Test Report for the Gateway Energy and Coke Company Facility ID 119040ATN HRSG Bypass Vent Stack No. 5

Prepared for:
Gateway Energy and Coke Company
Granite City, Illinois

Prepared by:
AECOM
Oak Ridge, Tennessee

November 2018

SunCoke Energy

Gateway Energy and Coke Company, LLC

2585 Edwardsville Rd
Granite City, IL 62040

November 16, 2018

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RE: Consent Decree, *United States, et al. v. Gateway Energy & Coke Company LLC, et al.*
Stack Testing Report for GECC September and October 2018 Stack Testing
Gateway Energy and Coke Company, Facility (Facility ID 119040 ATN)

To Whom It May Concern,

The United States, the State of Illinois, the State of Ohio, Gateway Energy & Coke Company, LLC (GECC), Haverhill Coke Company, LLC (HNCC) and SunCoke Energy, Inc. (SunCoke) are parties to a Consent Decree (CD) lodged in the U.S. District Court for the Southern District of Illinois with an Effective Date of November 7, 2014.

In accordance with Paragraphs 29, 30, and 33 of the CD, HNCC and GECC are required to conduct stack testing during any Scheduled FGD Maintenance that lasts more than 2 days and a report documenting the results of the stack test must be submitted no later than 60 days after conducting the stack test. GECC conducted stack testing pursuant to Paragraphs 29 and 30 on September 17th – 20th and

SunCoke Energy

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2585 Edwardsville Rd
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October 4th-5th, 2018, during Scheduled FGD Maintenance. Attached, please find the report documenting the stack test results.

Please contact me at 618-512-4918 or bewhitman@suncoke.com if you have any questions or concerns.

Sincerely,

Brandon Whitman
EHS Manager
SunCoke Energy, Inc.

TEST REPORT FOR THE
GATEWAY ENERGY AND COKE COMPANY
FACILITY ID 119040ATN
HRSG BYPASS VENT STACK No. 5

Test Dates: September 17-20, 2018 and October 4-5, 2018

Prepared for:

Gateway Energy and Coke Company
2585 Edwardsville Road
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Prepared by:

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November 2018

PROJECT CONTACT INFORMATION

Plant Name and Address

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Source Identification

Facility ID – 119040ATN
Stack Test – Bypass Vent Stack No. 5

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TABLE OF CONTENTS

1. INTRODUCTION/OVERVIEW 1
2. CONSENT DECREE TEST REQUIREMENTS 3
3. STACK TEST RESULTS 4
4. STACK TEST METHODS 10
   - 4.1 Sampling Point Determination – USEPA Method 1 10
   - 4.2 Flue Gas Velocity and Volumetric Flow Rate – USEPA Method 2 10
   - 4.3 Flue Gas Composition – USEPA Method 3A 11
   - 4.4 Flue Gas Moisture Content – USEPA Method 4 11
   - 4.5 PM/PM_{10} – USEPA Methods 5/202 11
   - 4.6 HCl – USEPA Method 26A 13
   - 4.7 H_2SO_4 – Conditional Test Method 13 (CTM-13) 13
   - 4.8 $NO_X/SO_2/O_2/CO_2$ – USEPA Method 6C and 7E 14
   - 4.9 Lead and Mercury – USEPA Method 29 15

Appendix A: SAMPLE TRAIN DIAGRAMS

Appendix B: PRODUCTION DATA

Appendix C: RELATIVE ACCURACY TEST AUDIT REPORT

Appendix D: CALCULATIONS AND FIELD DATA

Appendix E: ANALYTICAL REPORTS

Appendix F: CALIBRATION INFORMATION

LIST OF TABLES

Table 1. Bypass Vent Stack Test Results 1
Table 2. HRSG Bypass Vent Stack No. 5 Test Results for PM, H_2SO_4, and NO_X 6
Table 3. HRSG Bypass Vent Stack No. 5 Retest for NO_X 8
Table 4. HRSG Bypass Vent Stack No. 5 Test Results for Lead, Mercury, and HCl 9
Table 5. Test Methods 10

LIST OF FIGURES

Figure 1. Comparison of Gas Flow Rates 18

LIST OF ACRONYMS

CD	Consent Decree
CEM	Continuous Emissions Monitoring
CFR	Code of Federal Regulations
CO_2	Carbon Dioxide
CTM	Conditional Test Method
FGD	Flue Gas Desulfurization
GECC	Gateway Energy & Coke Company
H_2O_2	Hydrogen Peroxide
H_2SO_4	Sulfuric Acid Mist
HCl	Hydrogen Chloride
HNO_3	Nitric Acid
HRSG	Heat Recovery Steam Generator
$KMnO_4$	Potassium Permanganate
NO_X	Nitrogen Oxides
O_2	Oxygen
PM	Particulate Matter
PM_{10}	Particulate Matter less than 10 microns diameter
ppm	parts per million
RATA	Relative Accuracy Test Audit
SO_2	Sulfur Dioxide
USEPA	United States Environmental Protection Agency

1. INTRODUCTION/OVERVIEW

Gateway Energy & Coke Company (GECC) operates a 120 oven heat recovery coke making facility in Granite City, Illinois. A series of stack tests were performed at GECC on Bypass Vent Stack No. 5 over the periods of September 17 through 20, 2018, and October 4 and 5, 2018. These tests were performed to collect information required by a Consent Decree (CD).

SunCoke Energy, Inc.; Haverhill North Coke Company; and GECC (collectively, SunCoke) entered into a CD with the United States and the states of Ohio and Illinois to resolve alleged Clean Air Act violations. This CD became effective on November 7, 2014. Paragraph 29 of the CD requires stack testing of one of the bypass vent stacks at GECC during flue gas desulfurization (FGD) system maintenance that is scheduled to last more than 2 days. GECC performed FGD maintenance beginning on September 4, 2018, for a period exceeding 2 days and performed the required tests on Bypass Vent Stack No. 5 as required by the CD. GECC previously submitted a test protocol to United States Environmental Protection Agency (USEPA) and Illinois EPA on July 13, 2018. Paragraph 33 of the CD requires submission of a report documenting the results of the test by no later than 60 days after the test. This report satisfies that requirement.

Table 1 shows the test results compared to CD limits.

Table 1. Bypass Vent Stack Test Results

Pollutant	CD Limit	Test Result	Comply with CD limit?
Total PM/PM_{10} (filterable plus condensable – pounds/hour)	34.3	21.2	Yes
Lead (pounds/hour)	0.186	0.089	Yes
Mercury (pounds/hour)	NA	0.0039	NA
Initial NO_X Test (pounds/hour) NO_X Retest (pounds/hour)	NA	22.6 19.3	NA
Hydrogen chloride (pounds/hour)	NA	53.6	NA
Sulfuric acid mist (pounds/hour)	NA	8.0	NA

The remainder of this report contains CD requirements (Section 2), test results (Section 3), test methods (Section 4), sample train diagrams (Appendix A), production data

(Appendix B), Relative Accuracy Test Audit Report (Appendix C), calculations and field data (Appendix D), analytical reports (Appendix E), and calibration information (Appendix F).

2. CONSENT DECREE TEST REQUIREMENTS

The CD requires that a series of tests be performed during periods of FGD maintenance scheduled to last more than 2 days. These tests were performed September 17 to 20 and October 4 and 5, 2018. The measured pollutants were:

- Particulate matter (PM) and particulate matter less than 10 microns diameter (PM_{10})
- Lead
- Mercury
- Hydrogen chloride (HCl)
- Sulfuric acid mist (H_2SO_4)
- Nitrogen oxides (NO_X)

A relative accuracy test audit (RATA) of the bypass vent continuous emission monitor (CEM) for sulfur dioxide (SO_2) was also performed during the same FGD outage at GECC. A copy of the RATA report is included as Appendix C of this report.

3. STACK TEST RESULTS

The 120 ovens at GECC operate on a 48-hour coking cycle. Generally, half the ovens are pushed and charged each day. For example, the 60 odd-numbered ovens are pushed and charged one day and the 60 even-numbered ovens are pushed and charged the next. There are two production runs per day; approximately one-fourth of the ovens are pushed and charged during each production run. Production at GECC typically occurs from approximately 19:00 in the evening until 04:00 the next morning.

Paragraph 19 of the CD requires that emissions be minimized during all bypass venting. This includes restrictions on the maximum average coal charge (an average 42.5 tons/oven for the facility) and the maximum coal sulfur content (allowed up to 1.1%). The coal charge tonnage was near the maximum allowed and the coal sulfur was representative of typical operations:

- Coal charge during all tests: 41.4 tons per oven average
- Coal sulfur during tests: 0.78% to 0.86% by weight

The coal charge to each oven is measured by a calibrated weigh bin, which batches each coal charge onto a conveyor belt prior to charging it to the oven. During the test, GECC complied with the CD requirement for emissions minimization, which requires a maximum of 42.5 tons on average charged per oven and a maximum coal sulfur of 1.1%. The date and average amount of coal charged to the ovens during the tests are shown in Appendix B. The coal sulfur analysis during the tests is also included in Appendix B.

The bypass vent stacks at GECC were opened to begin FGD maintenance on September 4, 2018. The RATA was performed on September 17, 2018, from approximately 11:30 to 16:30. The initial stack tests started September 18, 2018, at approximately 16:00 and were completed on September 20, 2018, at approximately 17:30. After reviewing the initial test results, it was noted that NO_X concentrations (80 parts per million [ppm]) were higher than typically observed. Upon investigation, it was determined that the plug that was installed to isolate the bypass vent stack from the gas sharing tunnel, which is currently under construction, was not fully sealed. Natural

gas burners were being used to cure refractory in the ductwork adjacent to the bypass vent stack and NO_X emissions from the natural gas burners were pulled into the bypass vent stack during the test. This increased the emissions of NO_X at the bypass vent stack, resulting in emissions that were not representative of normal operations. This curing work was a one-time activity to cure the refractory in the new gas sharing tunnel.

GECC contacted USEPA and proposed to retest NO_X emissions under representative conditions pursuant to the original test protocol submitted on July 13, 2018. USEPA concurred but required that additional NO_X test runs be performed during production and early in the coking cycle. These additional NO_X tests were performed starting October 4, 2018, at approximately 12:30 and completed on October 5, 2018, at approximately 11:30.

Three test runs were performed for each pollutant during the initial tests as described in the Test Protocol (July 2018). One test run was performed during pushing and charging (conducted during the first pass on the heat recovery steam generator [HRSG] Stack No. 5 ovens). Pushing and charging requires approximately 8 to 9 hours each day. The other runs were performed in the mid to late parts of the production cycle where there is no pushing and charging. Typically no pushing and charging occurs during the other 15 to 16 hours of the day. The average emissions rates are based on the average of these three test runs.

The stack tests for PM and H_2SO_4, and the initial NO_X test were performed on September 18 and 19. The emissions, supporting information, and compliance evaluation for the test runs are presented in Table 2. The NO_X emissions exceeded the permit limit because the test conditions were not representative of typical operating conditions (additional emissions vented to bypass stack from curing refractory).

Table 2. HRSG Bypass Vent Stack No. 5 Test Results for PM, H_2SO_4, and NO_X

Sampling Train	Parameters				Average
PM/PM10	Run No.	**1**	**2**	**3**	
	Date	9/18/2018	9/18/2018	9/19/2018	
	Run times	16:08-18:21	23:26-01:34	11:48-13:54	
	Sample time (minutes)	120	120	120	120
	Volume sampled (dscf)	58.92	67.16	68.78	64.96
	Moisture Content (% Vol.)	12.7	16.9	14.8	14.8
	Percent Isokinetic	100.0	104.4	102.1	102.2
H2SO4	Run No.	**1**	**2**	**3**	
	Date	9/18/2018	9/19/2018	9/19/2018	
	Run times	16:40-17:40	00:04-01:04	12:14-13:14	
	Sample time (minutes)	60	60	60	60
	Volume sampled (dscf)	16.11	15.91	16.42	16.14
	Average charge/oven (wet tons coal)	41.2			
	Time in cycle	**late**	**production**	**mid**	
	O2 (%)	6.20	5.30	7.30	6.3
	CO2 (%)	10.00	10.80	8.90	9.9
	Stack Gas Temperature (^oF)	1,762	1,829	1,706	1,766
	Stack Velocity (ft/sec.)	52.3	61.8	59.5	57.9
	Gas Flow Rate (ACFM)	199,493	235,876	227,283	220,884
	Gas Flow Rate (SCFM)	46,642	53,521	54,691	51,618
	Gas Flow Rate (DSCFM)	40,710	44,463	46,586	43,919
	Concentration total PM/PM10 (gr/dscf)	0.038	0.077	0.053	0.056
	Particulate Mass Rate (pounds/hour)				
	Filterable PM/PM10	5.3	22.4	8.5	12.1
	Total PM/PM10 (filterable plus condensable)	13.2	29.3	21.1	21.2
	NOx concentration (ppm)	59.7	74.6	79.9	71.4
	NOx Mass Rate (pounds/hour)	17.4	23.8	26.7	22.6
	H2SO4 concentration (ppm)	11	14	10	12
	H2SO4 mass rate (pounds/hour)	6.9	9.8	7.3	8.0
Compliance Evaluation	Permit and CD Particulate Emission Limit (filterable plus condensable) - pounds/hour				34.3
	Comply with limit?				Yes
	NOx Emission Limit (pounds/hour)				20.8
	Comply with limit?				No (retest showed compliance)
	H2SO4 Emission Limit (pounds/hour)				19.4
	Comply with limit?				Yes

USEPA agreed to retesting for NO_X but suggested an expanded series of test runs. The following NO_X test runs were performed during the retest:

- Start sampling after second oven under stack was charged
- Next run started as soon as possible after previous
- Next run started as soon as possible after previous
- Mid cycle
- Late cycle

Table 3 shows the results of the NO_X retests. It was observed that stack conditions were not representative during Run No. 1 due to an open damper. The damper was closed for the next five test runs (which increased NO_X emissions). The average of the five representative NO_X test runs demonstrated compliance with the permit limit.

The stack tests for lead, mercury, and HCl were performed on September 19 and 20 on approximately the same schedule as the PM and H_2SO_4 tests (one test run during production with other runs at different times in the cycle). The emissions, supporting information, and compliance evaluation for the test runs are presented in Table 4.

Air-cooled probes that were 11 feet long were used for the PM tests on September 18 and 19. The temperatures during all the tests on Bypass Vent Stack No. 5 were higher than typically encountered with the result that the primary and backup air-cooled probes were warped to the point that they could not be used after the PM tests. Air-cooled 7 foot probes were used for the lead and mercury tests on September 19 and 20. The disadvantage of the shorter probes was that they could only reach half the traverse points. The partial traverse data were used to determine the gas flow rates for the lead and mercury tests. The lead and mercury test data appear valid based on a comparison of the gas flow data from all tests. In addition, the NO_X testing demonstrated that the stack is not stratified. This is discussed in more detail in Section 4.9.

Table 3. HRSG Bypass Vent Stack No. 5 Retest for NO_X

Parameters								**Average All Representative Runs [B]**
Time in cycle	**mid**		**late**	**production (after 2nd oven charged)**	**early (after Run 3)**	**early (after Run 4)**	**mid**	
Average charge/oven (wet tons coal)	40.8		40.8	40.8	40.8	41.6	41.6	
Run No.	1 [A]		2	3	4	5	6	
Date	10/4/2018		10/4/2018	10/4/2018	10/4/2018	10/5/2018	10/5/2018	
Run times	12:30 - 13:39		16:10 - 17:13	21:30 - 22:33	23:07 - 00:09	00:41 - 1:45	10:16 - 11:37	
Sample time (minutes)	60		60	60	60	60	60	60
Moisture Content (% Vol.)	15.8%		12.8%	15.9%	14.9%	14.0%	14.2%	14.4%
O2 (%)	12.7%		8.8%	6.0%	7.0%	7.9%	7.8%	7.5%
CO2 (%)	5.4%		8.2%	10.0%	9.2%	8.7%	8.7%	9.0%
Stack Gas Temperature (^oF)	1,134		1,549	1,549	1,724	1,675	1,670	1,633
Stack Velocity (ft/sec.)	58.2		52.5	52.8	57.7	56.6	58.7	55.7
Gas Flow Rate (ACFM)	222,328		200,382	201,405	220,317	215,959	223,776	212,368
Gas Flow Rate (SCFM)	72,949		52,135	52,327	52,650	52,782	54,740	52,927
Gas Flow Rate (DSCFM)	61,411		45,460	44,029	44,810	45,416	46,990	45,341
NOx concentration (ppm)	26.0		56.3	65.2	67.8	51.2	57.3	59.6
NOx Mass Rate (pounds/hour)	11.4		18.3	20.6	21.7	16.6	19.3	19.3
Permit NOx Emission Limit (pounds/hour)								20.8
Comply with limit?								Yes

Notes: A - Damper open. Run not representative.
B - Exluding Run 1

Table 4. HRSG Bypass Vent Stack No. 5 Test Results for Lead, Mercury, and HCl

Sampling Train	Parameters				Average
Lead/ Mercury	Run No.	**1**	**2**	**3**	
	Date	9/19/2018	9/20/2018	9/20/2018	
	Run times	23:06-24:42	12:04-13:40	15:58-17:34	
	Sample time (minutes)	96	96	96	96
	Volume sampled (dscf)	53.03	45.88	50.73	49.88
	Moisture Content (% Vol.)	18.0	16.0	14.7	16.3
	Percent Isokinetic	105.7	104.0	103.6	104.4
HCl	Run No.	**1**	**2**	**3**	
	Date	9/19/2018	9/20/2018	9/20/2018	
	Run times	23:15-24:15	12:05-13:05	16:00-17:00	
	Sample time (minutes)	60	60	60	60
	Volume sampled (dscf)	31.05	31.44	31.48	31.32
	Moisture Content (% Vol.)	18.5	16.5	15.4	16.8
	Average charge/oven (wet tons coal)	41.9			
	Time in cycle	**production**	**mid**	**late**	
	O2 (%)	5.30	6.30	7.20	6.3
	CO2 (%)	10.20	9.80	9.20	9.7
	Stack Gas Temperature (^{o}F)	1,827	1,768	1,673	1,756
	Stack Velocity (ft/sec.)	61.0	50.9	53.4	55.1
	Gas Flow Rate (ACFM) [A]	232,820	194,128	203,897	210,282
	Gas Flow Rate (SCFM) [A]	52,874	45,393	49,630	49,299
	Gas Flow Rate (DSCFM) [A]	43,356	38,109	42,329	41,265
	Lead concentration (ug/m3)	794	429	486	569
	Lead emission rate (lb/hour)	0.129	0.061	0.077	0.089
	Mercury concentration (ug/m3)	22.8	24.9	28.9	25.6
	Mercury emission rate (lb/hour)	0.0037	0.0036	0.0046	0.0039
	HCl concentration (ppm)	280	217	186	228
	HCl mass rate (pounds/hour)	69.1	47.0	44.8	53.6
Compliance Evaluation	Permit lead emission limit (pounds/hour) [B]				0.065
	Comply with limit?				No
	CD lead emission limit (pounds/hour)				0.186
	Comply with limit?				Yes

Notes: A - Partial traverse - see discussion in text
B - Submitted permit application October 26, 2010 to revise lead limit to 0.186 pound/hour

4. STACK TEST METHODS

The test methods are listed in Table 5. Each test was based on USEPA reference methods or alternative methods approved by USEPA.

Table 5. Test Methods

Emission Unit	Pollutant	Test Method Reference	Comment
Bypass vent stack No. 5	Traverse point layout	USEPA Method 1	
	Gas flow rate	USEPA Method 2	
	Gas molecular weight	USEPA Method 3A	Measured O_2 and CO_2
	Moisture	USEPA Method 4	
	PM/PM_{10}	USEPA Method 5/202	
	NO_X	USEPA Method 7E	
	SO_2	USEPA Method 6C	RATA CEM pollutant
	H_2SO_4	USEPA Conditional Test Method (CTM)-13	Controlled condensate method
	HCl	USEPA Method 26A	
	Lead and Mercury	USEPA Method 29	

This section contains a brief description of the sampling and analytical procedures for each method that was employed during the test program. Any deviations from the methods are also discussed.

4.1 Sampling Point Determination – USEPA Method 1

The number and location of the sampling or traverse points was determined according to the procedures outlined in USEPA Method 1. The sample location was inspected to ensure USEPA Method 1 criteria are met. All points were at least 1.0 inch from the stack wall, per Method 1. The bypass vent stack required a 24 point traverse for isokinetic sampling, which was spread evenly across two sampling ports.

4.2 Flue Gas Velocity and Volumetric Flow Rate – USEPA Method 2

The flue gas velocity and volumetric flow rate were determined according to the procedures outlined in USEPA Method 2. Velocity measurements were made using S-type Pitot tubes that had been calibrated in a wind tunnel according to USEPA Method 2 criteria.

Differential pressures were measured with a fluid-inclined manometer. Flue gas temperatures were measured with Type K thermocouples equipped with digital readouts.

4.3 Flue Gas Composition – USEPA Method 3A

Flue gas analysis for O_2 and carbon dioxide (CO_2) concentrations to determine the flue gas dry molecular weight was performed in accordance with USEPA Method 3A directly utilizing CEMs for each gas or by obtaining integrated samples that were then analyzed by CEMs for each gas. The concentrations of O_2 and CO_2 were reported in percent levels.

4.4 Flue Gas Moisture Content – USEPA Method 4

The flue gas moisture content was determined in conjunction with each USEPA Method 5/202, Method 29, and Method 26A sampling trains and according to the sampling and analytical procedures outlined in USEPA Method 4. The impingers were connected in series and contained reagents as described in Sections 4.5, 4.6, and 4.9. The impingers were contained in an ice bath to ensure condensation of the moisture in the flue gas stream. Any moisture that was not condensed in the impingers was captured in the silica gel; therefore, all moisture was weighed and entered into moisture content calculations.

4.5 PM/PM_{10} – USEPA Methods 5/202

The CD requires testing for PM and PM_{10}. PM consists of two components – filterable and condensable. It was not practicable to measure filterable PM_{10} in the GECC bypass vent stacks because the temperature (over 1,800ºF) was outside the range of the equipment typically used for Method 201A (400ºF). Certain modifications to the method may be used to extend the range to 500ºF. As discussed in the test protocol, the equipment described in Method 201A cannot be used above this temperature without alternate construction techniques and the use of exotic materials (40 CFR 60, Appendix A, Method 201A, 8.6.1). In any event, Method 201A uses an in-stack filter after the cyclone, which limits the temperature to approximately 1,000ºF. Therefore, PM_{10} emissions were assumed to be the same as PM emissions.

The sampling probe was fitted with a calibrated, S-type Pitot for measuring exhaust gas flow rates and a K-type thermocouple for measuring the gas stream temperature. The absence of cyclonic flow was verified prior to performing the compliance tests.

The filterable PM was measured in accordance with USEPA Reference Method 5. The filterable PM was performed by extracting a sample of the stack exhaust gas stream through a one-piece quartz nozzle and liner encased in an air-cooled probe. The probe was attached to a heated, glass filter holder containing a pre-weighed, glass-fiber filter. The filter heater box was maintained at a temperature of 248°F +25°F as measured by a K-type thermocouple in the filter holder housing.

At the conclusion of each test run, the sample train was recovered by rinsing the sample probe and nozzle three times with acetone into a sample container. The filter was removed from the filter holder and placed into a Petri dish and sealed for transportation. The front half of the glass filter holder and connecting elbow were rinsed with acetone into the probe wash sample container. A sample of the acetone used in the sample recovery was collected and analyzed as a reagent blank. The acetone rinses and filters were analyzed for filterable PM.

The condensable fraction of PM was measured using the procedures described in USEPA Reference Method 202. The impinger train contained a water-jacketed coil condenser between the heated filter outlet and inlet to the first impinger. The water condensed in the coil condenser drops into a knockout impinger. The second impinger is initially empty. The cooled gas then passes through a Teflon filter maintained in the range of 65°F to 85°F. The third impinger initially contains 100 mL of distilled water. The fourth impinger contains approximately 200 grams of indicating silica gel. The third and fourth impingers are placed in an ice bath to maintain the impinger train outlet temperature at ≤65°F.

After testing, the impinger train was moved to the test trailer and connected to a cylinder of pure nitrogen and purged for 60 minutes at a flow rate of 14 L/min. The condenser, first two impingers, connecting glassware, and front-half of the Teflon filter holder were rinsed with water

for the inorganic sample and with acetone followed by hexane for the organic sample. The Teflon filter, organic and inorganic rinses, and reagent blanks were analyzed for inorganic and organic condensable PM.

4.6 HCl – USEPA Method 26A

The HCl sampling was performed using an USEPA Method 26A sampling train. The train consisted of a quartz liner fitted into an air-cooled sampling probe. This is required because the stack temperature was at least 1,800°F. The probe was connected to a heated, glass filter holder containing a quartz filter. The outlet of the filter holder was connected to a series of ball-joint impingers. The first and second impingers were the Greenburg-Smith type and each contained 100 mL of 0.1N sulfuric acid (H_2SO_4). The third impinger was a modified Greenburg-Smith impinger containing water. The fourth impinger was a modified Greenburg-Smith impinger containing 200 grams of indicating silica gel. Only the impingers that absorb HCl (the H_2SO_4 impingers) were analyzed.

4.7 H_2SO_4 – Conditional Test Method 13 (CTM-13)

Conditional Test Method 13 (CTM-13) method, also known as NCASI Method 8A, was developed as an alternative to USEPA Method 8 for determining H_2SO_4 emissions from Kraft recovery furnaces. It has been observed that the reference method, USEPA Method 8, can be subject to significant interference from SO_2 as well as sulfates if they are present in the PM. This alternative method uses a quartz in-line filter to remove PM from the gas stream prior to capturing H_2SO_4. The use of a controlled condensation technique instead of impingers reduces the potential for positive bias from SO_2. This conditional test method was used because the expected sulfur trioxide concentration was small (less than 20 ppm), and the alternate test method is likely to be more accurate in this situation.

The CTM-13 sampling train consisted of a quartz tube wrapped in an insulating blanket that was used as the sampling probe. The exit of the probe was connected to a filter holder containing a quartz filter, which was maintained at a temperature of >500°F by means of a

cylindrical heating mantle. The outlet of the filter holder was connected to a modified Graham condenser that was constructed with a Type-C glass frit and 200 cm of 5mm ID glass tubing condenser coil. The outer condenser chamber contained water maintained at a temperature range of 140°F to 180°F by means of a recirculating water bath. The outlet of the heated coil condenser was connected to a series of glass impingers. The first impinger was a Greenburg-Smith filled with 100 mL of 3% hydrogen peroxide (H_2O_2). The second impinger was a modified Greenburg-Smith also filled with 100 mL of 3% H_2O_2. The third impinger was a Greenburg-Smith filled with 100 mL of distilled water. The fourth impinger was a modified Greenburg-Smith filled with 200 grams of indicating silica gel. The sampling train was connected, by means of an umbilical cord, to the control console. The control console contained the dry gas meter, sampling pump, heat controllers, and sample rate controls.

The CTM-13 sample train was operated by placing the end of the quartz sample tube approximately 3 feet into the vent stack. A gas sample was then extracted from a single sampling point in the stack, at a constant sample rate of 10.0 L/min (±10%), for a 1-hour period. Leak checks were performed at both the beginning and ending of a sample test run.

At the conclusion of the test run, the CTM-13 sample train was removed from the sampling platform and recovered in the test trailer. The sample recovery was performed by rinsing the H_2SO_4 condenser with distilled water. The H_2SO_4 condenser rinse was collected into sample containers. The impingers were discarded since they are designed to collect SO_2, which was not a target pollutant for these tests. The H_2SO_4 sample containers were then sealed at the site for subsequent analysis. The CTM-13 analysis was performed by suppressed ion chromatography.

4.8 $NO_X/SO_2/O_2/CO_2$ – USEPA Method 6C and 7E

AECOM operated a CEM for SO_2 according to USEPA Method 6C during the RATA. Ten SO_2 tests were performed for the RATA. AECOM operated CEMs for NO_X and O_2/CO_2 according to USEPA Methods 7E and 3A, respectively, for the stack tests. The CEM analyzers were calibrated before the start of testing. System bias checks were performed before and after

each test stack test run and after every third run for the SO_2 RATA. The calibration and bias checks used USEPA protocol gases according to USEPA Method 7E and Method 3A guidelines. The gases were measured continuously, and an electronic data logger recorded 1-minute averages for the test runs.

The CEM sampling was performed by placing a sample probe in the stack to withdraw a continuous gas sample. The stack profile was not stratified as demonstrated by measuring the NO_X concentrations at 16.7%, 50%, and 83.3% of the stack diameter. The gas sample was transported through a heated, Teflon sample line to an electric gas chiller that removed moisture from the gas stream. Exiting the gas chiller, the dried sample gas was distributed to each CEM for subsequent analysis.

4.9 Lead and Mercury – USEPA Method 29

The lead and mercury sampling was performed using an USEPA Method 29 sampling train. The sample train consisted of an integrated quartz nozzle and probe liner fitted into an air-cooled sampling probe. This is required because the stack temperature was at least 1,800°F. The outlet of the probe was connected to a heated, glass filter holder containing a quartz fiber filter. The outlet of the filter holder was connected to a series of ball-joint impingers. The first impinger was a modified Greenburg-Smith containing 100 mL of a 5% nitric acid (HNO_3)/10% H_2O_2 mixture. The second impinger was a Greenburg-Smith containing a 5% HNO_3/10% H_2O_2 mixture. The third impinger was a modified Greenburg-Smith and was initially empty. The fourth and fifth impingers were modified Greenburg-Smith types containing a mixture of 4% potassium permanganate ($KMnO_4$)/10% H_2SO_4. The sixth impinger was a modified Greenburg-Smith containing 200 grams of indicating silica gel. The remainder of the sampling train was identical to the previously described Method 5/202 train.

The Method 29 train was operated in the same way as the Method 5 train, except the total sample volume collected was at least 70 dry standard cubic feet to ensure adequate detection limits of the target metals. At the conclusion of the sample run, the Method 29 sample train was removed from the stack to the sample recovery trailer for subsequent recovery per Method 29

procedures. The sample probe was washed on the stack to avoid potential breakage of the probe liner.

At the conclusion of each Method 29 test run, the sample train was recovered by washing the nozzle/probe assembly and front half of the filter holder three times with 0.1N HNO_3 into a sample container. The impinger train was then disassembled and each impinger weighed to determine the moisture gained during the sample run. The liquid contents of impingers one and two were transferred into a sample container along with the 0.1N HNO_3 rinse. Impinger three was also rinsed with 0.1N HNO_3. The contents of impingers four and five were transferred into a sample container. The impingers were then rinsed with 100 mL of fresh $KMnO_4$ solution. The rinse was transferred to a separate sample container. The impingers were then rinsed with 100 mL of deionized water and added to the same sample container. A 25 mL rinse of 8N HNO_3 was performed and collected into a separate sample container. The silica gel in the last impinger was recovered for subsequent reconditioning.

Samples of the filter, deionized water, impinger solutions, and rinse solutions were collected along with the actual test samples to serve as blanks for the tests. The blank samples were analyzed along with the actual test samples.

4.9.1 Deviation from Test Protocol

The bypass vent stacks are difficult to test. The ports are very near the top of the stack where the exhaust plume can “bend” down and affect test personnel. Movement around the stack is restricted by a small test platform (approximately 4 feet wide) and by the open stack lids and their pneumatic cylinders.

A deviation from the isokinetic method has been previously approved (May 2016 tests at Haverhill Coke Company) for bypass vent stack testing to minimize the number of times each train is removed from the port and physically moved. A complete velocity traverse of 24 points (4 ports) is performed to determine the average velocity. One of the ports is chosen that has a representative velocity. The isokinetic train (Method 5/202 or Method 29) is installed in the

representative port for the entire run and velocities in the other ports are measured periodically with a Pitot tube at appropriate intervals during each test run. This procedure ensures that the average velocity is determined for each run by measuring the velocities at each traverse point while protecting the integrated probe and nozzle by minimizing the thermal shock and movement of the sample train. Most importantly this procedure does not require the test crew to try to move the sampling equipment around the narrow platform and its obstructions.

This alternate procedure was proposed to USEPA for the previous bypass vent stack tests at GECC (May 2017). However, USEPA suggested use of air-cooled 11 foot long probes with quartz liners. These longer probes allow sampling at all traverse points in the stack from two ports that are located such that the sampling equipment does not have to be moved around the stack. The 11 foot long air-cooled probes have been used for previous tests at GECC and other heat recovery coke making facilities where stack temperatures were in the general range of 1,300ºF to 1,600ºF. Each probe gradually bends and warps to the point where it cannot be used after approximately six to nine test runs.

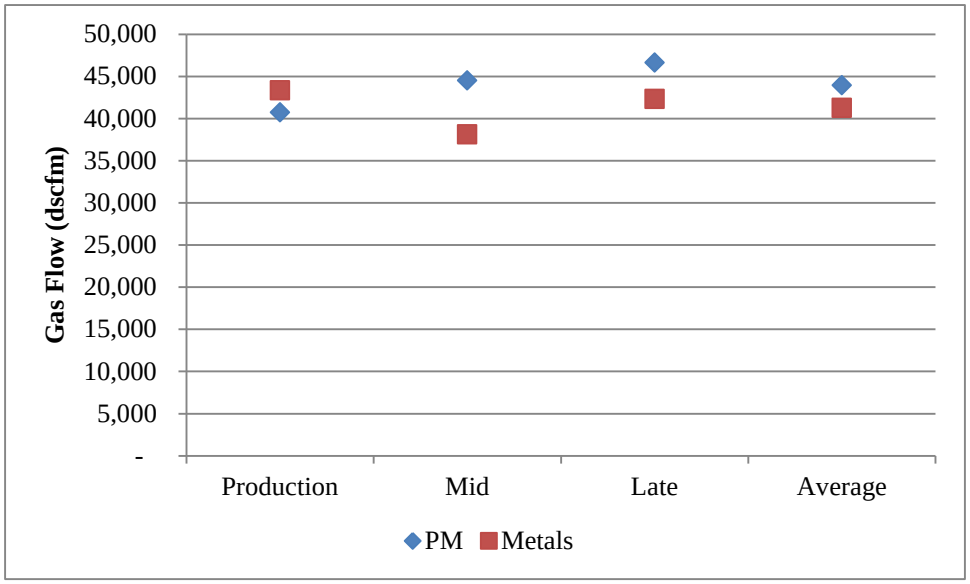
An 11 foot air-cooled probe was used for the PM tests. However, stack temperatures were high enough (up to 1,900ºF) to cause both the primary and backup air-cooled probes to warp to the point that they could not be used after the PM tests. Air-cooled 7 foot probes were used for the lead and mercury tests. The disadvantage of the 7 foot air-cooled probes is that they only reach half the traverse points. The advantage of 7 foot air-cooled probes is that they do not extend as far into the stack and are less likely to bend and warp at higher temperatures. The gas flow measurements used to determine lead and mercury emissions were based on the partial traverses of the stack using the 7 foot air-cooled probes.

Distribution of pollutants within the stack is not an issue. The stack was demonstrated to be not stratified during the NO_X tests.

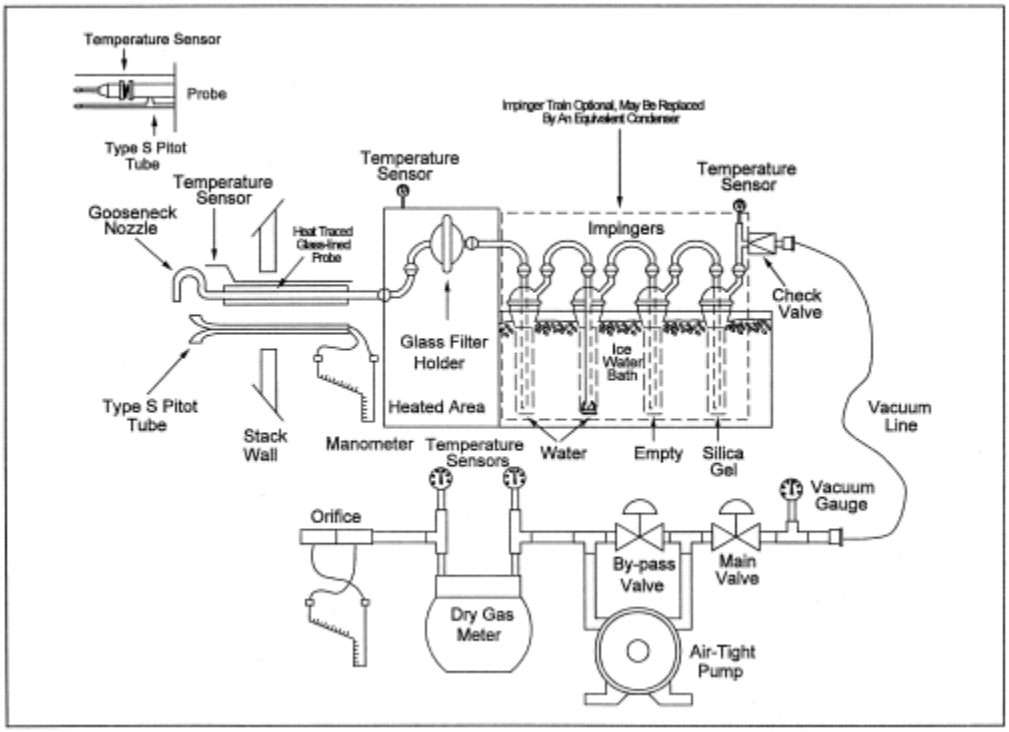
Figure 1 shows a comparison of the gas flow rates (dry standard cubic feet per minute [dscfm]) measured for the PM tests and the lead and mercury (metals) tests. The comparison of dscfm was used because the emission rate is based on the product of flow rate (dscfm) and

pollutant concentration. The dscfm values vary somewhat from run to run but the averages are very similar (within ±6%). Based on this comparison, the gas flows measured by the partial traverses appear reasonable and representative for determining emissions.

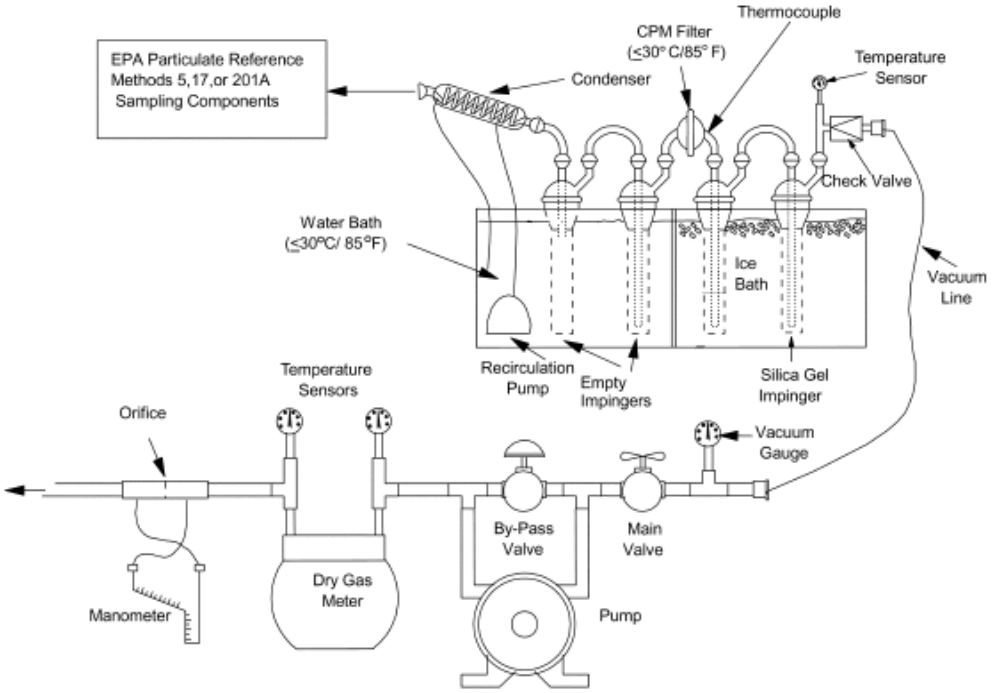
Figure 1. Comparison of Gas Flow Rates



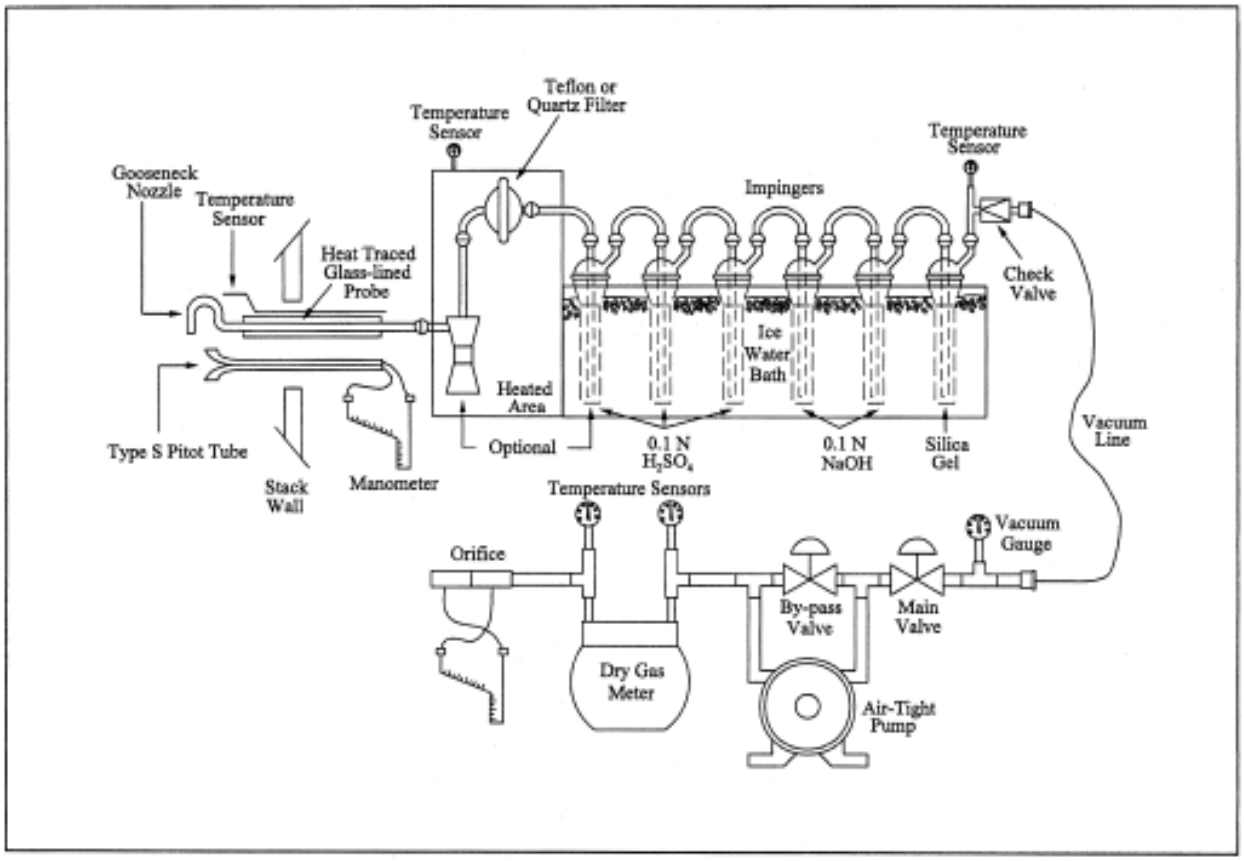
Appendix A
SAMPLE TRAIN DIAGRAMS



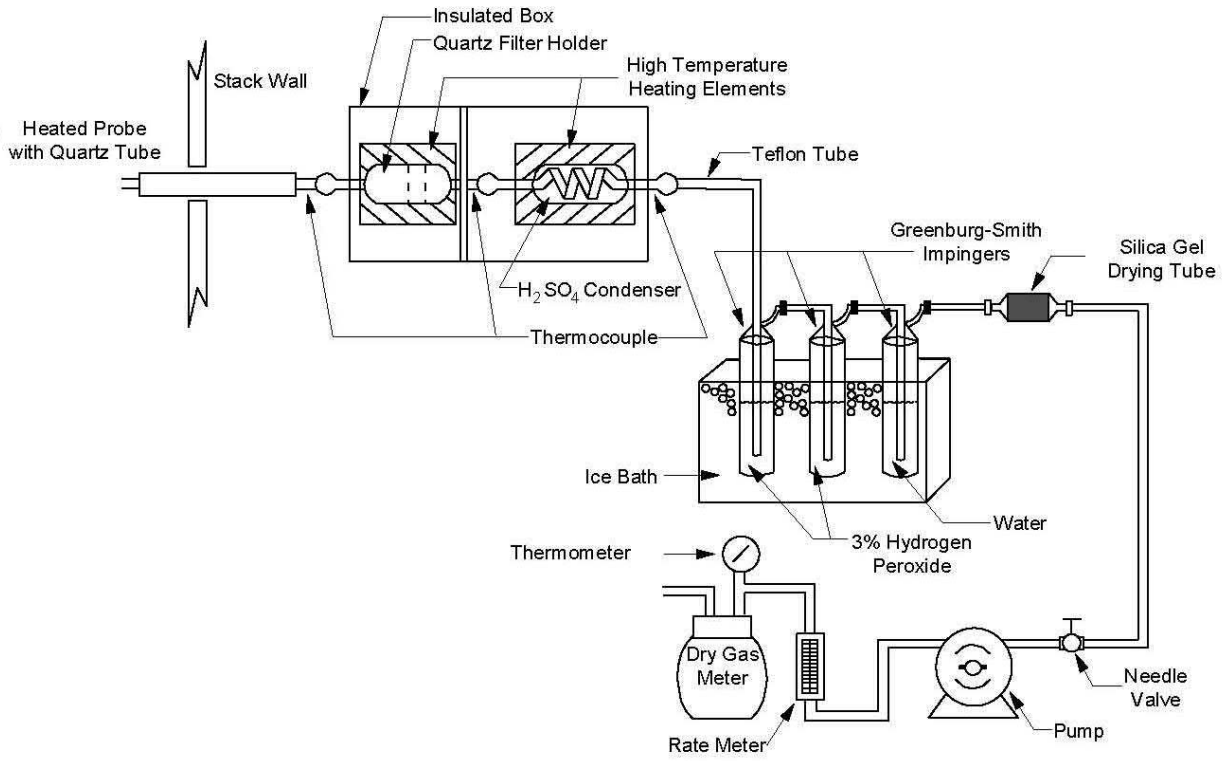
USEPA Method 5 Train (front portion)



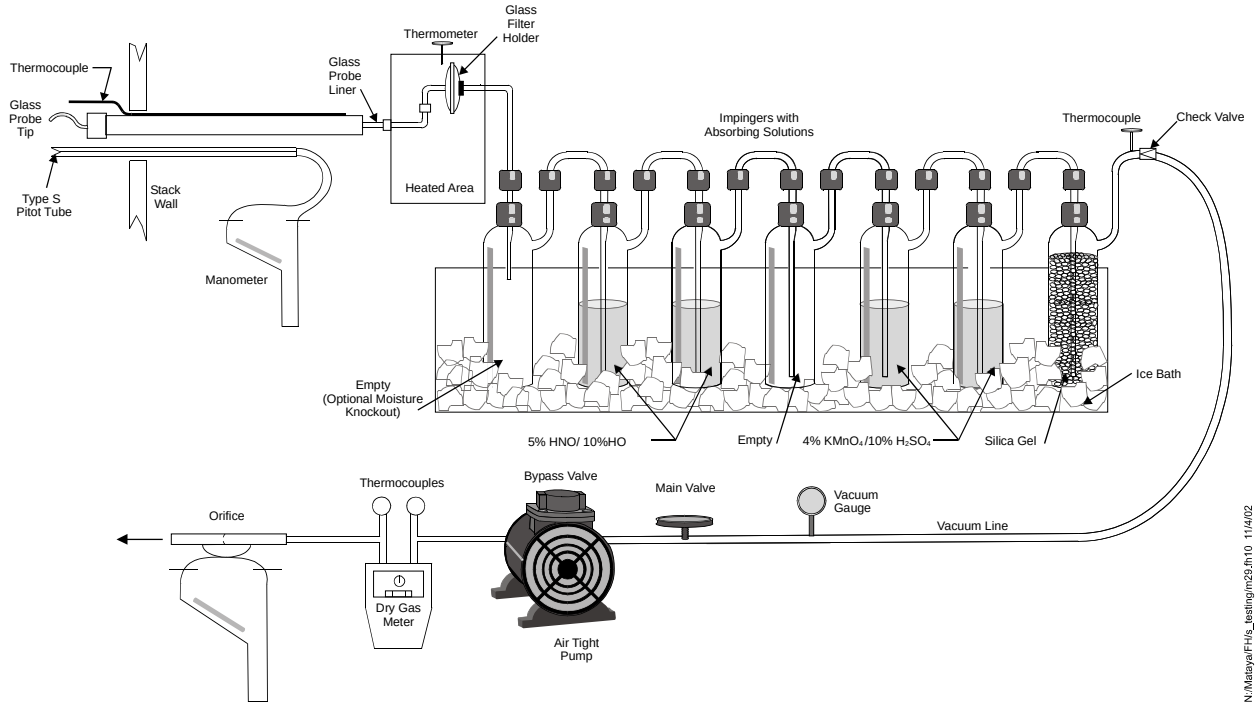
USEPA Method 202 Train (back portion)



USEPA Method 26A Train (no NaOH in back impingers)



USEPA Method CTM-13 Train



USEPA Method 29 Train

Appendix B
PRODUCTION DATA

Coal Charge Data

Date	Average Coal Charged (wet tons)	Coal Sulfur (%)
9/17/2018	38.33	0.78
9/18/2018	42.37	0.80
9/19/2018	41.57	0.82
9/20/2018	42.16	0.81
10/3/2018	40.62	0.86
10/4/2018	41.02	0.85
10/5/2018	42.13	0.84

Test Date	Average Coal Charge in Ovens During Tests (wet tons)
9/18/2018	40.4
9/19/2018	42.0
9/20/2018	41.9
10/4/2018	40.8
10/5/2018	41.6

Average PM, NOx, H2SO4 tests	41.2
Average lead, mercury, HCl tests	41.9
Average NOx Retest	41.2

Appendix C
RELATIVE ACCURACY TEST AUDIT REPORT

Relative Accuracy Test Audit Report for the Bypass Vent Stack 5 CEMS

Prepared for:
Gateway Energy and Coke Company, Granite City, IL

Prepared by:
AECOM
Oak Ridge, Tennessee

October 2018

RELATIVE ACCURACY TEST AUDIT REPORT
FOR THE
BYPASS VENT STACK 5 CEMS

Prepared For:

Gateway Energy and Coke Company
Granite City, Illinois

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October 2018

Table of Contents

Acronyms iii

1.0 Introduction 1-1

2.0 Test Results 2-1

3.0 Relative Accuracy Test Audit Technical Approach 3-1
- 3.1 CEMS Description 3-1
- 3.2 Relative Accuracy Test Audit Testing 3-2
- 3.3 U.S. Environmental Protection Agency Reference Methods 3-2
  - 3.3.1 Method 4, Moisture Determination 3-3
  - 3.3.2 Method 6C, Sulfur Dioxide Concentration Determination 3-3
- 3.4 Relative Accuracy Test Calculations 3-4
  - 3.4.1 Calibration Error Corrections 3-4
  - 3.4.2 Sulfur Dioxide Calculations 3-4
  - 3.4.3 Relative Accuracy Calculations 3-5

4.0 Quality Assurance/Quality Control Procedures 4-1
- 4.1 U.S. Environmental Protection Agency Reference Method Analyzer Calibrations 4-1
  - 4.1.1 Analyzer Calibration Error Checks 4-1
  - 4.1.2 System Bias Checks 4-2
  - 4.1.3 System Drift 4-2
- 4.2 Sampling Equipment Quality Control Procedures 4-2

Appendix A: REFERENCE METHOD SUPPORTING DOCUMENTATION
Appendix B: INSTALLED CEMS SUPPORTING DOCUMENTATION

List of Acronyms

CEMS	Continuous Emissions Monitoring System
CFR	Code of Federal Regulations
DAHS	Data Acquisition and Handling System
EPA	U.S. Environmental Protection Agency
ESC	Environmental Systems Corporation
FGD	Flue Gas Desulfurization
HRSG	Heat Recovery Steam Generator
GECC	Gateway Energy and Coke Company
ppm	parts per million
QA	Quality Assurance
QC	Quality Control
RATA	Relative Accuracy Test Audit
SO_2	Sulfur Dioxide

1.0 Introduction

Gateway Energy and Coke Company (GECC) operates a heat-recovery metallurgical coke production facility in Granite City, Illinois. A continuous emissions monitoring system (CEMS) is installed on the Bypass Vent Stack 5 to monitor the emissions of sulfur dioxide (SO_2) during bypass venting events. GECC contracted AECOM Technical Services, Inc. to perform a Relative Test Accuracy Audit (RATA) test on the Bypass Stack 5 CEMS, during a scheduled Flue Gas Desulfurization (FGD) maintenance outage in September 2018. A test protocol was submitted to the Illinois Environmental Protection Agency on July 13, 2018.

The RATA testing was performed on September 17, 2018. This test report presents the results of the RATA test. Section 2.0 summarizes the test results. Section 3.0 describes the methods and techniques that were used to conduct the testing. Section 4.0 discusses the quality assurance (QA)/quality control (QC) procedures that were followed in the performance of the testing. Detailed data supporting the RATA test are presented in Appendices A and B.

2.0 Test Results

The facility was operated at or above 50% of its normal production rate for the duration of the relative accuracy testing. The RATA consisted of at least 9 sampling runs. Each sample run was at least 21 minutes in duration.

Table 2-1 summarizes the results of the RATA for the CEMS. The relative accuracy for the installed CEMS must be no greater than 20% of the reference method. As indicated in the table, the CEMS met the required relative accuracy limits.

The reference method sample data, calibration data, calibration gas certification sheets, equipment calibration sheets, and field data sheets for moisture determinations are included in Appendix A. The installed CEMS sample data results are included in Appendix B.

Table 2-1
SO_2 Monitoring System RATA Results

Plant Name: Gateway Energy & Coke **GCO Analyzers:** SO_2: API Model T100 S/N 408

Location: Bypass Vent Stack 5

Date	Time	Run #	SO_2, ppmw RM Data	SO_2, ppmw CEMS Data	SO_2, ppmw Delta
17-Sep-18	1135 - 1157	1	281.9	241.1	40.8
17-Sep-18	1202 - 1225	2	308.7	236.7	72.0
17-Sep-18	1230 - 1253	3	310.7	234.9	75.9
17-Sep-18	1311 - 1334	4	479.4	581.8	-102.4
17-Sep-18	1336 - 1359	5	~~403.3~~	~~540.1~~	~~-136.8~~
17-Sep-18	1407 - 1430	6	405.4	504.2	-98.8
17-Sep-18	1450 - 1513	7	457.4	494.1	-36.7
17-Sep-18	1517 - 1540	8	440.0	476.4	-36.4
17-Sep-18	1545 - 1608	9	448.0	454.7	-6.8
17-Sep-18	1613 - 1636	10	461.5	447.4	14.0
		11			
		12			
	Average:		399.2	407.9	-8.7

Standard Deviation (Sd)		66.2
Confidence Coefficient (CC)		50.9
Relative Accuracy, % (Reference Method)	**Passing Criteria** **<=20%**	14.9
		PASS

Note: **A t - value of 2.306 was used in the confidence coefficient equation.**
Runs not used in calculations are indicated with strikethrough font (e.g., ~~1000~~)

3.0 Relative Accuracy Test Audit Technical Approach

The following sections describe the methods and techniques that were used to complete the RATA testing. Section 3.1 is a brief description of the installed CEMS. Section 3.2 describes the RATA testing. Descriptions of the U.S. Environmental Protection Agency (EPA) Reference Methods used to perform the RATA are presented in Section 3.3, while Section 3.4 describes the calculations used.

3.1 CEMS Description

The Bypass Stack 5 CEMS is a dilution extractive sampling system. Sample gas is drawn through a ceramic probe tube that extends approximately one-third of the way into the stack. Stack gas then enters the heated probe assembly. The entire dilution probe assembly is heated to a temperature of 375 °F. While in the heated probe chamber, the stack gas is filtered via the primary filter. The primary filter is a 2 µm woven stainless steel filter. The filtered stack gas then flows from the filter chamber to the dilution manifold, where it goes though the secondary filter, which is a safety filter to catch debris before entering the critical orifice. After being regulated by the critical orifice, the sample gas is pulled to the middle of the eductor where the pure sample mixes with the dilution air. The resulting mixture is a diluted sample that is ready for transport and sampling. Given the sampling conditions in the stack, a dilution ratio of 100:1 is used to lower the dew point of the sample gas significantly and to lower the concentration of the fouling constituents significantly.

To increase the response time, a fast-loop is used to draw more sample gas through the sample tube and filter chamber before dumping the gas back into the stack. The sample probe box also contains two blowback tanks to purge the probe filters at regular intervals (several times a day). This entire assembly is housed in a NEMA 4X stainless steel enclosure.

A heated traced sample line designed for freeze protection is used to transport the diluted sample from the dilution probe box to the analyzer in the CEMS building. The heated sample line contains two 3/8-in. Teflon sample lines (with one line being a spare), ¼-in. lines for

calibration, blowback, dilution motive air, fast loop air, vacuum tap, thermocouple extension wires, and wires for power and temperature alarms.

An ultraviolet fluorescence SO_2 analyzer (SN 408) with a range of 0–10 parts per million (ppm) (diluted) is used to measure SO_2 in the stack gas. Measured values are adjusted for the appropriate dilution ratio by the DAS to determine actual stack gas concentration.

An Environmental Systems Corporation (ESC) 8832 data controller records signals from the instruments. The controller communicates via an intranet connection with the data acquisition and handling system (DAHS) computer located in the administration building. The DAHS computer runs ESC's StackVision software package for recording data and providing emission reports.

3.2 Relative Accuracy Test Audit Testing

The RATA is a direct comparison of the permanently installed measurement system and concurrently measured results gathered by EPA reference methods. The CEMS RATA test was performed according to the applicable procedures cited in 40 CFR 60, Appendix B, PS-2. Based on data from the initial certification testing, traverse points located at 16.7, 50.0, and 83.3 percent of the measurement line were used for the RATA testing.

For the EPA reference method analyzers, a gas sample was continuously extracted and analyzed. The average observed concentration during each test run was determined using an arithmetic average of the data logger's 1-minute sub-averages. The moisture content of the gas was determined using Method 4. A moisture determination was performed approximately once per hour. The CEMS RATA data were evaluated in units of SO_2 ppm (wet).

3.3 U.S. Environmental Protection Agency Reference Methods

The following sections summarize the sampling procedures that were followed to complete the RATA testing program.

3.3.1 Method 4, Moisture Determination

The sample gas moisture content was determined by gravimetrically measuring the weight gain of chilled impingers using procedures contained in EPA Reference Method 4. A moisture determination was made approximately once per hour. The samples were collected from a single point within the stack. The moisture content of the gas was used to correct the measured dry SO_2 values from the reference method analyzer to a wet basis.

3.3.2 Method 6C, Sulfur Dioxide Concentration Determination

The SO_2 sampling and calibrations conformed to procedures outlined in EPA Reference Method 6C. A heated, stainless steel probe was used to extract the gas sample from the main stack. A 3/8-in., heated Teflon line transported the gas sample from the point of extraction to a gas conditioner and then to the SO_2 analyzer. The analyzer was located in a temperature-controlled area to minimize thermal effects on the calibration of the instruments.

The average observed SO_2 concentration for each test run was determined using an arithmetic average of an ESC 8816 data logger's 1-minute sub-averages. QC procedures implemented during the EPA reference method testing for SO_2 included three-point calibrations, bias checks, and a response time test. The SO_2 analyzer was calibrated before each series of test runs. The calibrations consisted of introducing ultra high purity N_2 as a zero gas and two known concentrations of SO_2 directly to the analyzer. Bias checks were performed after every three test runs. The bias check consisted of introducing a zero gas and one known concentration of SO_2 to the sampling system at a point directly following the sampling probe. EPA Protocol 1 calibration gases were used to perform the calibrations and bias checks. The measurement system response time was determined during the bias check by noting the times required to achieve a stable response for both the zero and upscale gases.

3.4 Relative Accuracy Test Calculations

The following sections detail the calculations that were performed during data reduction and relative accuracy determination activities.

3.4.1 Calibration Error Corrections

For each test run of the CEMS RATA, the mean of the reference method observed concentrations was calculated. The mean values for SO_2 were corrected for calibration error (drift/bias) using the following equation:

$$C_{corr} = (C_{obs} - C_o) \times \left(\frac{C_{MA}}{(C_M - C_o)} \right)$$

where:

C_{corr} = C_{obs} corrected for drift/bias, parts per million (ppm) or vol%
C_{obs} = Average observed analyzer concentration during test, ppm or vol%
C_o = (Pretest system zero response + post test system zero response)/2 ppm or vol%
C_{MA} = Actual concentration of calibration gas used, ppm or vol%
C_M = (Pretest system calibration response + post test calibration response)/2 ppm or vol%

3.4.2 Sulfur Dioxide Calculations

For each test run of the CEMS RATA, the SO_2 concentration on a wet basis was calculated using the following equation:

$$C_{wet} = C_{dry} \times [1 - (B_{wo} / 100)]$$

where:

C_{wet} = SO_2 concentration, ppm (wet)
C_{dry} = SO_2 concentration, ppm (dry)
B_{wo} = Gas moisture, %

3.4.3 Relative Accuracy Calculations

The relative accuracy test is a direct comparison of the permanently installed monitoring system and concurrently measured results gathered by EPA reference method. The arithmetic difference between the reference method and the installed system output was calculated for each test run. These arithmetic differences were then used to calculate the mean of the difference, standard deviation, confidence coefficient, and relative accuracy, using the following equations.

a) Arithmetic mean equation:

$$\overline{d} = \frac{1}{n} \sum_{i=1}^{n} d_i$$

where:

n = number of data points,

$\sum_{i=1}^{n} d_i$ = Algebraic sum of the individual difference d_i.

b) Standard deviation equation:

$$S_d = \left[\frac{\sum_{i=1}^{n} d_i^2 - \frac{\left(\sum_{i=1}^{n} d_i \right)^2}{n}}{n-1} \right]^{1/2}$$

c) Confidence coefficient equation:

$$CC = t_{0.975} \frac{S_d}{\sqrt{n}}$$

where:

$t_{0.975}$ = t-value (see table below).

t-values					
n[a]	$t_{0.975}$	n[a]	$t_{0.975}$	n[a]	$t_{0.975}$
2	12.706	7	2.947	12	2.201
3	4.303	8	2.365	13	2.179
4	3.182	9	2.306	14	2.160
5	2.776	10	2.262	15	2.145
6	2.571	11	2.228	16	2.131

[a] The t-values are already corrected for n-1 degrees of freedom.
Use n equal to the number of individual values.

d) Relative accuracy equation:

$$RA = \frac{|\bar{d}| + |CC|}{\overline{RM}} \times 100$$

where:

RA = Relative accuracy,

$|d|$ = Absolute value of the mean of differences,

$|CC|$ = Absolute value of the confidence coefficient,

RM = Average reference method value or applicable standard.

4.0 Quality Assurance/Quality Control Procedures

The objective of AECOM's QA Program is to ensure the accuracy and precision, as well as the reliability, of the data collected and generated for AECOM's clients and to meet the data quality objectives of the regulatory or accrediting bodies. Management, administrative, statistical, investigative, preventive, and corrective techniques were employed to maximize the reliability of data.

During the RATA testing, a strict QA/QC program was adhered to. Before actual sampling on-site, sampling equipment was thoroughly checked to ensure that each component was clean and operable. Equipment calibration data forms were compiled and reviewed for completeness and accuracy to ensure the acceptability of the equipment. Upon arrival on-site, the equipment was unloaded, inspected for possible damage, and then assembled for use. Any damaged or faulty equipment was tagged and removed from service until it could be repaired.

4.1 U.S. Environmental Protection Agency Reference Method Analyzer Calibrations

The reference method analyzer calibrations conformed to the procedures outlined in EPA Reference Method 6C. EPA Protocol 1 gas standards were utilized for all reference method calibrations.

4.1.1 Analyzer Calibration Error Checks

Zero and two upscale concentration gases were introduced to each analyzer and the responses recorded. The calibration error checks were considered successful if the difference between each of the certified concentrations (obtained from certificates of analysis) and the analyzer responses was within ±2% of the analyzer range for each of the calibration gases.

4.1.2 System Bias Checks

To determine the impact of the sample lines, pump, and sample cooler on the analyzer readings, a tee was used to introduce calibration gases (zero and upscale concentrations) to the sampling system at a point directly following the sampling probe. The analyzer responses were recorded and compared to the responses recorded when calibration gases were introduced directly to the analyzers for the analyzer calibration checks. The system bias checks were considered successful if the difference between the readings was within ±5% of the analyzer range for each of the calibration gases.

4.1.3 System Drift

During the field test, system drift was also determined. The system drift checks were considered successful if the difference between initial and final system bias readings was within ±3% of the analyzer range for calibration gases.

4.2 Sampling Equipment Quality Control Procedures

The sampling equipment used was calibrated before and after each field effort according to manufacturers' specifications; *EPA Qualify Assurance Handbook for Air Pollution Measurement Systems,* Volume III (EPA-600/4-7-027b); and 40 CFR 60. Calibrations were performed with standards that are National Institute of Standards and Technology traceable when applicable. The standards include multipoint dry gas meter calibration, thermocouples, and EPA Protocol I certified gases.

Appendix A

REFERENCE METHOD SUPPORTING DOCUMENTATION

- ***Reference Method Sample Data***
- ***Reference Method Calibration Data***
- ***Calibration Gas Certification Sheets***
- ***Sampling Equipment Calibration Data***
- ***Field Data Sheets***

Reference Method Sample Data

CEM Data Correction Data Sheet

Plant Name	Gateway Energy & Coke
Sampling Location	Bypass Vent Stack 5
Date	17-Sep-18
CEM Operator	Chandra Sastry
Project Number	
Pollutant	SO_2

Run No.	Start Time	Stop Time	Obs. Conc. (% or ppm)	Calibration Data			Calibration Corrected Data (% or ppm)
				Cma	Co	Cm	
1	1135	1157	320.6	551.0	5.3	541.4	324.1
2	1202	1225	350.6	551.0	5.3	541.4	354.9
3	1230	1253	352.9	551.0	5.3	541.4	357.3
4	1311	1334	554.8	551.0	9.6	546.6	559.5
5	1336	1359	468.2	551.0	9.6	546.6	470.6
6	1407	1430	470.6	551.0	9.6	546.6	473.1
7	1450	1513	529.7	551.0	11.3	551.8	528.5
8	1517	1540	510.0	551.0	11.3	551.8	508.4
9	1545	1608	519.0	551.0	11.3	551.8	517.6
10	1613	1636	534.3	551.0	11.3	551.8	533.2
11							
12							

Calibration Error Correction

Cgas=(Cobs-Co)*(Cma/(Cm-Co))

Source: GCO Bypass Vent Stack 5
Date: 9/17/2018

Time	SO2	Probe Location
11:35	286.3	83%
11:36	276.2	83%
11:37	284.1	83%
11:38	295.7	83%
11:39	300.4	83%
11:40	298.7	83%
11:41	290.6	83%
11:42	287.4	50%
11:43	309.9	50%
11:44	372.4	50%
11:45	379.6	50%
11:46	369.6	50%
11:47	350.2	50%
11:48	333.7	50%
11:49	330.9	Moving probe
11:50	342.7	Moving probe
11:51	324.2	17%
11:52	317.6	17%
11:53	327.9	17%
11:54	320.8	17%
11:55	334.3	17%
11:56	332.5	17%
11:57	341.4	17%
Average	320.6	

Run 1

Source: GCO Bypass Vent Stack 5
Date: 9/17/2018

Time	SO2	Probe Location
12:02	334.4	83%
12:03	332.4	83%
12:04	331.5	83%
12:05	328.8	83%
12:06	329.3	83%
12:07	325.3	83%
12:08	325.9	83%
12:09	332.5	50%
12:10	339.9	50%
12:11	356.3	50%
12:12	371.7	50%
12:13	359.5	50%
12:14	363	50%
12:15	356.5	50%
12:16	346.6	Moving probe
12:17	347.3	Moving probe
12:18	360.8	Moving probe
12:19	370.8	17%
12:20	371.7	17%
12:21	377.3	17%
12:22	372	17%
12:23	364.2	17%
12:24	357.2	17%
12:25	363.4	17%
Average	350.6	

Run 2

Source: GCO Bypass Vent Stack 5
Date: 9/17/2018

Time	SO2	Probe Location
12:30	341.7	83%
12:31	344.6	83%
12:32	352.6	83%
12:33	352.6	83%
12:34	338.9	83%
12:35	330.1	83%
12:36	338.6	83%
12:37	343	50%
12:38	342.4	50%
12:39	350.7	50%
12:40	351.8	50%
12:41	350.5	50%
12:42	354.7	50%
12:43	357.6	50%
12:44	359	Moving probe
12:45	354.8	Moving probe
12:46	342.8	Moving probe
12:47	353.8	17%
12:48	360.9	17%
12:49	367.7	17%
12:50	366.7	17%
12:51	368	17%
12:52	366	17%
12:53	378.9	17%
Average	352.9	

Run 3

Source: GCO Bypass Vent Stack 5
Date: 9/17/2018

Time	SO2	Probe Location
13:11	557	83%
13:12	558.9	83%
13:13	544.8	83%
13:14	545.5	83%
13:15	543	83%
13:16	545.2	83%
13:17	550.5	83%
13:18	586.7	50%
13:19	563.5	50%
13:20	558.4	50%
13:21	978.4	50%
13:22	589.7	50%
13:23	518.7	50%
13:24	503.5	50%
13:25	500.4	Moving probe
13:26	493	Moving probe
13:27	490	Moving probe
13:28	492.2	17%
13:29	485.5	17%
13:30	477	17%
13:31	509.6	17%
13:32	515.4	17%
13:33	518.3	17%
13:34	508.8	17%
Average	554.8	

Run 4

Source: GCO Bypass Vent Stack 5
Date: 9/17/2018

Time	SO2	Probe Location
13:36	489	83%
13:37	484.6	83%
13:38	478	83%
13:39	472.4	83%
13:40	479.4	83%
13:41	477.7	83%
13:42	480.7	83%
13:43	487	50%
13:44	474.3	50%
13:45	459.8	50%
13:46	458.3	50%
13:47	456.7	50%
13:48	450.7	50%
13:49	450	50%
13:50	452.8	Moving probe
13:51	472.1	Moving probe
13:52	471.8	Moving probe
13:53	468.8	17%
13:54	466.5	17%
13:55	471.2	17%
13:56	460.5	17%
13:57	445	17%
13:58	458.1	17%
13:59	464.3	17%
Average	468.2	

Run 5

Source: GCO Bypass Vent Stack 5
Date: 9/17/2018

Time	SO2	Probe Location
14:07	468.5	83%
14:08	467.9	83%
14:09	468.5	83%
14:10	469	83%
14:11	468.8	83%
14:12	471.6	83%
14:13	464.4	83%
14:14	463.9	50%
14:15	469.2	50%
14:16	481.8	50%
14:17	493.2	50%
14:18	490.8	50%
14:19	483.7	50%
14:20	480.4	50%
14:21	465.3	Moving probe
14:22	445.4	Moving probe
14:23	440.4	Moving probe
14:24	446.5	17%
14:25	456.5	17%
14:26	462.6	17%
14:27	465.1	17%
14:28	463.8	17%
14:29	471.5	17%
14:30	474.8	17%
Average	470.6	

Run 6

Source: GCO Bypass Vent Stack 5
Date: 9/17/2018

Time	SO2	Probe Location
14:50	554.1	83%
14:51	555.2	83%
14:52	561.2	83%
14:53	547.8	83%
14:54	547.1	83%
14:55	547.8	83%
14:56	532.6	83%
14:57	528.4	50%
14:58	522.7	50%
14:59	538.5	50%
15:00	539.7	50%
15:01	528.2	50%
15:02	520.3	50%
15:03	514.7	50%
15:04	512.2	Moving probe
15:05	510.1	Moving probe
15:06	513.9	Moving probe
15:07	509.5	17%
15:08	515.7	17%
15:09	516	17%
15:10	510.1	17%
15:11	511.4	17%
15:12	510.7	17%
15:13	511.4	17%
Average	529.7	

Run 7

Source: GCO Bypass Vent Stack 5
Date: 9/17/2018

Time	SO2	Probe Location
15:17	512.4	83%
15:18	492.1	83%
15:19	493.4	83%
15:20	494.9	83%
15:21	501	83%
15:22	496.5	83%
15:23	497.6	83%
15:24	497.7	50%
15:25	494.9	50%
15:26	500.8	50%
15:27	503.9	50%
15:28	500.6	50%
15:29	507.5	50%
15:30	513.4	50%
15:31	514.1	Moving probe
15:32	513.9	Moving probe
15:33	523.2	Moving probe
15:34	526.4	17%
15:35	525.2	17%
15:36	555.3	17%
15:37	527.5	17%
15:38	517.7	17%
15:39	521.7	17%
15:40	529.3	17%
Average	510.0	

Run 8

Source: GCO Bypass Vent Stack 5
Date: 9/17/2018

Time	SO2	Probe Location
15:45	523.7	83%
15:46	515.9	83%
15:47	517.4	83%
15:48	521.8	83%
15:49	522.5	83%
15:50	522.8	83%
15:51	521.9	83%
15:52	521.5	50%
15:53	511.9	50%
15:54	510.9	50%
15:55	532.9	50%
15:56	526.7	50%
15:57	533.7	50%
15:58	522	50%
15:59	501.8	Moving probe
16:00	501.5	Moving probe
16:01	506.2	Moving probe
16:02	499	17%
16:03	508	17%
16:04	504.3	17%
16:05	505.1	17%
16:06	523.8	17%
16:07	525.6	17%
16:08	527.1	17%
Average	519.0	

Run 9

Source: GCO Bypass Vent Stack 5
Date: 9/17/2018

Time	SO2	Probe Location
16:13	532.9	83%
16:14	554.3	83%
16:15	564.7	83%
16:16	567.7	83%
16:17	557.1	83%
16:18	544.4	83%
16:19	540.7	83%
16:20	542.1	50%
16:21	545.7	50%
16:22	555.5	50%
16:23	546.6	50%
16:24	530.7	50%
16:25	512.7	50%
16:26	506.9	50%
16:27	510.2	Moving probe
16:28	511.3	Moving probe
16:29	519.9	Moving probe
16:30	512.9	17%
16:31	513.5	17%
16:32	520.8	17%
16:33	518	17%
16:34	516.1	17%
16:35	520.6	17%
16:36	516.1	17%
Average	534.3	

Run 10

Reference Method Calibration Data

CEM CALIBRATION DATA

Sampling Location	Bypass Vent Stack 5
Date	17-Sep-18
Run Number	1
Start Time	1135
Stop Time	1157

Plant Name	Gateway Energy & Coke
Plant Rep.	Kris Singleton
Team Leader	Chandra Sastry
CEM Operator	Chandra Sastry
Project Number	

	Analyzer Number	Calibration Span
O2	05230A1	20.95
CO2	11047	20.6
SO2	130	997.1

	Calibration Gas Specification (% of Span)	CALIBRATION ERROR CHECK				SYSTEM CAL CHECK					Calibration Correction Factors
		Calibration Value (% or ppm)	Cylinder Number (1)	Analyzer Calibration Response	Difference (% of Span)	Pre Run 1 System Response	Pre Run 1 Syst. Bias (% of Span)	Post Run 1 System Response	Post Run 1 Syst. Bias (% of Span)	Drift (% of Span)	
SO2 Zero	0	0	UHP Nitrogen	0.9	0.09%	1.8	0.09%	8.8	0.79%	0.70%	Co=5.3
SO2 Low	NR										
SO2 Mid	40-60	551	DT0008082	554.9	0.39%	536.8	-1.82%	546	-0.89%	0.92%	Cm=541.4
SO2 High	100	997.1	CC193068	996.6	-0.05%						

$$Calibration\ Error = \left(\frac{Analyzer\ Response\ - Calibration\ Value}{Analyzer\ Span}\right) \times 100\ ;\text{allowable error} = \pm 2\%$$

$$System\ Bias = \left(\frac{System\ Response\ - Analyzer\ Response}{Analyzer\ Span}\right) \times 100\ ;\text{allowable error} = \pm 5\%$$

$$Drift = \left(\frac{Post\ Test\ System\ Response\ - Pre\ Test\ System\ Response}{Analyzer\ Span}\right) \times 100\ ;\text{allowable error} = \pm 3\%$$

$$C_0 = \left(\frac{Pre\ Test\ System\ Zero\ Response + Post\ Test\ System\ Zero\ Response}{2}\right)$$

$$C_m = \left(\frac{Pre\ Test\ System\ Upscale\ Response + Post\ Test\ System\ Upscale\ Response}{2}\right)$$

CEM CALIBRATION DATA

Sampling Location	Bypass Vent Stack 5
Date	17-Sep-18
Run Number	2
Start Time	1202
Stop Time	1225

Plant Name	Gateway Energy & Coke
Plant Rep.	Kris Singleton
Team Leader	Chandra Sastry
CEM Operator	Chandra Sastry
Project Number	

	Analyzer Number	Calibration Span
O2	05230A1	20.95
CO2	11047	20.6
SO2	130	997.1

	Calibration Gas Specification (% of Span)	CALIBRATION ERROR CHECK				SYSTEM CAL CHECK					Calibration Correction Factors
		Calibration Value (% or ppm)	Cylinder Number (1)	Analyzer Calibration Response	Difference (% of Span)	Pre Run 2		Post Run 2		Drift (% of Span)	
						System Response	Syst. Bias (% of Span)	System Response	Syst. Bias (% of Span)		
SO2 Zero	0	0	UHP Nitrogen	0.9	0.09%	1.8	0.09%	8.8	0.79%	0.70%	Co=5.3
SO2 Low	NR										
SO2 Mid	40-60	551	DT0008082	554.9	0.39%	536.8	-1.82%	546	-0.89%	0.92%	Cm=541.4
SO2 High	100	997.1	CC193068	996.6	-0.05%						

$$Calibration\ Error = \left(\frac{Analyzer\ Response\ - Calibration\ Value}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 2\%$$

$$System\ Bias = \left(\frac{System\ Response\ - Analyzer\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 5\%$$

$$Drift = \left(\frac{Post\ Test\ System\ Response\ - Pre\ Test\ System\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 3\%$$

$$C_0 = \left(\frac{Pre\ Test\ System\ Zero\ Response + Post\ Test\ System\ Zero\ Response}{2}\right)$$

$$C_m = \left(\frac{Pre\ Test\ System\ Upscale\ Response + Post\ Test\ System\ Upscale\ Response}{2}\right)$$

CEM CALIBRATION DATA

Sampling Location	Bypass Vent Stack 5
Date	17-Sep-18
Run Number	3
Start Time	1230
Stop Time	1253

Plant Name	Gateway Energy & Coke
Plant Rep.	Kris Singleton
Team Leader	Chandra Sastry
CEM Operator	Chandra Sastry
Project Number	

	Analyzer Number	Calibration Span
O2	05230A1	20.95
CO2	11047	20.6
SO2	130	997.1

	Calibration Gas Specification (% of Span)	CALIBRATION ERROR CHECK				SYSTEM CAL CHECK					Calibration Correction Factors
		Calibration Value (% or ppm)	Cylinder Number (1)	Analyzer Calibration Response	Difference (% of Span)	Pre Run 3 System Response	Pre Run 3 Syst. Bias (% of Span)	Post Run 3 System Response	Post Run 3 Syst. Bias (% of Span)	Drift (% of Span)	
SO2 Zero	0	0	UHP Nitrogen	0.9	0.09%	1.8	0.09%	8.8	0.79%	0.70%	Co=5.3
SO2 Low	NR										
SO2 Mid	40-60	551	DT0008082	554.9	0.39%	536.8	-1.82%	546	-0.89%	0.92%	Cm=541.4
SO2 High	100	997.1	CC193068	996.6	-0.05%						

$$Calibration\ Error = \left(\frac{Analyzer\ Response\ - Calibration\ Value}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 2\%$$

$$System\ Bias = \left(\frac{System\ Response\ - Analyzer\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 5\%$$

$$Drift = \left(\frac{Post\ Test\ System\ Response\ - Pre\ Test\ System\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 3\%$$

$$C_0 = \left(\frac{Pre\ Test\ System\ Zero\ Response + Post\ Test\ System\ Zero\ Response}{2}\right)$$

$$C_m = \left(\frac{Pre\ Test\ System\ Upscale\ Response + Post\ Test\ System\ Upscale\ Response}{2}\right)$$

CEM CALIBRATION DATA

Sampling Location	Bypass Vent Stack 5
Date	17-Sep-18
Run Number	4
Start Time	1311
Stop Time	1334

Plant Name	Gateway Energy & Coke
Plant Rep.	Kris Singleton
Team Leader	Chandra Sastry
CEM Operator	Chandra Sastry
Project Number	

	Analyzer Number	Calibration Span
O2	05230A1	20.95
CO2	11047	20.6
SO2	130	997.1

	Calibration Gas Specification (% of Span)	CALIBRATION ERROR CHECK				SYSTEM CAL CHECK					Calibration Correction Factors
		Calibration Value (% or ppm)	Cylinder Number (1)	Analyzer Calibration Response	Difference (% of Span)	Pre Run 4		Post Run 4		Drift (% of Span)	
						System Response	Syst. Bias (% of Span)	System Response	Syst. Bias (% of Span)		
SO2 Zero	0	0	UHP Nitrogen	0.9	0.09%	8.8	0.79%	10.3	0.94%	0.15%	Co=9.6
SO2 Low	NR										
SO2 Mid	40-60	551	DT0008082	554.9	0.39%	546	-0.89%	547.1	-0.78%	0.11%	Cm=546.6
SO2 High	100	997.1	CC193068	996.6	-0.05%						

$$Calibration\ Error = \left(\frac{Analyzer\ Response\ - Calibration\ Value}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 2\%$$

$$System\ Bias = \left(\frac{System\ Response\ - Analyzer\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 5\%$$

$$Drift = \left(\frac{Post\ Test\ System\ Response\ - Pre\ Test\ System\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 3\%$$

$$C_0 = \left(\frac{Pre\ Test\ System\ Zero\ Response + Post\ Test\ System\ Zero\ Response}{2}\right)$$

$$C_m = \left(\frac{Pre\ Test\ System\ Upscale\ Response + Post\ Test\ System\ Upscale\ Response}{2}\right)$$

CEM CALIBRATION DATA

Sampling Location	Bypass Vent Stack 5
Date	17-Sep-18
Run Number	5
Start Time	1336
Stop Time	1359

Plant Name	Gateway Energy & Coke
Plant Rep.	Kris Singleton
Team Leader	Chandra Sastry
CEM Operator	Chandra Sastry
Project Number	

	Analyzer Number	Calibration Span
O2	05230A1	20.95
CO2	11047	20.6
SO2	130	997.1

	Calibration Gas Specification (% of Span)	CALIBRATION ERROR CHECK				SYSTEM CAL CHECK					Calibration Correction Factors
		Calibration Value (% or ppm)	Cylinder Number (1)	Analyzer Calibration Response	Difference (% of Span)	Pre Run 5 System Response	Pre Run 5 Syst. Bias (% of Span)	Post Run 5 System Response	Post Run 5 Syst. Bias (% of Span)	Drift (% of Span)	
SO2 Zero	0	0	UHP Nitrogen	0.9	0.09%	8.8	0.79%	10.3	0.94%	0.15%	Co=9.6
SO2 Low	NR										
SO2 Mid	40-60	551	DT0008082	554.9	0.39%	546	-0.89%	547.1	-0.78%	0.11%	Cm=546.6
SO2 High	100	997.1	CC193068	996.6	-0.05%						

$$Calibration\ Error = \left(\frac{Analyzer\ Response\ - Calibration\ Value}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 2\%$$

$$System\ Bias = \left(\frac{System\ Response\ - Analyzer\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 5\%$$

$$Drift = \left(\frac{Post\ Test\ System\ Response\ - Pre\ Test\ System\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 3\%$$

$$C_0 = \left(\frac{Pre\ Test\ System\ Zero\ Response + Post\ Test\ System\ Zero\ Response}{2}\right)$$

$$C_m = \left(\frac{Pre\ Test\ System\ Upscale\ Response + Post\ Test\ System\ Upscale\ Response}{2}\right)$$

CEM CALIBRATION DATA

Sampling Location	Bypass Vent Stack 5
Date	17-Sep-18
Run Number	6
Start Time	1407
Stop Time	1430

Plant Name	Gateway Energy & Coke
Plant Rep.	Kris Singleton
Team Leader	Chandra Sastry
CEM Operator	Chandra Sastry
Project Number	

	Analyzer Number	Calibration Span
O2	05230A1	20.95
CO2	11047	20.6
SO2	130	997.1

	Calibration Gas Specification (% of Span)	CALIBRATION ERROR CHECK				SYSTEM CAL CHECK					Calibration Correction Factors
		Calibration Value (% or ppm)	Cylinder Number (1)	Analyzer Calibration Response	Difference (% of Span)	Pre Run 6 System Response	Pre Run 6 Syst. Bias (% of Span)	Post Run 6 System Response	Post Run 6 Syst. Bias (% of Span)	Drift (% of Span)	
SO2 Zero	0	0	UHP Nitrogen	0.9	0.09%	8.8	0.79%	10.3	0.94%	0.15%	Co=9.6
SO2 Low	NR										
SO2 Mid	40-60	551	DT0008082	554.9	0.39%	546	-0.89%	547.1	-0.78%	0.11%	Cm=546.6
SO2 High	100	997.1	CC193068	996.6	-0.05%						

$$Calibration\ Error = \left(\frac{Analyzer\ Response\ - Calibration\ Value}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 2\%$$

$$System\ Bias = \left(\frac{System\ Response\ - Analyzer\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 5\%$$

$$Drift = \left(\frac{Post\ Test\ System\ Response\ - Pre\ Test\ System\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 3\%$$

$$C_0 = \left(\frac{Pre\ Test\ System\ Zero\ Response + Post\ Test\ System\ Zero\ Response}{2}\right)$$

$$C_m = \left(\frac{Pre\ Test\ System\ Upscale\ Response + Post\ Test\ System\ Upscale\ Response}{2}\right)$$

CEM CALIBRATION DATA

Sampling Location	Bypass Vent Stack 5
Date	17-Sep-18
Run Number	7
Start Time	1450
Stop Time	1513

Plant Name	Gateway Energy & Coke
Plant Rep.	Kris Singleton
Team Leader	Chandra Sastry
CEM Operator	Chandra Sastry
Project Number	

	Analyzer Number	Calibration Span
O2	05230A1	20.95
CO2	11047	20.6
SO2	130	997.1

	Calibration Gas Specification (% of Span)	CALIBRATION ERROR CHECK				SYSTEM CAL CHECK					Calibration Correction Factors
		Calibration Value (% or ppm)	Cylinder Number (1)	Analyzer Calibration Response	Difference (% of Span)	Pre Run 7 System Response	Pre Run 7 Syst. Bias (% of Span)	Post Run 7 System Response	Post Run 7 Syst. Bias (% of Span)	Drift (% of Span)	
SO2 Zero	0	0	UHP Nitrogen	0.9	0.09%	10.3	0.94%	12.2	1.13%	0.19%	Co=11.3
SO2 Low	NR										
SO2 Mid	40-60	551	DT0008082	554.9	0.39%	547.1	-0.78%	556.5	0.16%	0.94%	Cm=551.8
SO2 High	100	997.1	CC193068	996.6	-0.05%						

$$Calibration\ Error = \left(\frac{Analyzer\ Response\ - Calibration\ Value}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 2\%$$

$$System\ Bias = \left(\frac{System\ Response\ - Analyzer\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 5\%$$

$$Drift = \left(\frac{Post\ Test\ System\ Response\ - Pre\ Test\ System\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 3\%$$

$$C_0 = \left(\frac{Pre\ Test\ System\ Zero\ Response + Post\ Test\ System\ Zero\ Response}{2}\right)$$

$$C_m = \left(\frac{Pre\ Test\ System\ Upscale\ Response + Post\ Test\ System\ Upscale\ Response}{2}\right)$$

CEM CALIBRATION DATA

Sampling Location	Bypass Vent Stack 5
Date	17-Sep-18
Run Number	8
Start Time	1517
Stop Time	1540

Plant Name	Gateway Energy & Coke
Plant Rep.	Kris Singleton
Team Leader	Chandra Sastry
CEM Operator	Chandra Sastry
Project Number	

	Analyzer Number	Calibration Span
O2	05230A1	20.95
CO2	11047	20.6
SO2	130	997.1

	Calibration Gas Specification (% of Span)	CALIBRATION ERROR CHECK				SYSTEM CAL CHECK					Calibration Correction Factors
		Calibration Value (% or ppm)	Cylinder Number (1)	Analyzer Calibration Response	Difference (% of Span)	Pre Run 8 System Response	Pre Run 8 Syst. Bias (% of Span)	Post Run 8 System Response	Post Run 8 Syst. Bias (% of Span)	Drift (% of Span)	
SO2 Zero	0	0	UHP Nitrogen	0.9	0.09%	10.3	0.94%	12.2	1.13%	0.19%	Co=11.3
SO2 Low	NR										
SO2 Mid	40-60	551	DT0008082	554.9	0.39%	547.1	-0.78%	556.5	0.16%	0.94%	Cm=551.8
SO2 High	100	997.1	CC193068	996.6	-0.05%						

$$Calibration\ Error = \left(\frac{Analyzer\ Response\ - Calibration\ Value}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 2\%$$

$$System\ Bias = \left(\frac{System\ Response\ - Analyzer\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 5\%$$

$$Drift = \left(\frac{Post\ Test\ System\ Response\ - Pre\ Test\ System\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 3\%$$

$$C_0 = \left(\frac{Pre\ Test\ System\ Zero\ Response + Post\ Test\ System\ Zero\ Response}{2}\right)$$

$$C_m = \left(\frac{Pre\ Test\ System\ Upscale\ Response + Post\ Test\ System\ Upscale\ Response}{2}\right)$$

CEM CALIBRATION DATA

Sampling Location	Bypass Vent Stack 5
Date	17-Sep-18
Run Number	9
Start Time	1545
Stop Time	1608

Plant Name	Gateway Energy & Coke
Plant Rep.	Kris Singleton
Team Leader	Chandra Sastry
CEM Operator	Chandra Sastry
Project Number	

	Analyzer Number	Calibration Span
O2	05230A1	20.95
CO2	11047	20.6
SO2	130	997.1

	Calibration Gas Specification (% of Span)	CALIBRATION ERROR CHECK				SYSTEM CAL CHECK					Calibration Correction Factors
		Calibration Value (% or ppm)	Cylinder Number (1)	Analyzer Calibration Response	Difference (% of Span)	Pre Run 9 System Response	Pre Run 9 Syst. Bias (% of Span)	Post Run 9 System Response	Post Run 9 Syst. Bias (% of Span)	Drift (% of Span)	
SO2 Zero	0	0	UHP Nitrogen	0.9	0.09%	10.3	0.94%	12.2	1.13%	0.19%	Co=11.3
SO2 Low	NR										
SO2 Mid	40-60	551	DT0008082	554.9	0.39%	547.1	-0.78%	556.5	0.16%	0.94%	Cm=551.8
SO2 High	100	997.1	CC193068	996.6	-0.05%						

$$Calibration\ Error = \left(\frac{Analyzer\ Response\ - Calibration\ Value}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 2\%$$

$$System\ Bias = \left(\frac{System\ Response\ - Analyzer\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 5\%$$

$$Drift = \left(\frac{Post\ Test\ System\ Response\ - Pre\ Test\ System\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 3\%$$

$$C_0 = \left(\frac{Pre\ Test\ System\ Zero\ Response + Post\ Test\ System\ Zero\ Response}{2}\right)$$

$$C_m = \left(\frac{Pre\ Test\ System\ Upscale\ Response + Post\ Test\ System\ Upscale\ Response}{2}\right)$$

CEM CALIBRATION DATA

Sampling Location	Bypass Vent Stack 5
Date	17-Sep-18
Run Number	10
Start Time	1613
Stop Time	1636

Plant Name	Gateway Energy & Coke
Plant Rep.	Kris Singleton
Team Leader	Chandra Sastry
CEM Operator	Chandra Sastry
Project Number	

	Analyzer Number	Calibration Span
O2	05230A1	20.95
CO2	11047	20.6
SO2	130	997.1

	Calibration Gas Specification (% of Span)	CALIBRATION ERROR CHECK				SYSTEM CAL CHECK					Calibration Correction Factors
		Calibration Value (% or ppm)	Cylinder Number (1)	Analyzer Calibration Response	Difference (% of Span)	Pre Run 10 System Response	Pre Run 10 Syst. Bias (% of Span)	Post Run 10 System Response	Post Run 10 Syst. Bias (% of Span)	Drift (% of Span)	
SO2 Zero	0	0	UHP Nitrogen	0.9	0.09%	10.3	0.94%	12.2	1.13%	0.19%	Co=11.3
SO2 Low	NR										
SO2 Mid	40-60	551	DT0008082	554.9	0.39%	547.1	-0.78%	556.5	0.16%	0.94%	Cm=551.8
SO2 High	100	997.1	CC193068	996.6	-0.05%						

$$Calibration\ Error = \left(\frac{Analyzer\ Response\ - Calibration\ Value}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 2\%$$

$$System\ Bias = \left(\frac{System\ Response\ - Analyzer\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 5\%$$

$$Drift = \left(\frac{Post\ Test\ System\ Response\ - Pre\ Test\ System\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 3\%$$

$$C_0 = \left(\frac{Pre\ Test\ System\ Zero\ Response + Post\ Test\ System\ Zero\ Response}{2}\right)$$

$$C_m = \left(\frac{Pre\ Test\ System\ Upscale\ Response + Post\ Test\ System\ Upscale\ Response}{2}\right)$$

Source: GCO Bypass Vent Stack 5
Date: 9/17/2018

Time	SO2
10:27	0.7
10:28	0.8
10:29	0.9
10:30	0.9
10:31	0.9
10:32	0.9
10:33	0.9
10:34	0.9
10:35	0.4
10:36	0.3
10:37	0.3
10:38	0.3
10:39	0.3
10:40	0.3
10:41	0.3
10:42	0.3
10:43	0.3
10:44	0.3
10:45	0.3
10:46	0.3
10:47	1.5
10:48	638.7
10:49	779.4
10:50	778.4
10:51	810.5
10:52	836
10:53	845.7
10:54	896.4
10:55	1021.8
10:56	1031.5
10:57	1017
10:58	996.6
10:59	703.3
11:00	553
11:01	554.9
11:02	411.2

Direct Cal

Source: GCO Bypass Vent Stack 5
Date: 9/17/2018

Time	SO2
11:06	2.5
11:07	2.5
11:08	2
11:09	1.8
11:10	1.8
11:11	1.8
11:12	119.4
11:13	473
11:14	513.7
11:15	524.8
11:16	527.5
11:17	532.1
11:18	536.8
11:19	536.3
11:20	440

System Cal

Source: GCO Bypass Vent Stack 5
Date: 9/17/2018

Time	SO2
12:55	381.4
12:56	376.5
12:57	80.8
12:58	22.7
12:59	13.9
13:00	10.6
13:01	8.8
13:02	372.7
13:03	523.9
13:04	534.8
13:05	542.7
13:06	543.9
13:07	546

Post Cal Run 3

Source: GCO Bypass Vent Stack 5
Date: 9/17/2018

Time	SO2
14:32	366.9
14:33	56
14:34	25
14:35	16.8
14:36	12.9
14:37	10.3
14:38	154.8
14:39	517.3
14:40	541.7
14:41	547
14:42	547.1

Post Cal Run 6

Source: GCO Bypass Vent Stack 5
Date: 9/17/2018

Time	SO2
16:37	297.9
16:38	35.9
16:39	21.4
16:40	16.7
16:41	14.6
16:42	13.4
16:43	12.2
16:44	305.9
16:45	537.4
16:46	551.5
16:47	557.3
16:48	556.5
16:49	557.2

Post Cal Run 10

Calibration Gas Certification Sheets

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E02NI99E15A0940	Reference Number:	54-124267424-4
Cylinder Number:	CC193068	Cylinder Volume:	144.4 Cubic Feet
Laboratory:	ASG - Chicago - IL	Cylinder Pressure:	2015 PSIG
PGVP Number:	B12011	Valve Outlet:	660
Gas Code:	SO2,BALN	Certification Date:	Jun 08, 2011

Expiration Date: Jun 08, 2019

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
SULFUR DIOXIDE	1000 PPM	997.1 PPM	G1	+/- 1% NIST Traceable	06/03/2011, 06/08/2011
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	071204	CC239980	993.4 PPM SULFUR DIOXIDE/NITROGEN	0.6	Mar 23, 2017

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nexus 470 AEP0000428	FTIR	May 21, 2011

Triad Data Available Upon Request

Notes:

Signature on file

Approved for Release

PRAXAIR

6055 Brent Drive
Toledo, OH 43611
Tel:(419)729-7732 Fax:(419)729-2411
PGVP ID: F12016

DocNumber: 000016905

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

PRAXAIR PKG CAHOKIA IL HS
#9 JUDITH LANE
CAHOKIA IL 62206

Praxair Order Number: 70094652
Customer PO Number:
Customer Reference Number:

Fill Date: 7/27/2016
Part Number: NI SD550E-AS
Lot Number: 0727WG16
Cylinder Style and Outlet: AS CGA 660
Cylinder Pressure and Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:		08/17/2024	NIST Traceable Expanded Uncertainty:
Cylinder Number:		DT0008082	
551	ppm	SULFUR DIOXIDE	± 0.7 %
	Balance	NITROGEN	

Certification Information:

Certification Date : 8/17/2016 *Term :* 96 Months *Expiration Date :* 08/17/2024

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1.
Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data:

(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1 . Component: SULFUR DIOXIDE

Requested Concentration: 550 ppm
Certified Concentration: 551 ppm
Instrument Used: AMETEK 921
Analytical Method: NDUV
Last Multipoint Calibration: 08/12/2016

Reference Standard Type: GMIS
Ref. Std. Cylinder #: CC218692
Ref. Std. Conc: 1002 PPM
Ref. Std. traceable to SRM #: 1662a
SRM Sample #: 93-H-05
SRM Cylinder #: CAL017130

First Analysis Data:						Date:	08/10/2016
Z:	0	R:	1001	C:	551	Conc:	551
R:	1001	Z:	0	C:	551	Conc:	551
Z:	0	C:	551	R:	1001	Conc:	552
UOM:	PPM					Mean Test Assay:	552 PPM

Second Analysis Data:						Date:	08/17/2016
Z:	0	R:	1002	C:	550	Conc:	550
R:	1001	Z:	0	C:	550	Conc:	550
Z:	0	C:	550	R:	1001	Conc:	550
UOM:	PPM					Mean Test Assay:	550 PPM

Analyzed by: Edward E Zucal

Certified by: Rolonda Kaywood

Information contained herein has been prepared at your request by qualified experts within Praxair Distribution, Inc. While we believe that the information is accurate within the limits of the analytical methods employed and is complete to the extent of the specified analyses performed, we make no warranty or representation as to the suitability of the use of the information for any purpose. The information is offered with the understanding that any use of the information is at the sole discretion and risk of the user. In no event shall the liability of Praxair Distribution, Inc. arising out of the use of the information contained herein exceed the fee established for providing such information.

Making Our Planet More Productive

Sampling Equipment Calibration Data

CDS-04S
5 Point Console Dry Gas Meter Calibration

		Initials	Date
Calibrated by		CS	2/21/18
Reviewed by		WCT	3/11/18
Console Sticker	Prepared		
	Reviewed		
	Affixed		
MCL-01 or MCL-33 Prepared		CS	2/21/18

Console Calibration Expiration Date
21-Feb-2019

Console ID
URS-002

Orifice ID:	IX-40		IX-48		IX-55		IX-63		IX-73	
Orifice K':	0.2378		0.3467		0.4564		0.5840		0.8042	
Dry Gas Meter	Run #1a	Run #1b	Run #2a	Run #2b	Run #3a	Run #3b	Run #4a	Run #4b	Run #5a	Run #5b
Initial Reading, (ft^3)	839.970	845.432	778.000	784.035	790.094	796.242	802.393	810.270	818.150	829.040
Final Reading, (ft^3)	845.432	850.890	784.035	790.094	796.242	802.393	810.270	818.150	829.040	839.970
Difference, (ft^3)	5.462	5.458	6.035	6.059	6.148	6.151	7.877	7.880	10.890	10.930
Initial Meter Temp., (°F)	77	77	70	72	73	74	74	75	75	76
Final Meter Temp., (°F)	77	77	72	73	74	74	75	75	76	77
Average Meter Temp., (°F)	77.0	77.0	71.0	72.5	73.5	74.0	74.5	75.0	75.5	76.5
Test Time (min.)	17	17	13	13	10	10	10	10	10	10
Orifice Manometer Reading, ("H_2O)	0.34	0.34	0.69	0.69	1.10	1.10	1.90	1.90	3.60	3.60
Barometric Pressure, ("Hg)	29.43		29.43		29.43		29.43		29.43	
Ambient Temperature, (°F)	71		71		71		71		71	
Pump Vacuum, ("Hg)	22.5	22.5	21	21	19.5	19.5	17.5	17.5	14.5	14.5
Standard Volume of the Meter, (V_{mstd})	5.285	5.281	5.910	5.917	5.999	5.996	7.687	7.683	10.652	10.672
Standard Volume of Critical Orifice, (V_{crstd})	5.163	5.163	5.756	5.756	5.829	5.829	7.459	7.459	10.271	10.271
Flow Rate (cfm)	0.311	0.311	0.455	0.455	0.600	0.600	0.769	0.768	1.065	1.067
DGM Calibration Factor, (Y)	0.977	0.978	0.974	0.973	0.972	0.972	0.970	0.971	0.964	0.962
Average DGM Calibration Factor (Y)	0.977		0.973		0.972		0.971		0.963	
Delta H@, ("H_2O)	2.009	2.009	1.943	1.937	1.783	1.781	1.884	1.883	1.895	1.892
Average ΔH@, ("H_2O)	2.009		1.940		1.782		1.884		1.894	

Current Average Y	0.971
All Individual Y within 2% of mean?	TRUE
Average Delta $H_@$	1.902
All individual $\Delta H_@$ within 0.20"H_2O of mean	TRUE

CDS-04S DGM 5 point against orifice
Per EM SOP-002
Issued: January 2018

Temperature Readout Calibration
Isokinetic Sampling Consoles

Calibrated by	Initials	CS
	Date	2/20/18
Reviewed by	Initials	WCT
	Date	3/11/18

Readout ID Number
URS-002

Reference Thermometer	ID Number	2490
	Calibration Exp Date	5/22/18
Reference Thermocouple	ID Number	SR 2
	Calibration Exp Date	2/9/19
Voltage Generator	ID Number	T-311348
	Calibration Exp Date	

Temperature Readout Calibration		
Reference Thermometer (°F)	70	
Temperature Readout (°F)	69	
Was readout adjusted?	N	Y/(N)
Do these agree within 2°F	Y	(Y)/N

Temperature Readout Linearity Check

Channel	Voltage (mV)	Temperature (°F) Theoretical	Observed	Difference [1]
1 STACK	-0.0	32	31	-1
	-1.0	-10	-9	1
	0.0	32	31	-1
	1.0	77	75	-2
	3.0	165	164	-1
	5.0	251	251	0
	7.0	341	341	0
	10.0	475	473	-2
	15.0	692	693	1
	20.0	905	905	0
	30.0	1329	1328	-1
	40.0	1772	1772	0

Channel	Voltage (mV)	Temperature (°F) Theoretical	Observed	Difference [1]
2 PROBE	0.0	32	31	-1
	5.0	251	252	+1 WCT
3 FILTER	0.0	32	31	-1
	5.0	251	251	0
4 EXIT	0.0	32	31	-1
	1.0	77	75	-2
5	0.0	32		
	1.0	77		
6 AUX	0.0	32	32	0
	2.0	121	120	-1
7	0.0	32		
	2.0	121		

[1] Difference is calculated as follows: **Difference = Observed - Theoretical**	*Acceptable difference is ±5 °F for temperatures below 1000 °F and ±10 °F for temperatures above 1000 °F*	*Are these met?* (Y)/ N

Field Data Sheets

AECOM

EPA M2/M4 DATA SHEET

Project Name: RATA Test
Project No.: 60582380
Date: 9-17-18

Test No.: R1
Location: Vent Stack #5
Personnel: JM-CS

Stack Dimensions: Circular; 9'
Barometric Pressure: 29.43 in. Hg
Static Pressure: — in. H_2O

VELOCITY TRAVERSE

TRAVERSE POINT	VELOCITY PRESSURE (ΔP)	STACK TEMP.
Average		

IMPINGER WEIGHTS

Impinger	Initial Wt.	Final Wt.	Total
1	694.2	705.6	
2	701.4	711.4	
3	611.7	616.8	
4	923.2	936.2	
Total			

PITOT LEAK CHECK (> 3")

TRAIN LEAK CHECK (ft^3 @ in, Hg.)

INITIAL	0.003 @ 14.0"
FINAL	0.001 @ 5.0"

MOISTURE TRAIN

SAMPLING TIME Clock	SAMPLING TIME Sample	DRY GAS METER	DGM TEMP.	LAST IMPINGER TEMP.	TRAIN VACUUM
12:35	0	440.806	96	64	1.7"
12:45	10	446.54	96	60	1.9"
12:55	20	452.34	98	60	2.0"
13:05	30	458.13	100	63	2.0
13:15	40	463.89	100	65	2.0
13:25	50	469.66	102	66	2.0
13:35	60	475.453	— END OF RUN —		

M4 Sample Train I.D. : —
O2%: NA
CO2%: NA
Control Console I.D.: URS-002
ΔH@: 1.902
Y: 0.971
Pitot Tube Type: S
I.D. No.:
Coefficient:
Manometer Type: Oil Incl.
I.D. No.:
Thermometer Type: K
I.D. No.:

NOTES:

AECOM

EPA M2/M4 DATA SHEET

Project Name: RATA Test
Project No.: 60582380
Date: 9-17-18

Test No.: R2
Location: Vent Stack #5
Personnel: FC-CS

Stack Dimensions: Circular; 9'
Barometric Pressure: 29.43 in. Hg
Static Pressure: — in. H_2O

VELOCITY TRAVERSE

TRAVERSE POINT	VELOCITY PRESSURE (ΔP)	STACK TEMP.
Average		

IMPINGER WEIGHTS

Impinger	Initial Wt.	Final Wt.	Total
1	765.6	862.9	
2	711.4	720.4	
3	616.8	616.9	
4	936.2	940.6	
Total			

PITOT LEAK CHECK (> 3")

TRAIN LEAK CHECK (ft^3 @ in, Hg.)

INITIAL	0.000 @ 10
FINAL	0.000 @ 5

MOISTURE TRAIN

SAMPLING TIME Clock	SAMPLING TIME Sample	DRY GAS METER	DGM TEMP.	LAST IMPINGER TEMP.	TRAIN VACUUM
1410	0	475.581	101	57	2
1420	10	481.36	101	57	2
1430	20	486.99	102	55	2
1440	30	492.60	103	56	2
1450	40	498.62	105	60	2
1500	50	504.41	107	61	2
1510	60	510.456	— END	OF RUN	—

M4 Sample Train I.D. : —
O2%: NA
CO2%: NA
Control Console I.D.: URS 002
ΔH@: 1.902
Y: 0.971
Pitot Tube Type: S
I.D. No.:
Coefficient:
Manometer Type: Oil Incl.
I.D. No.:
Thermometer Type: K
I.D. No.:

NOTES:

AECOM

EPA M2/M4 DATA SHEET

Project Name: RATA Test
Project No.: 60582380
Date: 9-17-18

Test No.: R3
Location: Vent Stack #5
Personnel: FC - JM - ~~SC~~ CS

Stack Dimensions: Circular; 9'
Barometric Pressure: 29.43 in. Hg
Static Pressure: — in. H_2O

VELOCITY TRAVERSE

TRAVERSE POINT	VELOCITY PRESSURE (ΔP)	STACK TEMP.
[redacted]		
Average		

IMPINGER WEIGHTS

Impinger	Initial Wt.	Final Wt.	Total
1	862.9	995.1	
2	720.4	739.6	
3	616.9	617.3	
4	940.6	950.4	
Total			

PITOT LEAK CHECK (> 3")

[redacted]

TRAIN LEAK CHECK (ft^3 @ in, Hg.)

INITIAL	0.000	@ 8
FINAL	0.000	@ 5

MOISTURE TRAIN

SAMPLING TIME Clock	SAMPLING TIME Sample	DRY GAS METER	DGM TEMP. 108	LAST IMPINGER TEMP. 65 JTM	TRAIN VACUUM
15:50	0	510.599	~~65~~ JTM	~~108~~	2
16:00	10	516.72	~~48~~ JTM 108	~~108~~ JTM 48	2
16:10	20	523.64	108	49	2
16:20	30	530.51	108	50	2
16:30	40	536.25	108	51	2
16:40	50	542.36	109	52	2
16:50	60	548.19	109 ~~END OF RUN 1~~	53	2
1700	70	554.04	109	55	2
1710	80	559.47	110	55	2
1721	91	565.832			

M4 Sample Train I.D.: —
O2%: NA
CO2%: NA
Control Console I.D.: URS-002
ΔH@: 1.902
Y: 0.971
Pitot Tube Type: S
I.D. No.:
Coefficient:
Manometer Type: Oil Incl.
I.D. No.:
Thermometer Type: K
I.D. No.:

NOTES:

Appendix B

INSTALLED CEMS SUPPORTING DOCUMENTATION

Installed CEMS Sample Data

Source: GCO Bypass Vent Stack 5
Date: 9/17/2018

Installed CEMS Data	SO2 (ppmw)	Comments
9/17/18 11:35	245.3	
9/17/18 11:36	239.6	
9/17/18 11:37	239.1	
9/17/18 11:38	239.7	
9/17/18 11:39	241.9	
9/17/18 11:40	241	
9/17/18 11:41	239.6	
9/17/18 11:42	238.8	
9/17/18 11:43	238.7	
9/17/18 11:44	239.1	
9/17/18 11:45	240.4	
9/17/18 11:46	241.9	
9/17/18 11:47	243.1	
9/17/18 11:48	243	
9/17/18 11:49	242.2	Ref Method probe being moved
9/17/18 11:50	242.2	Ref Method probe being moved
9/17/18 11:51	241.7	
9/17/18 11:52	240.5	
9/17/18 11:53	240.8	
9/17/18 11:54	241.2	
9/17/18 11:55	241.4	
9/17/18 11:56	242.4	
9/17/18 11:57	243.3	
Average	241.1	

Run 1

Source: GCO Bypass Vent Stack 5
Date: 9/17/2018

Installed CEMS Data	SO2 (ppmw)	Comments
9/17/18 12:02	237.6	
9/17/18 12:03	235.6	
9/17/18 12:04	234	
9/17/18 12:05	234.3	
9/17/18 12:06	234.9	
9/17/18 12:07	234.5	
9/17/18 12:08	234.8	
9/17/18 12:09	236.1	
9/17/18 12:10	236.9	
9/17/18 12:11	238.3	
9/17/18 12:12	239.2	
9/17/18 12:13	238.9	
9/17/18 12:14	236.6	
9/17/18 12:15	234.4	
9/17/18 12:16	232.6	Ref Method probe being moved
9/17/18 12:17	233	Ref Method probe being moved
9/17/18 12:18	234.5	Ref Method probe being moved
9/17/18 12:19	237.2	
9/17/18 12:20	239.3	
9/17/18 12:21	240.3	
9/17/18 12:22	239.6	
9/17/18 12:23	237.8	
9/17/18 12:24	235.5	
9/17/18 12:25	234.2	17%
Average	236.7	

Run 2

Source: GCO Bypass Vent Stack 5
Date: 9/17/2018

Installed CEMS Data	SO2 (ppmw)	Comments
9/17/18 12:30	236.7	
9/17/18 12:31	242	
9/17/18 12:32	239.5	
9/17/18 12:33	234.4	
9/17/18 12:34	228.1	
9/17/18 12:35	228.7	
9/17/18 12:36	230.3	
9/17/18 12:37	231.8	
9/17/18 12:38	232.2	
9/17/18 12:39	232.7	
9/17/18 12:40	232.6	
9/17/18 12:41	232.5	
9/17/18 12:42	234.4	
9/17/18 12:43	237	
9/17/18 12:44	239.2	Ref Method probe being moved
9/17/18 12:45	240	Ref Method probe being moved
9/17/18 12:46	239.1	Ref Method probe being moved
9/17/18 12:47	238.2	
9/17/18 12:48	237.6	
9/17/18 12:49	237.1	
9/17/18 12:50	237.4	
9/17/18 12:51	237.1	
9/17/18 12:52	236.3	
9/17/18 12:53	235.6	17%
Average	234.9	

Run 3

Source: GCO Bypass Vent Stack 5
Date: 9/17/2018

Installed CEMS Data	SO2 (ppmw)	Comments
9/17/18 13:11	579.5	
9/17/18 13:12	581.2	
9/17/18 13:13	581.6	
9/17/18 13:14	581.6	
9/17/18 13:15	580.9	
9/17/18 13:16	579.3	
9/17/18 13:17	578.6	
9/17/18 13:18	578.3	
9/17/18 13:19	578.1	
9/17/18 13:20	577.9	
9/17/18 13:21	578.1	
9/17/18 13:22	580	
9/17/18 13:23	582.9	
9/17/18 13:24	586.1	
9/17/18 13:25	589.7	Ref Method probe being moved
9/17/18 13:26	591.2	Ref Method probe being moved
9/17/18 13:27	590.7	Ref Method probe being moved
9/17/18 13:28	589.6	
9/17/18 13:29	587.2	
9/17/18 13:30	585.4	
9/17/18 13:31	585.1	
9/17/18 13:32	585.3	
9/17/18 13:33	583.3	
9/17/18 13:34	578.7	17%
Average	581.8	

Run 4

Source: GCO Bypass Vent Stack 5
Date: 9/17/2018

Installed CEMS Data	SO2 (ppmw)	Comments
9/17/18 13:36	565.3	
9/17/18 13:37	558	
9/17/18 13:38	554.1	
9/17/18 13:39	550.9	
9/17/18 13:40	547.5	
9/17/18 13:41	544.6	
9/17/18 13:42	542.7	
9/17/18 13:43	540.7	
9/17/18 13:44	538.5	
9/17/18 13:45	536.8	
9/17/18 13:46	534.1	
9/17/18 13:47	532.2	
9/17/18 13:48	531.9	
9/17/18 13:49	533.1	
9/17/18 13:50	534.6	Ref Method probe being moved
9/17/18 13:51	537.1	Ref Method probe being moved
9/17/18 13:52	538.8	Ref Method probe being moved
9/17/18 13:53	539.5	
9/17/18 13:54	539.9	
9/17/18 13:55	538.6	
9/17/18 13:56	534.9	
9/17/18 13:57	530.4	
9/17/18 13:58	526	
9/17/18 13:59	521.7	17%
Average	540.1	

Run 5

Source: GCO Bypass Vent Stack 5
Date: 9/17/2018

Installed CEMS Data	SO2 (ppmw)	Comments
9/17/18 14:07	513.2	
9/17/18 14:08	510.6	
9/17/18 14:09	507.7	
9/17/18 14:10	506.2	
9/17/18 14:11	506.5	
9/17/18 14:12	506	
9/17/18 14:13	505.8	
9/17/18 14:14	506.4	
9/17/18 14:15	506.5	
9/17/18 14:16	506	
9/17/18 14:17	507.4	
9/17/18 14:18	508.5	
9/17/18 14:19	508.7	
9/17/18 14:20	508.5	
9/17/18 14:21	506.7	Ref Method probe being moved
9/17/18 14:22	503.9	Ref Method probe being moved
9/17/18 14:23	501.4	Ref Method probe being moved
9/17/18 14:24	499.3	
9/17/18 14:25	498.7	
9/17/18 14:26	498.4	
9/17/18 14:27	497.8	
9/17/18 14:28	496.4	
9/17/18 14:29	494.9	
9/17/18 14:30	494.5	17%
Average	504.2	

Run 6

Source: GCO Bypass Vent Stack 5
Date: 9/17/2018

Installed CEMS Data	SO2 (ppmw)	Comments
9/17/18 14:50	500.6	
9/17/18 14:51	500.5	
9/17/18 14:52	500.5	
9/17/18 14:53	500.3	
9/17/18 14:54	500.5	
9/17/18 14:55	499.8	
9/17/18 14:56	497.6	
9/17/18 14:57	495.5	
9/17/18 14:58	493.8	
9/17/18 14:59	492	
9/17/18 15:00	491	
9/17/18 15:01	491.1	
9/17/18 15:02	491.2	
9/17/18 15:03	491.7	
9/17/18 15:04	492.4	Ref Method probe being moved
9/17/18 15:05	492.8	Ref Method probe being moved
9/17/18 15:06	492.1	Ref Method probe being moved
9/17/18 15:07	491.9	
9/17/18 15:08	491.4	
9/17/18 15:09	490.9	
9/17/18 15:10	490.8	
9/17/18 15:11	490.1	
9/17/18 15:12	488.2	
9/17/18 15:13	486.1	17%
Average	494.1	

Run 7

Source: GCO Bypass Vent Stack 5
Date: 9/17/2018

Installed CEMS Data	SO2 (ppmw)	Comments
9/17/18 15:17	483.7	
9/17/18 15:18	482.8	
9/17/18 15:19	481.9	
9/17/18 15:20	480.6	
9/17/18 15:21	479.3	
9/17/18 15:22	478.9	
9/17/18 15:23	478.5	
9/17/18 15:24	477.2	
9/17/18 15:25	476.3	
9/17/18 15:26	475.3	
9/17/18 15:27	474.5	
9/17/18 15:28	474.4	
9/17/18 15:29	474.7	
9/17/18 15:30	475.5	
9/17/18 15:31	476	Ref Method probe being moved
9/17/18 15:32	476.9	Ref Method probe being moved
9/17/18 15:33	477.3	Ref Method probe being moved
9/17/18 15:34	476.6	
9/17/18 15:35	476.3	
9/17/18 15:36	475.5	
9/17/18 15:37	472.8	
9/17/18 15:38	470.8	
9/17/18 15:39	469.8	
9/17/18 15:40	469	17%
Average	476.4	

Run 8

Source: GCO Bypass Vent Stack 5
Date: 9/17/2018

Installed CEMS Data	SO2 (ppmw)	Comments
9/17/18 15:45	465.7	
9/17/18 15:46	462.7	
9/17/18 15:47	459.7	
9/17/18 15:48	456.9	
9/17/18 15:49	455.5	
9/17/18 15:50	454.6	
9/17/18 15:51	454.5	
9/17/18 15:52	454.5	
9/17/18 15:53	454.5	
9/17/18 15:54	455.5	
9/17/18 15:55	455.3	
9/17/18 15:56	454.7	
9/17/18 15:57	454.7	
9/17/18 15:58	453.6	
9/17/18 15:59	453.2	Ref Method probe being moved
9/17/18 16:00	454.5	Ref Method probe being moved
9/17/18 16:01	455.4	Ref Method probe being moved
9/17/18 16:02	455.7	
9/17/18 16:03	454.7	
9/17/18 16:04	451.2	
9/17/18 16:05	449	
9/17/18 16:06	448.1	
9/17/18 16:07	448.1	
9/17/18 16:08	450.5	17%
Average	454.7	

Run 9

Source: GCO Bypass Vent Stack 5
Date: 9/17/2018

Installed CEMS Data	SO2 (ppmw)	Comments
9/17/18 16:13	455.1	
9/17/18 16:14	454.6	
9/17/18 16:15	454	
9/17/18 16:16	453.4	
9/17/18 16:17	452.1	
9/17/18 16:18	450.4	
9/17/18 16:19	448.3	
9/17/18 16:20	446.4	
9/17/18 16:21	445.3	
9/17/18 16:22	444.7	
9/17/18 16:23	444.9	
9/17/18 16:24	445.8	
9/17/18 16:25	446.6	
9/17/18 16:26	447.4	
9/17/18 16:27	448.8	Ref Method probe being moved
9/17/18 16:28	449.9	Ref Method probe being moved
9/17/18 16:29	449.1	Ref Method probe being moved
9/17/18 16:30	447.4	
9/17/18 16:31	446.4	
9/17/18 16:32	444.9	
9/17/18 16:33	443.1	
9/17/18 16:34	442.5	
9/17/18 16:35	441.7	
9/17/18 16:36	440.8	17%
Average	447.4	

Run 10

Appendix D
CALCULATIONS AND FIELD DATA

Appendix D
CALCULATIONS AND FIELD DATA

Calculation Summary

Project Name	**PM and H2SO4 and NOx**								
Project Number	**60582380**								
Facility	**Granite City Operations**								
Sample Type	PM	PM	PM	H2SO4	H2SO4	H2SO4			Averages
Source	BVS 5	BVS 5	BVS 5	BVS 5	BVS 5	BVS 5			
Condition	0	0	0	0	0	0			
Run	1	2	3	1	2	3			
Date	9/18/2018	9/18/2018	9/19/2018	9/18/2018	9/19/2018	9/19/2018			
Time Start	16:08	23:26	11:48	16:40	00:04	12:14			
Time Stop	18:21	01:34	13:54	17:40	01:04	13:14			
Sampling Times	16:08-18:21	23:26-01:34	11:48-13:54	16:40-17:40	00:04-01:04	12:14-13:14			
Duct Diameter (ft) *(equivalent if square duct)*	9.00	9.00	9.00	0.00	0.00	0.00			
Pitot Tube Correction Factor	0.84	0.84	0.84	0.00	0.00	0.00			
Nozzle Diameter (inches)	0.375	0.375	0.375	0.000	0.000	0.000			
DGMCF (Y_d)	0.971	0.971	0.971	0.975	0.975	0.975			
Orifice Factor ("wc) ($\Delta H_@$)	1.902	1.902	1.902	1.939	1.939	1.939			
Console Identification	URS-002	URS-002	URS-002	URS 001	URS 001	URS 001			
Standard Temperature (°F) (T_{std})	68	68	68	68	68	68			
Barometric Pressure Measured ("Hg)	29.90	29.90	30.00	29.90	29.90	30.00			
Stack Elevation (ft) (relative to Barometer)	450	450	450	450	450	450			
Barometric Pressure ("Hg) (P_{bar})	29.45	29.45	29.55	29.45	29.45	29.55			
Average Stack Temperature (°F) (T_s)	1761.8	1829.3	1706.0	#DIV/0!	#DIV/0!	#DIV/0!			1765.7
Average DGM Temp (°F) (T_m)	122.9	112.3	105.7	123.3	118.8	106.3			
Average Delta H ("wc) (ΔH_{avg})	0.98	1.19	1.22	0.32	0.30	0.30			
Condensed Water (g)	182.1	290.2	253.8	0.0	0.0	0.0			
Test Duration (minutes) (Θ)	120	120	120	60	60	60			
Static Pressure ("wc) (P_g)	-0.20	-0.20	-0.20	-0.20	-0.20	-0.20			
Carbon Monoxide Content (%) (%CO)	0	0	0	0	0	0			
Carbon Dioxide Content (%) ($\%CO_2$)	10.00	10.80	8.90	0.00	0.00	0.00			
Oxygen Content (%) ($\%O_2$)	6.20	5.30	7.30	0.00	0.00	0.00			
Hydrogen Content (%) ($\%H_2$)	0.0	0.0	0.0	0.0	0.0	0.0			
Methane Content (%) ($\%CH_4$)	0.0	0.0	0.0	0.0	0.0	0.0			
Nitrogen Content (%) ($\%N_2$)	83.80	83.90	83.80	100.00	100.00	100.00			
Meter Volume (dcf) (V_m)	67.897	75.935	76.611	18.527	18.160	18.273			
Average square root of ΔP ($(\sqrt{\Delta P})_{avg}$)	0.446	0.516	0.512	#DIV/0!	#DIV/0!	#DIV/0!			
Absolute Stack Pressure ("Hg) (P_s)	29.44	29.44	29.54	29.44	29.44	29.54			
Absolute Stack Temperature (°R) (T_s)	2221.8	2289.3	2166.0	#DIV/0!	#DIV/0!	#DIV/0!			2225.7
Flue Gas Moisture (%) (B_{WS})	12.72	16.92	14.82	0.00	0.00	0.00			7.41
Moisture at saturation	N/A	N/A	N/A	#DIV/0!	#DIV/0!	#DIV/0!			
Moisture used in Calculation	12.72	16.92	14.82	#DIV/0!	#DIV/0!	#DIV/0!			14.82
Gas Molecular Wt (Wet) (g/g-mole) (M_S)	28.34	27.92	27.98	#DIV/0!	#DIV/0!	#DIV/0!			
Corrected Vol of Gas Sample (dcf) ($V_{m(std)}$)	65.928	73.733	74.389	18.064	17.706	17.816			
Volume at Meter (dscf) (V_M)	58.923	67.162	68.781	16.109	15.909	16.417			
Average Gas Velocity (ft/sec) (V_S)	52.26	61.80	59.54	#DIV/0!	#DIV/0!	#DIV/0!			57.87
Avg Flow Rate (acfh)	11,969,592	14,152,583	13,636,954	#DIV/0!	#DIV/0!	#DIV/0!			13,253,043
Avg Flow Rate (acfm)	199,493	235,876	227,283	#DIV/0!	#DIV/0!	#DIV/0!			220,884
Avg Flow Rate (scfh)	2,798,497	3,211,259	3,281,438	#DIV/0!	#DIV/0!	#DIV/0!			3,097,065
Avg Flow Rate (scfm)	46,642	53,521	54,691	#DIV/0!	#DIV/0!	#DIV/0!			51,618
Avg Flow Rate (dscfh) (Q_{sd})	2,442,575	2,667,759	2,795,133	#DIV/0!	#DIV/0!	#DIV/0!			2,635,156
Avg Flow Rate (dscfm) (Q_{sd})	40,710	44,463	46,586	#DIV/0!	#DIV/0!	#DIV/0!			43,919
Isokinetic Sampling Rate (%) (I)	100.04	104.41	102.05	#DIV/0!	#DIV/0!	#DIV/0!			

Average square root of ΔH ($(\sqrt{\Delta H})_{avg}$)	0.97	1.09	1.10	0.56	0.55	0.55		
Gas Molecular Weight (Dry) (M_d) (g/g-mole)	29.8	29.9	29.7					

Filter Weight Gain (mg)	49.3	242	57.4						
PNR Weight Gain (mg)	9.005	13.525	36.925						
Impinger Residue (mg)	85.7	78.7	141.4						
Front-Half Particulate Loading (gr/dscf)	0.0153	0.0587	0.0212						0.0190
Back-Half Particulate Loading (gr/dscf)	0.0224	0.0181	0.0317						0.0181
Total Particulate Loading (gr/dscf)	0.0377	0.0768	0.0529						0.0335
Front-Half Particulate Loading (mg/dscm)	34.9	134	48.4						43.5
Back-Half Particulate Loading (mg/dscm)	51.4	41.4	72.6						55.1
Total Particulate Loading (mg/dscm)	86.3	176	121						76.6
Front-Half Particulate Loading O_2 Corr (gr/dscf)	0.0144	0.0523	0.0216						0.0177
Back-Half Particulate Loading O_2 Corrected (gr/dscf)	0.0212	0.0161	0.0324						0.0233
Total Particulate Loading O_2 Corrected (gr/dscf)	0.0357	0.0684	0.0540						0.0316
Front-Half Particulate Loading O_2 Corrected (mg/dscm)	33.0	120	49.5						40.4
Back-Half Particulate Loading O_2 Corrected (mg/dscm)	48.6	36.9	74.2						53.2
Total Particulate Loading O_2 Corrected (mg/dscm)	81.6	157	124						72.4
Front-Half Particulate Emission (lbs/hr)	5.33	22.4	8.45						12.1
Total Particulate Emission (lbs/hr)	13.2	29.3	21.1						21.2

Calculation Summary

Data Entry Area

Sample Type	PM	Pitot Tube Correction Factor	0.84	Entered By (initials)	JC	
Source	BVS 5	Console ID	URS-002	Checked by (initials)	SB	
Condition		DGMCF	0.971	Corrected by (initials)		
Run	1	$\Delta H_@$	1.902		Value	Link Checked
Date	18-Sep	Nozzle Diameter (in)	0.3750	% CO		
Duct Diameter (ft)	9	Std Temp (°F)	68	% CO_2	10	
Duct Depth (ft)		Bar Press ("Hg, meas)	29.9	% O_2	6.2	
Duct Width (ft)		Meter Elev (ft) (rel to Brmtr)	450	% H_2		
		Static Press ("H_2O)	-0.2	% CH_4		

Times		DGM Volumes (as read)		Impinger Catch (g)	Initial	Final	
start	16:08	start	566.134	1	362.4	545.0	182.6
stop	17:08	stop	634.031	2	608.7	608.2	-0.5
start	17:21	start		3	716.0	716.0	0
stop	18:21	stop		4	855.6	855.6	0
start		start		5			
stop		stop		6			
start		start		7			
stop		stop		8			
start		start		9			
stop		stop		10			
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
						Total Wt Gain	182.1
Duration	120	Total	67.897				

	ΔP ("H_2O)	ΔH ("H_2O)	Stack Temp (°F)	DGM Temp (°F)	√ΔP	√ΔH
Averages	0.21	0.98	1762	122.9	0.4460	0.9673
Individual Readings	0.32	1.60	1793	122	0.56568542	1.264911
	0.29	1.30	1797	122	0.53851648	1.140175
	0.28	1.30	1795	123	0.52915026	1.140175
	0.29	1.30	1790	124	0.53851648	1.140175
	0.30	1.40	1783	125	0.54772256	1.183216
	0.30	1.40	1785	126	0.54772256	1.183216
	0.24	1.10	1780	127	0.48989795	1.048809
	0.20	0.94	1775	127	0.4472136	0.969536
	0.15	0.71	1768	127	0.38729833	0.842615
	0.12	0.57	1763	126	0.34641016	0.754983
	0.07	0.33	1749	124	0.26457513	0.574456
	0.07	0.33	1745	124	0.26457513	0.574456
	0.28	1.30	1770	123	0.52915026	1.140175
	0.27	1.30	1769	122	0.51961524	1.140175
	0.27	1.30	1766	122	0.51961524	1.140175
	0.26	1.20	1764	122	0.50990195	1.095445
	0.27	1.30	1761	122	0.51961524	1.140175
	0.23	1.10	1757	121	0.47958315	1.048809
	0.19	0.89	1744	121	0.43588989	0.943398
	0.18	0.85	1739	121	0.42426407	0.921954
	0.15	0.71	1734	121	0.38729833	0.842615
	0.12	0.57	1730	120	0.34641016	0.754983
	0.09	0.43	1717	119	0.3	0.655744
	0.07	0.33	1708	119	0.26457513	0.574456

Calculation Summary

Data Entry Area

Sample Type	PM	Pitot Tube Correction Factor	0.84	Entered By (initials)	JC
Source	BVS 5	Console ID	URS-002	Checked by (initials)	SB
Condition		DGMCF	0.971	Corrected by (initials)	
Run	2	$\Delta H_@$	1.902		
Date	18-Sep	Nozzle Diameter (in)	0.3750		
Duct Diameter (ft)	9	Std Temp (°F)	68		
Duct Depth (ft)		Bar Press ("Hg, meas)	29.9		
Duct Width (ft)		Meter Elev (ft) (rel to Brmtr)	450		
		Static Press ("H_2O)	-0.2		

	Value	Lrk Checked
% CO		
% CO_2	10.8	
% O_2	5.3	
% H_2		
% CH_4		

Times		DGM Volumes (as read)		Impinger Catch (g)			
					Initial	Final	
start	23:26	start	634.783	1	357.2	627.8	270.6
stop	00:26	stop	710.718	2	607.8	609.1	1.3
start	00:34	start		3	703.3	704.6	1.3
stop	01:34	stop		4	785.2	802.2	17
start		start		5			
stop		stop		6			
start		start		7			
stop		stop		8			
start		start		9			
stop		stop		10			
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
						Total Wt Gain	290.2
Duration	120	Total	75.935				

	ΔP ("H_2O)	ΔH ("H_2O)	Stack Temp (°F)	DGM Temp (°F)	√ΔP	√ΔH
Averages	0.27	1.19	1829	112.3	0.5156	1.0903
Individual Readings	0.29	1.40	1664	103	0.53851648	1.183216
	0.30	1.40	1792	105	0.54772256	1.183216
	0.33	1.50	1833	106	0.57445626	1.224745
	0.32	1.40	1826	107	0.56568542	1.183216
	0.30	1.30	1892	109	0.54772256	1.140175
	0.28	1.20	1891	111	0.52915026	1.095445
	0.30	1.30	1918	112	0.54772256	1.140175
	0.28	1.20	1900	113	0.52915026	1.095445
	0.28	1.20	1883	114	0.52915026	1.095445
	0.24	1.00	1878	115	0.48989795	1
	0.22	0.97	1866	115	0.46904158	0.984886
	0.18	0.80	1856	114	0.42426407	0.894427
	0.28	1.20	1840	113	0.52915026	1.095445
	0.29	1.30	1839	113	0.53851648	1.140175
	0.28	1.20	1825	114	0.52915026	1.095445
	0.24	1.10	1818	114	0.48989795	1.048809
	0.21	0.95	1814	115	0.45825757	0.974679
	0.21	0.95	1808	114	0.45825757	0.974679
	0.27	1.20	1807	114	0.51961524	1.095445
	0.28	1.30	1802	114	0.52915026	1.140175
	0.27	1.20	1796	114	0.51961524	1.095445
	0.26	1.20	1789	115	0.50990195	1.095445
	0.25	1.20	1784	115	0.5	1.095445
	0.25	1.20	1782	115	0.5	1.095445

Calculation Summary

Data Entry Area

Sample Type	PM	Pitot Tube Correction Factor	0.84	Entered By (initials)	JC	
Source	BVS 5	Console ID	URS-002	Checked by (initials)	SB	
Condition		DGMCF	0.971	Corrected by (initials)	JC	
Run	3	$\Delta H_@$	1.902		Value	Link Checked
Date	19-Sep	Nozzle Diameter (in)	0.3750	% CO		
Duct Diameter (ft)	9	Std Temp (°F)	68	% CO_2	8.9	
Duct Depth (ft)		Bar Press ("Hg, meas)	30	% O_2	7.3	
Duct Width (ft)		Meter Elev (ft) (rel to Brmtr)	450	% H_2		
		Static Press ("H_2O)	-0.2	% CH_4		

Times		DGM Volumes (as read)		Impinger Catch (g)			
					Initial	Final	
start	11:48	start	711.610	1	362.4	587.9	225.5
stop	12:48	stop	788.221	2	607.0	607.8	0.8
start	12:54	start		3	714.2	725.9	11.7
stop	13:54	0		4	854.9	870.7	15.8
start		start		5			
stop		stop		6			
start		start		7			
stop		stop		8			
start		start		9			
stop		stop		10			
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
						Total Wt Gain	253.8
Duration	120	Total	76.611				

	ΔP ("H_2O)	ΔH ("H_2O)	Stack Temp (°F)	DGM Temp (°F)	√ΔP	√ΔH
Averages	0.26	1.22	1706	105.7	0.5122	1.1049
Individual Readings	0.24	1.20	1735	102	0.48989795	1.095445
	0.24	1.20	1735	103	0.48989795	1.095445
	0.31	1.40	1730	104	0.55677644	1.183216
	0.26	1.20	1724	104	0.50990195	1.095445
	0.24	1.20	1725	104	0.48989795	1.095445
	0.24	1.20	1721	104	0.48989795	1.095445
	0.29	1.30	1723	105	0.53851648	1.140175
	0.28	1.30	1718	106	0.52915026	1.140175
	0.29	1.30	1717	106	0.53851648	1.140175
	0.27	1.20	1705	106	0.51961524	1.095445
	0.24	1.10	1681	106	0.48989795	1.048809
	0.25	1.20	1682	107	0.5	1.095445
	0.20	0.95	1688	107	0.4472136	0.974679
	0.26	1.20	1711	107	0.50990195	1.095445
	0.27	1.20	1710	107	0.51961524	1.095445
	0.28	1.30	1706	106	0.52915026	1.140175
	0.28	1.30	1705	106	0.52915026	1.140175
	0.27	1.20	1706	107	0.51961524	1.095445
	0.30	1.40	1705	107	0.54772256	1.183216
	0.29	1.30	1699	106	0.53851648	1.140175
	0.28	1.30	1695	106	0.52915026	1.140175
	0.25	1.20	1688	107	0.5	1.095445
	0.24	1.10	1674	107	0.48989795	1.048809
	0.24	1.10	1662	107	0.48989795	1.048809

Calculation Summary

Data Entry Area

Sample Type	H2SO4	Pitot Tube Correction Factor		Entered By (initials)	JC
Source	BVS 5	Console ID	URS 001	Checked by (initials)	SB
Condition		DGMCF	0.975	Corrected by (initials)	
Run	1	$\Delta H_@$	1.939		
Date	18-Sep	Nozzle Diameter (in)			
Duct Diameter (ft)		Std Temp (°F)	68		
Duct Depth (ft)		Bar Press ("Hg, meas)	29.9		
Duct Width (ft)		Meter Elev (ft) (rel to Brmtr)	450		
		Static Press ("H_2O)	-0.2		

	Value	Link Checked
% CO		
% CO_2		
% O_2		
% H_2		
% CH_4		

Times		DGM Volumes (as read)		Impinger Catch (g)	Initial	Final
start	16:40	start	155.010	1		
stop	17:40	stop	173.537	2		
start		start		3		
stop		stop		4		
start		start		5		
stop		stop		6		
start		start		7		
stop		stop		8		
start		start		9		
stop		stop		10		
start		start				
stop		stop				
start		start				
stop		stop				
start		start				
stop		stop				
start		start				
stop		stop				
				Total Wt Gain		0.0
Duration	60	Total	18.527			

	ΔP ("H_2O)	ΔH ("H_2O)	Stack Temp (°F)	DGM Temp (°F)	√ΔP	√ΔH
Averages	#DIV/0!	0.32	#DIV/0!	123.3	#DIV/0!	0.5634

Individual Readings			
	0.30	127	0.5477226
	0.30	126	0.5477226
	0.32	125	0.5656854
	0.32	124	0.5656854
	0.32	123	0.5656854
	0.32	123	0.5656854
	0.32	123	0.5656854
	0.32	123	0.5656854
	0.32	122	0.5656854
	0.32	122	0.5656854
	0.35	121	0.591608
	0.30	120	0.5477226

Calculation Summary

Data Entry Area

Sample Type	H2SO4	Pitot Tube Correction Factor		Entered By (initials)	JC
Source	BVS 5	Console ID	URS 001	Checked by (initials)	SB
Condition		DGMCF	0.975	Corrected by (initials)	
Run	2	$\Delta H_@$	1.939		
Date	19-Sep	Nozzle Diameter (in)			
Duct Diameter (ft)		Std Temp (°F)	68		
Duct Depth (ft)		Bar Press ("Hg, meas)	29.9		
Duct Width (ft)		Meter Elev (ft) (rel to Brmtr)	450		
		Static Press ("H_2O)	-0.2		

	Value	Leak Checked
% CO		
% CO_2		
% O_2		
% H_2		
% CH_4		

Times		DGM Volumes (as read)		Impinger Catch (g)	Initial	Final
start	00:04	start	173.625			
stop	01:04	stop	191.785	1		
start		start		2		
stop		stop		3		
start		start		4		
stop		stop		5		
start		start		6		
stop		stop		7		
start		start		8		
stop		stop		9		
start		start		10		
stop		stop				
start		start				
stop		stop				
start		start				
stop		stop				
start		start				
stop		stop				
					Total Wt Gain	0.0
Duration	60	Total	18.160			

	ΔP ("H_2O)	ΔH ("H_2O)	Stack Temp (°F)	DGM Temp (°F)	√ΔP	√ΔH
Averages	#DIV/0!	0.30	#DIV/0!	118.8	#DIV/0!	0.5469

Individual Readings	0.30	120	0.547723
	0.29	120	0.538516
	0.29	120	0.538516
	0.30	118	0.547723
	0.30	118	0.547723
	0.30	118	0.547723
	0.29	118	0.538516
	0.30	119	0.547723
	0.29	119	0.538516
	0.31	119	0.556776
	0.31	119	0.556776
	0.31	118	0.556776

Calculation Summary

Data Entry Area

Sample Type	H2SO4	Pitot Tube Correction Factor		Entered By (initials)	JC
Source	BVS 5	Console ID	URS 001	Checked by (initials)	SB
Condition		DGMCF	0.975	Corrected by (initials)	
Run	3	$\Delta H_@$	1.939		
Date	19-Sep	Nozzle Diameter (in)			
Duct Diameter (ft)		Std Temp (°F)	68		
Duct Depth (ft)		Bar Press ("Hg, meas)	30		
Duct Width (ft)		Meter Elev (ft) (rel to Brmtr)	450		
		Static Press ("H_2O)	-0.2		

	Value	Link Checked
% CO		
% CO_2		
% O_2		
% H_2		
% CH_4		

Times		DGM Volumes (as read)		Impinger Catch (g)	Initial	Final
start	12:14	start	191.905			
stop	13:14	stop	210.178	1		
start		start		2		
stop		stop		3		
start		start		4		
stop		stop		5		
start		start		6		
stop		stop		7		
start		start		8		
stop		stop		9		
start		start		10		
stop		stop				
start		start				
stop		stop				
start		start				
stop		stop				
start		start				
stop		stop				
					Total Wt Gain	0.0
Duration	60	Total	18.273			

	ΔP ("H_2O)	ΔH ("H_2O)	Stack Temp (°F)	DGM Temp (°F)	√ΔP	√ΔH
Averages	#DIV/0!	0.30	#DIV/0!	106.3	#DIV/0!	0.5477

Individual Readings			
	0.30	105	0.547723
	0.30	106	0.547723
	0.30	105	0.547723
	0.30	106	0.547723
	0.30	107	0.547723
	0.30	107	0.547723
	0.30	107	0.547723
	0.30	107	0.547723
	0.30	107	0.547723
	0.30	106	0.547723
	0.30	106	0.547723
	0.30	107	0.547723

Sample Type	Filt and Cond PM (M5/M202)	Date 9/18/18		Nozzle Dia (in) 0.375	Page 1 of 1
Project Name	GCO FGD Outage Tests	Cond	Run 1	Barometer ID weather channel	Train Leak Rate (cfm @ "Hg)
Project Number	60582380	Console ID URS-002		Bar. Press. ("Hg) 29.90	Initial 0.005 @ 11"
Facility	SunCoke Energy Granite City Operations	ΔH@ 1.902		Stat. Press. ("H_2O) -0.2	Final 0.001 @ 6"
Source	Vent Stack #5	K_f		Probe ID 1808981	Pitot Tube Leak Check ("H_2O@"H_2O)
Operator	WCT/JM	DGMCF 0.971		Pitot ID 8349	Initial (-) ✓ @ 6"
Duct Dimension(s)	9'	Filter No.		PTCF 0.84	Initial (+) ✓ @ 6"
Nozzle Calibration				Meter Elevation (ft) (relative to Barometer)	Final (-) ✓ @ 6"
Caliper ID	Ultratech 01 0.375 0.375 0.375			450	Final (+) ✓ @ 6"

Post-Test Stack TC Check	Reference Thermometer ID 2490	Ref Thermometer Exp Date Cal. date 5/23/17 (NIST)	Thermometer and TC agree within 2°F Y/N	Post-Test: Are Pitots Damaged? Y/N

Point	Clock Time 16:08	DGM Reading (ft^3)	ΔP ("H_2O)	ΔH ("H_2O)	Temperature (°F) Stack	Probe Target 248±25	Filter Target 248±25	CPM Filter[1] Target: near but <85	Imp Exit Target <68	DGM Outlet	Vacuum ("Hg)
A-1	0	566.134	0.32	1.6	1793	N/A	246	85	67	122	5
2	5	569.7	0.29	1.3	1797		264	85	65	122	4½
3	10	573.1	0.28	1.3	1795		270	85	63	123	4½
4	15	576.5	0.29	1.3	1790		260	85	60	124	4½
5	20	579.7	0.30	1.4	1783		256	85	58	125	5
6	25	583.2	0.30	1.4	1785		230	85	56	126	5
7	30	586.6	0.24	1.1	1780		270	82	55	127	5
8	35	589.8	0.20	0.94	1775		270	79	56	127	4
9	40	592.7	0.15	0.71	1768		271	77	56	127	3
10	45	595.2	0.12	0.57	1763		254	78	56	126	2½
11	50	597.4	0.07	0.33	1749		230	79	63	124	1½
12	55	599.2	0.07	0.33	1745		235	81	63	124	1½
Stop 1708	60	600.808									
B-1 1721	60	600.808	0.28	1.3	1770		255	85	64	123	4½
2	65	604.1	0.27	1.3	1769		253	84	58	122	5
3	70	607.3	0.27	1.3	1766		259	80	58	122	5
4	75	610.5	0.26	1.2	1764		264	79	58	122	5
5	80	613.8	0.27	1.3	1761		250	80	60	122	5
6	85	617.1	0.23	1.1	1757		270	84	61	121	5
7	90	620.2	0.19	0.89	1744		270	85	62	121	4
8	95	623.0	0.18	0.85	1739		272	85	63	121	4
9	100	625.8	0.15	0.71	1734		267	85	59	121	3½
10	105	628.2	0.12	0.57	1730		245	85	58	120	3
11	110	630.4	0.09	0.43	1717		230	84	58	119	2
12	115	632.4	0.07	0.33	1708		245	85	60	119	2
Stop 1821	120	634.031									

Notes: B ladder A Probe warped by end of run - change for next run

[1] Remember to record Final CPM Filter Temperature

SDS-36: PM (Filt & Cond) by EPA Methods 5/202
Per: EM SOP-047
Issued: June 2018
Document reviewed biennially

Project Name	GCO FGD Outage Tests
Project Number	60582380
Date	9/18/18
Source	Vent Stack #5

Particulate Matter (incl. Condensable)

EPA Method 5/202

Condition No.	
Run No.	1
Balance ID	i 5500
Recovered by	JC

Moisture Determination

Imp No.	Contents	Vol (mL)	Configuration	Initial Wt (g)	Final Wt (g)
1	empty	--	K/O	~~361.3~~ 362	545.0
2	empty	--	Mod	~~609.6~~ 608.2	608.2
3	Water	100	Mod	709.3	716.0
4	Silica Gel	~300g	Mod	837.6	855.6
5					

Filter

Filter ID Number	

Sample Log

Sample ID Number	Sample Container	Description
-M5/202-PNR	250 ml	Probe and Nozzle Rinse
-M5/202-Filt	Petri Dish	Filter
-M5/202-WtRns	1000 ml	Water Rinse
-M5/202-OrgRns	250 ml	Organic Rinse
-M5/202-CPMFilt	Petri Dish	CPM Filter

Sample Recovery Checklist

_____ Rinse and brush probe and nozzle with acetone (three times) into PNR sample bottle.

_____ Disconnect transfer line. Rinse with water (two times) into water rinse sample bottle. Rinse with acetone (one time) and hexane (two times) into the organic rinse sample bottle.

_____ Transfer water from knockout impinger to second impinger. Ensure that water level is at least 1 cm above stem tip. Add water if necessary.

Volume of water added: _____

_____ If all water in knockout impinger will not fit in second impinger, replace stem on knockout impinger. Ensure that the water level in the first impinger is at least 1 cm above stem tip. Add water if necessary.

Volume of water added: _____.

_____ Purge with nitrogen for one hour at >14 liters per minute. Record start and end times on the data sheet.

Start _____ Stop _____

_____ Separate filter holder and place filter in clean pre-rinsed glass petri dish. Complete Filt sample label.

_____ Rinse front half of filter holder with acetone (three times) into PNR bottle. Complete probe and nozzle rinse (PNR) sample label.

_____ Rinse the back half of the filter holder and any connecting glassware with water (two times) into the water rinse sample bottle.

_____ Rinse the back half of the filter holder and any connecting glassware with acetone (one time) and with hexane (two times) into the organic rinse sample bottle.

_____ Separate CPM filter holder and place CPM filter in clean pre-rinsed glass petri dish. Complete CPM-Filt sample label.

_____ Disassemble sample train, wipe off excess water and weigh each impinger. Record the final weights in the Moisture Determination section of this data sheet

Note condition of the silica gel impinger. ____% spent

_____ Pour the contents of the first two impingers into the water rinse catch bottle(s). Rinse impingers, connecting glassware. And the front half of the CPM filter holder two times with water into the same bottles. Complete water rinse sample label.

_____ Rinse the first two impingers, connecting glassware, and the front half of the CPM filter holder acetone (one time) and hexane (two times) into the organic rinse sample bottle(s)

_____ Log samples into logbook and store appropriately.

Notes:

RDS-47 - PM and Condensables by EPA Method 5/202
Per: EM SOP-047
Issued: May 2018
Document reviewed biennially

Sample Type	Filt and Cond PM (M5/M202)	Date	9/18/18	Nozzle Dia (in)	0.375	Page	1 of 1
Project Name	GCO FGD Outage Tests	Cond / Run	2	Barometer ID	Weather Channel	Train Leak Rate (cfm @ "Hg)	
Project Number	60582380	Console ID	MRS-002	Bar. Press. ("Hg)	29.90	Initial	0.002 @ 11"
Facility	SunCoke Energy Granite City Operations	ΔH@	1.902	Stat. Press. ("H_2O)	-0.2	Final	0.002 @ 11"
Source	Vent Stack #5	K_1		Probe ID	1808971	Pitot Tube Leak Check ("H_2O@"H_2O)	
Operator	WCT/JM	DGMCF	0.971	Pitot ID	1801770	Initial (-)	✓ @ 6"
Duct Dimension(s)	9'	Filter No.		PTCF	0.84	Initial (+)	✓ @ 6"
Nozzle Calibration				Meter Elevation (ft) (relative to Barometer)	450	Final (-)	✓ @ 6"
Caliper ID	UltraTech 01 — 0.375 — 0.375 — 0.375					Final (+)	✓ @ 6"
Post-Test Stack TC Check	Reference Thermometer ID: 2490	Ref Thermometer Exp Date	NIST 5/22/17	Thermometer and TC agree within 2°F	(Y) / N	Post-Test: Are Pitots Damaged?	Y / (N)

Point	Clock Time 2326	DGM Reading (ft³) 783	ΔP ("H_2O)	ΔH ("H_2O)	Temperature (°F) Stack	Probe Target 248±25	Filter Target 248±25	CPM Filter[1] Target: near but <85	Imp Exit Target <68	DGM Outlet	Vacuum ("Hg)
A-1	0	634.509	0.29	1.4	1664	N/A	240	85	66	103	3½
2	5	638.1	0.30	1.4	1792		248	85	62	105	10
3	10	641.5	0.33	1.5	1833		240	85	62	106	10
4	15	645.5	0.32	1.4	1826		247	85	61	107	5
5	20	649.0	0.30	1.3	1892		239	85	62	109	5
6	25	652.2	0.28	1.2	1891		252	85	53	111	5
7	30	655.3	0.30	1.3	1918		247	83	50	112	5
8	35	658.5	0.28	1.2	1900		246	78	48	113	5
9	40	661.6	0.28	1.2	1883		246	75	47	114	5
10	45	664.7	0.24	1.0	1878		250	73	47	115	4½
11	50	667.6	0.22	0.97	1866		247	73	46	115	4½
12	55	670.5	0.18	0.80	1856		246	73	47	114	4
Stop	2456 60	673.111									
B-1	2500 60	673.111	0.28	1.2	1840		248	80	52	113	5
2	65	676.1	0.29	1.3	1839		247	76	48	113	5
3	70	679.1	0.28	1.2	1825		250	74	52	114	5
4	75	682.2	0.24	1.1	1818		250	73	52	114	5
5	80	685.2	0.21	0.95	1814		246	74	54	115	5
6	85	688.1	0.21	0.95	1808		248	74	53	114	5
7	90	691.0	0.27	1.2	1807		246	75	54	114	5½
8	95	694.0	0.28	1.3	1802		247	75	54	114	6
9	100	697.3	0.27	1.2	1796		247	76	54	114	5½
10	105	700.5	0.26	1.2	1789		245	75	53	115	5½
11	110	703.7	0.25	1.2	1784		246	76	53	115	5½
12	115	706.9	0.25	1.2	1782		246	76	53	115	5½
Stop	120	710.718									
	0134										

Notes: Change AC Probe

[1] Remember to record Final CPM Filter Temperature

SDS-36: PM (Filt & Cond) by EPA Methods 5/202
Per: EM SOP-047
Issued: June 2018
Document reviewed biennially

Project Name	GCO FGD Outage Tests
Project Number	60582380
Date	9/18/18
Source	Vent Stack #5

Particulate Matter (incl. Condensable)
EPA Method 5/202

Condition No.	
Run No.	2
Balance ID	5500
Recovered by	JE

Moisture Determination

Imp No.	Contents	Vol (mL)	Configuration	Initial Wt (g)	Final Wt (g)
1	empty	--	K/O	357.2	627.8
2	empty	--	Mod	607.8	609.1
3	Water	100	Mod	703.3	704.6
4	Silica Gel	~300g	Mod	785.2	802.2
5					

Filter

Filter ID Number	

Sample Log

Sample ID Number	Sample Container	Description
-M5/202-PNR	250 ml	Probe and Nozzle Rinse
-M5/202-Filt	Petri Dish	Filter
-M5/202-WtRns	1000 ml	Water Rinse
-M5/202-OrgRns	250 ml	Organic Rinse
-M5/202-CPMFilt	Petri Dish	CPM Filter

Sample Recovery Checklist

_____ Rinse and brush probe and nozzle with acetone (three times) into PNR sample bottle.

_____ Disconnect transfer line. Rinse with water (two times) into water rinse sample bottle. Rinse with acetone (one time) and hexane (two times) into the organic rinse sample bottle.

_____ Transfer water from knockout impinger to second impinger. Ensure that water level is at least 1 cm above stem tip. Add water if necessary.

Volume of water added: _____

_____ If all water in knockout impinger will not fit in second impinger, replace stem on knockout impinger. Ensure that the water level in the first impinger is at least 1 cm above stem tip. Add water if necessary.

Volume of water added: _____.

_____ Purge with nitrogen for one hour at >14 liters per minute. Record start and end times on the data sheet.

Start _____ Stop _____

_____ Separate filter holder and place filter in clean pre-rinsed glass petri dish. Complete Filt sample label.

_____ Rinse front half of filter holder with acetone (three times) into PNR bottle. Complete probe and nozzle rinse (PNR) sample label.

_____ Rinse the back half of the filter holder and any connecting glassware with water (two times) into the water rinse sample bottle.

_____ Rinse the back half of the filter holder and any connecting glassware with acetone (one time) and with hexane (two times) into the organic rinse sample bottle.

_____ Separate CPM filter holder and place CPM filter in clean pre-rinsed glass petri dish. Complete CPM-Filt sample label.

_____ Disassemble sample train, wipe off excess water and weigh each impinger. Record the final weights in the Moisture Determination section of this data sheet

Note condition of the silica gel impinger. ____% spent

_____ Pour the contents of the first two impingers into the water rinse catch bottle(s). Rinse impingers, connecting glassware. And the front half of the CPM filter holder two times with water into the same bottles. Complete water rinse sample label.

_____ Rinse the first two impingers, connecting glassware, and the front half of the CPM filter holder acetone (one time) and hexane (two times) into the organic rinse sample bottle(s)

_____ Log samples into logbook and store appropriately.

Notes:

RDS-47 - PM and Condensables by EPA Method 5/202
Per: EM SOP-047
Issued: May 2018
Document reviewed biennially

Sample Type	Filt and Cond PM (M5/M202)	Date	9/19/18	Nozzle Dia (in)	0.375	Page	1 of 1
Project Name	GCO FGD Outage Tests	Cond	Run 3	Barometer ID	Weather Channel	**Train Leak Rate** (cfm @ "Hg)	
Project Number	60582380	Console ID	URS-002	Bar. Press. ("Hg)	30.0	Initial	0.015 @ 12"
Facility	SunCoke Energy Granite City Operations	ΔH@	1.902	Stat. Press. ("H_2O)	-0.20	Final	0.002 @ 7"
Source	Vent Stack #5	K_f		Probe ID	180/170	**Pitot Tube Leak Check** ("H_2O@"H_2O)	
Operator	WCT / JM / FC	DGMCF	0.971	Pitot ID		Initial (-)	✓ @ 6"
Duct Dimension(s)	9'	Filter No.		PTCF	0.84	Initial (+)	✓ @ 6"
Nozzle Calibration				Meter Elevation (ft) (relative to Barometer)	450	Final (-)	✓ @ 6"
Caliper ID						Final (+)	✓ @ 6"

Post-Test Stack TC Check	Reference Thermometer ID	Ref Thermometer Exp Date	Thermometer and TC agree within 2°F	Y / N	Post-Test: Are Pitots Damaged? Y (N)

Point	Clock Time	DGM Reading (ft³)	ΔP ("H_2O)	ΔH ("H_2O)	Temperature (°F) Stack	Probe Target 248±25	Filter Target 248±25	CPM Filter[1] Target: near but <85	Imp Exit Target <68	DGM Outlet	Vacuum ("Hg)
	1148										
A-1	0	711.610	0.24	1.2	1735	NA	232	85	64	102	3½
2	5	714.6	0.24	1.2	1735		243	85	61	103	4
3	10	717.7	0.31	1.4	1730		249	84	60	104	5
4	15	721.0	0.26	1.2	1724		247	81	59	104	4½
5	20	724.3	0.24	1.2	1725		255	80	60	104	4½
6	25	727.4	0.24	1.2	1721		256	79	60	104	4½
7	30	731.5	0.29	1.3	1723		253	78	61	105	5
8	35	734.9	0.28	1.3	1718		248	81	63	106	4½
9	40	738.1	0.29	1.3	1717		242	83	60	106	4½
10	45	741.2	0.27	1.2	1705		240	80	54	106	4½
11	50	744.4	0.24	1.1	1681		237	78	51	106	4
12	55	747.5	0.25	1.2	1682		245	78	53	107	4½
Stop	1248 60	750.585									
R-1	1254 60	750.585	0.20	0.95	1688		243	85	52	107	3
2	65	753.4	0.26	1.2	1711		237	83	51	107	4
3	70	756.4	0.27	1.2	1710		238	81	52	107	4
4	75	759.4	0.28	1.3	1706		245	80	54	106	5
5	80	762.5	0.28	1.3	1705		240	78	56	106	5
6	85	765.7	0.27	1.2	1706		245	79	57	107	5
7	90	768.9	0.30	1.4	1705		244	79	57	107	5½
8	95	772.0	0.29	1.3	1699		239	80	57	106	5½
9	100	775.5	0.28	1.3	1695		246	80	58	106	5½
10	105	778.8	0.25	1.2	1688		248	81	59	107	5
11	110	782.0	0.24	1.1	1674		243	82	59	107	5
12	115	785.2	0.24	1.1	1662		242	82	59	107	5
Stop	120	788.221									
	1354										

Notes:

[1] Remember to record Final CPM Filter Temperature

SDS-36: PM (Filt & Cond) by EPA Methods 5/202
Per: EM SOP-047
Issued: June 2018
Document reviewed biennially

Project Name	GCO FGD Outage Tests
Project Number	60582380
Date	9/19/18
Source	Vent Stack #5

Particulate Matter (incl. Condensable)

EPA Method 5/202

Condition No.	
Run No.	3
Balance ID	i 5520
Recovered by	JC

Moisture Determination

Imp No.	Contents	Vol (mL)	Configuration	Initial Wt (g)	Final Wt (g)
1	empty	--	K/O	362.4	587.9
2	empty	--	Mod	607.0	607.8
3	Water	100	Mod	714.2	725.9
4	Silica Gel	~300g	Mod	854.9	870.7
5					

Filter

Filter ID Number	

Sample Log

Sample ID Number	Sample Container	Description
-M5/202-PNR	250 ml	Probe and Nozzle Rinse
-M5/202-Filt	Petri Dish	Filter
-M5/202-WtRns	1000 ml	Water Rinse
-M5/202-OrgRns	250 ml	Organic Rinse
-M5/202-CPMFilt	Petri Dish	CPM Filter

Sample Recovery Checklist

_____ Rinse and brush probe and nozzle with acetone (three times) into PNR sample bottle.

_____ Disconnect transfer line. Rinse with water (two times) into water rinse sample bottle. Rinse with acetone (one time) and hexane (two times) into the organic rinse sample bottle.

_____ Transfer water from knockout impinger to second impinger. Ensure that water level is at least 1 cm above stem tip. Add water if necessary.

Volume of water added: _____

_____ If all water in knockout impinger will not fit in second impinger, replace stem on knockout impinger. Ensure that the water level in the first impinger is at least 1 cm above stem tip. Add water if necessary.

Volume of water added: _____.

_____ Purge with nitrogen for one hour at >14 liters per minute. Record start and end times on the data sheet.

Start _____ Stop _____

_____ Separate filter holder and place filter in clean pre-rinsed glass petri dish. Complete Filt sample label.

_____ Rinse front half of filter holder with acetone (three times) into PNR bottle. Complete probe and nozzle rinse (PNR) sample label.

_____ Rinse the back half of the filter holder and any connecting glassware with water (two times) into the water rinse sample bottle.

_____ Rinse the back half of the filter holder and any connecting glassware with acetone (one time) and with hexane (two times) into the organic rinse sample bottle.

_____ Separate CPM filter holder and place CPM filter in clean pre-rinsed glass petri dish. Complete CPM-Filt sample label.

_____ Disassemble sample train, wipe off excess water and weigh each impinger. Record the final weights in the Moisture Determination section of this data sheet

Note condition of the silica gel impinger. ____% spent

_____ Pour the contents of the first two impingers into the water rinse catch bottle(s). Rinse impingers, connecting glassware. And the front half of the CPM filter holder two times with water into the same bottles. Complete water rinse sample label.

_____ Rinse the first two impingers, connecting glassware, and the front half of the CPM filter holder acetone (one time) and hexane (two times) into the organic rinse sample bottle(s)

_____ Log samples into logbook and store appropriately.

Notes:

RDS-47 - PM and Condensables by EPA Method 5/202
Per: EM SOP-047
Issued: May 2018
Document reviewed biennially

Sample Type	**Controlled Condensation; H_2SO_4/SO_2**	Date	9/18/18	Operator	JC/FC	Page	1 of 1
Project Name	GCO FGD Outage Tests	Condition		Barometer ID	WC	**Train Leak Rate** (cfm@"Hg)	
Project Number	60582380	Run	1	Bar. Press. ("Hg)	29.90	Initial	0.00@ 5
Facility	SunCoke Energy Granite City Operations	Console ID	URS001			Final	0.00@ 4
Source	Vent Stack #5	DGMCF	0.975	Meter Elevation (ft) (relative to Barometer)			
Duct Dimension(s)	9'						

~~Coil ID~~	Clock Time	DGM Reading (ft^3)	ΔH ("H_2O)	Temperature (°F) Probe (if used) Target 600	Filter or IGS Target 550	Cond Exit Target 140	Imp Exit Target <68	DGM	Vacuum ("Hg)	~~O_2 (%)~~
16:40	0	155.010	0.30		470	130	100	127	1	
	5	156.5	0.30		650	138	95	126	2	
	10	158.0	0.32		620	144	90	125	2	
	15	159.55	0.32		578	151	90	124	2	
	20	161.0	0.32		609	157	85	123	2	
	25	162.65	0.32		584	161	80	123	2	
	30	164.25	0.32		611	164	80	123	2	
	35	165.8	0.32		584	167	80	123	2	
	40	167.3	0.32		581	168	80	122	2	
	45	168.95	0.32		593	169	80	122	2	
	50	170.5	0.35		598	163	80	121	2	
	55	172.0	0.30		600	170	80	120	2	
17:40	60	173.537								

Notes:

SDS-34: *H_2SO_4/SO_2 by Controlled Condensatio*
Per *EM SOP-0*
Issued: *February 2*
Document reviewed bien

Sample Type: **Controlled Condensation; H_2SO_4/SO_2**	Date: 9/19/18	Operator: JC/CS	Page: 1 of 1
Project Name: GCO FGD Outage Tests	Condition:	Barometer ID: WC	**Train Leak Rate** (cfm@"Hg)
Project Number: 60582380	Run: 2	Bar. Press. ("Hg): 29.90	Initial: 0.00 @ 5
Facility: SunCoke Energy Granite City Operations	Console ID: URS 001		Final: 0.00 @ 5
Source: Vent Stack #5	DGMCF: 0.975	Meter Elevation (ft) (relative to Barometer):	
Duct Dimension(s): 9'			

~~Coil ID~~	Clock Time	DGM Reading (ft^3)	ΔH ("H_2O)	Temperature (°F) Probe (~~if used~~) Target 600	Filter or IGS Target 550	Cond Exit Target 140	Imp Exit Target <68	DGM	Vacuum ("Hg)	O_2 (%)
00:04	0	173.625	0.30		584	130	88	120	2	
	5	175.1	0.29		618	130	90	120	2	
	10	176.6	0.29		623	135	94	120	2	
	15	178.1	0.30		572	143	91	118	2	
	20	179.9	0.30		592	150	80	118	3	
	25	181.1	0.30		608	158	80	118	2	
	30	182.6	0.29		604	162	80	118	2	
	35	184.2	0.30		566	164	79	119	2	
	40	185.6	0.29		617	169	81	119	3	
	45	187.2	0.31		592	166	80	119	3	
	50	188.7	0.31		583	178	80	119	3	
	55	190.2	0.31		603	180	80	118	3	
01:04	60	191.785								

Notes:

SDS-34: H_2SO_4/SO_2 by Controlled Condensation
Per EM SOP-066
Issued: February 2018
Document reviewed biennially

Sample Type	**Controlled Condensation; H_2SO_4/SO_2**	Date	9/19/18	Operator	JM/CS	Page	1 of 1
Project Name	GCO FGD Outage Tests	Condition	–	Barometer ID	WC	**Train Leak Rate (cfm@"Hg)**	
Project Number	60582380	Run	3	Bar. Press. ("Hg)	30.0	Initial	0 @ 4"
Facility	SunCoke Energy Granite City Operations	Console ID	URS-001			Final	0 @ 4"
Source	Vent Stack #5	DGMCF	0.975	Meter Elevation (ft) (relative to Barometer)	450		
Duct Dimension(s)	9'						

Coil ID	Clock Time	DGM Reading (ft^3)	ΔH ("H_2O)	Temperature (°F) Probe (if used) Target 600	Filter or IGS Target 550	Cond Exit Target 140	Imp Exit Target <68	DGM	Vacuum ("Hg)	O_2 (%)
12:14	0	191.905	0.30		672	130	90	105 ~~107~~ CS	2	
	5	193.4	0.30		605	150	76	106	2	
	10	194.9	0.30		490	165	72	105	2	
	15	196.37	0.30		750	164	73	106	2	
	20	197.9	0.30		740	160	73	107	2	
	25	199.44	0.30		625	160	74	107	2	
	30	200.98	0.30		530	150	75	107	2	
	35	202.51	0.30		630	150	75	107	2	
	40	204.5	0.30		627	150	76	107	2	
	45	205.58	0.30		569	150	76	106	2	
	50	207.12	0.30		575	149	76	106	2	
	55	208.65	0.30		540	148	76	107	2	
13:14	60	210.178								

Notes:

SDS-34: H_2SO_4/SO_2 by Controlled Condensation
Per EM SOP-066
Issued: February 2018
Document reviewed biennially

Filterable PM Results

Parameter	Run 1	Run 2	Run 3
Filter (mg)	49.3	242	57.4
Probe/nozzle rinse (mg)	9.58	14.1	37.5
Acetone blank (mg)	0.575	0.575	0.575
Net probe/nozzle rinse (mg)	9.005	13.525	36.925
Total filterable PM (mg)	58.3	255.5	94.3

Condensable PM Results

Parameter	Run 1	Run 2	Run 3	Field blank	Proof blank
Inorganic (mg)	83.50	76.60	136.00	3.19	2.90
Organic (mg)	4.22	4.13	7.37	3.33	2.83
Total (mg)	87.7	80.7	143.4	6.5	5.7
Field blank correction (mg)	2.0	2.0	2.0		
Net condensable PM	85.7	78.7	141.4		

H2SO4 Results

Parameter	Run 1	Run 2	Run 3
Sample volume (dscf)	16.11	15.91	16.42
Sample volume (dscm)	0.456	0.451	0.465
H2SO4 in sample (ug)	20,700	26,600	19,500
Conc. (ug/ft3)	1,285	1,672	1,188
Conc. (ug/m3)	45,380	59,045	41,946
Molecular weight	98.0	98.0	98.0
Conc. (ppm)	11.1	14.5	10.3

Calculation Summary

Project Name	**Lead, Mercury, and HCl**
Project Number	**60582380**
Facility	**Granite City Operations**

Sample Type	Metals	Metals	Metals	HCl	HCl	HCl			Averages
Source	BVS 5	BVS 5	BVS 5	BVS 5	BVS 5	BVS 5			
Condition	0	0	0	0	0	0			
Run	1	2	3	1	2	3			
Date	9/19/2018	9/20/2018	9/20/2018	9/19/2018	9/20/2018	9/20/2018			
Time Start	23:06	12:04	15:58	23:15	12:05	16:00			
Time Stop	24:42	13:40	17:34	24:15	13:05	17:00			
Sampling Times	23:06-24:42	12:04-13:40	15:58-17:34	23:15-24:15	12:05-13:05	16:00-17:00			
Duct Diameter (ft) *(equivalent if square duct)*	9.00	9.00	9.00	0.00	0.00	0.00			
Pitot Tube Correction Factor	0.84	0.84	0.84	0.00	0.00	0.00			
Nozzle Diameter (inches)	0.375	0.375	0.375	0.000	0.000	0.000			
DGMCF (Y_d)	0.971	0.971	0.971	0.975	0.975	0.975			
Orifice Factor ("wc) ($\Delta H_@$)	1.902	1.902	1.902	1.939	1.939	1.939			
Console Identification	URS-002	URS-002	URS-002	URS 001	URS 001	URS 001			
Standard Temperature (°F) (T_{std})	68	68	68	68	68	68			
Barometric Pressure Measured ("Hg)	29.90	29.99	29.89	29.90	29.99	29.89			
Stack Elevation (ft) (relative to Barometer)	450	450	450	450	450	450			
Barometric Pressure ("Hg) (P_{bar})	29.45	29.54	29.44	29.45	29.54	29.44			
Average Stack Temperature (°F) (T_s)	1827.3	1768.3	1673.3	#DIV/0!	#DIV/0!	#DIV/0!			1756.3
Average DGM Temp (°F) (T_m)	88.3	105.7	99.8	87.5	108.7	102.0			
Average Delta H ("wc) (ΔH_{avg})	1.12	0.85	1.01	1.03	1.19	1.15			
Condensed Water (g)	246.9	186.0	185.6	149.6	131.8	121.8			
Test Duration (minutes) (Θ)	96	96	96	60	60	60			
Static Pressure ("wc) (P_g)	-0.20	-0.20	-0.20	-0.20	-0.20	-0.20			
Carbon Monoxide Content (%) (%CO)	0	0	0	0	0	0			
Carbon Dioxide Content (%) (%CO_2)	10.20	9.80	9.20	0.00	0.00	0.00			
Oxygen Content (%) (%O_2)	5.30	6.30	7.20	0.00	0.00	0.00			
Hydrogen Content (%) (%H_2)	0.0	0.0	0.0	0.0	0.0	0.0			
Methane Content (%) (%CH_4)	0.0	0.0	0.0	0.0	0.0	0.0			
Nitrogen Content (%) (%N_2)	84.50	83.90	83.60	100.00	100.00	100.00			
Meter Volume (dcf) (V_m)	57.453	51.168	56.161	33.464	35.072	34.822			
Average square root of ΔP ($(\sqrt{\Delta P})_{avg}$)	0.507	0.431	0.463	#DIV/0!	#DIV/0!	#DIV/0!			
Absolute Stack Pressure ("Hg) (P_s)	29.44	29.53	29.43	29.44	29.53	29.43			
Absolute Stack Temperature (°R) (T_s)	2287.3	2228.3	2133.3	#DIV/0!	#DIV/0!	#DIV/0!			2216.3
Flue Gas Moisture (%) (B_{WS})	18.00	16.05	14.71	18.51	16.50	15.43			16.53
Moisture at saturation	N/A	N/A	N/A	#DIV/0!	#DIV/0!	#DIV/0!			
Moisture used in Calculation	18.00	16.05	14.71	#DIV/0!	#DIV/0!	#DIV/0!			16.25
Gas Molecular Wt (Wet) (g/g-mole) (M_S)	27.71	27.92	28.03	#DIV/0!	#DIV/0!	#DIV/0!			
Corrected Vol of Gas Sample (dcf) ($V_{m(std)}$)	55.787	49.684	54.532	32.627	34.195	33.951			
Volume at Meter (dscf) (V_M)	53.030	45.884	50.734	31.053	31.440	31.476			
Average Gas Velocity (ft/sec) (V_S)	60.99	50.86	53.42	#DIV/0!	#DIV/0!	#DIV/0!			55.09
Avg Flow Rate (acfh)	13,969,202	11,647,683	12,233,792	#DIV/0!	#DIV/0!	#DIV/0!			12,616,893
Avg Flow Rate (acfm)	232,820	194,128	203,897	#DIV/0!	#DIV/0!	#DIV/0!			210,282
Avg Flow Rate (scfh)	3,172,421	2,723,593	2,977,800	#DIV/0!	#DIV/0!	#DIV/0!			2,957,938
Avg Flow Rate (scfm)	52,874	45,393	49,630	#DIV/0!	#DIV/0!	#DIV/0!			49,299
Avg Flow Rate (dscfh) (Q_{sd})	2,601,361	2,286,558	2,539,726	#DIV/0!	#DIV/0!	#DIV/0!			2,475,882
Avg Flow Rate (dscfm) (Q_{sd})	43,356	38,109	42,329	#DIV/0!	#DIV/0!	#DIV/0!			41,265
Isokinetic Sampling Rate (%) (I)	105.68	104.03	103.56	#DIV/0!	#DIV/0!	#DIV/0!			

Average square root of ΔH ($(\sqrt{\Delta H})_{avg}$)	1.06	0.92	1.00	1.02	1.09	1.07		
Gas Molecular Weight (Dry) (M_d) (g/g-mole)	29.8	29.8	29.8					

Calculation Summary

Data Entry Area

Sample Type	Metals	Pitot Tube Correction Factor	0.84	Entered By (initials)	JC	
Source	BVS 5	Console ID	UR5-002	Checked by (initials)	SB	
Condition		DGMCF	0.971	Corrected by (initials)		
Run	1	$\Delta H_@$	1.902		Value	Link Checked
Date	19-Sep	Nozzle Diameter (in)	0.3750	% CO		
Duct Diameter (ft)	9	Std Temp (°F)	68	% CO_2	10.2	
Duct Depth (ft)		Bar Press ("Hg, meas)	29.9	% O_2	5.3	
Duct Width (ft)		Meter Elev (ft) (rel to Brmtr)	450	% H_2		
		Static Press ("H_2O)	-0.2	% CH_4		

Times		DGM Volumes (as read)		Impinger Catch (g)			
					Initial	Final	
start	23:06	start	789.614	1	707.5	902.7	195.2
stop	24:42	stop	847.067	2	713.3	736.0	22.7
start		start		3	581.1	586.8	5.7
stop		stop		4	702.1	706.5	4.4
start		start		5	703.4	705.8	2.4
stop		stop		6	801.7	818.2	16.5
start		start		7			
stop		stop		8			
start		start		9			
stop		stop		10			
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
						Total Wt Gain	246.9
Duration	96	Total	57.453				

	ΔP ("H_2O)	ΔH ("H_2O)	Stack Temp (°F)	DGM Temp (°F)	√ΔP	√ΔH
Averages	0.26	1.12	1827	88.3	0.5072	1.0572
Individual Readings	0.26	1.20	1886	86	0.50990195	1.095445
	0.26	1.20	1885	86	0.50990195	1.095445
	0.26	1.20	1904	86	0.50990195	1.095445
	0.27	1.20	1892	86	0.51961524	1.095445
	0.28	1.20	1898	87	0.52915026	1.095445
	0.28	1.20	1882	87	0.52915026	1.095445
	0.25	1.05	1874	88	0.5	1.024695
	0.26	1.10	1870	88	0.50990195	1.048809
	0.27	1.10	1855	88	0.51961524	1.048809
	0.28	1.20	1839	88	0.52915026	1.095445
	0.26	1.10	1833	88	0.50990195	1.048809
	0.23	1.00	1823	88	0.47958315	1
	0.26	1.10	1818	89	0.50990195	1.048809
	0.26	1.10	1809	89	0.50990195	1.048809
	0.27	1.20	1804	89	0.51961524	1.095445
	0.27	1.20	1796	89	0.51961524	1.095445
	0.26	1.10	1793	89	0.50990195	1.048809
	0.25	1.10	1789	89	0.5	1.048809
	0.24	1.05	1785	89	0.48989795	1.024695
	0.24	1.05	1780	90	0.48989795	1.024695
	0.26	1.10	1775	90	0.50990195	1.048809
	0.25	1.10	1765	89	0.5	1.048809
	0.23	1.00	1755	90	0.47958315	1
	0.23	1.00	1745	90	0.47958315	1

Calculation Summary

Data Entry Area

Sample Type	Metals	Pitot Tube Correction Factor	0.84	Entered By (initials)	JC	
Source	BVS 5	Console ID	URS-002	Checked by (initials)	SB	
Condition		DGMCF	0.971	Corrected by (initials)		
Run	2	$\Delta H_@$	1.902		Value	Link Checked
Date	20-Sep	Nozzle Diameter (in)	0.3750	% CO		
Duct Diameter (ft)	9	Std Temp (°F)	68	% CO_2	9.8	
Duct Depth (ft)		Bar Press ("Hg, meas)	29.99	% O_2	6.3	
Duct Width (ft)		Meter Elev (ft) (rel to Brmtr)	450	% H_2		
		Static Press ("H_2O)	-0.2	% CH_4		

Times		DGM Volumes (as read)		Impinger Catch (g)			
start	12:04	start	847.528		Initial	Final	
stop	13:40	stop	898.696	1	712.4	872.6	160.2
start		start		2	700.8	711.7	10.9
stop		stop		3	600.5	601.9	1.4
start		start		4	706.5	705.5	-1
stop		stop		5	706.3	708.5	2.2
start		start		6	790.8	803.1	12.3
stop		stop		7			
start		start		8			
stop		stop		9			
start		start		10			
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
						Total Wt Gain	186.0
Duration	96	Total	51.168				

	ΔP ("H_2O)	ΔH ("H_2O)	Stack Temp (°F)	DGM Temp (°F)	√ΔP	√ΔH
Averages	0.19	0.85	1768	105.7	0.4308	0.9206
Individual Readings	0.22	1.05	1796	101	0.46904158	1.024695
	0.23	1.05	1795	101	0.47958315	1.024695
	0.21	0.94	1791	102	0.45825757	0.969536
	0.20	0.90	1784	102	0.4472136	0.948683
	0.19	0.85	1784	103	0.43588989	0.921954
	0.15	0.67	1761	104	0.38729833	0.818535
	0.22	1.00	1789	104	0.46904158	1
	0.22	1.00	1783	105	0.46904158	1
	0.19	0.86	1784	105	0.43588989	0.927362
	0.19	0.86	1778	106	0.43588989	0.927362
	0.16	0.73	1773	107	0.4	0.8544
	0.14	0.64	1740	108	0.37416574	0.8
	0.21	0.97	1773	107	0.45825757	0.984886
	0.20	0.91	1771	107	0.4472136	0.953939
	0.18	0.82	1770	107	0.42426407	0.905539
	0.14	0.64	1766	107	0.37416574	0.8
	0.14	0.64	1714	108	0.37416574	0.8
	0.15	0.70	1753	108	0.38729833	0.83666
	0.22	1.00	1762	108	0.46904158	1
	0.20	0.92	1766	108	0.4472136	0.959166
	0.19	0.87	1757	108	0.43588989	0.932738
	0.19	0.87	1752	108	0.43588989	0.932738
	0.18	0.83	1750	107	0.42426407	0.911043
	0.16	0.74	1746	107	0.4	0.860233

Calculation Summary

Data Entry Area

Sample Type	Metals	Pitot Tube Correction Factor	0.84	Entered By (initials)	JC
Source	BVS 5	Console ID	URS-002	Checked by (initials)	SB
Condition		DGMCF	0.971	Corrected by (initials)	JC
Run	3	$\Delta H_@$	1.902		
Date	20-Sep	Nozzle Diameter (in)	0.3750		
Duct Diameter (ft)	9	Std Temp (°F)	68		
Duct Depth (ft)		Bar Press ("Hg, meas)	29.89		
Duct Width (ft)		Meter Elev (ft) (rel to Brmtr)	450		
		Static Press ("H_2O)	-0.2		

	Value	Link Checked
% CO		
% CO_2	9.2	
% O_2	7.2	
% H_2		
% CH_4		

Times		DGM Volumes (as read)		Impinger Catch (g)			
					Initial	Final	
start	15:58	start	898.928	1	693.4	848.1	154.7
stop	17:34	stop	955.089	2	696.1	711.2	15.1
start		start		3	600.4	601.7	1.3
stop		0		4	707.3	707.1	-0.2
start		start		5	704.4	706.1	1.7
stop		stop		6	777.1	790.1	13
start		start		7			
stop		stop		8			
start		start		9			
stop		stop		10			
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
						Total Wt Gain	185.6
Duration	96	Total	56.161				

	ΔP ("H_2O)	ΔH ("H_2O)	Stack Temp (°F)	DGM Temp (°F)	√ΔP	√ΔH
Averages	0.22	1.01	1673	99.8	0.4625	1.0020
Individual Readings	0.25	1.20	1699	97	0.5	1.095445
	0.25	1.20	1692	97	0.5	1.095445
	0.23	1.05	1689	97	0.47958315	1.024695
	0.21	0.98	1687	98	0.45825757	0.989949
	0.20	0.93	1684	98	0.4472136	0.964365
	0.17	0.79	1681	99	0.41231056	0.888819
	0.24	1.10	1689	99	0.48989795	1.048809
	0.23	1.05	1689	99	0.47958315	1.024695
	0.23	1.05	1692	100	0.47958315	1.024695
	0.21	0.98	1684	100	0.45825757	0.989949
	0.21	0.98	1677	100	0.45825757	0.989949
	0.19	0.89	1669	101	0.43588989	0.943398
	0.25	1.20	1676	101	0.5	1.095445
	0.25	1.20	1675	101	0.5	1.095445
	0.23	1.10	1669	101	0.47958315	1.048809
	0.21	1.00	1668	101	0.45825757	1
	0.19	0.90	1663	101	0.43588989	0.948683
	0.16	0.76	1645	101	0.4	0.87178
	0.24	1.10	1658	100	0.48989795	1.048809
	0.24	1.10	1666	101	0.48989795	1.048809
	0.22	1.05	1665	101	0.46904158	1.024695
	0.22	1.05	1661	101	0.46904158	1.024695
	0.19	0.90	1662	101	0.43588989	0.948683
	0.14	0.66	1620	101	0.37416574	0.812404

Calculation Summary

Data Entry Area

Sample Type	HCl	Pitot Tube Correction Factor		Entered By (initials)	JC
Source	BVS 5	Console ID	URS 001	Checked by (initials)	SB
Condition		DGMCF	0.975	Corrected by (initials)	
Run	1	$\Delta H_@$	1.939		
Date	19-Sep	Nozzle Diameter (in)			
Duct Diameter (ft)		Std Temp (°F)	68		
Duct Depth (ft)		Bar Press ("Hg, meas)	29.9		
Duct Width (ft)		Meter Elev (ft) (rel to Brmtr)	450		
		Static Press ("H_2O)	-0.2		

	Value	Link Checked
% CO		
% CO_2		
% O_2		
% H_2		
% CH_4		

Times		DGM Volumes (as read)		Impinger Catch (g)			
					Initial	Final	
start	23:15	start	210.278	1	690.1	806.1	116
stop	24:15	stop	243.742	2	689.0	711.7	22.7
start		start		3	606.7	610.6	3.9
stop		stop		4	801.4	808.4	7
start		start		5			
stop		stop		6			
start		start		7			
stop		stop		8			
start		start		9			
stop		stop		10			
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
						Total Wt Gain	149.6
Duration	60	Total	33.464				

	ΔP ("H_2O)	ΔH ("H_2O)	Stack Temp (°F)	DGM Temp (°F)	√ΔP	√ΔH
Averages	#DIV/0!	1.03	#DIV/0!	87.5	#DIV/0!	1.0168

Individual Readings			
	1.10	86	1.0488088
	1.00	86	1
	1.10	86	1.0488088
	1.00	86	1
	0.95	87	0.9746794
	1.00	87	1
	1.00	87	1
	1.10	88	1.0488088
	1.10	88	1.0488088
	1.00	88	1
	1.10	89	1.0488088
	1.00	89	1
	1.00	90	1

Calculation Summary

Data Entry Area

Sample Type	HCl	Pitot Tube Correction Factor		Entered By (initials)	JC
Source	BVS 5	Console ID	URS 001	Checked by (initials)	SB
Condition		DGMCF	0.975	Corrected by (initials)	
Run	2	$\Delta H_@$	1.939		
Date	20-Sep	Nozzle Diameter (in)			
Duct Diameter (ft)		Std Temp (°F)	68		
Duct Depth (ft)		Bar Press ("Hg, meas)	29.99		
Duct Width (ft)		Meter Elev (ft) (rel to Brmtr)	450		
		Static Press ("H_2O)	-0.2		

	Value	Link Checked
% CO		
% CO_2		
% O_2		
% H_2		
% CH_4		

Times		DGM Volumes (as read)		Impinger Catch (g)			
					Initial	Final	
start	12:05	start	244.058	1	689.0	795.6	106.6
stop	13:05	stop	279.130	2	675.9	693.3	17.4
start		start		3	607.6	607.8	0.2
stop		stop		4	770.9	778.5	7.6
start		start		5			
stop		stop		6			
start		start		7			
stop		stop		8			
start		start		9			
stop		stop		10			
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
						Total Wt Gain	131.8
Duration	60	Total	35.072				

	ΔP ("H_2O)	ΔH ("H_2O)	Stack Temp (°F)	DGM Temp (°F)	$\sqrt{\Delta P}$	$\sqrt{\Delta H}$
Averages	#DIV/0!	1.19	#DIV/0!	108.7	#DIV/0!	1.0916

Individual Readings			
	1.20	106	1.095445
	1.20	106	1.095445
	1.10	106	1.048809
	1.20	107	1.095445
	1.20	108	1.095445
	1.20	109	1.095445
	1.20	109	1.095445
	1.20	110	1.095445
	1.20	110	1.095445
	1.20	111	1.095445
	1.20	111	1.095445
	1.20	111	1.095445

Calculation Summary

Data Entry Area

Sample Type	HCl	Pitot Tube Correction Factor		Entered By (initials)	JC
Source	BVS 5	Console ID	URS 001	Checked by (initials)	SB
Condition		DGMCF	0.975	Corrected by (initials)	
Run	3	$\Delta H_@$	1.939		
Date	20-Sep	Nozzle Diameter (in)			
Duct Diameter (ft)		Std Temp (°F)	68		
Duct Depth (ft)		Bar Press ("Hg, meas)	29.89		
Duct Width (ft)		Meter Elev (ft) (rel to Brmtr)	450		
		Static Press ("H_2O)	-0.2		

	Value	Link Checked
% CO		
% CO_2		
% O_2		
% H_2		
% CH_4		

Times		DGM Volumes (as read)		Impinger Catch (g)			
					Initial	Final	
start	16:00	start	279.370	1	709.9	796.8	86.9
stop	17:00	stop	314.192	2	712.8	733.0	20.2
start		start		3	586.0	590.5	4.5
stop		stop		4	807.5	817.7	10.2
start		start		5			
stop		stop		6			
start		start		7			
stop		stop		8			
start		start		9			
stop		stop		10			
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
						Total Wt Gain	121.8
Duration	60	Total	34.822				

	ΔP ("H_2O)	ΔH ("H_2O)	Stack Temp (°F)	DGM Temp (°F)	$\sqrt{\Delta P}$	$\sqrt{\Delta H}$
Averages	#DIV/0!	1.15	#DIV/0!	102.0	#DIV/0!	1.0721

Individual Readings			
	1.20	100	1.095445
	1.20	100	1.095445
	1.20	100	1.095445
	1.20	101	1.095445
	1.10	101	1.048809
	1.10	102	1.048809
	1.10	102	1.048809
	1.10	103	1.048809
	1.20	103	1.095445
	1.20	104	1.095445
	1.10	104	1.048809
	1.10	104	1.048809

Sample Type	**Multi Metals (Method 29)**	Date 9/19/18	Nozzle Dia (in) 0.375	Page 1 of 1	
Project Name	GCO FGD Outage Tests	Cond / Run 1	Barometer ID weather channel	**Train Leak Rate** (cfm @ "Hg)	
Project Number	60582380	Console ID URS-002	Bar. Press. ("Hg) 29.9	Initial 0.015 @ 11"	
Facility	SunCoke Energy Granite City Operations	ΔH@ 1.902	Stat. Press. ("H_2O) -0.20	Final 0.005 @ 7"	
Source	Vent Stack #5	K_f	Probe ID ACG-004	**Pitot Tube Leak Check** ("H_2O@"H_2O)	
Operator	WCT/Jm/FC	DGMCF 0.971	Pitot ID	Initial (-) ✓ @ 6"	
Duct Dimension(s)	9'		PTCF 0.84	Initial (+) ✓ @ 6"	
Nozzle Calibration			Meter Elevation (ft) (relative to Barometer) 450	Final (-) ✓ @ 6"	
Caliper ID	UltraTech 01 — 0.375 / 0.375 / 0.375			Final (+) ✓ @ 6"	
Post-Test Stack TC Check	Reference Thermometer ID 2490	Ref Thermometer Exp Date NIST 5/22/17	Thermometer and TC agree within 2°F (Y) N	Post-Test: Are Pitots Damaged? Y (N)	

Point	Clock Time	DGM Reading (ft³)	ΔP ("H_2O)	ΔH ("H_2O)	Temperature (°F) Stack	Probe Target 248±25	Filter Target 248±25	Imp Exit Target <68	DGM Outlet	Vacuum ("Hg)
B-1	0	789.614	0.26	1.2	1886	N/A	252	73	86	3
2	4	792.1	0.26	1.2	1885		252	72	86	3 1/2
3	8	794.5	0.26	1.2	1904		252	70	86	3 1/2
4	12	796.8	0.27	1.2	1892		248	69	86	4
5	16	799.2	0.28	1.2	1898		250	58	87	4
6	20	801.7	0.28	1.2	1882		246	52	87	4
B-1	24	804.0	0.25	1.05	1874		241	50	88	4
2	28	806.4	0.26	1.1	1870		239	50	88	4
3	32	808.7	0.27	1.1	1855		252	49	88	4
4	36	811.1	0.28	1.2	1839		254	50	88	4 1/2
5	40	813.5	0.26	1.1	1833		250	50	88	4 1/2
6	44	816.0	0.23	1.0	1823		238	50	88	4
B-1	48	818.3	0.26	1.1	1818		239	50	89	4 1/2
2	52	820.6	0.26	1.1	1809		250	50	89	4 1/2
3	56	823.0	0.27	1.2	1804		250	50	89	5
4	60	825.4	0.27	1.2	1796		248	50	89	5
5	64	827.9	0.26	1.1	1793		244	50	89	5
6	68	830.4	0.25	1.1	1789		243	51	89	5
B-1	72	832.8	0.24	1.05	1785		241	51	89	4 1/2
2	76	835.3	0.24	1.05	1780		246	51	90	4
3	80	837.7	0.26	1.1	1775		243	51	90	4
4	84	840.1	0.25	1.1	1765		246	52	89	4 1/2
5	88	842.5	0.23	1.0	1755		245	53	90	4 1/2
6	92	845.0	0.23	1.0	1745		242	53	90	4 1/2
Stop	96	847.067								
	2442									

Notes: 11' Probe + Back up probe Too warped to use further. Use 7' probe - partial traverse

SDS-07 Metals by EPA Method 29
Per EM SOP-017
Issued: January 2018
Document reviewed biennially

Project Name	GCO FGD Outage Tests
Project Number	60582380
Date	9/19/18
Source	Vent Stack #5

Multi-Metals
EPA Method 29
No Determination of PM

Condition No.	
Run No.	1
Balance ID	2 5500
Recovered by	JR

Moisture Determination

Imp No.	Contents	Vol (mL)	Configuration	Initial Wt (g)	Final Wt (g)
~~1~~	-[1]	-	~~Mod~~		
1	HNO_3/H_2O_2 Soln	100	Mod	707.5	902.7
2	HNO_3/H_2O_2 Soln	100	G/S	713.3	736.0
3	-	-	Mod	581.1	586.8
4	$H_2SO_4/KMnO_4$ Soln	100	Mod	702.1	706.5
5	$H_2SO_4/KMnO_4$ Soln	100	Mod	703.4	705.8
6	Silica Gel	~200g	Mod	801.7	818.2

[1] Per the method, this first impinger is optional and may be excluded for sources with moisture catch anticipated to be less than 100 g (Section 8.1.3.2)

Sample Log

Sample ID Number	Sample Container	Description
-M29-PNR	250 ml	Probe and Nozzle Rinse
-M29-Filt	Petri Dish	Filter
-M29-NPI	1000 ml	Nitric Peroxide Impinger
-M29-EIR	250 ml	Empty Impinger Rinse
-M29-Perm	1000 ml	Permanganate Impinger
-M29-HClRns	250 ml	HCl Rinse of Permanganate Impinger

Sample Recovery Checklist

_____ Rinse and brush probe and nozzle with 0.1 M Nitric Acid into PNR bottle.
Note – use Teflon brush.

_____ Rinse the (optional) Teflon transfer line with 0.1M nitric acid into NPI bottle.

_____ Separate filter holder and place filter in clean Petri dish. Complete Filt sample label.

_____ Rinse front half of filter holder with 0.1 M nitric acid into PNR bottle. Complete PNR sample label.

_____ Disassemble sample train, wipe off excess water and weigh each impinger. Record the final weights in the Moisture Determination section.

Note condition of silica gel. _____% spent.

_____ Pour contents of first 2 impingers into the NPI catch bottle(s). Rinse the impingers, filter support, back-half of the filter holder and connecting glassware with 0.1 M nitric acid same bottle(s). Complete NPI sample label(s).

_____ Rinse the 3rd (initially empty) impinger with 0.1 M nitric acid into the empty impinger rinse (EIR) bottle. Complete EIR sample label.

_____ Pour the contents of the 4th and 5th impingers (permanganate impingers) into the permanganate impinger catch bottle (Perm). Rinse with a total of 100 ml of permanganate solution and 100 ml of DI water. Complete Perm sample label

_____ Rinse the permanganate impingers with a total of 25 mL of 8N HCl into the HClRns bottle. Rinse impingers with 200 ml DI water into the same bottle. Complete HClRns sample label.
(Note, this is not required if there is no visible solid residue)

_____ Log samples into logbook and store appropriately.

Notes

RDS-22; Metals by EPA M29, no PM
Per EM SOP-017
Issued: *May 2017*

Sample Type	**Multi Metals (Method 29)**	Date	9/20/18	Nozzle Dia (in)	0.375	Page	1 of 1
Project Name	GCO FGD Outage Tests	Cond / Run	2	Barometer ID	Weather Channel	**Train Leak Rate** (cfm @ "Hg)	
Project Number	60582380	Console ID	URS-002	Bar. Press. ("Hg)	29.99	Initial	0.001 @ 11"
Facility	SunCoke Energy Granite City Operations	ΔH@	1.902	Stat. Press. ("H_2O)	-0.20	Final	0.0 @ 8"
Source	Vent Stack #5	K_f		Probe ID	ACG-004	**Pitot Tube Leak Check** ("H_2O@"H_2O)	
Operator	WCT/JM/FC	DGMCF	0.971	Pitot ID		Initial (-)	✓ @ 7"
Duct Dimension(s)	9'			PTCF	0.84	Initial (+)	✓ @ 7"
Nozzle Calibration				Meter Elevation (ft) (relative to Barometer)	450	Final (-)	✓ @ 6"
Caliper ID						Final (+)	✓ @ 6"
Post-Test Stack TC Check	Reference Thermometer ID	Ref Thermometer Exp Date		Thermometer and TC agree within 2°F	Y / N	Post-Test: Are Pitots Damaged?	Y / N

Point	Clock Time 1204	DGM Reading (ft³)	ΔP ("H_2O)	ΔH ("H_2O)	Temperature (°F) Stack	Probe Target 248±25	Filter Target 248±25	Imp Exit Target <68	DGM Outlet	Vacuum ("Hg)
B-1	0	847.528	0.22	1.05	1796	NA	231	67	101	2½
2	4	849.9	0.23	1.05	1795		252	64	101	3
3	8	852.3	0.21	0.94	1791		248	62	102	2½
4	12	854.5	0.20	0.90	1784		258	61	102	2½
5	16	856.7	0.19	0.85	1784		253	61	103	2½
6	20	858.8	0.15	0.67	1761		247	61	104	2
B-1	24	860.7	0.22	1.0	1789		245	61	104	3
2	28	862.0	0.22	1.0	1783		247	61	105	3
3	32	865.3	0.19	0.86	1784		246	62	105	2½
4	36	867.5	0.19	0.86	1778		254	62	106	2½
5	40	869.7	0.16	0.73	1773		242	64	107	2½
6	44	871.6	0.14	0.64	1740		242	63	106	2
B-1	48	873.6	0.21	0.97	1773		244	60	107	3
2	52	875.8	0.20	0.91	1771		246	59	107	3
3	56	878.0	0.18	0.82	1770		243	60	107	2½
4	60	880.1	0.14	0.64	1766		245	62	107	2
5	64	881.9	0.14	0.64	1714		242	65	108	2
6	68	883.7	0.15	0.70	1753		236	63	108	2½
B-1	72	885.6	0.22	1.0	1762		235	61	108	3
2	76	887.9	0.20	0.92	1766		248	62	108	3
3	80	890.1	0.19	0.87	1757		252	63	108	3
4	84	892.3	0.19	0.87	1752		249	63	108	3
5	88	894.5	0.18	0.83	1750		244	64	107	2½
6	92	896.7	0.16	0.74	1746		242	64	107	2½
Stop	96	898.696								
	1340									

Notes

SDS-07 Metals by EPA Method 29
Per EM SOP-017
Issued: January 2018
Document reviewed biennially

Project Name	GCO FGD Outage Tests
Project Number	60582380
Date	9/20/18
Source	Vent Stack #5

Multi-Metals
EPA Method 29
No Determination of PM

Condition No.	
Run No.	2
Balance ID	5500
Recovered by	JC

Moisture Determination

Imp No.	Contents	Vol (mL)	Configuration	Initial Wt (g)	Final Wt (g)
~~1~~	-[1]	-	~~Mod~~		
1	HNO_3/H_2O_2 Soln	100	Mod	712.4	872.6
2	HNO_3/H_2O_2 Soln	100	G/S	700.8	711.7
3	-	-	Mod	608.5	601.9
4	$H_2SO_4/KMnO_4$ Soln	100	Mod	706.5	705.5
5	$H_2SO_4/KMnO_4$ Soln	100	Mod	706.3	708.5
6	Silica Gel	~200g	Mod	790.8	803.1

[1] Per the method, this first impinger is optional and may be excluded for sources with moisture catch anticipated to be less than 100 g (Section 8.1.3.2)

Sample Log

Sample ID Number	Sample Container	Description
-M29-PNR	250 ml	Probe and Nozzle Rinse
-M29-Filt	Petri Dish	Filter
-M29-NPI	1000 ml	Nitric Peroxide Impinger
-M29-EIR	250 ml	Empty Impinger Rinse
-M29-Perm	1000 ml	Permanganate Impinger
-M29-HClRns	250 ml	HCl Rinse of Permanganate Impinger

Sample Recovery Checklist

_____ Rinse and brush probe and nozzle with 0.1 M Nitric Acid into PNR bottle.
Note – use Teflon brush.

_____ Rinse the (optional) Teflon transfer line with 0.1M nitric acid into NPI bottle.

_____ Separate filter holder and place filter in clean Petri dish. Complete Filt sample label.

_____ Rinse front half of filter holder with 0.1 M nitric acid into PNR bottle. Complete PNR sample label.

_____ Disassemble sample train, wipe off excess water and weigh each impinger. Record the final weights in the Moisture Determination section.

Note condition of silica gel. _____% spent.

_____ Pour contents of first 2 impingers into the NPI catch bottle(s). Rinse the impingers, filter support, back-half of the filter holder and connecting glassware with 0.1 M nitric acid same bottle(s). Complete NPI sample label(s).

_____ Rinse the 3rd (initially empty) impinger with 0.1 M nitric acid into the empty impinger rinse (EIR) bottle. Complete EIR sample label.

_____ Pour the contents of the 4th and 5th impingers (permanganate impingers) into the permanganate impinger catch bottle (Perm). Rinse with a total of 100 ml of permanganate solution and 100 ml of DI water. Complete Perm sample label

_____ Rinse the permanganate impingers with a total of 25 mL of 8N HCl into the HClRns bottle. Rinse impingers with 200 ml DI water into the same bottle. Complete HClRns sample label.
(Note, this is not required if there is no visible solid residue)

_____ Log samples into logbook and store appropriately.

Notes

RDS-22; Metals by EPA M29, no PM
Per EM SOP-017
Issued: *May 2017*

Sample Type	**Multi Metals (Method 29)**	Date 9/20/18	Nozzle Dia (in) 0.375	Page 1 of 1	
Project Name	GCO FGD Outage Tests	Cond / Run 3	Barometer ID Channel	**Train Leak Rate** (cfm @ "Hg)	
Project Number	60582380	Console ID URS-002	Bar. Press. ("Hg) 29.89	Initial 0.005 @ 11"	
Facility	SunCoke Energy Granite City Operations	ΔH@ 1.902	Stat. Press. ("H_2O) -0.20	Final 0.0 @ 5"	
Source	Vent Stack #5	K_f	Probe ID AC6-004	**Pitot Tube Leak Check** ("H_2O@"H_2O)	
Operator	WCT/JM/FC	DGMCF 0.971	Pitot ID	Initial (-) ✓ @ 6"	
Duct Dimension(s)	9'		PTCF 0.84	Initial (+) ✓ @ 6"	
Nozzle Calibration			Meter Elevation (ft) (relative to Barometer) 450	Final (-) ✓ @ 6"	
Caliper ID				Final (+) ✓ @ 6"	
Post-Test Stack TC Check	Reference Thermometer ID	Ref Thermometer Exp Date	Thermometer and TC agree within 2°F **Y / N**	Post-Test: Are Pitots Damaged? **Y / N**	

Point	Clock Time 1658	DGM Reading (ft³)	ΔP ("H_2O)	ΔH ("H_2O)	Temperature (°F) Stack	Probe Target 248±25	Filter Target 248±25	Imp Exit Target <68	DGM Outlet	Vacuum ("Hg)
B-1	0	898.928	0.25	1.2	1699	NA	230	68	97	4
2	4	901.5	0.25	1.2	1692		249	59	97	4
3	8	904.1	0.23	1.05	1689		250	56	97	3½
4	12	906.5	0.21	0.98	1687		249	55	98	3
5	16	908.8	0.20	0.93	1684		243	54	98	3
6	20	911.1	0.17	0.79	1681		236	53	99	3
B-1	24	913.1	0.24	1.1	1689		235	53	99	3½
2	28	915.5	0.23	1.05	1689		240	52	99	3½
3	32	918.0	0.23	1.05	1692		253	51	100	4
4	36	920.5	0.21	0.98	1684		250	51	100	3½
5	40	922.8	0.21	0.98	1677		244	51	100	3½
6	44	925.1	0.19	0.89	1669		250	51	101	3½
B-1	48	927.2	0.25	1.2	1676		242	51	101	4
2	52	929.6	0.25	1.2	1675		250	51	101	4
3	56	932.1	0.23	1.1	1669		243	51	101	4
4	60	934.5	0.21	1.0	1668		245	52	101	3½
5	64	936.9	0.19	0.90	1663		243	52	101	3½
6	68	939.1	0.16	0.76	1645		244	53	101	3
B-1	72	941.1	0.24	1.1	1658		237	53	100	4
2	76	943.5	0.24	1.1	1666		243	53	101	4
3	80	945.9	0.22	1.05	1665		249	53	101	4
4	84	948.3	0.22	1.05	1661		249	54	101	4
5	88	950.6	0.19	0.90	1662		242	54	101	3½
6	92	952.8	0.14	0.66	1620		242	55	101	3
Stop	96	955.089								
	1734									

Notes

SDS-07 Metals by EPA Method 29
Per EM SOP-017
Issued: January 2018
Document reviewed biennially

Project Name	GCO FGD Outage Tests
Project Number	60582380
Date	9/20/18
Source	Vent Stack #5

Multi-Metals
EPA Method 29
No Determination of PM

Condition No.	
Run No.	3
Balance ID	i 5500
Recovered by	JC

Moisture Determination

Imp No.	Contents	Vol (mL)	Configuration	Initial Wt (g)	Final Wt (g)
~~1~~	-[1]	-	~~Mod~~		
1	HNO_3/H_2O_2 Soln	100	Mod	693.4	848.1
2	HNO_3/H_2O_2 Soln	100	G/S	696.1	711.2
3	-	-	Mod	600.4	601.7
4	$H_2SO_4/KMnO_4$ Soln	100	Mod	707.3	707.1
5	$H_2SO_4/KMnO_4$ Soln	100	Mod	704.4	706.1
6	Silica Gel	~200g	Mod	777.1	790.1

[1] Per the method, this first impinger is optional and may be excluded for sources with moisture catch anticipated to be less than 100 g (Section 8.1.3.2)

Sample Log

Sample ID Number	Sample Container	Description
-M29-PNR	250 ml	Probe and Nozzle Rinse
-M29-Filt	Petri Dish	Filter
-M29-NPI	1000 ml	Nitric Peroxide Impinger
-M29-EIR	250 ml	Empty Impinger Rinse
-M29-Perm	1000 ml	Permanganate Impinger
-M29-HClRns	250 ml	HCl Rinse of Permanganate Impinger

Sample Recovery Checklist

_____ Rinse and brush probe and nozzle with 0.1 M Nitric Acid into PNR bottle.
Note – use Teflon brush.

_____ Rinse the (optional) Teflon transfer line with 0.1M nitric acid into NPI bottle.

_____ Separate filter holder and place filter in clean Petri dish. Complete Filt sample label.

_____ Rinse front half of filter holder with 0.1 M nitric acid into PNR bottle. Complete PNR sample label.

_____ Disassemble sample train, wipe off excess water and weigh each impinger. Record the final weights in the Moisture Determination section.

Note condition of silica gel. _____% spent.

_____ Pour contents of first 2 impingers into the NPI catch bottle(s). Rinse the impingers, filter support, back-half of the filter holder and connecting glassware with 0.1 M nitric acid same bottle(s). Complete NPI sample label(s).

_____ Rinse the 3rd (initially empty) impinger with 0.1 M nitric acid into the empty impinger rinse (EIR) bottle. Complete EIR sample label.

_____ Pour the contents of the 4th and 5th impingers (permanganate impingers) into the permanganate impinger catch bottle (Perm). Rinse with a total of 100 ml of permanganate solution and 100 ml of DI water. Complete Perm sample label

_____ Rinse the permanganate impingers with a total of 25 mL of 8N HCl into the HClRns bottle. Rinse impingers with 200 ml DI water into the same bottle. Complete HClRns sample label.
(Note, this is not required if there is no visible solid residue)

_____ Log samples into logbook and store appropriately.

Notes

RDS-22; Metals by EPA M29, no PM
Per EM SOP-017
Issued: *May 2017*

Sample Type	HCl, Cl_2 (EPA Method 26)	Date 9/19/18		Page 1 of 1	
Project Name	GCO FGD Outage Tests	Condition		Sampling Train Leak Rate (lpm@"Hg)	
Project Number	60582380	Run 1	Barometer ID WC	Initial 0 @ 7"	
Facility	SunCoke Energy Granite City Operations	Console ID VRS-001	Bar. Press. ("Hg) 29.9	Final 0 @ 4"	
Source	Vent Stack #5	DGMCF 0.975	Stat. Press. ("H_2O) — 0.20		
Operator	CS, FC		Meter Elevation (ft) (relative to Barometer) 450		
Duct Dimension(s)	9'				

Point	Clock Time	DGM Reading (L)	Temperature (°F) Probe Target 248-273	Temperature (°F) Filter Target 248-273	Temperature (°F) DGM Outlet	Vacuum (in. Hg)	Meter PRessure (in. H_2O)	Flow Meter
11:15 AM	0	210.278		273	86	2	1.1	68
23:15	5	212.85		253	86	2	1.0	65
	10	215.78		254	86	2	1.1	64
	15	218.55		258	86	2	1.0	65
	20	221.26		257	87	2	0.95	62
	25	224.05		256	87	3	1.0	56
	30	226.83		254	87	3	1.0	54
	35	229.66		255	88	3	1.1	53
	40	232.49		255	88	3	1.1	54
	45	235.3		256	88	3	1.0	54
	50	238.12		255	89	3	1.1	55
	55	240.94		255	89	3	1.0	56
12:15 AM	60	243.742		256	90	3	1.0	56
24:15								

Notes:

SDS-20: HCl, Cl_2 by EPA Method 26
Per EM SOP-064
Issued: August 2018
Document reviewed biennially

Project Name	GCO FGD Outage Tests
Project Number	60582380
Date	9/19/20
Source	Vent Stack #5

HCl/Cl2
EPA Method 26A

Condition No.	
Run No.	1
Balance ID	i5500
Recovered by	JC

Moisture Determination

Imp No.	Contents	Vol (mL)	Configuration	Initial Wt (g)	Final Wt (g)
~~1~~[a]	~~0.1 N H_2SO_4~~	~~50~~	~~KO~~		
1	0.1 N H_2SO_4	100	G/S	690.1	806.1
2	0.1 N H_2SO_4	100	G/S	689.0	711.7
3	Empty	--	Mod	606.7	610.6
~~5~~	~~0.1 N NaOH~~	~~100~~	~~Mod~~		
4	Silica Gel	~200g	Mod	801.4	808.4

[a] this impinger optional, per Method 26A

Sample Log

Sample ID Number	Sample Container	Description
-M26A-AcdImp	1 L Nalgene	Acid Impinger Catch & Rinse
~~-M26A-AlkImp~~	~~500 mL Nalgene~~	~~Alkaline Impinger Catch & Rinse~~

Sample Recovery Checklist

_____ (Only if transfer line is used). Disconnect transfer line, and rinse three times with DI water into acid impinger catch bottle. Transfer bottle to laboratory with impinger train.

_____ Using water, rinse filter support, back half of filter holder and any connecting glassware into the acid impinger catch bottle.

_____ Disassemble sample train, wipe off excess water and weigh each impinger. Record the final weights in the Moisture Determination section of this data sheet.

Note condition of the silica gel impinger. ____% spent

_____ Pour contents of the 1st and 2nd (containing acid) impingers into the Acid impinger catch bottle(s). Rinse impingers and connecting glassware with deionized water into the same bottle(s). Complete acid impinger sample label.

_____ ~~Pour the contents of the 4th and 5th impingers (containing NaOH) into the alkaline impinger catch bottle(s). Rinse impingers and connecting glassware with deionized water into the same bottle(s). Complete alkaline impinger sample label.~~

_____ Log samples into logbook and store appropriately.

Notes:

RDS-19: HCl/Cl_2 by EPA Method 26A
Per EM SOP-021
Issued: August 2017

Sample Type	HCl, Cl_2 (EPA Method 26)	Date 9/20/18		Page 1 of 1	
Project Name	GCO FGD Outage Tests	Condition		Sampling Train Leak Rate (lpm@"Hg)	
Project Number	60582380	Run 2	Barometer ID WC	Initial 0 @ 10"	
Facility	SunCoke Energy Granite City Operations	Console ID URS-001	Bar. Press. ("Hg) 29.99	Final 0.005 @ 3"	
Source	Vent Stack #5	DGMCF 0.975	Stat. Press. ("H_2O) -0.20		
Operator	CS, FC		Meter Elevation (ft) (relative to Barometer) 450		
Duct Dimension(s)	9'				

Point	Clock Time	DGM Reading (L)	Temperature (°F) Probe Target 248-273	Filter Target 248-273	DGM Outlet	Vacuum (in. Hg)	Meter PRessure (in. H_2O)	~~Flow Meter~~ Dry Gas Exit Temp
12:05	0	244.058		258	106	2	1.2	72
	5	246.92		261	106	2	1.2	64
	10	249.84		261	106	2	1.1	64
	15	252.8		259	107	2	1.2	63
	20	255.75		262	108	2	1.2	63
	25	258.69		261	109	2	1.2	56
	30	261.62		261	109	2	1.2	55
	35	264.55		262	110	2	1.2	56
	40	267.48		263	110	2	1.2	57
	45	270.42		261	111	2	1.2	57
	50	273.34		264	111	2	1.2	58
	55	276.24		259	111	2	1.2	59
13:05	60	279.130						

Notes:

Project Name	GCO FGD Outage Tests
Project Number	60582380
Date	9/20/18
Source	Vent Stack #5

HCl/Cl2
EPA Method 26A

Condition No.	
Run No.	2
Balance ID	i5500
Recovered by	JC

Moisture Determination

Imp No.	Contents	Vol (mL)	Configuration	Initial Wt (g)	Final Wt (g)	
~~1~~ [a]	~~0.1 N H_2SO_4~~	~~50~~	~~KO~~			
1	0.1 N H_2SO_4	100	G/S	689.0	~~806.1~~	795.6
2	0.1 N H_2SO_4	100	G/S	675.9	~~714.7~~	693.3
3	Empty	--	Mod	607.6	~~610.6~~	607.8
~~5~~	~~0.1 N NaOH~~	~~100~~	~~Mod~~			
4	Silica Gel	~200g	Mod	770.9	~~808.4~~	778.5

[a] this impinger optional, per Method 26A

Sample Recovery Checklist

____ (Only if transfer line is used). Disconnect transfer line, and rinse three times with DI water into acid impinger catch bottle. Transfer bottle to laboratory with impinger train.

____ Using water, rinse filter support, back half of filter holder and any connecting glassware into the acid impinger catch bottle.

____ Disassemble sample train, wipe off excess water and weigh each impinger. Record the final weights in the Moisture Determination section of this data sheet.

Note condition of the silica gel impinger. ____% spent

____ Pour contents of the 1st and 2nd (containing acid) impingers into the Acid impinger catch bottle(s). Rinse impingers and connecting glassware with deionized water into the same bottle(s). Complete acid impinger sample label.

~~Pour the contents of the 4th and 5th impingers (containing NaOH) into the alkaline impinger catch bottle(s). Rinse impingers and connecting glassware with deionized water into the same bottle(s). Complete alkaline impinger sample label.~~

____ Log samples into logbook and store appropriately.

Notes:

Sample Log

Sample ID Number	Sample Container	Description
-M26A-AcdImp	1 L Nalgene	Acid Impinger Catch & Rinse
~~-M26A-AlkImp~~	~~500 mL Nalgene~~	~~Alkaline Impinger Catch & Rinse~~

Sample Type	HCl, Cl_2 (EPA Method 26)	Date 4/20/18		Page 1 of 1	
Project Name	GCO FGD Outage Tests	Condition		Sampling Train Leak Rate (lpm@"Hg)	
Project Number	60582380	Run 3	Barometer ID WC	Initial 0 @ 10"	
Facility	SunCoke Energy Granite City Operations	Console ID URS-001	Bar. Press. ("Hg) 29.89	Final 0.0 @ 5	
Source	Vent Stack #5	DGMCF 0.975	Stat. Press. ("H_2O) -0.20		
Operator	CS, FC		Meter Elevation (ft) (relative to Barometer) 450		Duct Exit Temp
Duct Dimension(s)	9'				

Point	Clock Time	DGM Reading (L)	Temperature (°F) Probe Target 248-273	Filter Target 248-273	DGM Outlet	Vacuum (in. Hg)	Meter PRessure (in. H_2O)	Flow Meter
16:00	0	~~297~~ 279 CS .370		255	100	2	1.2	72
	5	282.40		254	100	2	1.2	68
	10	285.31		260	100	2	1.2	67
	15	288.16		262	101	2	1.2	63
	20	291.05		267	101	2	1.1	64
	25	293.92		262	102	2	1.1	64
	30	296.76		261	102	2	1.1	64
	35	299.68		262	103	2	1.1	64
	40	302.6		261	103	2	1.2	64
	45	305.5		261	104	2	1.2	64
	50	308.4		264	104	2	1.1	65
	55	311.3		264	104	2	1.1	67
17:00	60	314.192						

Notes:

SDS-20: HCl, Cl_2 by EPA Method 26
Per EM SOP-064
Issued: August 2018
Document reviewed biennially

Project Name	GCO FGD Outage Tests
Project Number	60582380
Date	9/20/18
Source	Vent Stack #5

HCl/Cl2
EPA Method 26A

Condition No.	
Run No.	3
Balance ID	¿5500
Recovered by	JC

Moisture Determination

Imp No.	Contents	Vol (mL)	Configuration	Initial Wt (g)	Final Wt (g)
~~1~~ [a]	~~0.1 N H_2SO_4~~	~~50~~	~~KO~~		
1	0.1 N H_2SO_4	100	G/S	709.9	796.8
2	0.1 N H_2SO_4	100	G/S	712.8	733.0
3	Empty	--	Mod		
~~5~~	~~0.1 N NaOH~~	~~100~~	~~Mod~~	586.0	590.5
4	Silica Gel	~200g	Mod	807.5	817.7

[a] this impinger optional, per Method 26A

Sample Log

Sample ID Number	Sample Container	Description
-M26A-AcdImp	1 L Nalgene	Acid Impinger Catch & Rinse
~~-M26A-AlkImp~~	~~500 mL Nalgene~~	~~Alkaline Impinger Catch & Rinse~~

Sample Recovery Checklist

_____ (Only if transfer line is used). Disconnect transfer line, and rinse three times with DI water into acid impinger catch bottle. Transfer bottle to laboratory with impinger train.

_____ Using water, rinse filter support, back half of filter holder and any connecting glassware into the acid impinger catch bottle.

_____ Disassemble sample train, wipe off excess water and weigh each impinger. Record the final weights in the Moisture Determination section of this data sheet.

Note condition of the silica gel impinger. ____% spent

_____ Pour contents of the 1st and 2nd (containing acid) impingers into the Acid impinger catch bottle(s). Rinse impingers and connecting glassware with deionized water into the same bottle(s). Complete acid impinger sample label.

_____ ~~Pour the contents of the 4th and 5th impingers (containing NaOH) into the alkaline impinger catch bottle(s). Rinse impingers and connecting glassware with deionized water into the same bottle(s). Complete alkaline impinger sample label.~~

_____ Log samples into logbook and store appropriately.

Notes:

RDS-19: HCl/Cl₂ by EPA Method 26A
Per EM SOP-021
Issued: August 2017

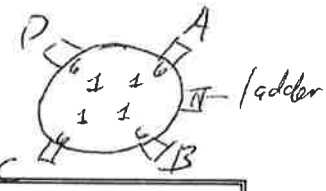
Metals Results

Parameter	Run 1	Run 2	Run 3
Sample volume (dscf)	53.03	45.88	50.73
Sample volume (dscm)	1.502	1.299	1.437
Lead in filter/PNR (ug)	1190	556	695
Lead in Imp 1&2 (ug)	1.62	1.31	2.50
Lead in sample (ug)	1191.6	557.3	697.5
Lead Conc. (ug/ft3)	22.471	12.146	13.748
Lead Conc. (ug/m3)	793.5	428.9	485.5
Mercury in filter/PNR (ug)	ND	ND	ND
Mercury in Imp 1&2 (ug)	28.90	28.4	34.70
Mercury in Imp 3 (ug)	1.63	1.38	3.01
Mercury in Imp 4&5 (ug)	2.66	2.21	3.57
Mercury in HCl rinse (ug)	1.02	0.425	0.28
Mercury in sample (ug)	34.2	32.4	41.6
Mercury Conc. (ug/ft3)	0.6451	0.7065	0.8192
Mercury Conc. (ug/m3)	22.78	24.95	28.93

HCl Results

Parameter	Run 1	Run 2	Run 3
Sample volume (dscf)	31.05	31.44	31.48
Sample volume (dscm)	0.879	0.890	0.891
HCl in sample (ug)	374,000	293,000	252,000
Conc. (ug/ft3)	12,044	9,319	8,006
Conc. (ug/m3)	425,322	329,112	282,732
Molecular weight	36.5	36.5	36.5
Conc. (ppm)	280.4	217.0	186.4

Determination of Cyclonic Flow
Preliminary Velocity/Temperature Traverse
EPA Methods 1 and 2



Project	GCO FCR Tests
Project Number	605-42107
Facility	GCO
Source	HRSG-#5 Stack
Operator	WCT / SP
Date	5/2/17
Time	
Pitot Tube No.	
PTCF	

Console (or Temperature Readout) ID	
Barometric Pressure (" Hg)	
Elevation (Relative to Barometer) (ft)	
Static Pressure (" wc)	-0.31

Pitot Tube Leak Check ("H_2O@"H_2O)			
Initial (-)	✓	@	5
Initial (+)	✓	@	5
Final (-)	✓	@	6
Final (+)	✓	@	5

Traverse Point	Yaw Angle (°)	Velocity Head (ΔP) (in. wc)	Temperature (°F)
A 1	-10.5	0.26	1390
2	-17	0.18	1391
3	-16	0.23	1403
4	-20	0.27	1399
5	-21	0.20	1392
6	-16	0.17	1384
B 1	-18	0.30	
2	-15	0.31	1375
3	-20	0.32	1415
4	-24	0.29	1430
5	-18	0.26	1441
6	-17	0.24	1435

Traverse Point	Yaw Angle (°)	Velocity Head (ΔP) (in. wc)	Temperature (°F)
C 1	-3	0.28	~~13~~
2	-10	0.29	1368
3	-17	0.26	1385
4	-16	0.27	1391
5	-22	0.24	1384
6	-24	0.22	1387
D 1	-13.5	2.29	1350
2	-20	0.28	1350
3	-21	0.26	1352
4	-21.5	0.22	1355
5	-25	0.23	1358
6	-16	0.18	

Average Yaw Angle: 17.6 (This is the average of the absolute value of the measurements)

If the average yaw angle exceeds 20°, Method 2 is not applicable for the determination of gas velocity.

RM Sample Data

Plant Name	Gateway Energy & Coke
Sampling Location	Bypass Stack 5
Date	Sept 18-20
CEM Operator	Chandra Sastry
Project Number	60582380

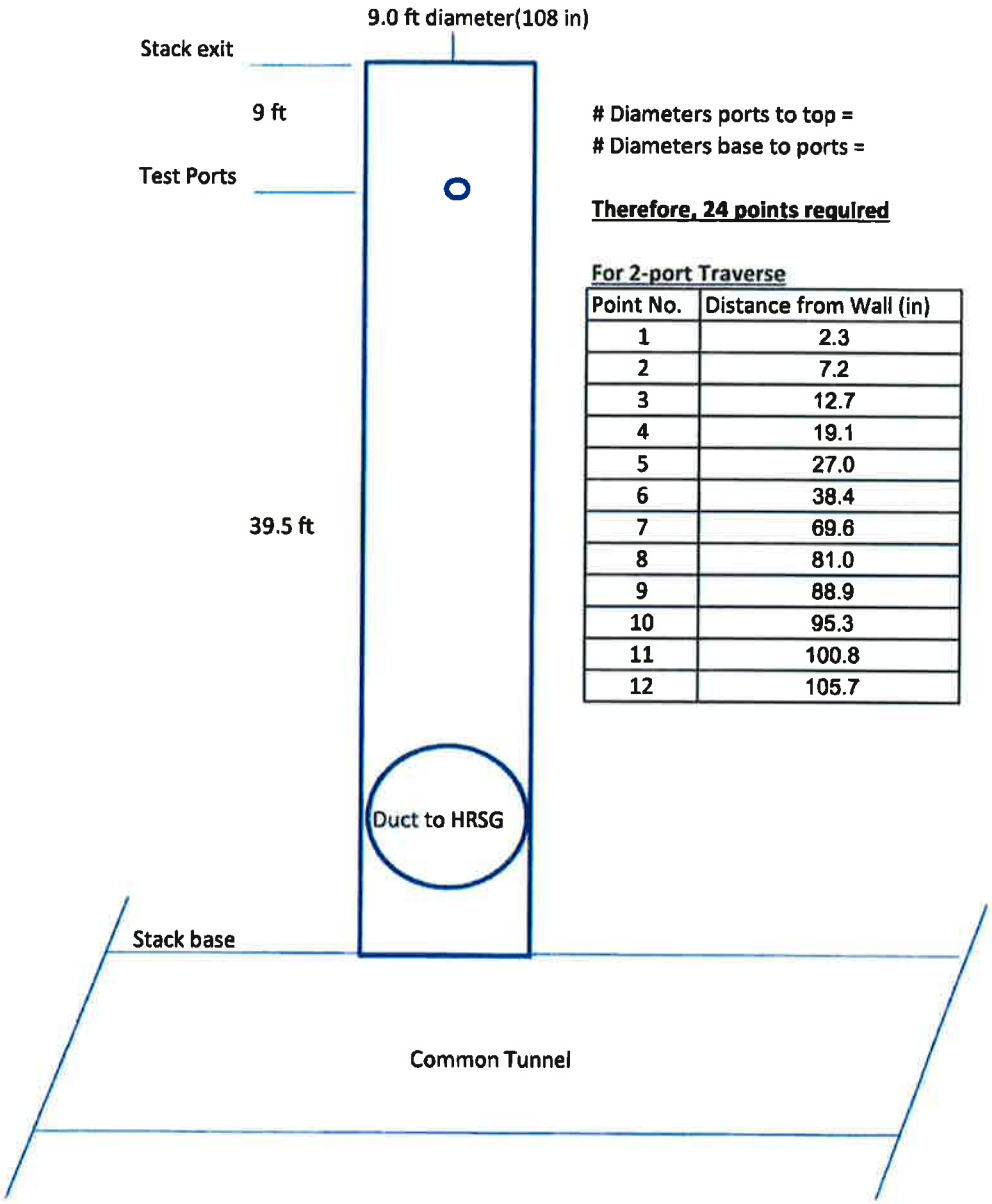
Observed Values

Run No.	Date	Start Time	Stop Time	Start - Stop Time	Reference Method Obs. Value		
					O_2	CO_2	NOX
1	9/18/18	1612	1711	1612 - 1711	6.2	9.7	57.6
2	9/18/18	2319	0018	2319 - 0018	5.3	10.4	72.0
3	9/19/18	1135	1234	1135 - 1234	7.3	8.7	77.3
4	9/19/18	2314	0029	2314 - 0029	5.3	9.9	NA
5	9/20/18	1213	1341	1213 - 1341	6.3	9.5	NA
6	9/20/18	1600	1731	1600 - 1731	7.1	8.9	NA

Bias-Adjusted Values

Run No.	Date	Start Time	Stop Time	Start - Stop Time	Reference Method Adj. Value		
					O_2	CO_2	NOX
1	9/18/18	1612	1711	1612 - 1711	6.2	10.0	59.65
2	9/18/18	2319	0018	2319 - 0018	5.3	10.8	74.61
3	9/19/18	1135	1234	1135 - 1234	7.3	8.9	79.91
4	9/19/18	2314	0029	2314 - 0029	5.3	10.2	NA
5	9/20/18	1213	1341	1213 - 1341	6.3	9.8	NA
6	9/20/18	1600	1731	1600 - 1731	7.2	9.2	NA

Bypass Vent Stack Traverse Points



# Diameters ports to top =	1.0
# Diameters base to ports =	4.4

Therefore, 24 points required

For 2-port Traverse

Point No.	Distance from Wall (in)
1	2.3
2	7.2
3	12.7
4	19.1
5	27.0
6	38.4
7	69.6
8	81.0
9	88.9
10	95.3
11	100.8
12	105.7

AECOM

Velocity Traverse Data

Plant Name: Gateway Energy & Coke
Sampling Location: Bypass Stack 5
Project Number: 60582380

Run #	1			2			3		
Date	4-Oct-18			4-Oct-18			4-Oct-18		
Time	1239-1253			1617-1627			2135-2145		
Location	Bypass Stack 5			Bypass Stack 5			Bypass Stack 5		
Pitot Tube Coefficient	0.84			0.84			0.84		
Stack Diameter, in	108			108			108		
Stack Area, sq. ft.	63.6			63.6			63.6		
Barometric Pressure, in. Hg	29.65			29.63			29.59		
Static Pressure, in. H_20	-0.16			-0.16			-0.20		
Stack Gas O_2, %	12.74%			8.77%			5.98%		
Stack Gas CO_2, %	5.40%			8.23%			10.01%		
Stack Gas N_2, %	82%			83%			84%		
Dry Gas Molecular Weight	29.4			29.667323			29.840734		
Moisture Content, %	15.82%			12.80%			15.86%		
Wet Gas Molecular Weight	27.57			28.17			27.96		
Stack Gas Flow, acfm	222328			200382			201405		
Stack Gas Flow, scfm	72949			52135			52327		
Traverse Point	Stack Temp.	Velocity Pressure	Gas Velocity (fps)	Stack Temp.	Velocity Pressure	Gas Velocity (fps)	Stack Temp.	Velocity Pressure	Velocity (fps)
1	1195	0.42	66.22	1582	0.26	57.28	1497	0.22	51.81
2	1161	0.32	57.20	1583	0.25	56.18	1515	0.26	56.58
3	1130	0.3	54.86	1578	0.24	54.97	1520	0.26	56.65
4	1071	0.24	48.15	1566	0.18	47.47	1507	0.17	45.66
5	1114	0.4	63.02	1570	0.24	54.87	1512	0.25	55.44
6	1090	0.32	55.94	1575	0.24	54.93	1521	0.24	54.44
7	1070	0.28	51.99	1569	0.2	50.07	1520	0.21	50.91
8	1043	0.19	42.44	1556	0.15	43.23	1503	0.14	41.39
9	1202	0.52	73.84	1571	0.25	56.01	1539	0.25	55.82
10	1197	0.46	69.34	1577	0.27	58.29	1570	0.29	60.58
11	1217	0.4	65.05	1574	0.24	54.92	1585	0.25	56.46
12	1120	0.26	50.91	1420	0.15	41.74	1545	0.18	47.43
13	1167	0.34	59.07	1573	0.27	58.24	1598	0.27	58.86
14	1120	0.33	57.35	1580	0.26	57.25	1615	0.27	59.10
15	1140	0.36	60.28	1583	0.26	57.29	1623	0.25	56.98
16	1114	0.24	48.82	1332	0.13	37.94	1618	0.2	50.90
Average	1134		58.25	1549		52.50	1549		52.76

AECOM

Plant Name:
Sampling Location:
Project Number:

Run #	4			5			6		
Date	4-Oct-18			5-Oct-18			5-Oct-18		
Time	2314-2324			0042-0053			1024-1034		
Location	Bypass Stack 5			Bypass Stack 5			Bypass Stack 5		
Pitot Tube Coefficient	0.84			0.84			0.84		
Stack Diameter, in	108			108			108		
Stack Area, sq. ft.	63.6			63.6			63.6		
Barometric Pressure, in. Hg	29.59			29.58			29.54		
Static Pressure, in. H_20	-0.20			-0.20			-0.20		
Stack Gas O_2, %	6.97%			7.89%			7.80%		
Stack Gas CO_2, %	9.22%			8.69%			8.75%		
Stack Gas N_2, %	84%			83%			83%		
Dry Gas Molecular Weight	29.754216			29.706567			29.711393		
Moisture Content, %	14.89%			13.96%			14.16%		
Wet Gas Molecular Weight	28.00			28.07			28.05		
Stack Gas Flow, acfm	220317			215959			223776		
Stack Gas Flow, scfm	52650			52782			54740		
Traverse Point	Stack Temp.	Velocity Pressure	Velocity (fps)	Stack Temp.	Velocity Pressure	Velocity (fps)	Stack Temp.	Velocity Pressure	Velocity (fps)
1	1747	0.27	60.91	1678	0.28	60.98	1675	0.28	61.00
2	1748	0.27	60.92	1680	0.27	59.91	1682	0.3	63.25
3	1748	0.27	60.92	1680	0.25	57.65	1680	0.26	58.85
4	1744	0.24	57.38	1670	0.22	53.95	1672	0.21	52.79
5	1733	0.25	58.42	1685	0.25	57.72	1672	0.27	59.86
6	1739	0.27	60.80	1684	0.25	57.70	1674	0.28	60.99
7	1738	0.24	57.31	1685	0.24	56.55	1670	0.26	58.71
8	1730	0.18	49.54	1665	0.16	45.96	1664	0.2	51.42
9	1723	0.27	60.57	1673	0.28	60.91	1665	0.28	60.86
10	1728	0.27	60.64	1678	0.28	60.98	1674	0.3	63.13
11	1727	0.24	57.16	1676	0.23	55.24	1675	0.27	59.90
12	1601	0.18	48.06	1664	0.2	51.37	1668	0.21	52.74
13	1726	0.3	63.90	1672	0.3	63.03	1677	0.27	59.93
14	1725	0.28	61.71	1682	0.27	59.94	1676	0.27	59.92
15	1722	0.25	58.27	1682	0.25	57.68	1674	0.23	55.27
16	1711	0.19	50.67	1648	0.19	49.88	1628	0.15	44.15
Average	1724		57.72	1675		56.58	1670		58.63

AECOM

Moisture Determination Data

Plant Name: Gateway Energy & Coke
Sampling Location: Bypass Stack 5
Project Number: 60582380

Run #	1			2			3			4			5			6		
Date	4-Oct-18			4-Oct-18			4-Oct-18			4-Oct-18			5-Oct-18			5-Oct-18		
Time	1230-1330			1613-1713			2133-2233			2311-2411			0041-0141			1021-1121		
Location	Bypass Stack 5			Bypass Stack 5			Bypass Stack 5			Bypass Stack 5			Bypass Stack 5			Bypass Stack 5		
	Initial Wt.	Final Wt.	Wt. Gain	Initial Wt.	Final Wt.	Wt. Gain	Initial Wt.	Final Wt.	Wt. Gain	Initial Wt.	Final Wt.	Wt. Gain	Initial Wt.	Final Wt.	Wt. Gain	Initial Wt.	Final Wt.	Wt. Gain
Impinger #1	702.2	818	115.8	673	762.9	89.9	672	783.4	111.4	779	878.4	99.4	685.2	783.4	98.2	687	778.2	91.2
Impinger #2	673.1	674.5	1.4	625.8	627.1	1.3	627.1	631.9	4.8	674.2	680.9	6.7	640.4	644.5	4.1	667.2	670.9	3.7
Impinger #3	615.4	617.2	1.8	617.2	619.8	2.6	619.8	619.8	0	615.6	618.2	2.6	619.8	620.3	0.5	619.3	620.4	1.1
Impinger #4	885.3	895.4	10.1	895.4	902.3	6.9	900.2	903.7	3.5	902.9	911.6	8.7	903.7	909.1	5.4	908.1	912.5	4.4
Condensed Water, g		129.1			100.7			119.7			117.4			108.2			100.4	
DGMCF		0.975			0.975			0.975			0.975			0.975			0.975	
Barometric Pressure (" Hg)		29.65			29.63			29.59			29.59			29.58			29.54	
Average DGM Temp (°F)		76			75			77			84			78			124	
Average Delta H (in wc)		1.00			1.00			0.90			1.00			1.00			1.00	
Meter Volume (acf)		33.976			33.874			31.535			33.740			33.190			32.920	
Corrected Volume of Gas sampled (acf)		33.127			33.027			30.747			32.897			32.360			32.097	
Volume at Meter (dscf)		32.418			32.359			29.965			31.655			31.476			28.722	
Flue Gas Moisture (%)		15.82%			12.80%			15.86%			14.89%			13.96%			14.16%	

AECOM

VELOCITY TRAVERSE DATA SHEET

Project Name: Gateway Energy CD Retest

Project No.: 60582380

Date: 10/4/18

Test No.: 1

Location: Bypass Vent Stack 5

Personnel: CS & WL

	Traverse Point	Velocity Pressure	Stack Temperature	
A	1	0.42	1195	
	2	0.32	1161	
	3	0.30	1130	
	4	0.24	1071	
B	5	0.40	1114	
	6	0.32	1090	
	7	0.28	1070	
	8	0.19	1043	
C	9	0.52	1202	
	10	0.46	1197	
	11	0.40	1217	
	12	0.26	1120	
D	13	0.34	1167	
	14	0.33	1120	
	15	0.36	1140	
	16	0.24	1114	
Average				

Start Test: 1239

End Test: 1253

MSL

Stack Dimensions: 9 ft diameter

Barometric Pressure, Pbar: 30.12 in. Hg (29.65 at elevation)

Static Pressure: -0.16 in. H_2O

Stack Gas, O_2: CEMS %

Stack Gas, CO_2: CEMS %

Stack Temperature: / °F

Wet Bulb Temperature: / °F

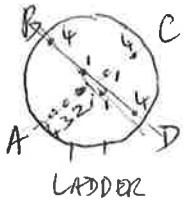
Pitot Tube Coefficient, Cp: 0.84

Pitot Positive Leak Check: ✓ > 3 in. H_2O

Pitot Negative Leak Check: ✓ > 3 in. H_2O

TC check ✓
Thermometer (NIST) 67°F
thermocouple 67°F

Notes, Drawings;



Pitot Tube Type: S-Type I.D. No.: AQS INC 6-4

Pitot Coefficient, Cp: 0.84

Manometer Type: Oil I.D. No.: URS-001

Thermometer Type: K Type I.D. No.: "

AECOM

EPA M4 DATA SHEET

Project Name: Gateway Energy CD Retest
Project No.: 60582380
Date: 10/4/18

Test No.: 1
Location: Bypass Vent Stack 5
Personnel: CS & WL

Stack Dimensions: 9 ft diameter
Barometric Pressure: 30.12 in. Hg
Static Pressure: _____ in. H_2O
29.48 at elev

M2 Test Time : Start : 1230 Stop : 1330

VELOCITY TRAVERSE		
TRAVERSE POINT	VELOCITY PRESSURE (ΔP)	STACK TEMP.
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
Average		

IMPINGER WEIGHTS			
Impinger	Initial Wt.	Final Wt.	Total
1	702.2	818.0	
2	673.1	674.5	
3	615.4	617.2	
4	885.3	895.4	
Total			

PITOT LEAK CHECK (> 3")		
INITIAL	(+)	(-)
FINAL	(+)	(-)
TRAIN LEAK CHECK (ft^3 @ in, Hg.)		
INITIAL	0 @ 10"	
FINAL	0 @ 5"	

MOISTURE TRAIN					
SAMPLING TIME Clock	Sample	DRY GAS METER	DGM TEMP.	LAST IMPINGER TEMP.	TRAIN VACUUM
12:30	0	355.678	75	68	4"
	5	358.4	75	68	4"
	10	361.4	75	67	4"
	15	364.23	75	67	4"
	20	367.1	76	67	4"
	25	369.9	76	67	4"
	30	372.7	76	66	4"
	40	378.5	77	60	4"
	50	384.1	77	57	4"
1330	60	389.654	77	57	4"

M4 Sample Train I.D. : _____
Control Console I.D.: URS-001 ΔH@: 1.939 Y: 0.975
Pitot Tube Type: S-Type I.D. No.: _____ Coefficient: _____
Manometer Type: Oil I.D. No.: _____
Thermometer Type: K Type I.D. No.: _____

NOTES: _____

AECOM

VELOCITY TRAVERSE DATA SHEET

Project Name: Gateway Energy CD Retest

Project No.: 60582380

Date: 10/4/18

Test No.: 2

Location: Bypass Vent Stack 5

Personnel: CS & WL

Traverse Point	Velocity Pressure	Stack Temperature	
1	0.26	1582	
2	0.25	1583	
3	0.24	1578	
4	0.18	1566	
5	0.24	1570	
6	0.24	1575	
7	0.20	1569	
8	0.15	1556	
9	0.25	1571	
10	0.27	1577	
11	0.24	1574	
12	0.15	1420	
13	0.27	1573	
14	0.26	1580	
15	0.26	1583	
16	0.13	1332	
Average			

Start Test: 1617

End Test: 1627

Stack Dimensions: 9 ft diameter

Barometric Pressure, Pbar: 30.1 in. Hg 29.63 at elev.

Static Pressure: -0.16 in. H_2O

Stack Gas, O_2: CEMS %

Stack Gas, CO_2: CEMS %

Stack Temperature: / °F

Wet Bulb Temperature: / °F

Pitot Tube Coefficient, Cp: 0.84

Pitot Positive Leak Check: ✓ > 3 in. H_2O

Pitot Negative Leak Check: ✓ > 3 in. H_2O

Notes, Drawings;

Pitot Tube Type: S-Type I.D. No.: AQS INC 6-4

Pitot Coefficient, Cp: 0.84

Manometer Type: Oil I.D. No.: URS-001

Thermometer Type: K Type I.D. No.: "

AECOM

EPA M4 DATA SHEET

Project Name: Gateway Energy CD Retest
Project No.: 60582380
Date: 10/4/18

Test No.: 2
Location: Bypass Vent Stack 5
Personnel: CS & WL

Stack Dimensions: 9 ft diameter
Barometric Pressure: 30.1 in. Hg
Static Pressure: ___ in. H_2O

M2 Test Time : Start : 1613 Stop : 1713

29.63 at elev.

VELOCITY TRAVERSE		
TRAVERSE POINT	VELOCITY PRESSURE (ΔP)	STACK TEMP.
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
Average		

IMPINGER WEIGHTS			
Impinger	Initial Wt.	Final Wt.	Total
1	673.0	762.9	
2	625.8	627.1	
3	617.7	619.8	
4	895.4	902.3	
Total			

PITOT LEAK CHECK (> 3")		
INITIAL	(+)	(-)
FINAL	(+)	(-)
TRAIN LEAK CHECK (ft^3 @ in, Hg.)		
INITIAL	0	@ 10"
FINAL	0	@ 5"

MOISTURE TRAIN					
SAMPLING TIME Clock	Sample	DRY GAS METER	DGM TEMP.	LAST IMPINGER TEMP.	TRAIN VACUUM
1613	0	390.053	73	70	4"
	5	393.0	73	66	4"
	10	395.6	73	64	4"
	15	398.4	74	63	4"
	20	401.23	74	63	4"
	25	404.0	74	60	4"
	30	406.88	75	59	4"
	40	~~[illegible]~~ 412.4 CS	76	59	4"
	50	418.15	77	60	4"
1713	60	423.927			

M4 Sample Train I.D. : ___
Control Console I.D.: URS-001 ΔH@: 1.939 Y: 0.975
Pitot Tube Type: S-Type I.D. No.: ___ Coefficient: ___
Manometer Type: Oil I.D. No.: ___
Thermometer Type: K Type I.D. No.: ___

NOTES: ___

AECOM

VELOCITY TRAVERSE DATA SHEET

Project Name: Gateway Energy CD Retest

Project No.: 60582380

Date: 10/4/18

Test No.: 3

Location: Bypass Vent Stack 5

Personnel: CS & WL

Traverse Point	Velocity Pressure	Stack Temperature	
1	0.22	1497	
2	0.26	1515	
3	0.26	1520	
4	0.17	1507	
5	0.25	1512	
6	0.24	1521	
7	0.21	1520	
8	0.14	1503	
9	0.25	1539	
10	0.29	1570	
11	0.25	1585	
12	0.18	1545	
13	0.27	1598	
14	0.27	1615	
15	0.25	1623	
16	0.20	1618	
Average			

Start Test: 21:35

End Test: 21:45

Stack Dimensions: 9 ft diameter

Barometric Pressure, Pbar: 30.06 in. Hg 29.59 at elev.

Static Pressure: -0.20 in. H_2O

Stack Gas, O_2: CEMS %

Stack Gas, CO_2: CEMS %

Stack Temperature: / °F

Wet Bulb Temperature: / °F

Pitot Tube Coefficient, Cp: 0.84

Pitot Positive Leak Check: ✓ > 3 in. H_2O

Pitot Negative Leak Check: ✓ > 3 in. H_2O

Notes, Drawings;

Pitot Tube Type: S-Type I.D. No.: AQS INC 6-4

Pitot Coefficient, Cp: 0.84

Manometer Type: Oil I.D. No.: URS-001

Thermometer Type: K Type I.D. No.: 11

AECOM

EPA M4 DATA SHEET

Project Name: Gateway Energy CD Retest
Project No.: 60582380
Date: 10/4/18

Test No.: 3
Location: Bypass Vent Stack 5
Personnel: CS & WL

Stack Dimensions: 9 ft diameter
Barometric Pressure: 30.06 in. Hg
Static Pressure: ~~0.20~~ in. H_2O
29.59 ✓ dev

M2 Test Time : Start : 2133 Stop : 2233

VELOCITY TRAVERSE		
TRAVERSE POINT	VELOCITY PRESSURE (ΔP)	STACK TEMP.
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
Average		

IMPINGER WEIGHTS			
Impinger	Initial Wt.	Final Wt.	Total
1	672.0	783.4	
2	627.1	631.9	
3	619.8	619.8	
4	900.2	903.7	
Total			
Total			

PITOT LEAK CHECK (> 3")		
INITIAL	(+)	(-)
FINAL	(+)	(-)
TRAIN LEAK CHECK (ft^3 @ in, Hg.)		
INITIAL	0 @ 10"	
FINAL	0 @ 5"	

MOISTURE TRAIN					
SAMPLING TIME Clock	Sample	DRY GAS METER	DGM TEMP.	LAST IMPINGER TEMP.	TRAIN VACUUM
21:33	0	424.010	75	65	4"
	5	426.8	74	51	4"
	10	429.6	74	48	4"
	15	432.1	75	49	4"
	20	434.4	76	50	5"
	25	437.75	77	51	5"
	30	440.35	78	51	5"
	40	445.5	79	52	5"
	50	450.6	80	53	5"
22:33	60	455.545			5"

M4 Sample Train I.D. :
Control Console I.D.: URS-001 ΔH@: 1.939 Y: 0.975
Pitot Tube Type: S-Type I.D. No.: Coefficient:
Manometer Type: Oil I.D. No.:
Thermometer Type: K Type I.D. No.:

NOTES:

AECOM

VELOCITY TRAVERSE DATA SHEET

Project Name: Gateway Energy CD Retest

Project No.: 60582380

Date: 10/4/18

Test No.: 4

Location: Bypass Vent Stack 5

Personnel: CS & WL

Traverse Point	Velocity Pressure	Stack Temperature	
1	0.27	1747	
2	0.27	1748	
3	0.27	1748	
4	0.24	1744	
5	0.25	1733	
6	0.27	1739	
7	0.24	1738	
8	0.18	1730	
9	0.27	1723	
10	0.27	1728	
11	0.24	1727	
12	0.18	1601	
13	0.30	1726	
14	0.28	1725	
15	0.25	1722	
16	0.19	1711	
Average			

Start Test: 23:14

End Test: 23:24

Stack Dimensions: 9 ft diameter 29.59 at elev.

Barometric Pressure, Pbar: 30.06 in. Hg

Static Pressure: -0.20 in. H_2O

Stack Gas, O_2: CEMS %

Stack Gas, CO_2: CEMS %

Stack Temperature: / °F

Wet Bulb Temperature: / °F

Pitot Tube Coefficient, Cp: 0.84

Pitot Positive Leak Check: ✓ > 3 in. H_2O

Pitot Negative Leak Check: ✓ > 3 in. H_2O

Notes, Drawings;

Pitot Tube Type: S-Type I.D. No.: AQS INC 6-4

Pitot Coefficient, Cp: 0.84

Manometer Type: Oil I.D. No.: URS-001

Thermometer Type: K Type I.D. No.: "

AECOM

EPA M4 DATA SHEET

Project Name: Gateway Energy CD Retest
Project No.: 60582380
Date: 10/4/18

Test No.: 4
Location: Bypass Vent Stack 5
Personnel: CS & WL

Stack Dimensions: 9 ft diameter
Barometric Pressure: 30.06 in. Hg
Static Pressure: _____ in. H_2O
29.59 at elev.

M2 Test Time : Start : 2311 Stop : 0011

VELOCITY TRAVERSE		
TRAVERSE POINT	VELOCITY PRESSURE (ΔP)	STACK TEMP.
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
Average		

IMPINGER WEIGHTS			
Impinger	Initial Wt.	Final Wt.	Total
1	779.0	878.4	
2	674.2	680.9	
3	615.6	618.2	
4	902.9	911.6	
Total			

PITOT LEAK CHECK (> 3")		
INITIAL	(+)	(-)
FINAL	(+)	(-)
TRAIN LEAK CHECK (ft^3 @ in, Hg.)		
INITIAL	0 @ 7"	
FINAL	0.015 @ 5"	

MOISTURE TRAIN					
SAMPLING TIME Clock	SAMPLING TIME Sample	DRY GAS METER	DGM TEMP.	LAST IMPINGER TEMP.	TRAIN VACUUM
23:11	0	455.71	86	69	4"
	5	458.55	85	66	4"
	10	461.4	84	62	4"
	15	464.2	84	63	4"
	20	467.0	83	63	4"
	25	469.84	83	64	4"
	30	472.6	83	65	4"
	40	478.25	83	66	4"
	50	483.92	83	67	4"
00:11	60	489.45			

M4 Sample Train I.D. : _____
Control Console I.D.: URS-001 ΔH@: 1.939 Y: 0.975
Pitot Tube Type: S-Type I.D. No.: _____ Coefficient: _____
Manometer Type: Oil I.D. No.: _____
Thermometer Type: K Type I.D. No.: _____

NOTES: _____

AECOM

VELOCITY TRAVERSE DATA SHEET

Project Name: Gateway Energy CD Retest

Project No.: 60582380

Date: 10/5/18

Test No.: 5

Location: Bypass Vent Stack 5

Personnel: CS & WL

Traverse Point	Velocity Pressure	Stack Temperature	
1	0.28	1678	
2	0.27	1680	
3	0.25	1680	
4	0.22	1670	
5	0.25	1685	
6	0.25	1684	
7	0.24	1685	
8	0.16	1665	
9	0.28	1673	
10	0.28	1678	
11	0.23	1676	
12	0.20	1664	
13	0.30	1672	
14	0.27	1682	
15	0.25	1682	
16	0.19	1648	
Average			

Start Test: 00:42

End Test: 00:53

Stack Dimensions: 9 ft diameter

Barometric Pressure, Pbar: 30.05 in. Hg 29.58 at elev

Static Pressure: -0.20 in. H_2O

Stack Gas, O_2: CEMS %

Stack Gas, CO_2: CEMS %

Stack Temperature: / °F

Wet Bulb Temperature: / °F

Pitot Tube Coefficient, Cp: 0.84

Pitot Positive Leak Check: ✓ > 3 in. H_2O

Pitot Negative Leak Check: ✓ > 3 in. H_2O

Notes, Drawings;

Pitot Tube Type: S-Type I.D. No.: AQS INC 6-4

Pitot Coefficient, Cp: 0.84

Manometer Type: Oil I.D. No.: URC-001

Thermometer Type: K Type I.D. No.: "

AECOM

EPA M4 DATA SHEET

Project Name: Gateway Energy CD Retest
Project No.: 60582380
Date: 10/5/18

Test No.: 5
Location: Bypass Vent Stack 5
Personnel: CS & WL

Stack Dimensions: 9 ft diameter
Barometric Pressure: 30.05 in. Hg
Static Pressure: _____ in. H_2O
29.58 at elev

M2 Test Time : Start : 0041 Stop : 0141

VELOCITY TRAVERSE		
TRAVERSE POINT	VELOCITY PRESSURE (ΔP)	STACK TEMP.
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
Average		

IMPINGER WEIGHTS			
Impinger	Initial Wt.	Final Wt.	Total
1	685.2	783.4	
2	640.4 ~~631.9~~	644.5	
3	619.8	620.3	
4	903.7	909.1	
Total			

PITOT LEAK CHECK (> 3")		
INITIAL	(+)	(-)
FINAL	(+)	(-)
TRAIN LEAK CHECK (ft^3 @ in, Hg.)		
INITIAL	0	@ 7"
FINAL	0	@ 5"

MOISTURE TRAIN					
SAMPLING TIME Clock	SAMPLING TIME Sample	DRY GAS METER	DGM TEMP.	LAST IMPINGER TEMP.	TRAIN VACUUM
00:41	0	489.575	78	69	5"
	5	492.37	78	68	5"
	10	495.1	78	62	5"
	15	497.9	78	61	5"
	20	500.5	78	61	5"
	25	503.31	78	62	5"
	30	506.15	79	63	5"
	40	511.7	79	64	5"
	50	517.47	79	66	5"
01:41	60	522.765			

M4 Sample Train I.D. : _____
Control Console I.D.: URS-001 ΔH@: 1.939 Y: 0.975
Pitot Tube Type: S-Type I.D. No.: _____ Coefficient: _____
Manometer Type: Oil I.D. No.: _____
Thermometer Type: K Type I.D. No.: _____

NOTES: _____

AECOM

VELOCITY TRAVERSE DATA SHEET

Project Name: Gateway Energy CD Retest

Project No.: 60582380

Date: 10/5/18

Test No.: 6

Location: Bypass Vent Stack 5

Personnel: CS & WL

Traverse Point	Velocity Pressure	Stack Temperature	
1	0.28	1675	
2	0.30	1682	
3	0.26	1680	
4	0.21	1672	
5	0.27	1672	
6	0.28	1674	
7	0.26	1670	
8	0.20	1664	
9	0.28	1665	
10	0.30	1674	
11	0.27	1675	
12	0.21	1668	
13	0.27	1677	
14	0.27	1676	
15	0.23	1674	
16	0.15	1628	
Average			

Start Test: 10:24

End Test: 10:34

Stack Dimensions: 9 ft diameter

Barometric Pressure, Pbar: 30.01 in. Hg 29.54 at elev.

Static Pressure: -0.20 in. H_2O

Stack Gas, O_2: CEMS %

Stack Gas, CO_2: CEMS %

Stack Temperature: / °F

Wet Bulb Temperature: / °F

Pitot Tube Coefficient, Cp: 0.84

Pitot Positive Leak Check: ✓ > 3 in. H_2O

Pitot Negative Leak Check: ✓ > 3 in. H_2O

Notes, Drawings;

Pitot Tube Type: S-Type I.D. No.: AQS INC 6-4

Pitot Coefficient, Cp: 0.84

Manometer Type: Oil I.D. No.: URS-001

Thermometer Type: K Type I.D. No.: "

AECOM

EPA M4 DATA SHEET

Project Name: Gateway Energy CD Retest
Project No.: 60582380
Date: 10/5/18

Test No.: 6
Location: Bypass Vent Stack 5
Personnel: CS & WL

Stack Dimensions: 9 ft diameter
Barometric Pressure: 30.01 in. Hg
Static Pressure: — in. H_2O
29.54 at elev.

M2 Test Time: Start: 1021 Stop: 1121

VELOCITY TRAVERSE		
TRAVERSE POINT	VELOCITY PRESSURE (ΔP)	STACK TEMP.
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
Average		

IMPINGER WEIGHTS			
Impinger	Initial Wt.	Final Wt.	Total
1	687.0	778.2	
2	662.2	670.9	
3	619.3	620.4	
4	908.1	912.5	
Total			

PITOT LEAK CHECK (> 3")		
INITIAL	(+)	(-)
FINAL	(+)	(-)
TRAIN LEAK CHECK (ft^3 @ in, Hg.)		
INITIAL	0	@ 7"
FINAL	0	@ 5"

MOISTURE TRAIN					
SAMPLING TIME Clock	Sample	DRY GAS METER	DGM TEMP.	LAST IMPINGER TEMP.	TRAIN VACUUM
10:21	0	522.829	120	75	5"
	5	525.7	120	69	5"
	10	528.6	120	69	5"
	15	531.2	122	69	5"
	20	533.9	123	69	5"
	25	536.7	124	69	5"
	30	539.5	125	68	5"
	40	545.0	127	68	5"
	50	550.73	129	69	5"
11:21	60	555.749	1		

M4 Sample Train I.D.:
Control Console I.D.: VRS-001 ΔH@: 1.939 Y: 0.975
Pitot Tube Type: S-Type I.D. No.: Coefficient:
Manometer Type: Oil I.D. No.:
Thermometer Type: K Type I.D. No.:

NOTES: Radiant heat from Stack on cold bucket. Bucket was completely iced and ~~[illegible]~~ water mixed in.

RM Sample Data

Plant Name	Gateway Energy & Coke
Sampling Location	Bypass Stack 5
Date	Sept 18-20
CEM Operator	Chandra Sastry
Project Number	60582380

Observed Values

Run No.	Date	Start Time	Stop Time	Start - Stop Time	Reference Method Obs. Value		
					O_2	CO_2	NOX
1	9/18/18	1612	1711	1612 - 1711	6.2	9.7	57.6
2	9/18/18	2319	0018	2319 - 0018	5.3	10.4	72.0
3	9/19/18	1135	1234	1135 - 1234	7.3	8.7	77.3
4	9/19/18	2314	0029	2314 - 0029	5.3	9.9	NA
5	9/20/18	1213	1341	1213 - 1341	6.3	9.5	NA
6	9/20/18	1600	1731	1600 - 1731	7.1	8.9	NA

Bias-Adjusted Values

Run No.	Date	Start Time	Stop Time	Start - Stop Time	Reference Method Adj. Value		
					O_2	CO_2	NOX
1	9/18/18	1612	1711	1612 - 1711	6.2	10.0	59.65
2	9/18/18	2319	0018	2319 - 0018	5.3	10.8	74.61
3	9/19/18	1135	1234	1135 - 1234	7.3	8.9	79.91
4	9/19/18	2314	0029	2314 - 0029	5.3	10.2	NA
5	9/20/18	1213	1341	1213 - 1341	6.3	9.8	NA
6	9/20/18	1600	1731	1600 - 1731	7.2	9.2	NA

CEM Data Correction Data Sheet

Plant Name	Gateway Energy & Coke
Sampling Location	Bypass Stack 5
Date	18-Sep-18
CEM Operator	Chandra Sastry
Project Number	60582380
Pollutant	O_2

Run No.	Start Time	Stop Time	Obs. Conc. (% or ppm)	Calibration Data			Calibration Corrected Data (% or ppm)
				Cma	Co	Cm	
1	1612	1711	6.2	10.1	0.1	10.0	6.2
2	2319	0018	5.3	10.1	0.1	10.0	5.3
3	1135	1234	7.3	10.1	0.1	10.1	7.3
4	2314	0029	5.3	10.1	0.0	10.1	5.3
5	1213	1341	6.3	10.1	0.0	10.1	6.3
6	1600	1731	7.1	10.1	0.0	10.1	7.2

Calibration Error Correction

Cgas=(Cobs-Co)*(Cma/(Cm-Co))

CEM Data Correction Data Sheet

Plant Name	Gateway Energy & Coke
Sampling Location	Bypass Stack 5
Date	18-Sep-18
CEM Operator	Chandra Sastry
Project Number	60582380
Pollutant	CO_2

Run No.	Start Time	Stop Time	Obs. Conc. (% or ppm)	Calibration Data			Calibration Corrected Data (% or ppm)
				Cma	Co	Cm	
1	1612	1711	9.7	10.0	0.2	9.7	10.0
2	2319	0018	10.4	10.0	0.1	9.6	10.8
3	1135	1234	8.7	10.0	0.1	9.7	8.9
4	2314	0029	9.9	10.0	0.3	9.7	10.2
5	1213	1341	9.5	10.0	0.2	9.6	9.8
6	1600	1731	8.9	10.0	0.2	9.6	9.2

Calibration Error Correction

Cgas=(Cobs-Co)*(Cma/(Cm-Co))

CEM Data Correction Data Sheet

Plant Name	Gateway Energy & Coke
Sampling Location	Bypass Stack 5
Date	18-Sep-18
CEM Operator	Chandra Sastry
Project Number	60582380
Pollutant	NOX

Run No.	Start Time	Stop Time	Obs. Conc. (% or ppm)	Calibration Data			Calibration Corrected Data (% or ppm)
				Cma	Co	Cm	
1	1612	1711	57.6	45.8	0.1	44.2	59.6
2	2319	0018	72.0	45.8	0.1	44.2	74.6
3	1135	1234	77.3	45.8	0.2	44.4	79.9

Calibration Error Correction

Cgas=(Cobs-Co)*(Cma/(Cm-Co))

GCO Bypass Vent Stack 5 CD Testing
9/18/2018

Time	NOX (ppm)	CO2 (%)	O2 (%)
16:12	58.2	9.95	5.92
16:13	58.6	9.96	5.93
16:14	58.1	9.91	6.03
16:15	58.9	9.9	6.06
16:16	58.2	9.92	6.04
16:17	58	9.86	6.06
16:18	58.1	9.87	6.01
16:19	57.7	9.78	6.12
16:20	58	9.75	6.19
16:21	57.3	9.79	6.15
16:22	57.9	9.78	6.11
16:23	58.5	9.76	6.12
16:24	58.1	9.8	6.09
16:25	58.1	9.78	6.07
16:26	59	9.74	6.15
16:27	58.1	9.73	6.15
16:28	57.5	9.73	6.16
16:29	57	9.71	6.18
16:30	57.1	9.74	6.15
16:31	57.5	9.77	6.1
16:32	58.1	9.72	6.17
16:33	58	9.74	6.13
16:34	57.4	9.72	6.16
16:35	58.2	9.68	6.21
16:36	58.2	9.63	6.29
16:37	58.4	9.67	6.26
16:38	57.5	9.7	6.2
16:39	55.9	9.72	6.18
16:40	56.5	9.66	6.24
16:41	57	9.63	6.27
16:42	58.6	9.6	6.33
16:43	58.1	9.65	6.28
16:44	58.5	9.62	6.32
16:45	58	9.63	6.33
16:46	57.3	9.65	6.25
16:47	57.7	9.66	6.25
16:48	57.5	9.72	6.18
16:49	56.7	9.72	6.17
16:50	57.4	9.67	6.24
16:51	57.1	9.76	6.22
16:52	56.9	9.64	6.31
16:53	58	9.66	6.3
16:54	57.1	9.74	6.17
16:55	57.5	9.71	6.23
16:56	57.5	9.72	6.24
16:57	58.4	9.75	6.18
16:58	57.2	9.78	6.14
16:59	56.7	9.73	6.2
17:00	57.5	9.74	6.2

Run 1

GCO Bypass Vent Stack 5 CD Testing
9/18/2018

Time	NOX (ppm)	CO2 (%)	O2 (%)
17:01	57.8	9.78	6.14
17:02	57.3	9.73	6.19
17:03	57	9.76	6.16
17:04	57	9.76	6.16
17:05	56.8	9.81	6.11
17:06	55.7	9.85	6.05
17:07	55.2	9.81	6.1
17:08	56.2	9.77	6.17
17:09	57.5	9.7	6.31
17:10	57.3	9.69	6.29
17:11	57.2	9.69	6.27
Average	**57.56**	**9.74**	**6.17**

Run 1

GCO Bypass Vent Stack 5 CD Testing
9/18/2018

Time	NOX (ppm)	CO2 (%)	O2 (%)
23:19	59.9	8.1	9.07
23:20	59.0	8.2	9.04
23:21	59.9	8.37	8.84
23:22	60.4	8.59	8.47
23:23	62.4	8.78	8.18
23:24	64.3	9.28	7.49
23:25	71.5	9.05	7.78
23:26	67.6	9.02	7.86
23:27	68.9	9.08	7.81
23:28	70.5	9.4	7.34
23:29	68.5	9.74	6.76
23:30	70.7	10.03	6.34
23:31	79.2	10.39	5.72
23:32	84.4	10.19	5.9
23:33	81.0	10.06	6.25
23:34	81.8	10.02	6.2
23:35	83.2	10.38	5.67
23:36	76.9	10.35	5.63
23:37	72.8	10.43	5.53
23:38	77.7	10.6	5.22
23:39	80.5	10.6	5.12
23:40	73.5	10.38	5.4
23:41	71.3	10.13	5.72
23:42	71.3	10.13	5.73
23:43	70.6	10.1	5.77
23:44	73.3	10.34	5.45
23:45	71.1	10.71	4.81
23:46	74.2	10.97	4.38
23:47	77.5	11.26	3.91
23:48	77.3	10.83	4.52
23:49	70.8	10.83	4.6
23:50	69.8	10.95	4.49
23:51	70.2	11.2	4.02
23:52	69.3	11.4	3.59
23:53	71.4	11.4	3.54
23:54	73.7	11.64	3.18
23:55	75.3	11.56	3.2
23:56	71.9	11.35	3.51
23:57	70.6	11.35	3.51
23:58	70.4	11.28	3.63
23:59	70.8	11.17	3.72
0:00	71.3	11.05	3.93
0:01	71.4	10.97	4.07
0:02	71.4	10.93	4.08
0:03	71.7	10.89	4.13
0:04	71.7	10.85	4.17
0:05	71.7	10.81	4.23
0:06	71.9	10.77	4.32
0:07	72.3	10.75	4.37

Run 2

GCO Bypass Vent Stack 5 CD Testing
9/18/2018

Time	NOX (ppm)	CO2 (%)	O2 (%)
0:08	72.8	10.65	4.51
0:09	73.1	10.62	4.53
0:10	72.5	10.67	4.49
0:11	73.2	10.69	4.49
0:12	72.9	10.67	4.49
0:13	72.8	10.63	4.56
0:14	74.0	10.62	4.58
0:15	74.8	10.63	4.58
0:16	74.1	10.66	4.51
0:17	72.1	10.69	4.49
0:18	71.5	10.66	4.52
Average	**72.0**	**10.4**	**5.3**

Run 2

GCO Bypass Vent Stack 5 CD Testing
9/19/2018

Time	NOX (ppm)	CO2 (%)	O2 (%)
11:35	78.9	8.7	7.24
11:36	78.7	8.68	7.29
11:37	78.3	8.75	7.21
11:38	78.6	8.69	7.31
11:39	79.4	8.73	7.26
11:40	78.6	8.78	7.18
11:41	78.6	8.74	7.26
11:42	77.8	8.77	7.22
11:43	79	8.72	7.3
11:44	79	8.7	7.34
11:45	78.4	8.84	7.12
11:46	78.2	8.82	7.14
11:47	78.3	8.76	7.24
11:48	78.7	8.72	7.32
11:49	78.9	8.67	7.41
11:50	79	8.62	7.5
11:51	78.8	8.71	7.36
11:52	78	8.75	7.29
11:53	78.1	8.74	7.3
11:54	78.2	8.85	7.13
11:55	78.8	8.7	7.37
11:56	77.8	8.75	7.29
11:57	77.8	8.68	7.41
11:58	77.2	8.72	7.34
11:59	77.6	8.67	7.43
12:00	77.8	8.72	7.38
12:01	76.8	8.71	7.39
12:02	76.6	8.64	7.49
12:03	78	8.59	7.58
12:04	78.5	8.54	7.68
12:05	78.3	8.78	7.31
12:06	76.7	8.76	7.31
12:07	77.3	8.72	7.41
12:08	76.6	8.81	7.24
12:09	75.7	8.68	7.45
12:10	77.3	8.72	7.41
12:11	76.6	8.74	7.37
12:12	76	8.69	7.46
12:13	77.3	8.7	7.44
12:14	77.1	8.7	7.43
12:15	76.2	8.71	7.44
12:16	77.1	8.62	7.57
12:17	76.7	8.68	7.5
12:18	76.3	8.65	7.52
12:19	76.4	8.67	7.49
12:20	76.5	8.67	7.47
12:21	76.4	8.74	7.35
12:22	76.7	8.6	7.6
12:23	76.5	8.71	7.45

Run 3

GCO Bypass Vent Stack 5 CD Testing
9/19/2018

Time	NOX (ppm)	CO2 (%)	O2 (%)
12:24	75.5	8.76	7.36
12:25	75.4	8.83	7.24
12:26	76.1	8.88	7.17
12:27	75.7	8.91	7.1
12:28	75	8.91	7.09
12:29	75.6	8.84	7.22
12:30	75	8.88	7.15
12:31	76.7	8.81	7.3
12:32	75.7	8.85	7.23
12:33	75.6	8.91	7.12
12:34	75.2	8.88	7.17
Average	**77.3**	**8.7**	**7.3**

Run 3

GCO Bypass Vent Stack 5 CD Testing
9/19/2018

Time	CO2 (%)	O2 (%)
23:14	11.01	3.49
23:15	11	3.63
23:16	10.82	3.91
23:17	10.81	3.93
23:18	10.72	4.02
23:19	10.69	4.12
23:20	10.72	4.05
23:21	10.83	3.87
23:22	10.87	3.81
23:23	10.97	3.65
23:24	10.92	3.66
23:25	10.61	4.14
23:26	10.63	4.14
23:27	10.49	4.33
23:28	10.47	4.38
23:29	10.36	4.53
23:30	10.37	4.52
23:31	10.47	4.37
23:32	10.57	4.2
23:33	10.45	4.36
23:34	10.38	4.5
23:35	10.33	4.56
23:36	10.27	4.64
23:37	10.21	4.75
23:38	10.2	4.76
23:39	10.13	4.87
23:40	10.17	4.8
23:41	10.09	4.92
23:42	10.06	4.96
23:43	10.02	5.03
23:44	9.94	5.14
23:45	9.96	5.11
23:46	9.91	5.17
23:47	9.94	5.14
23:48	9.92	5.17
23:49	9.85	5.26
23:50	9.77	5.4
23:51	9.77	5.38
23:52	9.77	5.4
23:53	9.66	5.55
23:54	9.71	5.49
23:55	9.67	5.53
23:56	9.65	5.58
23:57	9.64	5.6
23:58	9.6	5.64
23:59	9.56	5.7
0:00	9.57	5.69
0:01	9.52	5.76
0:02	9.53	5.75

Run 4

GCO Bypass Vent Stack 5 CD Testing
9/19/2018

Time	CO2 (%)	O2 (%)
0:03	9.49	5.81
0:04	9.46	5.87
0:05	9.45	5.86
0:06	9.41	5.92
0:07	9.34	6.05
0:08	9.35	6.03
0:09	9.3	6.11
0:10	9.31	6.1
0:11	9.35	6.04
0:12	9.28	6.14
0:13	9.26	6.17
0:14	9.22	6.23
0:15	9.21	6.26
0:16	9.18	6.28
0:17	9.19	6.29
0:18	9.18	6.3
0:19	9.18	6.29
0:20	9.13	6.39
0:21	9.15	6.35
0:22	9.15	6.36
0:23	9.12	6.4
0:24	9.09	6.44
0:25	9.05	6.5
0:26	9.06	6.5
0:27	9.03	6.55
0:28	9.04	6.54
0:29	8.92	6.62
Average	**9.86**	**5.27**

Run 4

GCO Bypass Vent Stack 5 CD Testing
9/20/2018

Time	CO2 (%)	O2 (%)
12:13	9.65	5.9
12:14	9.55	6.01
12:15	9.57	6.05
12:16	9.53	6.12
12:17	9.47	6.19
12:18	9.45	6.21
12:19	9.53	6.15
12:20	9.55	6.12
12:21	9.64	5.98
12:22	9.56	6.08
12:23	9.61	6.02
12:24	9.46	6.22
12:25	9.61	6.05
12:26	9.58	6.07
12:27	9.7	5.95
12:28	9.65	5.97
12:29	9.6	6.04
12:30	9.58	6.11
12:31	9.59	6.07
12:32	9.53	6.15
12:33	9.44	6.29
12:34	9.5	6.22
12:35	9.64	6.02
12:36	9.65	5.99
12:37	9.66	5.97
12:38	9.6	6.03
12:39	9.59	6.09
12:40	9.5	6.18
12:41	9.52	6.2
12:42	9.6	6.07
12:43	9.53	6.18
12:44	9.45	6.28
12:45	9.48	6.26
12:46	9.49	6.25
12:47	9.5	6.26
12:48	9.41	6.35
12:49	9.55	6.18
12:50	9.55	6.18
12:51	9.55	6.14
12:52	9.57	6.13
12:53	9.52	6.22
12:54	9.47	6.26
12:55	9.41	6.38
12:56	9.4	6.38
12:57	9.53	6.21
12:58	9.52	6.22
12:59	9.57	6.16
13:00	9.55	6.15
13:01	9.48	6.26

Run 5

GCO Bypass Vent Stack 5 CD Testing
9/20/2018

Time	CO2 (%)	O2 (%)
13:02	9.51	6.22
13:03	9.53	6.21
13:04	9.52	6.23
13:05	9.63	6.06
13:06	9.58	6.13
13:07	9.46	6.29
13:08	9.52	6.24
13:09	9.48	6.27
13:10	9.33	6.5
13:11	9.36	6.48
13:12	9.3	6.54
13:13	9.4	6.43
13:14	9.45	6.35
13:15	9.35	6.46
13:16	9.35	6.48
13:17	9.35	6.48
13:18	9.39	6.43
13:19	9.51	6.26
13:20	9.38	6.44
13:21	9.45	6.37
13:22	9.43	6.3
13:23	9.45	6.33
13:24	9.42	6.36
13:25	9.25	6.62
13:26	9.27	6.58
13:27	9.23	6.65
13:28	9.28	6.62
13:29	9.29	6.57
13:30	9.29	6.58
13:31	9.25	6.64
13:32	9.38	6.49
13:33	9.4	6.5
13:34	9.35	6.52
13:35	9.35	6.5
13:36	9.24	6.63
13:37	9.23	6.67
13:38	9.25	6.65
13:39	9.27	6.6
13:40	9.34	6.51
13:41	9.28	6.62
Average	**9.47**	**6.28**

Run 5

GCO Bypass Vent Stack 5 CD Testing
9/20/2018

Time	CO2 (%)	O2 (%)
16:00	8.89	7.16
16:01	9.04	6.94
16:02	8.94	7.09
16:03	9.04	6.94
16:04	8.99	7.03
16:05	8.93	7.11
16:06	8.92	7.13
16:07	9.06	6.93
16:08	8.99	7.28
16:09	8.99	7.05
16:10	9.08	6.93
16:11	9.15	6.93
16:12	9.08	6.85
16:13	9.09	6.84
16:14	8.95	7.06
16:15	8.99	6.99
16:16	8.98	7.03
16:17	9.02	6.97
16:18	9.01	6.97
16:19	9.13	6.81
16:20	9.13	6.8
16:21	9.09	6.86
16:22	9.07	6.87
16:23	9.03	6.93
16:24	8.99	7.02
16:25	8.91	7.15
16:26	8.97	7.05
16:27	9.04	6.94
16:28	8.97	7.06
16:29	9.05	6.92
16:30	8.94	7.1
16:31	8.98	7.04
16:32	9	7.01
16:33	8.99	7.05
16:34	8.91	7.11
16:35	8.97	7.06
16:36	8.91	7.16
16:37	8.89	7.2
16:38	9.03	7
16:39	8.9	7.17
16:40	8.96	7.09
16:41	8.94	7.14
16:42	8.89	7.2
16:43	8.91	7.15
16:44	8.91	7.19
16:45	8.92	7.15
16:46	8.91	7.19
16:47	8.91	7.17
16:48	8.92	7.16
16:49	8.83	7.3

Run 6

GCO Bypass Vent Stack 5 CD Testing
9/20/2018

Time	CO2 (%)	O2 (%)
16:50	8.82	7.33
16:51	8.84	7.29
16:52	8.78	7.41
16:53	8.85	7.29
16:54	8.88	7.24
16:55	8.89	7.24
16:56	8.91	7.2
16:57	8.95	7.12
16:58	8.92	7.16
16:59	8.91	7.21
17:00	8.98	7.1
17:01	9.04	6.97
17:02	9.04	6.99
17:03	9.03	7
17:04	8.95	7.11
17:05	8.97	7.1
17:06	8.91	7.21
17:07	8.95	7.13
17:08	8.94	7.15
17:09	8.88	7.2
17:10	8.87	7.26
17:11	8.92	7.21
17:12	8.92	7.19
17:13	8.98	7.1
17:14	8.98	7.08
17:15	8.95	7.13
17:16	8.96	7.1
17:17	8.91	7.2
17:18	8.86	7.27
17:19	9.03	7.05
17:20	8.8	7.4
17:21	8.93	7.17
17:22	8.92	7.19
17:23	8.87	7.27
17:24	8.89	7.22
17:25	8.89	7.25
17:26	8.78	7.4
17:27	8.6	7.68
17:28	8.77	7.44
17:29	8.76	7.45
17:30	8.72	7.56
17:31	8.53	7.71
Average	**8.94**	**7.13**

Run 6

CEM CALIBRATION DATA

Sampling Location	Bypass Stack 5
Date	18-Sep-18
Run Number	1
Start Time	1612
Stop Time	1711

Plant Name	Gateway Energy & Coke
Plant Rep.	Kris Singleton
Team Leader	John Carson
CEM Operator	Chandra Sastry
Project Number	60582380

	Analyzer Number	Calibration Span
O2	05230A1	20.99
CO2	11047	20.67
NOX		90.9
SO2		
CO		

	Calibration Gas Specification (% of Span)	CALIBRATION ERROR CHECK				SYSTEM CAL CHECK					Calibration Correction Factors
		Calibration Value (% or ppm)	Cylinder Number (1)	Analyzer Calibration Response	Difference (% of Span)	Pre Run 1 System Response	Pre Run 1 Syst. Bias (% of Span)	Post Run 1 System Response	Post Run 1 Syst. Bias (% of Span)	Drift (% of Span)	
O2 Zero	0	0	UHP Nitrogen	0.02	0.10%	0.06	0.19%	0.06	0.19%	0.00%	Co=0.1
O2 Low	NR										
O2 Mid	40-60	10.13	EB0088246	10.18	0.24%	10.08	-0.48%	9.85	-1.57%	-1.10%	Cm=10.0
O2 High	100	20.99	CC126166	21.07	0.38%						
CO2 Zero	0	0	UHP Nitrogen	0.16	0.77%	0.16	0.00%	0.22	0.29%	0.29%	Co=0.2
CO2 Low	NR										
CO2 Mid	40-60	9.958	EB0088246	9.89	-0.33%	9.74	-0.73%	9.58	-1.50%	-0.77%	Cm=9.7
CO2 High	100	20.67	CC126166	20.69	0.10%						
NOX Zero	0	0	UHP Nitrogen	0	0.00%	0.2	0.22%	0	0.00%	-0.22%	Co=0.1
NOX Low	NR										
NOX Mid	40-60	45.78	CC415347	45.3	-0.53%	44.7	-0.66%	43.7	-1.76%	-1.10%	Cm=44.2
NOX High	100	90.9	CC199922	90.9	0.00%						

$$Calibration\ Error = \left(\frac{Analyzer\ Response\ - Calibration\ Value}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 2\%$$

$$System\ Bias = \left(\frac{System\ Response\ - Analyzer\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 5\%$$

$$Drift = \left(\frac{Post\ Test\ System\ Response\ - Pre\ Test\ System\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 3\%$$

$$C_0 = \left(\frac{Pre\ Test\ System\ Zero\ Response + Post\ Test\ System\ Zero\ Response}{2}\right)$$

$$C_m = \left(\frac{Pre\ Test\ System\ Upscale\ Response + Post\ Test\ System\ Upscale\ Response}{2}\right)$$

CEM CALIBRATION DATA

Sampling Location	Bypass Stack 5
Date	18-Sep-18
Run Number	2
Start Time	2319
Stop Time	0018

Plant Name	Gateway Energy & Coke
Plant Rep.	Kris Singleton
Team Leader	John Carson
CEM Operator	Chandra Sastry
Project Number	60582380

	Analyzer Number	Calibration Span
O2	05230A1	20.99
CO2	11047	20.67
NOX		90.9
SO2		
CO		

	Calibration Gas Specification (% of Span)	CALIBRATION ERROR CHECK				SYSTEM CAL CHECK					
		Calibration Value (% or ppm)	Cylinder Number (1)	Analyzer Calibration Response	Difference (% of Span)	Pre Run 2		Post Run 2		Drift (% of Span)	Calibration Correction Factors
						System Response	Syst. Bias (% of Span)	System Response	Syst. Bias (% of Span)		
O2 Zero	0	0	UHP Nitrogen	0.02	0.10%	0.06	0.19%	0.07	0.24%	0.05%	Co=0.1
O2 Low	NR										
O2 Mid	40-60	10.13	EB0088246	10.18	0.24%	9.85	-1.57%	10.13	-0.24%	1.33%	Cm=10.0
O2 High	100	20.99	CC126166	21.07	0.38%						
CO2 Zero	0	0	UHP Nitrogen	0.16	0.77%	0.22	0.29%	0.02	-0.68%	-0.97%	Co=0.1
CO2 Low	NR										
CO2 Mid	40-60	9.958	EB0088246	9.89	-0.33%	9.58	-1.50%	9.67	-1.06%	0.44%	Cm=9.6
CO2 High	100	20.67	CC126166	20.69	0.10%						
NOX Zero	0	0	UHP Nitrogen	0	0.00%	0	0.00%	0.1	0.11%	0.11%	Co=0.1
NOX Low	NR										
NOX Mid	40-60	45.78	CC415347	45.3	-0.53%	43.7	-1.76%	44.7	-0.66%	1.10%	Cm=44.2
NOX High	100	90.9	CC199922	90.9	0.00%						

$$Calibration\ Error = \left(\frac{Analyzer\ Response\ - Calibration\ Value}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 2\%$$

$$System\ Bias = \left(\frac{System\ Response\ - Analyzer\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 5\%$$

$$Drift = \left(\frac{Post\ Test\ System\ Response\ - Pre\ Test\ System\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 3\%$$

$$C_0 = \left(\frac{Pre\ Test\ System\ Zero\ Response + Post\ Test\ System\ Zero\ Response}{2}\right)$$

$$C_m = \left(\frac{Pre\ Test\ System\ Upscale\ Response + Post\ Test\ System\ Upscale\ Response}{2}\right)$$

CEM CALIBRATION DATA

Sampling Location	Bypass Stack 5
Date	19-Sep-18
Run Number	3
Start Time	1135
Stop Time	1234

Plant Name	Gateway Energy & Coke
Plant Rep.	Kris Singleton
Team Leader	John Carson
CEM Operator	Chandra Sastry
Project Number	60582380

	Analyzer Number	Calibration Span
O2	05230A1	20.99
CO2	11047	20.67
NOX		90.9
SO2		
CO		

	Calibration Gas Specification (% of Span)	CALIBRATION ERROR CHECK				SYSTEM CAL CHECK					Calibration Correction Factors
		Calibration Value (% or ppm)	Cylinder Number (1)	Analyzer Calibration Response	Difference (% of Span)	Pre Run 3		Post Run 3		Drift (% of Span)	
						System Response	Syst. Bias (% of Span)	System Response	Syst. Bias (% of Span)		
O2 Zero	0	0	UHP Nitrogen	0.02	0.10%	0.07	0.24%	0.03	0.05%	-0.19%	Co=0.1
O2 Low	NR										
O2 Mid	40-60	10.13	EB0088246	10.18	0.24%	10.13	-0.24%	10.04	-0.67%	-0.43%	Cm=10.1
O2 High	100	20.99	CC126166	21.07	0.38%						
CO2 Zero	0	0	UHP Nitrogen	0.16	0.77%	0.02	-0.68%	0.27	0.53%	1.21%	Co=0.1
CO2 Low	NR										
CO2 Mid	40-60	9.958	EB0088246	9.89	-0.33%	9.67	-1.06%	9.72	-0.82%	0.24%	Cm=9.7
CO2 High	100	20.67	CC126166	20.69	0.10%						
NOX Zero	0	0	UHP Nitrogen	0	0.00%	0.1	0.11%	0.2	0.22%	0.11%	Co=0.2
NOX Low	NR										
NOX Mid	40-60	45.78	CC415347	45.3	-0.53%	44.7	-0.66%	44	-1.43%	-0.77%	Cm=44.4
NOX High	100	90.9	CC199922	90.9	0.00%						

$$Calibration\ Error = \left(\frac{Analyzer\ Response\ - Calibration\ Value}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 2\%$$

$$System\ Bias = \left(\frac{System\ Response\ - Analyzer\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 5\%$$

$$Drift = \left(\frac{Post\ Test\ System\ Response\ - Pre\ Test\ System\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 3\%$$

$$C_0 = \left(\frac{Pre\ Test\ System\ Zero\ Response + Post\ Test\ System\ Zero\ Response}{2}\right)$$

$$C_m = \left(\frac{Pre\ Test\ System\ Upscale\ Response + Post\ Test\ System\ Upscale\ Response}{2}\right)$$

CEM CALIBRATION DATA

Sampling Location	Bypass Stack 5
Date	19-Sep-18
Run Number	4
Start Time	2314
Stop Time	0029

Plant Name	Gateway Energy & Coke
Plant Rep.	Kris Singleton
Team Leader	John Carson
CEM Operator	Chandra Sastry
Project Number	60582380

	Analyzer Number	Calibration Span
O2	05230A1	20.99
CO2	11047	20.67
NOX		90.9
SO2		
CO		

	Calibration Gas Specification (% of Span)	CALIBRATION ERROR CHECK				SYSTEM CAL CHECK					Calibration Correction Factors
						Pre Run 4		Post Run 4			
		Calibration Value (% or ppm)	Cylinder Number (1)	Analyzer Calibration Response	Difference (% of Span)	System Response	Syst. Bias (% of Span)	System Response	Syst. Bias (% of Span)	Drift (% of Span)	
O2 Zero	0	0	UHP Nitrogen	0.02	0.10%	0.03	0.05%	0	-0.10%	-0.14%	Co=0.0
O2 Low	NR										
O2 Mid	40-60	10.13	EB0088246	10.18	0.24%	10.04	-0.67%	10.1	-0.38%	0.29%	Cm=10.1
O2 High	100	20.99	CC126166	21.07	0.38%						
CO2 Zero	0	0	UHP Nitrogen	0.16	0.77%	0.27	0.53%	0.23	0.34%	-0.19%	Co=0.3
CO2 Low	NR										
CO2 Mid	40-60	9.958	EB0088246	9.89	-0.33%	9.72	-0.82%	9.63	-1.26%	-0.44%	Cm=9.7
CO2 High	100	20.67	CC126166	20.69	0.10%						

$$Calibration\ Error = \left(\frac{Analyzer\ Response\ - Calibration\ Value}{Analyzer\ Span}\right) \times 100\ ;\text{allowable error} = \pm 2\%$$

$$System\ Bias = \left(\frac{System\ Response\ - Analyzer\ Response}{Analyzer\ Span}\right) \times 100\ ;\text{allowable error} = \pm 5\%$$

$$Drift = \left(\frac{Post\ Test\ System\ Response\ - Pre\ Test\ System\ Response}{Analyzer\ Span}\right) \times 100\ ;\text{allowable error} = \pm 3\%$$

$$C_0 = \left(\frac{Pre\ Test\ System\ Zero\ Response + Post\ Test\ System\ Zero\ Response}{2}\right)$$

$$C_m = \left(\frac{Pre\ Test\ System\ Upscale\ Response + Post\ Test\ System\ Upscale\ Response}{2}\right)$$

CEM CALIBRATION DATA

Sampling Location	Bypass Stack 5
Date	20-Sep-18
Run Number	5
Start Time	1213
Stop Time	1341

Plant Name	Gateway Energy & Coke
Plant Rep.	Kris Singleton
Team Leader	John Carson
CEM Operator	Chandra Sastry
Project Number	60582380

	Analyzer Number	Calibration Span
O2	05230A1	20.99
CO2	11047	20.67
NOX		90.9
SO2		
CO		

	Calibration Gas Specification (% of Span)	CALIBRATION ERROR CHECK				SYSTEM CAL CHECK					Calibration Correction Factors
		Calibration Value (% or ppm)	Cylinder Number (1)	Analyzer Calibration Response	Difference (% of Span)	Pre Run 5 System Response	Pre Run 5 Syst. Bias (% of Span)	Post Run 5 System Response	Post Run 5 Syst. Bias (% of Span)	Drift (% of Span)	
O2 Zero	0	0	UHP Nitrogen	0.02	0.10%	0	-0.10%	0.04	0.10%	0.19%	Co=0.0
O2 Low	NR										
O2 Mid	40-60	10.13	EB0088246	10.18	0.24%	10.1	-0.38%	10.08	-0.48%	-0.10%	Cm=10.1
O2 High	100	20.99	CC126166	21.07	0.38%						
CO2 Zero	0	0	UHP Nitrogen	0.16	0.77%	0.23	0.34%	0.21	0.24%	-0.10%	Co=0.2
CO2 Low	NR										
CO2 Mid	40-60	9.958	EB0088246	9.89	-0.33%	9.63	-1.26%	9.64	-1.21%	0.05%	Cm=9.6
CO2 High	100	20.67	CC126166	20.69	0.10%						

$$Calibration\ Error = \left(\frac{Analyzer\ Response\ - Calibration\ Value}{Analyzer\ Span}\right) \times 100\ ;\text{allowable error} = \pm 2\%$$

$$System\ Bias = \left(\frac{System\ Response\ - Analyzer\ Response}{Analyzer\ Span}\right) \times 100\ ;\text{allowable error} = \pm 5\%$$

$$Drift = \left(\frac{Post\ Test\ System\ Response\ - Pre\ Test\ System\ Response}{Analyzer\ Span}\right) \times 100\ ;\text{allowable error} = \pm 3\%$$

$$C_0 = \left(\frac{Pre\ Test\ System\ Zero\ Response + Post\ Test\ System\ Zero\ Response}{2}\right)$$

$$C_m = \left(\frac{Pre\ Test\ System\ Upscale\ Response + Post\ Test\ System\ Upscale\ Response}{2}\right)$$

CEM CALIBRATION DATA

Sampling Location	Bypass Stack 5
Date	20-Sep-18
Run Number	6
Start Time	1600
Stop Time	1731

Plant Name	Gateway Energy & Coke
Plant Rep.	Kris Singleton
Team Leader	John Carson
CEM Operator	Chandra Sastry
Project Number	60582380

	Analyzer Number	Calibration Span
O2	05230A1	20.99
CO2	11047	20.67
NOX		90.9
SO2		
CO		

	Calibration Gas Specification (% of Span)	CALIBRATION ERROR CHECK				SYSTEM CAL CHECK					Calibration Correction Factors
		Calibration Value (% or ppm)	Cylinder Number (1)	Analyzer Calibration Response	Difference (% of Span)	Pre Run 6 System Response	Pre Run 6 Syst. Bias (% of Span)	Post Run 6 System Response	Post Run 6 Syst. Bias (% of Span)	Drift (% of Span)	
O2 Zero	0	0	UHP Nitrogen	0.02	0.10%	0.04	0.10%	0.04	0.10%	0.00%	Co=0.0
O2 Low	NR										
O2 Mid	40-60	10.13	EB0088246	10.18	0.24%	10.08	-0.48%	10.04	-0.67%	-0.19%	Cm=10.1
O2 High	100	20.99	CC126166	21.07	0.38%						
CO2 Zero	0	0	UHP Nitrogen	0.16	0.77%	0.21	0.24%	0.23	0.34%	0.10%	Co=0.2
CO2 Low	NR										
CO2 Mid	40-60	9.958	EB0088246	9.89	-0.33%	9.64	-1.21%	9.65	-1.16%	0.05%	Cm=9.6
CO2 High	100	20.67	CC126166	20.69	0.10%						

$$Calibration\ Error = \left(\frac{Analyzer\ Response\ - Calibration\ Value}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 2\%$$

$$System\ Bias = \left(\frac{System\ Response\ - Analyzer\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 5\%$$

$$Drift = \left(\frac{Post\ Test\ System\ Response\ - Pre\ Test\ System\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 3\%$$

$$C_0 = \left(\frac{Pre\ Test\ System\ Zero\ Response + Post\ Test\ System\ Zero\ Response}{2}\right)$$

$$C_m = \left(\frac{Pre\ Test\ System\ Upscale\ Response + Post\ Test\ System\ Upscale\ Response}{2}\right)$$

GCO Bypass Vent Stack 5 CD Testing
9/18/2018

Time	NOX (ppm)	CO2 (%)	O2 (%)
9:34	0	0.23	11.51
9:35	0	0.16	0.07
9:36	0	0.16	0.03
9:37	0	0.16	0.02
9:38	0	14.64	12.9
9:39	0	20.56	21.01
9:40	0	20.69	21.07
9:41	0	18.34	19.65
9:42	0	10	10.41
9:43	0	9.9	10.2
9:44	0	9.89	10.18
9:45	0	8.45	10.71
9:46	0	0.38	18.42
9:47	0	0.34	20.57
9:48	0	0.34	20.71
9:49	0	0.52	20.67
9:50	49.7	0.85	3.51
9:51	94.9	0.21	0.11
9:52	90.9	0.19	0.05
9:53	90.1	0.18	0.03
9:54	79.9	0.19	0.12
9:55	45.8	0.17	0.01
9:56	45.3	0.17	0

Direct Cal

GCO Bypass Vent Stack 5 CD Testing
9/18/2018

Time	NOX (ppm)	CO2 (%)	O2 (%)
10:15	13.2	0.19	2.36
10:16	4.9	0.16	0.12
10:17	2.3	0.16	0.08
10:18	1.4	0.16	0.06
10:19	0.8	0.16	0.06
10:20	0.6	3.48	2.62
10:21	0.5	9.62	10.02
10:22	0.4	9.7	10.07
10:23	0.2	9.74	10.08
10:24	17.6	3.02	3.89
10:25	44.4	0.27	0.06
10:26	44.6	0.22	0.04
10:27	44.7	0.2	0.02

System Cal

GCO Bypass Vent Stack 5 CD Testing
9/18/2018

Time	NOX (ppm)	CO2 (%)	O2 (%)
18:31	0.1	0.28	20.34
18:32	0.1	0.24	2.27
18:33	0	0.22	0.08
18:34	0	0.22	0.06
18:35	0	0.21	0.05
18:36	0	6.03	5.62
18:37	0	9.46	9.82
18:38	0	9.54	9.84
18:39	0	9.58	9.85
18:40	0	9.03	9.68
18:41	23.6	0.57	0.56
18:42	43.3	0.33	0.04
18:43	43.6	0.28	0.02
18:44	43.7	0.25	0.02

Post Cal Run 1

GCO Bypass Vent Stack 5 CD Testing
9/19/2018

Time	NOX (ppm)	CO2 (%)	O2 (%)
1:41	0.0	0.37	17.74
1:42	6.4	0.22	0.41
1:43	0.1	0.21	0.1
1:44	0.1	0.2	0.07
1:45	0.0	2.26	1.8
1:46	0.0	9.46	10.04
1:47	0.0	9.61	10.13
1:48	0.0	9.67	10.13
1:49	11.5	3.05	3.5
1:50	44.3	0.34	0.1
1:51	44.6	0.27	0.04
1:52	44.7	0.25	0.03

Post Cal Run 2

GCO Bypass Vent Stack 5 CD Testing
9/19/2018

Time	NOX (ppm)	CO2 (%)	O2 (%)
13:54	53.3	3.13	15.51
13:55	9.6	0.43	5.6
13:56	0.3	0.29	0.06
13:57	0.2	0.27	0.03
13:58	0.1	0.45	0.08
13:59	0.1	9.29	9.12
14:00	0.1	9.67	10
14:01	0	9.71	10.02
14:02	0	9.72	10.04
14:03	9	4.48	5.32
14:04	43.4	0.34	0.06
14:05	43.9	0.27	0.03
14:06	44	0.26	1.76

Post Cal Run 3

GCO Bypass Vent Stack 5 CD Testing
9/20/2018

Time	CO2 (%)	O2 (%)
0:30	1.34	2.26
0:31	0.27	0.02
0:32	0.23	0
0:33	1.09	0.39
0:34	9.41	9.67
0:35	9.6	10.09
0:36	9.63	10.1

Post Cal Run 4

GCO Bypass Vent Stack 5 CD Testing
9/20/2018

Time	CO2 (%)	O2 (%)
13:42	9.33	6.54
13:43	6.43	5.91
13:44	0.3	0.08
13:45	0.21	0.04
13:46	1	0.55
13:47	9.44	9.88
13:48	9.6	10.07
13:49	9.64	10.08

Post Cal Run 5

GCO Bypass Vent Stack 5 CD Testing
9/20/2018

Time	CO2 (%)	O2 (%)
17:30	8.72	7.56
17:31	8.53	7.71
17:32	0.81	1.55
17:33	0.23	0.04
17:34	1.45	0.97
17:35	9.47	9.85
17:36	9.61	10.03
17:37	9.65	10.04

Post Cal Run 6

NO_2-NO Converter Efficiency Test (NO_2 Cylinder Method)

Date:	9/18/2018	Location:	Bypass Stack 5
Project:	CD Testing	Technician:	Chandra Sastry
Analyzer:	Thermo Environmental	Operating Range:	0-100
Model:	42i-HL		
S/N:	828232281		

Cylinder Number	Cal Gas Concentration	NO_x Analyzer Response in Direct Cal Mode
CC504828	50.19	45.3

$$\text{Converter Efficiency} = \frac{C_{Dir}}{C_v} \times 100$$

Converter Efficiency = **90.3** % (Must be greater than or equal to 90 percent)

Procedures

1. Calibrate analyzer
2. Introduce a 40 to 60 ppmv NO_2 calibration gas cylinder to the analyzer in direct cal mode and record the NO_x response.
3. Calculate efficiency.

GCO Bypass Vent Stack 5 CD Testing
9/18/2018

Time	NOX (ppm)	CO2 (%)	O2 (%)
9:59	34.5	0.2	21.06
10:00	38.6	0.2	21.1
10:01	41.4	0.2	21.12
10:02	42.6	0.2	21.13
10:03	43.3	0.2	21.14
10:04	43.8	0.2	21.15
10:05	44.2	0.2	21.15
10:06	44.5	0.2	21.16
10:07	44.7	0.2	21.16
10:08	44.9	0.2	21.16
10:09	44.9	0.2	21.16
10:10	45.1	0.2	21.17
10:11	45.2	0.2	21.17
10:12	45.3	0.2	21.17

NOX Conv Test

RM Sample Data

Plant Name	Gateway Energy & Coke
Sampling Location	Bypass Stack 5
Date	Oct 4 - 5
CEM Operator	Chandra Sastry
Project Number	60582380

Observed Values

Run No.	Date	Start Time	Stop Time	Start - Stop Time	Reference Method Obs. Value		
					O_2	CO_2	NOX
1	10/4/18	1230	1339	1230 - 1339	12.7	5.4	25.6
2	10/4/18	1610	1713	1610 - 1713	8.7	8.2	57.5
3	10/4/18	2130	2233	2130 - 2233	5.9	9.9	66.9
4	10/4/18	2307	0009	2307 - 0009	6.9	9.1	67.7
5	10/5/18	0041	0145	0041 - 0145	7.8	8.6	51.5
6	10/5/18	1016	1137	1016 - 1137	7.7	8.6	58.6

Bias-Adjusted Values

Run No.	Date	Start Time	Stop Time	Start - Stop Time	Reference Method Adj. Value		
					O_2	CO_2	NOX
1	10/4/18	1230	1339	1230 - 1339	12.7	5.4	26.02
2	10/4/18	1610	1713	1610 - 1713	8.8	8.2	56.28
3	10/4/18	2130	2233	2130 - 2233	6.0	10.0	65.18
4	10/4/18	2307	0009	2307 - 0009	7.0	9.2	67.77
5	10/5/18	0041	0145	0041 - 0145	7.9	8.7	51.17
6	10/5/18	1016	1137	1016 - 1137	7.8	8.7	57.30

CEM Data Correction Data Sheet

Plant Name	Gateway Energy & Coke
Sampling Location	Bypass Stack 5
Date	4-Oct-18
CEM Operator	Chandra Sastry
Project Number	60582380
Pollutant	O_2

Run No.	Start Time	Stop Time	Obs. Conc. (% or ppm)	Calibration Data			Calibration Corrected Data (% or ppm)
				Cma	Co	Cm	
1	1230	1339	12.7	10.1	0.0	10.1	12.7
2	1610	1713	8.7	10.1	0.0	10.1	8.8
3	2130	2233	5.9	10.1	0.0	10.0	6.0
4	2307	0009	6.9	10.1	0.1	10.0	7.0
5	0041	0145	7.8	10.1	0.1	10.0	7.9
6	1016	1137	7.7	10.1	0.0	10.0	7.8

Calibration Error Correction

Cgas=(Cobs-Co)*(Cma/(Cm-Co))

CEM Data Correction Data Sheet

Plant Name	Gateway Energy & Coke
Sampling Location	Bypass Stack 5
Date	4-Oct-18
CEM Operator	Chandra Sastry
Project Number	60582380
Pollutant	CO_2

Run No.	Start Time	Stop Time	Obs. Conc. (% or ppm)	Calibration Data			Calibration Corrected Data (% or ppm)
				Cma	Co	Cm	
1	1230	1339	5.4	10.0	0.3	9.8	5.4
2	1610	1713	8.2	10.0	0.4	9.9	8.2
3	2130	2233	9.9	10.0	0.4	9.9	10.0
4	2307	0009	9.1	10.0	0.4	9.8	9.2
5	0041	0145	8.6	10.0	0.4	9.8	8.7
6	1016	1137	8.6	10.0	0.3	9.8	8.7

Calibration Error Correction

Cgas=(Cobs-Co)*(Cma/(Cm-Co))

NOX Corrdata

CEM Data Correction Data Sheet

Plant Name	Gateway Energy & Coke
Sampling Location	Bypass Stack 5
Date	4-Oct-18
CEM Operator	Chandra Sastry
Project Number	60582380
Pollutant	NOX

Run No.	Start Time	Stop Time	Obs. Conc. (% or ppm)	Calibration Data			Calibration Corrected Data (% or ppm)
				Cma	Co	Cm	
1	1230	1339	25.6	45.8	0.3	44.9	26.0
2	1610	1713	57.5	45.8	0.2	46.8	56.3
3	2130	2233	66.9	45.8	0.2	47.1	65.2
4	2307	0009	67.7	45.8	0.2	45.8	67.8
5	0041	0145	51.5	45.8	0.2	46.1	51.2
6	1016	1137	58.6	45.8	0.2	46.9	57.3

Calibration Error Correction

Cgas=(Cobs-Co)*(Cma/(Cm-Co))

GCO Bypass Vent Stack 5 CD Testing - NOX Retest
10/4/2018

Time	CO2 (%)	NOX (ppm)	O2 (%)	Probe Location
10/4/2018 11:30	5.3	24.6	12.8	50% of stack
10/4/2018 11:31	5.4	24.2	12.7	50% of stack
10/4/2018 11:32	5.5	25.1	12.4	50% of stack
10/4/2018 11:33	5.6	26.6	12.2	50% of stack
10/4/2018 11:34	5.6	26.2	12.4	50% of stack
10/4/2018 11:35	5.7	25.8	12.2	50% of stack
10/4/2018 11:36	5.6	26.3	12.2	50% of stack
10/4/2018 11:37	5.6	26	12.3	50% of stack
10/4/2018 11:38	5.7	27	12.2	50% of stack
10/4/2018 11:39	5.6	26.7	12.2	50% of stack
10/4/2018 11:40	5.6	26.6	12.3	50% of stack
10/4/2018 11:41	5.5	25.9	12.4	50% of stack
10/4/2018 11:42	5.4	26.5	12.7	50% of stack
10/4/2018 11:43	5.5	27.1	12.5	50% of stack
10/4/2018 11:44	5.4	25.7	12.6	50% of stack
10/4/2018 11:45	5.4	26.1	12.7	50% of stack
10/4/2018 11:46	5.5	27.1	12.4	50% of stack
10/4/2018 11:47	5.2	26.8	12.9	50% of stack
10/4/2018 11:48	5.4	26	12.7	50% of stack
10/4/2018 11:49	5.5	24.6	12.6	50% of stack
10/4/2018 11:50	5.4	24.8	12.7	Moving probe
10/4/2018 11:51	5.6	27.9	12.2	Moving probe
10/4/2018 11:52	5	24.9	13.3	Moving probe
10/4/2018 11:53	5.3	23.8	12.9	Moving probe
10/4/2018 11:54	5.2	24.6	12.9	16.7% of stack
10/4/2018 11:55	5.4	24.7	12.8	16.7% of stack
10/4/2018 11:56	5.4	26.4	12.7	16.7% of stack
10/4/2018 11:57	5.4	26.2	12.7	16.7% of stack
10/4/2018 11:58	5.3	26.9	12.7	16.7% of stack
10/4/2018 11:59	5.4	25.6	12.7	16.7% of stack
10/4/2018 12:00	5.3	24	12.9	16.7% of stack
10/4/2018 12:01	6	26.9	11.7	16.7% of stack
10/4/2018 12:02	5.9	30.1	11.8	16.7% of stack
10/4/2018 12:03	6.3	29.9	11.4	16.7% of stack
10/4/2018 12:04	6.1	31	11.6	16.7% of stack
10/4/2018 12:05	6	30.3	11.7	16.7% of stack
10/4/2018 12:06	5.9	29.1	11.9	16.7% of stack
10/4/2018 12:07	6	28.6	11.8	16.7% of stack
10/4/2018 12:08	5.5	28.9	12.3	16.7% of stack
10/4/2018 12:09	4.7	22.5	13.9	16.7% of stack
10/4/2018 12:10	5.8	23.3	12.3	16.7% of stack
10/4/2018 12:11	6.1	28.9	11.6	16.7% of stack
10/4/2018 12:12	6.2	30.2	11.5	16.7% of stack
10/4/2018 12:13	6.1	29.2	11.5	16.7% of stack
10/4/2018 12:14	6	27	11.9	Moving probe
10/4/2018 12:15	3	26.7	15.2	Moving probe
10/4/2018 12:16	0.5	19.9	19.1	Moving probe
10/4/2018 12:17	2.8	8.3	17.7	Moving probe
10/4/2018 12:18	5.2	18.8	12.9	Moving probe

Run 1

GCO Bypass Vent Stack 5 CD Testing - NOX Retest
10/4/2018

Time	CO2 (%)	NOX (ppm)	O2 (%)	Probe Location
10/4/2018 12:19	4.5	21.4	14.1	Moving probe
10/4/2018 12:20	4.5	21.7	14.1	83.3% of stack
10/4/2018 12:21	4.5	21.7	14.1	83.3% of stack
10/4/2018 12:22	4.5	21.3	14.1	83.3% of stack
10/4/2018 12:23	4.5	21.7	14.2	83.3% of stack
10/4/2018 12:24	4.4	20.6	14.4	83.3% of stack
10/4/2018 12:25	4.4	20.3	14.4	83.3% of stack
10/4/2018 12:26	4.5	21.7	14.2	83.3% of stack
10/4/2018 12:27	4.9	22.3	13.6	83.3% of stack
10/4/2018 12:28	6	27.6	11.8	83.3% of stack
10/4/2018 12:29	6	28.9	11.7	83.3% of stack
10/4/2018 12:30	5.9	27.4	11.8	83.3% of stack
10/4/2018 12:31	6.1	27.1	11.6	83.3% of stack
10/4/2018 12:32	6	28.5	11.7	83.3% of stack
10/4/2018 12:33	4.6	23.3	14	83.3% of stack
10/4/2018 12:34	4.6	21.8	14	83.3% of stack
10/4/2018 12:35	4.5	22.1	14.2	83.3% of stack
10/4/2018 12:36	4.6	21.7	14	83.3% of stack
10/4/2018 12:37	4.6	21.9	14	83.3% of stack
10/4/2018 12:38	4.6	22.4	14	83.3% of stack
10/4/2018 12:39	4.6	21.9	14.1	83.3% of stack
Average	5.4	25.6	12.7	

Run 1

GCO Bypass Vent Stack 5 CD Testing - NOX Retest
10/4/2018

Time	CO2 (%)	NOX (ppm)	O2 (%)	Probe Location				
10/4/2018 15:10	8.2	57.2	8.6	50% of stack		57.385	0.21%	difference from mean
10/4/2018 15:11	8.2	57	8.6	50% of stack		57.97	-0.81%	
10/4/2018 15:12	8.2	57.3	8.6	50% of stack		57.155	0.61%	
10/4/2018 15:13	8.2	57.1	8.7	50% of stack				
10/4/2018 15:14	8.2	56.8	8.6	50% of stack	average	57.5		
10/4/2018 15:15	8.2	56.4	8.6	50% of stack				
10/4/2018 15:16	8.2	57.5	8.7	50% of stack				
10/4/2018 15:17	8.1	58.1	8.7	50% of stack				
10/4/2018 15:18	8.2	57.6	8.7	50% of stack				
10/4/2018 15:19	8.2	57.4	8.7	50% of stack				
10/4/2018 15:20	8.2	57.5	8.7	50% of stack				
10/4/2018 15:21	8.1	57.2	8.7	50% of stack				
10/4/2018 15:22	8.1	57.6	8.7	50% of stack				
10/4/2018 15:23	8.2	57.8	8.7	50% of stack				
10/4/2018 15:24	8.2	57.6	8.7	50% of stack				
10/4/2018 15:25	8.2	57.8	8.7	50% of stack				
10/4/2018 15:26	8.2	57.9	8.7	50% of stack				
10/4/2018 15:27	8.2	57.6	8.7	50% of stack				
10/4/2018 15:28	8.2	57.4	8.6	50% of stack				
10/4/2018 15:29	8.2	56.9	8.7	50% of stack				
10/4/2018 15:30	8.1	56.7	8.8	83.3% of stack				
10/4/2018 15:31	8.2	57.4	8.7	83.3% of stack				
10/4/2018 15:32	8.1	57	8.8	83.3% of stack				
10/4/2018 15:33	8.1	56.8	8.9	83.3% of stack				
10/4/2018 15:34	8.1	56.9	8.8	83.3% of stack				
10/4/2018 15:35	8	57.6	9	83.3% of stack				
10/4/2018 15:36	8.1	58.2	8.8	83.3% of stack				
10/4/2018 15:37	8	58	8.9	83.3% of stack				
10/4/2018 15:38	8	57.5	8.9	83.3% of stack				
10/4/2018 15:39	8.1	58.2	8.8	83.3% of stack				
10/4/2018 15:40	8.1	59	8.8	83.3% of stack				
10/4/2018 15:41	8	58.9	8.9	83.3% of stack				
10/4/2018 15:42	8	58.8	8.9	83.3% of stack				
10/4/2018 15:43	8.1	58.3	8.9	83.3% of stack				
10/4/2018 15:44	8.1	58.3	8.9	83.3% of stack				
10/4/2018 15:45	8.2	59	8.8	83.3% of stack				
10/4/2018 15:46	8.1	58.2	8.8	83.3% of stack				
10/4/2018 15:47	8.2	58.6	8.8	83.3% of stack				
10/4/2018 15:48	8.3	59.1	8.6	83.3% of stack				
10/4/2018 15:49	8.4	56.9	8.5	83.3% of stack				
10/4/2018 15:50	7.7	57	9.1	Moving Probe				
10/4/2018 15:51	0.5	20	20.5	Moving Probe				
10/4/2018 15:52	7.9	38.6	9.9	Moving Probe				
10/4/2018 15:53	8.3	59.6	8.6	Moving Probe				
10/4/2018 15:54	8.3	58.7	8.6	16.7% of stack				
10/4/2018 15:55	8.3	58.7	8.5	16.7% of stack				
10/4/2018 15:56	8.3	59.7	8.5	16.7% of stack				
10/4/2018 15:57	8.2	58.9	8.6	16.7% of stack				
10/4/2018 15:58	8.3	59.2	8.5	16.7% of stack				
10/4/2018 15:59	8.3	60.2	8.6	16.7% of stack				
10/4/2018 16:00	8.3	60.7	8.6	16.7% of stack				
10/4/2018 16:01	8.2	59.7	8.7	16.7% of stack				
10/4/2018 16:02	8.3	56.7	8.5	16.7% of stack				
10/4/2018 16:03	8.3	55.7	8.5	16.7% of stack				
10/4/2018 16:04	8.3	56	8.5	16.7% of stack				
10/4/2018 16:05	8.3	55.8	8.5	16.7% of stack				
10/4/2018 16:06	8.4	55.6	8.4	16.7% of stack				
10/4/2018 16:07	8.4	54.9	8.4	16.7% of stack				
10/4/2018 16:08	8.4	55.3	8.4	16.7% of stack				

Run 2

GCO Bypass Vent Stack 5 CD Testing - NOX Retest
10/4/2018

Time	CO2 (%)	NOX (ppm)	O2 (%)	Probe Location
10/4/2018 16:09	8.3	55	8.4	16.7% of stack
10/4/2018 16:10	8.3	55.3	8.5	16.7% of stack
10/4/2018 16:11	8.3	55.5	8.5	16.7% of stack
10/4/2018 16:12	8.3	55.7	8.5	16.7% of stack
10/4/2018 16:13	8.3	55.8	8.5	16.7% of stack
Average	8.2	57.5	8.7	

Run 2

GCO Bypass Vent Stack 5 CD Testing - NOX Retest
10/4/2018

Time	CO2 (%)	NOX (ppm)	O2 (%)	Probe Location
10/4/2018 20:30	7.4	55.8	10.1	50% of stack
10/4/2018 20:31	7.3	55.4	10.3	50% of stack
10/4/2018 20:32	7.4	56.1	10.1	50% of stack
10/4/2018 20:33	7.9	55.2	9.5	50% of stack
10/4/2018 20:34	7.7	54.4	9.6	50% of stack
10/4/2018 20:35	7.7	56.6	9.7	50% of stack
10/4/2018 20:36	7.8	55.9	9.6	50% of stack
10/4/2018 20:37	8	58.5	9.3	50% of stack
10/4/2018 20:38	8.2	58.7	8.9	50% of stack
10/4/2018 20:39	8.6	61.5	8.3	50% of stack
10/4/2018 20:40	8.6	66	8.1	50% of stack
10/4/2018 20:41	8.6	65.5	8.2	50% of stack
10/4/2018 20:42	8.3	66.4	8.5	50% of stack
10/4/2018 20:43	8.6	61.3	8.2	50% of stack
10/4/2018 20:44	9	63.1	7.5	50% of stack
10/4/2018 20:45	9.3	65.7	7	50% of stack
10/4/2018 20:46	9.6	76.1	6.5	50% of stack
10/4/2018 20:47	9.5	80.1	6.6	50% of stack
10/4/2018 20:48	9.4	75.5	6.7	50% of stack
10/4/2018 20:49	9.4	74.4	6.8	50% of stack
10/4/2018 20:50	9.6	77.2	6.4	16.7% of stack
10/4/2018 20:51	10	76	5.7	16.7% of stack
10/4/2018 20:52	10.4	77	5.2	16.7% of stack
10/4/2018 20:53	10.6	80.1	4.8	16.7% of stack
10/4/2018 20:54	10.4	81.3	5.1	16.7% of stack
10/4/2018 20:55	10.3	78.7	5.3	16.7% of stack
10/4/2018 20:56	10.4	74.5	5.1	16.7% of stack
10/4/2018 20:57	10.7	75.2	4.7	16.7% of stack
10/4/2018 20:58	10.9	73.1	4.2	16.7% of stack
10/4/2018 20:59	11.3	74.8	3.7	16.7% of stack
10/4/2018 21:00	11.5	75.4	3.3	16.7% of stack
10/4/2018 21:01	11.3	75.5	3.5	16.7% of stack
10/4/2018 21:02	11.4	73.3	3.4	16.7% of stack
10/4/2018 21:03	11.2	74	3.7	16.7% of stack
10/4/2018 21:04	11	73.6	4	16.7% of stack
10/4/2018 21:05	11	72.7	3.9	16.7% of stack
10/4/2018 21:06	11.1	71.8	3.8	16.7% of stack
10/4/2018 21:07	11	71.2	3.9	16.7% of stack
10/4/2018 21:08	10.9	69.4	4.1	16.7% of stack
10/4/2018 21:09	10.8	68.6	4.2	16.7% of stack
10/4/2018 21:10	10.9	65.1	4.1	Moving Probe
10/4/2018 21:11	6.7	39.4	10.9	Moving Probe
10/4/2018 21:12	10.9	64	4	Moving Probe
10/4/2018 21:13	10.8	64.4	4.1	83.3% of stack
10/4/2018 21:14	10.6	64.3	4.6	83.3% of stack
10/4/2018 21:15	10.5	65.3	4.6	83.3% of stack
10/4/2018 21:16	10.5	64.4	4.7	83.3% of stack
10/4/2018 21:17	10.6	64.6	4.5	83.3% of stack
10/4/2018 21:18	10.6	63.3	4.6	83.3% of stack

Run 3

GCO Bypass Vent Stack 5 CD Testing - NOX Retest
10/4/2018

Time	CO2 (%)	NOX (ppm)	O2 (%)	Probe Location
10/4/2018 21:19	10.6	63.5	4.5	83.3% of stack
10/4/2018 21:20	10.7	62.1	4.3	83.3% of stack
10/4/2018 21:21	10.7	62	4.4	83.3% of stack
10/4/2018 21:22	10.6	62.5	4.4	83.3% of stack
10/4/2018 21:23	10.3	62.6	4.9	83.3% of stack
10/4/2018 21:24	10.1	63.7	5.2	83.3% of stack
10/4/2018 21:25	10.1	63.8	5.2	83.3% of stack
10/4/2018 21:26	10.3	62.9	5	83.3% of stack
10/4/2018 21:27	10.4	61.7	4.8	83.3% of stack
10/4/2018 21:28	10.4	61.6	4.8	83.3% of stack
10/4/2018 21:29	10.3	61.7	5	83.3% of stack
10/4/2018 21:30	10.3	61.7	5	83.3% of stack
10/4/2018 21:31	9.9	61.6	5.5	83.3% of stack
10/4/2018 21:32	9.9	63.5	5.6	83.3% of stack
Average	9.9	66.9	5.9	

Run 3

GCO Bypass Vent Stack 5 CD Testing - NOX Retest
10/4/2018

Time	CO2 (%)	NOX (ppm)	O2 (%)	Probe Location
10/4/2018 22:07	9.6	67.2	6	50% of stack
10/4/2018 22:08	9.5	67.5	6.1	50% of stack
10/4/2018 22:09	9.5	67.9	6.1	50% of stack
10/4/2018 22:10	9.5	68.2	6.1	50% of stack
10/4/2018 22:11	9.5	68.5	6.2	50% of stack
10/4/2018 22:12	9.5	68	6.2	50% of stack
10/4/2018 22:13	9.5	68.2	6.2	50% of stack
10/4/2018 22:14	9.5	68	6.2	50% of stack
10/4/2018 22:15	9.4	67.8	6.3	50% of stack
10/4/2018 22:16	9.4	67.7	6.3	50% of stack
10/4/2018 22:17	9.4	67.6	6.4	50% of stack
10/4/2018 22:18	9.4	67.6	6.4	50% of stack
10/4/2018 22:19	9.4	67.5	6.4	50% of stack
10/4/2018 22:20	9.4	67.9	6.4	50% of stack
10/4/2018 22:21	9.3	67.7	6.4	50% of stack
10/4/2018 22:22	9.3	68.2	6.5	50% of stack
10/4/2018 22:23	9.3	67.7	6.5	50% of stack
10/4/2018 22:24	9.3	68.3	6.5	50% of stack
10/4/2018 22:25	9.3	68.3	6.5	50% of stack
10/4/2018 22:26	9.3	68.2	6.5	50% of stack
10/4/2018 22:27	9.2	68.2	6.7	83.3% of stack
10/4/2018 22:28	9.1	67.2	6.8	83.3% of stack
10/4/2018 22:29	9.1	67.6	6.8	83.3% of stack
10/4/2018 22:30	9.1	67.2	6.8	83.3% of stack
10/4/2018 22:31	9.1	67.3	6.8	83.3% of stack
10/4/2018 22:32	9.1	67.9	6.9	83.3% of stack
10/4/2018 22:33	9.1	67.8	6.9	83.3% of stack
10/4/2018 22:34	9.1	66.9	6.9	83.3% of stack
10/4/2018 22:35	9.1	67.2	6.9	83.3% of stack
10/4/2018 22:36	9	67.5	6.9	83.3% of stack
10/4/2018 22:37	9	67	7	83.3% of stack
10/4/2018 22:38	9	67.3	7	83.3% of stack
10/4/2018 22:39	9	66.9	7	83.3% of stack
10/4/2018 22:40	9	66.4	7	83.3% of stack
10/4/2018 22:41	9	66.8	7	83.3% of stack
10/4/2018 22:42	9	66.9	7	83.3% of stack
10/4/2018 22:43	9.1	66.7	6.9	83.3% of stack
10/4/2018 22:44	9	66.6	7	83.3% of stack
10/4/2018 22:45	9	67	7	83.3% of stack
10/4/2018 22:46	9	66.7	7	83.3% of stack
10/4/2018 22:47	8.8	69.4	7.3	Moving Probe
10/4/2018 22:48	5.1	44.8	13.4	Moving Probe
10/4/2018 22:49	8.8	67.1	7.3	Moving Probe
10/4/2018 22:50	8.8	71.1	7.4	16.7% of stack
10/4/2018 22:51	8.7	71.5	7.5	16.7% of stack
10/4/2018 22:52	8.8	69.2	7.4	16.7% of stack
10/4/2018 22:53	8.4	65	9	Chiller turned off
10/4/2018 22:54	2.4	64.9	14	Chiller turned off
10/4/2018 22:55	0.8	64.5	16.8	Chiller turned off

Run 4

GCO Bypass Vent Stack 5 CD Testing - NOX Retest
10/4/2018

Time	CO2 (%)	NOX (ppm)	O2 (%)	Probe Location
10/4/2018 22:56	0.7	50.7	18.5	Chiller turned off
10/4/2018 22:57	0.6	31.3	19.5	Chiller turned off
10/4/2018 22:58	5.6	29.5	13.5	Chiller turned off
10/4/2018 22:59	8.7	65.5	7.5	Chiller turned off
10/4/2018 23:00	8.7	69.2	7.6	16.7% of stack
10/4/2018 23:01	8.7	66.4	7.5	16.7% of stack
10/4/2018 23:02	8.8	66.1	7.4	16.7% of stack
10/4/2018 23:03	8.8	66.1	7.4	16.7% of stack
10/4/2018 23:04	8.8	66.3	7.3	16.7% of stack
10/4/2018 23:05	8.7	68.5	7.5	16.7% of stack
10/4/2018 23:06	8.6	69.4	7.7	16.7% of stack
10/4/2018 23:07	8.7	67.3	7.6	16.7% of stack
10/4/2018 23:08	8.7	66.8	7.6	16.7% of stack
10/4/2018 23:09	8.7	67.5	7.5	16.7% of stack
10/4/2018 23:10	8.6	69.6	7.7	16.7% of stack
10/4/2018 23:11	8.6	67.6	7.7	16.7% of stack
10/4/2018 23:12	8.7	67	7.6	16.7% of stack
10/4/2018 23:13	8.6	68.5	7.7	16.7% of stack
10/4/2018 23:14	8.8	66.2	7.5	16.7% of stack
10/4/2018 23:15	8.6	68.5	7.7	16.7% of stack
10/4/2018 23:16	8.5	67.2	7.8	16.7% of stack
Average	9.1	67.7	6.9	

Run 4

GCO Bypass Vent Stack 5 CD Testing - NOX Retest
10/5/2018

Time	CO2 (%)	NOX (ppm)	O2 (%)	Probe Location
10/4/2018 23:41	8.5	64.7	7.8	50% of stack
10/4/2018 23:42	8.6	64	7.7	50% of stack
10/4/2018 23:43	8.4	64	8	50% of stack
10/4/2018 23:44	8.5	63.9	7.9	50% of stack
10/4/2018 23:45	8.5	63.1	7.9	50% of stack
10/4/2018 23:46	8.6	62.7	7.7	50% of stack
10/4/2018 23:47	8.6	61.4	7.7	50% of stack
10/4/2018 23:48	8.6	62.3	7.8	50% of stack
10/4/2018 23:49	8.6	62.2	7.7	50% of stack
10/4/2018 23:50	8.6	61.7	7.7	50% of stack
10/4/2018 23:51	8.5	62.5	7.9	50% of stack
10/4/2018 23:52	8.5	62.1	7.8	50% of stack
10/4/2018 23:53	8.5	63.2	8	50% of stack
10/4/2018 23:54	8.6	61.2	7.8	50% of stack
10/4/2018 23:55	8.6	55.8	7.8	50% of stack
10/4/2018 23:56	8.7	52.7	7.7	50% of stack
10/4/2018 23:57	8.5	52.5	7.9	50% of stack
10/4/2018 23:58	8.5	53.2	8	50% of stack
10/4/2018 23:59	8.5	52.7	8	50% of stack
10/5/2018 0:00	8.5	52.5	8	50% of stack
10/5/2018 0:01	8.5	51.6	8	16.7% of stack
10/5/2018 0:02	8.6	50.4	7.7	16.7% of stack
10/5/2018 0:03	8.7	50.5	7.7	16.7% of stack
10/5/2018 0:04	8.8	48.1	7.5	16.7% of stack
10/5/2018 0:05	8.7	48.5	7.7	16.7% of stack
10/5/2018 0:06	8.9	46.3	7.4	16.7% of stack
10/5/2018 0:07	8.8	49.9	7.6	16.7% of stack
10/5/2018 0:08	8.7	49.5	7.7	16.7% of stack
10/5/2018 0:09	8.8	46.4	7.6	16.7% of stack
10/5/2018 0:10	8.7	48.7	7.6	16.7% of stack
10/5/2018 0:11	8.7	51	7.7	16.7% of stack
10/5/2018 0:12	8.7	48.6	7.7	16.7% of stack
10/5/2018 0:13	8.7	45.4	7.6	16.7% of stack
10/5/2018 0:14	8.7	45	7.6	16.7% of stack
10/5/2018 0:15	8.7	44.5	7.7	16.7% of stack
10/5/2018 0:16	8.7	44.5	7.6	16.7% of stack
10/5/2018 0:17	8.7	44.5	7.6	16.7% of stack
10/5/2018 0:18	8.8	45.3	7.6	16.7% of stack
10/5/2018 0:19	8.7	47.2	7.6	16.7% of stack
10/5/2018 0:20	8.7	47	7.7	16.7% of stack
10/5/2018 0:21	8.7	44.8	7.6	Moving Probe
10/5/2018 0:22	6.2	42.7	10.8	Moving Probe
10/5/2018 0:23	6.4	19.4	12.1	Moving Probe
10/5/2018 0:24	8.5	45.3	8	Moving Probe
10/5/2018 0:25	8.4	47.4	8.1	83.3% of stack
10/5/2018 0:26	8.4	47.5	8.1	83.3% of stack
10/5/2018 0:27	8.4	48.8	8.1	83.3% of stack
10/5/2018 0:28	8.4	48.9	8.1	83.3% of stack
10/5/2018 0:29	8.4	49.4	8.1	83.3% of stack

Run 5

GCO Bypass Vent Stack 5 CD Testing - NOX Retest
10/5/2018

Time	CO2 (%)	NOX (ppm)	O2 (%)	Probe Location
10/5/2018 0:30	8.6	49.5	7.9	83.3% of stack
10/5/2018 0:31	8.7	46.5	7.7	83.3% of stack
10/5/2018 0:32	8.7	45.9	7.6	83.3% of stack
10/5/2018 0:33	8.7	45.6	7.7	83.3% of stack
10/5/2018 0:34	8.8	45.2	7.6	83.3% of stack
10/5/2018 0:35	8.8	44.5	7.6	83.3% of stack
10/5/2018 0:36	8.6	45.7	7.9	83.3% of stack
10/5/2018 0:37	8.4	47.1	8.1	83.3% of stack
10/5/2018 0:38	8.5	48.3	8	83.3% of stack
10/5/2018 0:39	8.7	47.6	7.8	83.3% of stack
10/5/2018 0:40	8.7	45.8	7.7	83.3% of stack
10/5/2018 0:41	8.6	45.7	7.9	83.3% of stack
10/5/2018 0:42	8.5	46.6	8	83.3% of stack
10/5/2018 0:43	8.4	46.3	8.1	83.3% of stack
10/5/2018 0:44	8.4	47.9	8.1	83.3% of stack
Average	8.6	51.5	7.8	

Run 5

GCO Bypass Vent Stack 5 CD Testing - NOX Retest
10/5/2018

Time	CO2 (%)	NOX (ppm)	O2 (%)	Probe Location
10/5/2018 9:16	8.6	60.4	7.6	50% of stack
10/5/2018 9:17	8.6	60.3	7.6	50% of stack
10/5/2018 9:18	8.6	60.3	7.6	50% of stack
10/5/2018 9:19	8.6	60.1	7.6	50% of stack
10/5/2018 9:20	8.6	59.9	7.6	50% of stack
10/5/2018 9:21	8.6	60.7	7.6	50% of stack
10/5/2018 9:22	8.6	61	7.7	50% of stack
10/5/2018 9:23	8.6	60.5	7.6	50% of stack
10/5/2018 9:24	8.6	60.4	7.6	50% of stack
10/5/2018 9:25	8.6	59.8	7.5	50% of stack
10/5/2018 9:26	8.6	59.1	7.6	50% of stack
10/5/2018 9:27	8.6	59	7.6	50% of stack
10/5/2018 9:28	8.6	59.4	7.6	50% of stack
10/5/2018 9:29	8.6	58.7	7.6	50% of stack
10/5/2018 9:30	8.6	59.6	7.7	50% of stack
10/5/2018 9:31	8.6	59	7.7	50% of stack
10/5/2018 9:32	8.6	59.1	7.6	50% of stack
10/5/2018 9:33	8.6	58.4	7.7	50% of stack
10/5/2018 9:34	8.6	57.6	7.6	50% of stack
10/5/2018 9:35	8.6	57.9	7.7	50% of stack
10/5/2018 9:36	8.6	57.7	7.6	83.3% of stack
10/5/2018 9:37	8.6	57.5	7.7	83.3% of stack
10/5/2018 9:38	8.6	57.4	7.7	83.3% of stack
10/5/2018 9:39	8.6	56.7	7.6	83.3% of stack
10/5/2018 9:40	8.6	55.7	7.6	83.3% of stack
10/5/2018 9:41	8.6	56.8	7.7	83.3% of stack
10/5/2018 9:42	8.5	56	7.8	83.3% of stack
10/5/2018 9:43	8.5	56	7.8	83.3% of stack
10/5/2018 9:44	8.5	57.2	7.8	83.3% of stack
10/5/2018 9:45	8.5	58.3	7.9	83.3% of stack
10/5/2018 9:46	8.5	58.2	7.8	83.3% of stack
10/5/2018 9:47	8.5	58.6	7.9	83.3% of stack
10/5/2018 9:48	8.5	58.8	7.9	83.3% of stack
10/5/2018 9:49	8.5	59	7.9	83.3% of stack
10/5/2018 9:50	8.5	58.9	7.8	83.3% of stack
10/5/2018 9:51	8.6	59.5	7.7	83.3% of stack
10/5/2018 9:52	8.7	59	7.6	83.3% of stack
10/5/2018 9:53	8.5	58.2	7.9	83.3% of stack
10/5/2018 9:54	8.5	59.3	7.9	83.3% of stack
10/5/2018 9:55	8.4	58.9	7.9	83.3% of stack
10/5/2018 9:56	8.4	58.9	8	Moving Probe
10/5/2018 9:57	8.5	58.5	7.9	Moving Probe
10/5/2018 9:58	5.5	55.5	12	Moving Probe
10/5/2018 9:59	8.6	43.1	7.9	Moving Probe
10/5/2018 10:00	8.6	59.5	7.6	16.7% of stack
10/5/2018 10:01	8.7	59.8	7.6	16.7% of stack
10/5/2018 10:02	8.7	58.9	7.6	16.7% of stack
10/5/2018 10:03	8.7	59.1	7.5	16.7% of stack
10/5/2018 10:04	8.7	58.9	7.6	16.7% of stack

Run 6

GCO Bypass Vent Stack 5 CD Testing - NOX Retest
10/5/2018

Time	CO2 (%)	NOX (ppm)	O2 (%)	Probe Location
10/5/2018 10:05	5.1	55.4	7.4	Chiller turned off
10/5/2018 10:06	3.8	27.8	15.1	Chiller turned off
10/5/2018 10:07	3.8	25.5	15.3	Chiller turned off
10/5/2018 10:08	3.8	25.2	15.3	Chiller turned off
10/5/2018 10:09	3.8	25	15.3	Chiller turned off
10/5/2018 10:10	4.4	24.9	14.6	Chiller turned off
10/5/2018 10:11	8.4	48.7	8.2	Chiller turned off
10/5/2018 10:12	8.6	57.9	7.7	Chiller turned off
10/5/2018 10:13	8.6	57.7	7.8	16.7% of stack
10/5/2018 10:14	8.6	58.8	7.6	16.7% of stack
10/5/2018 10:15	8.6	58	7.7	16.7% of stack
10/5/2018 10:16	8.6	58.4	7.7	16.7% of stack
10/5/2018 10:17	8.6	58.1	7.7	16.7% of stack
10/5/2018 10:18	8.6	59.1	7.8	16.7% of stack
10/5/2018 10:19	8.6	58.5	7.7	16.7% of stack
10/5/2018 10:20	8.6	58.4	7.7	16.7% of stack
10/5/2018 10:21	8.6	57.9	7.6	16.7% of stack
10/5/2018 10:22	8.6	58.4	7.7	16.7% of stack
10/5/2018 10:23	8.6	58.1	7.7	16.7% of stack
10/5/2018 10:24	8.6	57.5	7.7	16.7% of stack
10/5/2018 10:25	8.6	57.7	7.7	16.7% of stack
10/5/2018 10:26	8.6	57.8	7.7	16.7% of stack
10/5/2018 10:27	8.5	57.2	7.8	16.7% of stack
Average	8.6	58.6	7.7	

Run 6

CEM CALIBRATION DATA

Sampling Location	Bypass Stack 5
Date	4-Oct-18
Run Number	1
Start Time	1230
Stop Time	1339

Plant Name	Gateway Energy & Coke
Plant Rep.	Brandon Whitman
Team Leader	Chandra Sastry
CEM Operator	Chandra Sastry
Project Number	60582380

	Analyzer Number	Calibration Span
O2	05230A1	20.99
CO2	11047	20.67
NOX		90.9
SO2		
CO		

	Calibration Gas Specification (% of Span)	CALIBRATION ERROR CHECK				SYSTEM CAL CHECK					
		Calibration Value (% or ppm)	Cylinder Number (1)	Analyzer Calibration Response	Difference (% of Span)	Pre Run 1		Post Run 1		Drift (% of Span)	Calibration Correction Factors
						System Response	Syst. Bias (% of Span)	System Response	Syst. Bias (% of Span)		
O2 Zero	0	0	UHP Nitrogen	0	0.00%	0	0.00%	0	0.00%	0.00%	Co=0.0
O2 Low	NR										
O2 Mid	40-60	10.13	EB0088246	10.2	0.33%	10.1	-0.48%	10.1	-0.48%	0.00%	Cm=10.1
O2 High	100	20.99	CC126166	21.1	0.52%						
CO2 Zero	0	0	UHP Nitrogen	0.2	0.97%	0.2	0.00%	0.3	0.48%	0.48%	Co=0.3
CO2 Low	NR										
CO2 Mid	40-60	9.958	EB0088246	9.8	-0.76%	9.7	-0.48%	9.8	0.00%	0.48%	Cm=9.8
CO2 High	100	20.67	CC126166	20.7	0.15%						
NOX Zero	0	0	UHP Nitrogen	0	0.00%	0.4	0.44%	0.1	0.11%	-0.33%	Co=0.3
NOX Low	NR										
NOX Mid	40-60	45.78	CC415347	44.3	-1.63%	43.7	-0.66%	46	1.87%	2.53%	Cm=44.9
NOX High	100	90.9	CC199922	91	0.11%						

$$Calibration\ Error = \left(\frac{Analyzer\ Response\ - Calibration\ Value}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 2\%$$

$$System\ Bias = \left(\frac{System\ Response\ - Analyzer\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 5\%$$

$$Drift = \left(\frac{Post\ Test\ System\ Response\ - Pre\ Test\ System\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 3\%$$

$$C_0 = \left(\frac{Pre\ Test\ System\ Zero\ Response + Post\ Test\ System\ Zero\ Response}{2}\right)$$

$$C_m = \left(\frac{Pre\ Test\ System\ Upscale\ Response + Post\ Test\ System\ Upscale\ Response}{2}\right)$$

CEM CALIBRATION DATA

Sampling Location	Bypass Stack 5
Date	4-Oct-18
Run Number	2
Start Time	1610
Stop Time	1713

Plant Name	Gateway Energy & Coke
Plant Rep.	Brandon Whitman
Team Leader	Chandra Sastry
CEM Operator	Chandra Sastry
Project Number	60582380

	Analyzer Number	Calibration Span
O2	05230A1	20.99
CO2	11047	20.67
NOX		90.9
SO2		
CO		

	Calibration Gas Specification (% of Span)	CALIBRATION ERROR CHECK				SYSTEM CAL CHECK					
						Pre Run 2		Post Run 2			
		Calibration Value (% or ppm)	Cylinder Number (1)	Analyzer Calibration Response	Difference (% of Span)	System Response	Syst. Bias (% of Span)	System Response	Syst. Bias (% of Span)	Drift (% of Span)	Calibration Correction Factors
O2 Zero	0	0	UHP Nitrogen	0	0.00%	0	0.00%	0	0.00%	0.00%	Co=0.0
O2 Low	NR										
O2 Mid	40-60	10.13	EB0088246	10.2	0.33%	10.1	-0.48%	10	-0.95%	-0.48%	Cm=10.1
O2 High	100	20.99	CC126166	21.1	0.52%						
CO2 Zero	0	0	UHP Nitrogen	0.2	0.97%	0.3	0.48%	0.4	0.97%	0.48%	Co=0.4
CO2 Low	NR										
CO2 Mid	40-60	9.958	EB0088246	9.8	-0.76%	9.8	0.00%	9.9	0.48%	0.48%	Cm=9.9
CO2 High	100	20.67	CC126166	20.7	0.15%						
NOX Zero	0	0	UHP Nitrogen	0	0.00%	0.1	0.11%	0.2	0.22%	0.11%	Co=0.2
NOX Low	NR										
NOX Mid	40-60	45.78	CC415347	44.3	-1.63%	46	1.87%	47.6	3.63%	1.76%	Cm=46.8
NOX High	100	90.9	CC199922	91	0.11%						

$$Calibration\ Error = \left(\frac{Analyzer\ Response\ - Calibration\ Value}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 2\%$$

$$System\ Bias = \left(\frac{System\ Response\ - Analyzer\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 5\%$$

$$Drift = \left(\frac{Post\ Test\ System\ Response\ - Pre\ Test\ System\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 3\%$$

$$C_0 = \left(\frac{Pre\ Test\ System\ Zero\ Response + Post\ Test\ System\ Zero\ Response}{2}\right)$$

$$C_m = \left(\frac{Pre\ Test\ System\ Upscale\ Response + Post\ Test\ System\ Upscale\ Response}{2}\right)$$

CEM CALIBRATION DATA

Sampling Location	Bypass Stack 5
Date	4-Oct-18
Run Number	3
Start Time	2130
Stop Time	2233

Plant Name	Gateway Energy & Coke
Plant Rep.	Brandon Whitman
Team Leader	Chandra Sastry
CEM Operator	Chandra Sastry
Project Number	60582380

	Analyzer Number	Calibration Span
O2	05230A1	20.99
CO2	11047	20.67
NOX		90.9
SO2		
CO		

	Calibration Gas Specification (% of Span)	CALIBRATION ERROR CHECK				SYSTEM CAL CHECK					
		Calibration Value (% or ppm)	Cylinder Number (1)	Analyzer Calibration Response	Difference (% of Span)	Pre Run 3 System Response	Pre Run 3 Syst. Bias (% of Span)	Post Run 3 System Response	Post Run 3 Syst. Bias (% of Span)	Drift (% of Span)	Calibration Correction Factors
O2 Zero	0	0	UHP Nitrogen	0	0.00%	0	0.00%	0	0.00%	0.00%	Co=0.0
O2 Low	NR										
O2 Mid	40-60	10.13	EB0088246	10.2	0.33%	10	-0.95%	10	-0.95%	0.00%	Cm=10.0
O2 High	100	20.99	CC126166	21.1	0.52%						
CO2 Zero	0	0	UHP Nitrogen	0.2	0.97%	0.4	0.97%	0.3	0.48%	-0.48%	Co=0.4
CO2 Low	NR										
CO2 Mid	40-60	9.958	EB0088246	9.8	-0.76%	9.9	0.48%	9.8	0.00%	-0.48%	Cm=9.9
CO2 High	100	20.67	CC126166	20.7	0.15%						
NOX Zero	0	0	UHP Nitrogen	0	0.00%	0.2	0.22%	0.2	0.22%	0.00%	Co=0.2
NOX Low	NR										
NOX Mid	40-60	45.78	CC415347	44.3	-1.63%	47.6	3.63%	46.5	2.42%	-1.21%	Cm=47.1
NOX High	100	90.9	CC199922	91	0.11%						

$$Calibration\ Error = \left(\frac{Analyzer\ Response\ - Calibration\ Value}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 2\%$$

$$System\ Bias = \left(\frac{System\ Response\ - Analyzer\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 5\%$$

$$Drift = \left(\frac{Post\ Test\ System\ Response\ - Pre\ Test\ System\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 3\%$$

$$C_0 = \left(\frac{Pre\ Test\ System\ Zero\ Response + Post\ Test\ System\ Zero\ Response}{2}\right)$$

$$C_m = \left(\frac{Pre\ Test\ System\ Upscale\ Response + Post\ Test\ System\ Upscale\ Response}{2}\right)$$

CEM CALIBRATION DATA

Sampling Location	Bypass Stack 5
Date	4-Oct-18
Run Number	4
Start Time	2307
Stop Time	0009

Plant Name	Gateway Energy & Coke
Plant Rep.	Brandon Whitman
Team Leader	Chandra Sastry
CEM Operator	Chandra Sastry
Project Number	60582380

	Analyzer Number	Calibration Span
O2	05230A1	20.99
CO2	11047	20.67
NOX		90.9
SO2		
CO		

	Calibration Gas Specification (% of Span)	CALIBRATION ERROR CHECK				SYSTEM CAL CHECK					
		Calibration Value (% or ppm)	Cylinder Number (1)	Analyzer Calibration Response	Difference (% of Span)	Pre Run 4 System Response	Pre Run 4 Syst. Bias (% of Span)	Post Run 4 System Response	Post Run 4 Syst. Bias (% of Span)	Drift (% of Span)	Calibration Correction Factors
O2 Zero	0	0	UHP Nitrogen	0	0.00%	0	0.00%	0.1	0.48%	0.48%	Co=0.1
O2 Low	NR										
O2 Mid	40-60	10.13	EB0088246	10.2	0.33%	10	-0.95%	10	-0.95%	0.00%	Cm=10.0
O2 High	100	20.99	CC126166	21.1	0.52%						
CO2 Zero	0	0	UHP Nitrogen	0.2	0.97%	0.3	0.48%	0.4	0.97%	0.48%	Co=0.4
CO2 Low	NR										
CO2 Mid	40-60	9.958	EB0088246	9.8	-0.76%	9.8	0.00%	9.8	0.00%	0.00%	Cm=9.8
CO2 High	100	20.67	CC126166	20.7	0.15%						
NOX Zero	0	0	UHP Nitrogen	0	0.00%	0.2	0.22%	0.2	0.22%	0.00%	Co=0.2
NOX Low	NR										
NOX Mid	40-60	45.78	CC415347	44.3	-1.63%	46.5	2.42%	45.1	0.88%	-1.54%	Cm=45.8
NOX High	100	90.9	CC199922	91	0.11%						

$$Calibration\ Error = \left(\frac{Analyzer\ Response\ - Calibration\ Value}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 2\%$$

$$System\ Bias = \left(\frac{System\ Response\ - Analyzer\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 5\%$$

$$Drift = \left(\frac{Post\ Test\ System\ Response\ - Pre\ Test\ System\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 3\%$$

$$C_0 = \left(\frac{Pre\ Test\ System\ Zero\ Response + Post\ Test\ System\ Zero\ Response}{2}\right)$$

$$C_m = \left(\frac{Pre\ Test\ System\ Upscale\ Response + Post\ Test\ System\ Upscale\ Response}{2}\right)$$

CEM CALIBRATION DATA

Sampling Location	Bypass Stack 5
Date	5-Oct-18
Run Number	5
Start Time	0041
Stop Time	0145

Plant Name	Gateway Energy & Coke
Plant Rep.	Brandon Whitman
Team Leader	Chandra Sastry
CEM Operator	Chandra Sastry
Project Number	60582380

	Analyzer Number	Calibration Span
O2	05230A1	20.99
CO2	11047	20.67
NOX		90.9
SO2		
CO		

	Calibration Gas Specification (% of Span)	CALIBRATION ERROR CHECK				SYSTEM CAL CHECK					
						Pre Run 5		Post Run 5			
		Calibration Value (% or ppm)	Cylinder Number (1)	Analyzer Calibration Response	Difference (% of Span)	System Response	Syst. Bias (% of Span)	System Response	Syst. Bias (% of Span)	Drift (% of Span)	Calibration Correction Factors
O2 Zero	0	0	UHP Nitrogen	0	0.00%	0.1	0.48%	0	0.00%	-0.48%	Co=0.1
O2 Low	NR										
O2 Mid	40-60	10.13	EB0088246	10.2	0.33%	10	-0.95%	10	-0.95%	0.00%	Cm=10.0
O2 High	100	20.99	CC126166	21.1	0.52%						
CO2 Zero	0	0	UHP Nitrogen	0.2	0.97%	0.4	0.97%	0.3	0.48%	-0.48%	Co=0.4
CO2 Low	NR										
CO2 Mid	40-60	9.958	EB0088246	9.8	-0.76%	9.8	0.00%	9.8	0.00%	0.00%	Cm=9.8
CO2 High	100	20.67	CC126166	20.7	0.15%						
NOX Zero	0	0	UHP Nitrogen	0	0.00%	0.2	0.22%	0.2	0.22%	0.00%	Co=0.2
NOX Low	NR										
NOX Mid	40-60	45.78	CC415347	44.3	-1.63%	45.1	0.88%	47.1	3.08%	2.20%	Cm=46.1
NOX High	100	90.9	CC199922	91	0.11%						

$$Calibration\ Error = \left(\frac{Analyzer\ Response\ - Calibration\ Value}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 2\%$$

$$System\ Bias = \left(\frac{System\ Response\ - Analyzer\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 5\%$$

$$Drift = \left(\frac{Post\ Test\ System\ Response\ - Pre\ Test\ System\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 3\%$$

$$C_0 = \left(\frac{Pre\ Test\ System\ Zero\ Response + Post\ Test\ System\ Zero\ Response}{2}\right)$$

$$C_m = \left(\frac{Pre\ Test\ System\ Upscale\ Response + Post\ Test\ System\ Upscale\ Response}{2}\right)$$

CEM CALIBRATION DATA

Sampling Location	Bypass Stack 5
Date	5-Oct-18
Run Number	6
Start Time	1016
Stop Time	1137

Plant Name	Gateway Energy & Coke
Plant Rep.	Brandon Whitman
Team Leader	Chandra Sastry
CEM Operator	Chandra Sastry
Project Number	60582380

	Analyzer Number	Calibration Span
O2	05230A1	20.99
CO2	11047	20.67
NOX		90.9
SO2		
CO		

	Calibration Gas Specification (% of Span)	CALIBRATION ERROR CHECK				SYSTEM CAL CHECK					
						Pre Run 6		Post Run 6			
		Calibration Value (% or ppm)	Cylinder Number (1)	Analyzer Calibration Response	Difference (% of Span)	System Response	Syst. Bias (% of Span)	System Response	Syst. Bias (% of Span)	Drift (% of Span)	Calibration Correction Factors
O2 Zero	0	0	UHP Nitrogen	0	0.00%	0	0.00%	0	0.00%	0.00%	Co=0.0
O2 Low	NR										
O2 Mid	40-60	10.13	EB0088246	10.2	0.33%	10	-0.95%	10	-0.95%	0.00%	Cm=10.0
O2 High	100	20.99	CC126166	21.1	0.52%						
CO2 Zero	0	0	UHP Nitrogen	0.2	0.97%	0.3	0.48%	0.3	0.48%	0.00%	Co=0.3
CO2 Low	NR										
CO2 Mid	40-60	9.958	EB0088246	9.8	-0.76%	9.8	0.00%	9.7	-0.48%	-0.48%	Cm=9.8
CO2 High	100	20.67	CC126166	20.7	0.15%						
NOX Zero	0	0	UHP Nitrogen	0	0.00%	0.2	0.22%	0.1	0.11%	-0.11%	Co=0.2
NOX Low	NR										
NOX Mid	40-60	45.78	CC415347	44.3	-1.63%	47.1	3.08%	46.6	2.53%	-0.55%	Cm=46.9
NOX High	100	90.9	CC199922	91	0.11%						

$$Calibration\ Error = \left(\frac{Analyzer\ Response\ - Calibration\ Value}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 2\%$$

$$System\ Bias = \left(\frac{System\ Response\ - Analyzer\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 5\%$$

$$Drift = \left(\frac{Post\ Test\ System\ Response\ - Pre\ Test\ System\ Response}{Analyzer\ Span}\right) \times 100\ ;\ \text{allowable error} = \pm 3\%$$

$$C_0 = \left(\frac{Pre\ Test\ System\ Zero\ Response + Post\ Test\ System\ Zero\ Response}{2}\right)$$

$$C_m = \left(\frac{Pre\ Test\ System\ Upscale\ Response + Post\ Test\ System\ Upscale\ Response}{2}\right)$$

GCO Bypass Vent Stack 5 CD Testing - NOX Retest
10/4/2018

Time	CO2 (%)	NOX (ppm)	O2 (%)
10/4/2018 9:06	0.1	0	3.8
10/4/2018 9:07	0	0	0.1
10/4/2018 9:08	0.1	0	0
10/4/2018 9:09	0.2	0	0
10/4/2018 9:10	2.7	0	5.7
10/4/2018 9:11	4	0	21.2
10/4/2018 9:12	3.2	0	21.1
10/4/2018 9:13	1.7	0.3	13.2
10/4/2018 9:14	5.8	0.4	1.4
10/4/2018 9:15	1	0.3	13.1
10/4/2018 9:16	2.6	0	21.1
10/4/2018 9:17	20	0	21.1
10/4/2018 9:18	20.7	0	21.1
10/4/2018 9:19	20.7	0	21.1
10/4/2018 9:20	20.6	0	21.1
10/4/2018 9:21	10.9	0	12.4
10/4/2018 9:22	9.8	0	10.2
10/4/2018 9:23	9.8	0	10.2
10/4/2018 9:24	7	3.4	8.5
10/4/2018 9:25	0.3	83.8	0.2
10/4/2018 9:26	0.2	91	0
10/4/2018 9:27	0.2	91	0
10/4/2018 9:28	0.2	86.5	0.1
10/4/2018 9:29	0.2	51.5	0
10/4/2018 9:30	0.2	44.4	0
10/4/2018 9:31	0.2	44.3	0

Direct Cal

GCO Bypass Vent Stack 5 CD Testing - NOX Retest
10/4/2018

Time	CO2 (%)	NOX (ppm)	O2 (%)
10/4/2018 9:45	0.2	0.8	0.1
10/4/2018 9:46	0.2	0.5	0.1
10/4/2018 9:47	0.2	0.4	0
10/4/2018 9:48	2.6	0.3	6.2
10/4/2018 9:49	9.6	0.2	10.1
10/4/2018 9:50	9.7	0.1	10.1
10/4/2018 9:51	8.8	0.1	10.8
10/4/2018 9:52	0.8	23.4	2.1
10/4/2018 9:53	0.3	43.6	0
10/4/2018 9:54	0.2	43.7	0
10/4/2018 9:55	0.2	43.7	0

System Cal

GCO Bypass Vent Stack 5 CD Testing - NOX Retest
10/4/2018

Time	CO2 (%)	NOX (ppm)	O2 (%)
10/4/2018 12:42	0.4	15.1	3.3
10/4/2018 12:43	0.3	0.2	0.1
10/4/2018 12:44	0.3	0.1	0
10/4/2018 12:45	0.3	0.1	0
10/4/2018 12:46	1.2	0.1	1.7
10/4/2018 12:47	9.7	0	9.8
10/4/2018 12:48	9.8	0	10.1
10/4/2018 12:49	5.3	1.8	8.5
10/4/2018 12:50	0.4	43.1	0.1
10/4/2018 12:51	0.3	45.9	0
10/4/2018 12:52	0.3	46	0
10/4/2018 12:53	0.3	46.1	0

Post Cal Run 1

GCO Bypass Vent Stack 5 CD Testing - NOX Retest
10/4/2018

Time	CO2 (%)	NOX (ppm)	O2 (%)
10/4/2018 16:19	0.4	4.9	0.2
10/4/2018 16:20	0.4	0.2	0
10/4/2018 16:21	0.4	0.2	0
10/4/2018 16:22	0.4	0.2	0
10/4/2018 16:23	4.3	0.3	4.9
10/4/2018 16:24	9.8	0.3	10
10/4/2018 16:25	9.9	0.3	10
10/4/2018 16:26	9.9	0.3	10
10/4/2018 16:27	6.9	1.1	9.6
10/4/2018 16:28	0.5	36	0.1
10/4/2018 16:29	0.4	46.4	0
10/4/2018 16:30	0.4	47.1	0
10/4/2018 16:31	0.4	47.6	0

Post Cal Run 2

GCO Bypass Vent Stack 5 CD Testing - NOX Retest
10/4/2018

Time	CO2 (%)	NOX (ppm)	O2 (%)
10/4/2018 21:46	0.4	5.8	3.9
10/4/2018 21:47	0.3	0.2	0.1
10/4/2018 21:48	0.3	0.2	0.1
10/4/2018 21:49	0.3	0.2	0
10/4/2018 21:50	0.8	0.2	1.8
10/4/2018 21:51	9.7	0.2	9.8
10/4/2018 21:52	9.8	0.2	10
10/4/2018 21:53	7.1	0.3	9.9
10/4/2018 21:54	0.4	32.6	0.1
10/4/2018 21:55	0.4	46.4	0
10/4/2018 21:56	0.3	46.5	0

Post Cal Run 3

GCO Bypass Vent Stack 5 CD Testing - NOX Retest
10/4/2018

Time	CO2 (%)	NOX (ppm)	O2 (%)
10/4/2018 23:23	0.4	0.4	0.5
10/4/2018 23:24	0.4	0.2	0.1
10/4/2018 23:25	0.4	0.2	1
10/4/2018 23:26	9.3	0.1	9.4
10/4/2018 23:27	9.8	0.2	10
10/4/2018 23:28	9.8	0.2	10
10/4/2018 23:29	9	0.2	10.6
10/4/2018 23:30	1	27.4	1.9
10/4/2018 23:31	0.4	45.1	0
10/4/2018 23:32	0.4	45.1	0

Post Cal Run 4

GCO Bypass Vent Stack 5 CD Testing - NOX Retest
10/5/2018

Time	CO2 (%)	NOX (ppm)	O2 (%)
10/5/2018 0:48	0.4	2.4	0
10/5/2018 0:49	0.4	0.2	0
10/5/2018 0:50	0.3	0.2	0
10/5/2018 0:51	5.3	0.2	6.9
10/5/2018 0:52	9.8	0.3	10
10/5/2018 0:53	9.8	0.4	10
10/5/2018 0:54	5.4	2.4	8.5
10/5/2018 0:55	0.4	45.1	0
10/5/2018 0:56	0.4	47.6	0
10/5/2018 0:57	0.4	47.1	0

Post Cal Run 5

GCO Bypass Vent Stack 5 CD Testing - NOX Retest
10/5/2018

Time	CO2 (%)	NOX (ppm)	O2 (%)
10/5/2018 10:31	2.1	40.7	13.6
10/5/2018 10:32	0.3	0.6	0.1
10/5/2018 10:33	0.3	0.2	0
10/5/2018 10:34	0.3	0.1	0
10/5/2018 10:35	0.3	0.1	0
10/5/2018 10:36	1.3	0.1	1.7
10/5/2018 10:37	9.6	0.2	9.8
10/5/2018 10:38	9.7	0.2	10
10/5/2018 10:39	9.7	0.3	10
10/5/2018 10:40	4.8	2.1	7.4
10/5/2018 10:41	0.3	44.2	0
10/5/2018 10:42	0.3	46.7	0.1
10/5/2018 10:43	0.3	46.6	0.1

Post Cal Run 6

NO_2-NO Converter Efficiency Test (NO_2 Cylinder Method)

Date:	10/4/2018	Location:	Bypass Stack 5
Project:	CD Testing	Technician:	Chandra Sastry
Analyzer:	Thermo Environmental	Operating Range:	0-100
Model:	42i-HL		
S/N:	828232281		

Cylinder Number	Cal Gas Concentration	NO_x Analyzer Response in Direct Cal Mode
CC504828	50.19	45.3

$$\text{Converter Efficiency} = \frac{C_{Dir}}{C_v} \times 100$$

Converter Efficiency = **90.3** % (Must be greater than or equal to 90 percent)

Procedures

1. Calibrate analyzer
2. Introduce a 40 to 60 ppmv NO_2 calibration gas cylinder to the analyzer in direct cal mode and record the NO_x response.
3. Calculate efficiency.

GCO Bypass Vent Stack 5 CD Testing - NOX Retest
10/4/2018

Time	CO2 (%)	NOX (ppm)	O2 (%)
10/4/2018 9:32	0.2	43.8	8.6
10/4/2018 9:33	0.2	43.9	21.1
10/4/2018 9:34	0.2	44.8	21.1
10/4/2018 9:35	0.2	45	21.1
10/4/2018 9:36	0.2	45.1	21.1
10/4/2018 9:37	0.2	45.1	21.1
10/4/2018 9:38	0.2	45.2	21.1
10/4/2018 9:39	0.2	45.3	21.1
10/4/2018 9:40	0.2	45.3	21.1

NOX Conv Test

Appendix E
ANALYTICAL REPORTS

ANALYTICAL REPORT

Job Number: 140-12817-1

Job Description: Granite City - M5/202

For:
URS Corporation
105 Mitchell Road, Suite 200
Oak Ridge, TN 37830

Attention: John Carson

Approved for release.
Courtney M Adkins
Project Manager I
10/2/2018 3:59 PM

Courtney M Adkins, Project Manager I
5815 Middlebrook Pike, Knoxville, TN, 37921
(865)291-3000
courtney.adkins@testamericainc.com
10/02/2018

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Table of Contents

Cover Title Page 1

Data Summaries 3

- Definitions 3
- Method Summary 4
- Sample Summary 5
- Case Narrative 6
- QC Association 7
- Client Sample Results 8
- Default Detection Limits 12
- Chronicle 13
- Certification Summary 17

Inorganic Sample Data 18

- General Chemistry Data 18
  - Gen Chem Cover Page 19
  - Gen Chem Sample Data 20
  - Gen Chem MDL 40
  - Gen Chem Analysis Run Log 46
  - Gen Chem Prep Data 49
  - Gen Chem Raw Data 53

Shipping and Receiving Documents 57

- Client Chain of Custody 58

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Method Summary

Client: URS Corporation
Project/Site: Granite City - M5/202

TestAmerica Job ID: 140-12817-1

Method	Method Description	Protocol	Laboratory
202 InOrg CPM	Inorganic Condensable Particulate Matter	EPA	TAL KNX
202 Org CPM	Organic Condensable Particulate Matter	EPA	TAL KNX
5	Particulates	EPA	TAL KNX

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL KNX = TestAmerica Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Sample Summary

Client: URS Corporation
Project/Site: Granite City - M5/202

TestAmerica Job ID: 140-12817-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
140-12817-1	M5-FILT-1	Air	09/18/18 00:00	09/25/18 16:50
140-12817-2	M5-PNR-1	Air	09/18/18 00:00	09/25/18 16:50
140-12817-3	M5-FILT-2	Air	09/18/18 00:00	09/25/18 16:50
140-12817-4	M5-PNR-2	Air	09/18/18 00:00	09/25/18 16:50
140-12817-5	M5-FILT-3	Air	09/19/18 00:00	09/25/18 16:50
140-12817-6	M5-PNR-3	Air	09/19/18 00:00	09/25/18 16:50
140-12817-7	M5-FILT-BLANK	Air	09/19/18 00:00	09/25/18 16:50
140-12817-8	M5/M202-ACETONE REAGENT BLANK	Air	09/19/18 00:00	09/25/18 16:50
140-12817-10	M202-H2O-1	Air	09/18/18 00:00	09/25/18 16:50
140-12817-11	M202-ORG-1	Air	09/18/18 00:00	09/25/18 16:50
140-12817-13	M202-H2O-2	Air	09/18/18 00:00	09/25/18 16:50
140-12817-14	M202-ORG-2	Air	09/18/18 00:00	09/25/18 16:50
140-12817-16	M202-H2O-3	Air	09/19/18 00:00	09/25/18 16:50
140-12817-17	M202-ORG-3	Air	09/19/18 00:00	09/25/18 16:50
140-12817-19	M202-H2O-FIELD BLANK	Air	09/19/18 00:00	09/25/18 16:50
140-12817-20	M202-ORG-FIELD BLANK	Air	09/19/18 00:00	09/25/18 16:50
140-12817-22	M202-H2O-PROOF BLANK	Air	09/18/18 00:00	09/25/18 16:50
140-12817-23	M202-ORG-PROOF BLANK	Air	09/18/18 00:00	09/25/18 16:50
140-12817-24	M202-WATER REAGENT BLANK	Air	09/19/18 00:00	09/25/18 16:50
140-12817-25	M202-HEXANE REAGENT BLANK	Air	09/19/18 00:00	09/25/18 16:50

Job Narrative
140-12817-1

Sample Receipt

The samples were received on September 25, 2018 at 4:50 PM in good condition and properly preserved. The temperature of the cooler at receipt was 20.7º C.

Quality Control and Data Interpretation

Unless otherwise noted, all holding times, and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

General Chemistry

Total Particulates: The measurement of the mass of particulate matter trapped by the particulate filter and probe rinse derived from an M-5 sampling train was performed using SOP number KNOX-WC-0006 (based on EPA Methods 0050 and 5). Microfiber filters and 150 mL beakers are carefully inspected and tare weighed to constant weight. After sample collection, the filters are dried, and then carefully weighed to constant weight to determine the mass of particulate matter trapped on the filters. The acetone probe rinse solution is evaporated to dryness, and then weighed to constant weight to determine the total particulate mass collected in the rinse. The total particulate mass collected by an M-5 train is the sum of the particulate filter and the acetone probe rinse residue weights.

Particulate by Method 202: Samples derived from Method 202 require special handling. The CPE filters were extracted three times with water, which was then combined with the corresponding aqueous fraction. The filters were then extracted with hexane three times, and the extracts were combined with the solvent rinses. The aqueous fractions were then extracted three times with hexane, and the extracts were combined with the solvent rinses. The organic fractions, including the acetone and hexane reagent blanks, were air dried in a hood. The aqueous fractions, including the deionized water reagent blank, were simmered to near dryness, and then allowed to air dry.

Aqueous samples having a pH < 6 were reconstituted with boiled deionized water, and then titrated with 0.1N ammonium hydroxide to a pH 7 endpoint. The samples were again simmered to near dryness, and then allowed to air dry. Titration to a pH 7 endpoint was not required for samples with a pH of 6 or higher upon receipt. Where applicable, the contribution from added ammonia was calculated and subtracted from the residue weight to obtain the final result for the aqueous fractions.

Residual water from both the aqueous samples and the organic solvent samples were further air dried in a forced draft oven at 28°C before transferring them to a desiccator. The air dried samples were transferred to a desiccator and dried over calcium sulfate to constant weight.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

QC Association Summary

Client: URS Corporation
Project/Site: Granite City - M5/202

TestAmerica Job ID: 140-12817-1

General Chemistry

Analysis Batch: 23973

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-12817-10	M202-H2O-1	Total/NA	Air	202 InOrg CPM	
140-12817-13	M202-H2O-2	Total/NA	Air	202 InOrg CPM	
140-12817-16	M202-H2O-3	Total/NA	Air	202 InOrg CPM	
140-12817-19	M202-H2O-FIELD BLANK	Total/NA	Air	202 InOrg CPM	
140-12817-22	M202-H2O-PROOF BLANK	Total/NA	Air	202 InOrg CPM	
140-12817-24	M202-WATER REAGENT BLANK	Total/NA	Air	202 InOrg CPM	

Analysis Batch: 23975

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-12817-8	M5/M202-ACETONE REAGENT BLANK	Total/NA	Air	202 Org CPM	
140-12817-11	M202-ORG-1	Total/NA	Air	202 Org CPM	
140-12817-14	M202-ORG-2	Total/NA	Air	202 Org CPM	
140-12817-17	M202-ORG-3	Total/NA	Air	202 Org CPM	
140-12817-20	M202-ORG-FIELD BLANK	Total/NA	Air	202 Org CPM	
140-12817-23	M202-ORG-PROOF BLANK	Total/NA	Air	202 Org CPM	
140-12817-25	M202-HEXANE REAGENT BLANK	Total/NA	Air	202 Org CPM	

Analysis Batch: 24112

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-12817-1	M5-FILT-1	Total/NA	Air	5	
140-12817-2	M5-PNR-1	Total/NA	Air	5	
140-12817-3	M5-FILT-2	Total/NA	Air	5	
140-12817-4	M5-PNR-2	Total/NA	Air	5	
140-12817-5	M5-FILT-3	Total/NA	Air	5	
140-12817-6	M5-PNR-3	Total/NA	Air	5	
140-12817-7	M5-FILT-BLANK	Total/NA	Air	5	
140-12817-8	M5/M202-ACETONE REAGENT BLANK	Total/NA	Air	5	

Client Sample Results

Client: URS Corporation
Project/Site: Granite City - M5/202

TestAmerica Job ID: 140-12817-1

Client Sample ID: M5-FILT-1 — Lab Sample ID: 140-12817-1

Date Collected: 09/18/18 00:00
Matrix: Air
Date Received: 09/25/18 16:50
Sample Container: Petri/Filter

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Particulates, Total	49.3		0.500	0.500	mg/sample			10/01/18 13:01	1

Client Sample ID: M5-PNR-1 — Lab Sample ID: 140-12817-2

Date Collected: 09/18/18 00:00
Matrix: Air
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 250ml - unpreserved

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Particulates, Total	9.58		0.500	0.500	mg/sample			10/01/18 13:01	1

Client Sample ID: M5-FILT-2 — Lab Sample ID: 140-12817-3

Date Collected: 09/18/18 00:00
Matrix: Air
Date Received: 09/25/18 16:50
Sample Container: Petri/Filter

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Particulates, Total	242		0.500	0.500	mg/sample			10/01/18 13:01	1

Client Sample ID: M5-PNR-2 — Lab Sample ID: 140-12817-4

Date Collected: 09/18/18 00:00
Matrix: Air
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 250ml - unpreserved

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Particulates, Total	14.1		0.500	0.500	mg/sample			10/01/18 13:01	1

Client Sample ID: M5-FILT-3 — Lab Sample ID: 140-12817-5

Date Collected: 09/19/18 00:00
Matrix: Air
Date Received: 09/25/18 16:50
Sample Container: Petri/Filter

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Particulates, Total	57.4		0.500	0.500	mg/sample			10/01/18 13:01	1

Client Sample ID: M5-PNR-3 — Lab Sample ID: 140-12817-6

Date Collected: 09/19/18 00:00
Matrix: Air
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 250ml - unpreserved

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Particulates, Total	37.5		0.500	0.500	mg/sample			10/01/18 13:01	1

Client Sample ID: M5-FILT-BLANK — Lab Sample ID: 140-12817-7

Date Collected: 09/19/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50
Sample Container: Petri/Filter

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Particulates, Total	0.675		0.500	0.500	mg/sample			10/01/18 13:01	1

Client Sample ID: M5/M202-ACETONE REAGENT BLANK — Lab Sample ID: 140-12817-8

Date Collected: 09/19/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 250ml - unpreserved

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Organic Condensible Particulate Matter	1.25		1.00	0.500	mg/sample			09/26/18 17:25	1
Particulates, Total	0.575		0.500	0.500	mg/sample			10/01/18 13:01	1

Client Sample ID: M202-H2O-1 — Lab Sample ID: 140-12817-10

Date Collected: 09/18/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 250ml - unpreserved

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Inorganic Condensible Particulate Matter	83.5		1.00	0.500	mg/sample			09/26/18 17:22	1

Client Sample ID: M202-ORG-1 — Lab Sample ID: 140-12817-11

Date Collected: 09/18/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 250ml - unpreserved

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Organic Condensible Particulate Matter	4.22		1.00	0.500	mg/sample			09/26/18 17:25	1

Client Sample ID: M202-H2O-2 — Lab Sample ID: 140-12817-13

Date Collected: 09/18/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 250ml - unpreserved

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Inorganic Condensible Particulate Matter	76.6		1.00	0.500	mg/sample			09/26/18 17:22	1

Client Sample ID: M202-ORG-2 — Lab Sample ID: 140-12817-14

Date Collected: 09/18/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 250ml - unpreserved

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Organic Condensible Particulate Matter	4.13		1.00	0.500	mg/sample			09/26/18 17:25	1

Client Sample ID: M202-H2O-3 — Lab Sample ID: 140-12817-16

Date Collected: 09/19/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 250ml - unpreserved

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Inorganic Condensible Particulate Matter	136		1.00	0.500	mg/sample			09/26/18 17:22	1

Client Sample ID: M202-ORG-3 — Lab Sample ID: 140-12817-17

Date Collected: 09/19/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 250ml - unpreserved

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Organic Condensible Particulate Matter	7.37		1.00	0.500	mg/sample			09/26/18 17:25	1

Client Sample ID: M202-H2O-FIELD BLANK — Lab Sample ID: 140-12817-19

Date Collected: 09/19/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 250ml - unpreserved

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Inorganic Condensible Particulate Matter	3.19		1.00	0.500	mg/sample			09/26/18 17:22	1

Client Sample ID: M202-ORG-FIELD BLANK — Lab Sample ID: 140-12817-20

Date Collected: 09/19/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 250ml - unpreserved

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Organic Condensible Particulate Matter	3.33		1.00	0.500	mg/sample			09/26/18 17:25	1

Client Sample ID: M202-H2O-PROOF BLANK — Lab Sample ID: 140-12817-22

Date Collected: 09/18/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 250ml - unpreserved

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Inorganic Condensible Particulate Matter	2.90		1.00	0.500	mg/sample			09/26/18 17:22	1

Client Sample ID: M202-ORG-PROOF BLANK — Lab Sample ID: 140-12817-23

Date Collected: 09/18/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 250ml - unpreserved

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Organic Condensible Particulate Matter	2.83		1.00	0.500	mg/sample			09/26/18 17:25	1

Client Sample ID: M202-WATER REAGENT BLANK — Lab Sample ID: 140-12817-24

Date Collected: 09/19/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 250ml - unpreserved

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Inorganic Condensible Particulate Matter	2.24		1.00	0.500	mg/sample			09/26/18 17:22	1

Client Sample ID: M202-HEXANE REAGENT BLANK — Lab Sample ID: 140-12817-25

Date Collected: 09/19/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 250ml - unpreserved

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Organic Condensible Particulate Matter	1.16		1.00	0.500	mg/sample			09/26/18 17:25	1

Default Detection Limits

Client: URS Corporation
Project/Site: Granite City - M5/202

TestAmerica Job ID: 140-12817-1

General Chemistry

Analyte	RL	MDL	Units	Method
Inorganic Condensible Particulate Matter	1.00	0.500	mg/sample	202 InOrg CPM
Organic Condensible Particulate Matter	1.00	0.500	mg/sample	202 Org CPM
Particulates, Total	0.500	0.500	mg/sample	5

Lab Chronicle

Client: URS Corporation
Project/Site: Granite City - M5/202

TestAmerica Job ID: 140-12817-1

Client Sample ID: M5-FILT-1 — Lab Sample ID: 140-12817-1

Date Collected: 09/18/18 00:00
Date Received: 09/25/18 16:50
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	5		1			24112	10/01/18 13:01	TSN	TAL KNX
	Instrument ID:	FT_Gross								

Client Sample ID: M5-PNR-1 — Lab Sample ID: 140-12817-2

Date Collected: 09/18/18 00:00
Date Received: 09/25/18 16:50
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	5		1			24112	10/01/18 13:01	TSN	TAL KNX
	Instrument ID:	FT_Gross								

Client Sample ID: M5-FILT-2 — Lab Sample ID: 140-12817-3

Date Collected: 09/18/18 00:00
Date Received: 09/25/18 16:50
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	5		1			24112	10/01/18 13:01	TSN	TAL KNX
	Instrument ID:	FT_Gross								

Client Sample ID: M5-PNR-2 — Lab Sample ID: 140-12817-4

Date Collected: 09/18/18 00:00
Date Received: 09/25/18 16:50
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	5		1			24112	10/01/18 13:01	TSN	TAL KNX
	Instrument ID:	FT_Gross								

Client Sample ID: M5-FILT-3 — Lab Sample ID: 140-12817-5

Date Collected: 09/19/18 00:00
Date Received: 09/25/18 16:50
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	5		1			24112	10/01/18 13:01	TSN	TAL KNX
	Instrument ID:	FT_Gross								

Client Sample ID: M5-PNR-3 — Lab Sample ID: 140-12817-6

Date Collected: 09/19/18 00:00
Date Received: 09/25/18 16:50
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	5		1			24112	10/01/18 13:01	TSN	TAL KNX
	Instrument ID:	FT_Gross								

Lab Chronicle

Client: URS Corporation
Project/Site: Granite City - M5/202

TestAmerica Job ID: 140-12817-1

Client Sample ID: M5-FILT-BLANK — Lab Sample ID: 140-12817-7

Date Collected: 09/19/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	5		1			24112	10/01/18 13:01	TSN	TAL KNX
	Instrument ID:	FT_Gross								

Client Sample ID: M5/M202-ACETONE REAGENT BLANK — Lab Sample ID: 140-12817-8

Date Collected: 09/19/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	202 Org CPM		1			23975	09/26/18 17:25	TSN	TAL KNX
	Instrument ID:	B3								
Total/NA	Analysis	5		1			24112	10/01/18 13:01	TSN	TAL KNX
	Instrument ID:	FT_Gross								

Client Sample ID: M202-H2O-1 — Lab Sample ID: 140-12817-10

Date Collected: 09/18/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	202 InOrg CPM		1			23973	09/26/18 17:22	TSN	TAL KNX
	Instrument ID:	B3								

Client Sample ID: M202-ORG-1 — Lab Sample ID: 140-12817-11

Date Collected: 09/18/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	202 Org CPM		1			23975	09/26/18 17:25	TSN	TAL KNX
	Instrument ID:	B3								

Client Sample ID: M202-H2O-2 — Lab Sample ID: 140-12817-13

Date Collected: 09/18/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	202 InOrg CPM		1			23973	09/26/18 17:22	TSN	TAL KNX
	Instrument ID:	B3								

Client Sample ID: M202-ORG-2 — Lab Sample ID: 140-12817-14

Date Collected: 09/18/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	202 Org CPM		1			23975	09/26/18 17:25	TSN	TAL KNX
	Instrument ID: B3									

Client Sample ID: M202-H2O-3 — Lab Sample ID: 140-12817-16

Date Collected: 09/19/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	202 InOrg CPM		1			23973	09/26/18 17:22	TSN	TAL KNX
	Instrument ID: B3									

Client Sample ID: M202-ORG-3 — Lab Sample ID: 140-12817-17

Date Collected: 09/19/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	202 Org CPM		1			23975	09/26/18 17:25	TSN	TAL KNX
	Instrument ID: B3									

Client Sample ID: M202-H2O-FIELD BLANK — Lab Sample ID: 140-12817-19

Date Collected: 09/19/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	202 InOrg CPM		1			23973	09/26/18 17:22	TSN	TAL KNX
	Instrument ID: B3									

Client Sample ID: M202-ORG-FIELD BLANK — Lab Sample ID: 140-12817-20

Date Collected: 09/19/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	202 Org CPM		1			23975	09/26/18 17:25	TSN	TAL KNX
	Instrument ID: B3									

Client Sample ID: M202-H2O-PROOF BLANK — Lab Sample ID: 140-12817-22

Date Collected: 09/18/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	202 InOrg CPM		1			23973	09/26/18 17:22	TSN	TAL KNX
	Instrument ID: B3									

Lab Chronicle

Client: URS Corporation
Project/Site: Granite City - M5/202

TestAmerica Job ID: 140-12817-1

Client Sample ID: M202-ORG-PROOF BLANK — Lab Sample ID: 140-12817-23

Date Collected: 09/18/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	202 Org CPM		1			23975	09/26/18 17:25	TSN	TAL KNX
	Instrument ID: B3									

Client Sample ID: M202-WATER REAGENT BLANK — Lab Sample ID: 140-12817-24

Date Collected: 09/19/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	202 InOrg CPM		1			23973	09/26/18 17:22	TSN	TAL KNX
	Instrument ID: B3									

Client Sample ID: M202-HEXANE REAGENT BLANK — Lab Sample ID: 140-12817-25

Date Collected: 09/19/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	202 Org CPM		1			23975	09/26/18 17:25	TSN	TAL KNX
	Instrument ID: B3									

Laboratory References:

TAL KNX = TestAmerica Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Accreditation/Certification Summary

Client: URS Corporation
Project/Site: Granite City - M5/202

TestAmerica Job ID: 140-12817-1

Laboratory: TestAmerica Knoxville

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
	AFCEE		N/A	
ANAB	DoD ELAP		L2311	02-13-19
Arkansas DEQ	State Program	6	88-0688	06-16-19
California	State Program	9	2423	06-30-19
Colorado	State Program	8	TN00009	02-28-19
Connecticut	State Program	1	PH-0223	09-30-19
Florida	NELAP	4	E87177	06-30-19
Georgia	State Program	4	906	04-13-20
Hawaii	State Program	9	N/A	04-13-19
Kansas	NELAP	7	E-10349	10-31-18
Kentucky (DW)	State Program	4	90101	12-31-18
Louisiana	NELAP	6	83979	06-30-19
Louisiana (DW)	NELAP	6	LA160005	12-31-18
Maryland	State Program	3	277	03-31-19
Michigan	State Program	5	9933	04-13-20
Nevada	State Program	9	TN00009	07-31-19
New Jersey	NELAP	2	TN001	06-30-19
New York	NELAP	2	10781	03-31-19
North Carolina (DW)	State Program	4	21705	07-31-19
North Carolina (WW/SW)	State Program	4	64	12-31-18
Ohio VAP	State Program	5	CL0059	08-28-20
Oklahoma	State Program	6	9415	08-31-19
Oregon	NELAP	10	TNI0189	01-01-19
Pennsylvania	NELAP	3	68-00576	12-31-18
Tennessee	State Program	4	2014	04-13-20
Texas	NELAP	6	T104704380-16-9	08-31-19
US Fish & Wildlife	Federal		LE-058448-0	07-31-19
USDA	Federal		P330-16-00262	08-20-19
Utah	NELAP	8	TN00009	07-31-18 *
Virginia	NELAP	3	460176	09-14-19
Washington	State Program	10	C593	01-19-19
West Virginia (DW)	State Program	3	9955C	12-31-18
West Virginia DEP	State Program	3	345	04-30-19
Wisconsin	State Program	5	998044300	08-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

GENERAL CHEMISTRY

COVER PAGE
GENERAL CHEMISTRY

Lab Name: TestAmerica Knoxville Job Number: 140-12817-1

SDG No.:

Project: Granite City - M5/202

Client Sample ID	Lab Sample ID
M5-FILT-1	140-12817-1
M5-PNR-1	140-12817-2
M5-FILT-2	140-12817-3
M5-PNR-2	140-12817-4
M5-FILT-3	140-12817-5
M5-PNR-3	140-12817-6
M5-FILT-BLANK	140-12817-7
M5/M202-ACETONE REAGENT BLANK	140-12817-8
M202-H2O-1	140-12817-10
M202-ORG-1	140-12817-11
M202-H2O-2	140-12817-13
M202-ORG-2	140-12817-14
M202-H2O-3	140-12817-16
M202-ORG-3	140-12817-17
M202-H2O-FIELD BLANK	140-12817-19
M202-ORG-FIELD BLANK	140-12817-20
M202-H2O-PROOF BLANK	140-12817-22
M202-ORG-PROOF BLANK	140-12817-23
M202-WATER REAGENT BLANK	140-12817-24
M202-HEXANE REAGENT BLANK	140-12817-25

Comments:

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: M5-FILT-1
Lab Sample ID: 140-12817-1
Lab Name: TestAmerica Knoxville
Job No.: 140-12817-1
SDG ID.:
Matrix: Air
Date Sampled: 09/18/2018 00:00
Reporting Basis: WET
Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
	Particulates, Total	49.3	0.500	0.500	mg/sample			1	5

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: M5-PNR-1
Lab Sample ID: 140-12817-2
Lab Name: TestAmerica Knoxville
Job No.: 140-12817-1
SDG ID.:
Matrix: Air
Date Sampled: 09/18/2018 00:00
Reporting Basis: WET
Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
	Particulates, Total	9.58	0.500	0.500	mg/sample			1	5

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: M5-FILT-2
Lab Sample ID: 140-12817-3
Lab Name: TestAmerica Knoxville
Job No.: 140-12817-1
SDG ID.:
Matrix: Air
Date Sampled: 09/18/2018 00:00
Reporting Basis: WET
Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
	Particulates, Total	242	0.500	0.500	mg/sample			1	5

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: M5-PNR-2
Lab Sample ID: 140-12817-4
Lab Name: TestAmerica Knoxville
Job No.: 140-12817-1
SDG ID.:
Matrix: Air
Date Sampled: 09/18/2018 00:00
Reporting Basis: WET
Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
	Particulates, Total	14.1	0.500	0.500	mg/sample			1	5

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: M5-FILT-3
Lab Sample ID: 140-12817-5
Lab Name: TestAmerica Knoxville
Job No.: 140-12817-1
SDG ID.:
Matrix: Air
Date Sampled: 09/19/2018 00:00
Reporting Basis: WET
Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
	Particulates, Total	57.4	0.500	0.500	mg/sample			1	5

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: M5-PNR-3
Lab Sample ID: 140-12817-6
Lab Name: TestAmerica Knoxville
Job No.: 140-12817-1
SDG ID.:
Matrix: Air
Date Sampled: 09/19/2018 00:00
Reporting Basis: WET
Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
	Particulates, Total	37.5	0.500	0.500	mg/sample			1	5

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: M5-FILT-BLANK
Lab Sample ID: 140-12817-7
Lab Name: TestAmerica Knoxville
Job No.: 140-12817-1
SDG ID.:
Matrix: Air
Date Sampled: 09/19/2018 00:00
Reporting Basis: WET
Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
	Particulates, Total	0.675	0.500	0.500	mg/sample			1	5

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: M5/M202-ACETONE REAGENT BLANK
Lab Sample ID: 140-12817-8
Lab Name: TestAmerica Knoxville
Job No.: 140-12817-1
SDG ID.:
Matrix: Air
Date Sampled: 09/19/2018 00:00
Reporting Basis: WET
Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
	Organic Condensible Particulate Matter	1.25	1.00	0.500	mg/sample			1	202 Org CPM
	Particulates, Total	0.575	0.500	0.500	mg/sample			1	5

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: M202-H2O-1
Lab Sample ID: 140-12817-10
Lab Name: TestAmerica Knoxville
Job No.: 140-12817-1
SDG ID.:
Matrix: Air
Date Sampled: 09/18/2018 00:00
Reporting Basis: WET
Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
	Inorganic Condensible Particulate Matter	83.5	1.00	0.500	mg/sample			1	202 InOrg CPM

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: M202-ORG-1
Lab Sample ID: 140-12817-11
Lab Name: TestAmerica Knoxville
Job No.: 140-12817-1
SDG ID.:
Matrix: Air
Date Sampled: 09/18/2018 00:00
Reporting Basis: WET
Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
	Organic Condensible Particulate Matter	4.22	1.00	0.500	mg/sample			1	202 Org CPM

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: M202-H2O-2
Lab Sample ID: 140-12817-13
Lab Name: TestAmerica Knoxville
Job No.: 140-12817-1
SDG ID.:
Matrix: Air
Date Sampled: 09/18/2018 00:00
Reporting Basis: WET
Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
	Inorganic Condensible Particulate Matter	76.6	1.00	0.500	mg/sample			1	202 InOrg CPM

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: M202-ORG-2
Lab Sample ID: 140-12817-14
Lab Name: TestAmerica Knoxville
Job No.: 140-12817-1
SDG ID.:
Matrix: Air
Date Sampled: 09/18/2018 00:00
Reporting Basis: WET
Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
	Organic Condensible Particulate Matter	4.13	1.00	0.500	mg/sample			1	202 Org CPM

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: M202-H2O-3
Lab Sample ID: 140-12817-16
Lab Name: TestAmerica Knoxville
Job No.: 140-12817-1
SDG ID.:
Matrix: Air
Date Sampled: 09/19/2018 00:00
Reporting Basis: WET
Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
	Inorganic Condensible Particulate Matter	136	1.00	0.500	mg/sample			1	202 InOrg CPM

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: M202-ORG-3
Lab Sample ID: 140-12817-17
Lab Name: TestAmerica Knoxville
Job No.: 140-12817-1
SDG ID.:
Matrix: Air
Date Sampled: 09/19/2018 00:00
Reporting Basis: WET
Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
	Organic Condensible Particulate Matter	7.37	1.00	0.500	mg/sample			1	202 Org CPM

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: M202-H2O-FIELD BLANK
Lab Sample ID: 140-12817-19
Lab Name: TestAmerica Knoxville
Job No.: 140-12817-1
SDG ID.:
Matrix: Air
Date Sampled: 09/19/2018 00:00
Reporting Basis: WET
Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
	Inorganic Condensible Particulate Matter	3.19	1.00	0.500	mg/sample			1	202 InOrg CPM

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: M202-ORG-FIELD BLANK
Lab Sample ID: 140-12817-20
Lab Name: TestAmerica Knoxville
Job No.: 140-12817-1
SDG ID.:
Matrix: Air
Date Sampled: 09/19/2018 00:00
Reporting Basis: WET
Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
	Organic Condensible Particulate Matter	3.33	1.00	0.500	mg/sample			1	202 Org CPM

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: M202-H2O-PROOF BLANK
Lab Sample ID: 140-12817-22
Lab Name: TestAmerica Knoxville
Job No.: 140-12817-1
SDG ID.:
Matrix: Air
Date Sampled: 09/18/2018 00:00
Reporting Basis: WET
Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
	Inorganic Condensible Particulate Matter	2.90	1.00	0.500	mg/sample			1	202 InOrg CPM

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: M202-ORG-PROOF BLANK
Lab Sample ID: 140-12817-23
Lab Name: TestAmerica Knoxville
Job No.: 140-12817-1
SDG ID.:
Matrix: Air
Date Sampled: 09/18/2018 00:00
Reporting Basis: WET
Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
	Organic Condensible Particulate Matter	2.83	1.00	0.500	mg/sample			1	202 Org CPM

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: M202-WATER REAGENT BLANK
Lab Sample ID: 140-12817-24
Lab Name: TestAmerica Knoxville
Job No.: 140-12817-1
SDG ID.:
Matrix: Air
Date Sampled: 09/19/2018 00:00
Reporting Basis: WET
Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
	Inorganic Condensible Particulate Matter	2.24	1.00	0.500	mg/sample			1	202 InOrg CPM

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: M202-HEXANE REAGENT BLANK
Lab Sample ID: 140-12817-25
Lab Name: TestAmerica Knoxville
Job No.: 140-12817-1
SDG ID.:
Matrix: Air
Date Sampled: 09/19/2018 00:00
Reporting Basis: WET
Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
	Organic Condensible Particulate Matter	1.16	1.00	0.500	mg/sample			1	202 Org CPM

9-IN
DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Knoxville Job Number: 140-12817-1

SDG Number:

Matrix: Air Instrument ID: B3

Method: 202 InOrg CPM MDL Date: 01/01/2015 17:11

Analyte	Wavelength/ Mass	RL (mg/sample)	MDL (mg/sample)
Inorganic Condensible Particulate Matter		1	0.5

9-IN
CALIBRATION BLANK DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Knoxville Job Number: 140-12817-1

SDG Number:

Matrix: Air Instrument ID: B3

Method: 202 InOrg CPM XMDL Date: 01/01/2015 17:44

Analyte	Wavelength/ Mass	XRL (mg/sample)	XMDL (mg/sample)
Inorganic Condensible Particulate Matter		1	0.5

9-IN
DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Knoxville Job Number: 140-12817-1

SDG Number:

Matrix: Air Instrument ID: B3

Method: 202 Org CPM MDL Date: 01/01/2015 17:11

Analyte	Wavelength/ Mass	RL (mg/sample)	MDL (mg/sample)
Organic Condensible Particulate Matter		1	0.5

9-IN
CALIBRATION BLANK DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Knoxville Job Number: 140-12817-1

SDG Number:

Matrix: Air Instrument ID: B3

Method: 202 Org CPM XMDL Date: 01/01/2015 17:44

Analyte	Wavelength/ Mass	XRL (mg/sample)	XMDL (mg/sample)
Organic Condensible Particulate Matter		1	0.5

9-IN
DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Knoxville Job Number: 140-12817-1

SDG Number:

Matrix: Air Instrument ID: FT_Gross

Method: 5 RL Date: 01/11/2016 09:38

Analyte	Wavelength/ Mass	RL (mg/sample)	
Particulates, Total		0.5	

FORM IX - IN

9-IN
CALIBRATION BLANK DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Knoxville Job Number: 140-12817-1

SDG Number:

Matrix: Air Instrument ID: FT_Gross

Method: 5 XRL Date: 01/11/2016 10:18

Analyte	Wavelength/ Mass	XRL (mg/sample)	
Particulates, Total		0.5	

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Knoxville Job No.: 140-12817-1

SDG No.:

Instrument ID: B3 Analysis Method: 202 InOrg CPM

Start Date: 09/26/2018 17:22 End Date: 09/26/2018 17:22

Lab Sample Id	D/F	Type	Time	Analytes																							
				ICPM																							
ZZZZZZ			17:22																								
ZZZZZZ			17:22																								
ZZZZZZ			17:22																								
140-12817-10	1	T	17:22	X																							
140-12817-13	1	T	17:22	X																							
140-12817-16	1	T	17:22	X																							
140-12817-19	1	T	17:22	X																							
140-12817-22	1	T	17:22	X																							
140-12817-24	1	T	17:22	X																							
ZZZZZZ			17:22																								
ZZZZZZ			17:22																								

Prep Types:
T = Total/NA

FORM XIII-IN

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Knoxville Job No.: 140-12817-1

SDG No.:

Instrument ID: B3 Analysis Method: 202 Org CPM

Start Date: 09/26/2018 17:25 End Date: 09/26/2018 17:25

Lab Sample Id	D/F	Type	Time	Analytes																							
				OCPM																							
ZZZZZZ			17:25																								
ZZZZZZ			17:25																								
ZZZZZZ			17:25																								
140-12817-8	1	T	17:25	X																							
140-12817-11	1	T	17:25	X																							
140-12817-14	1	T	17:25	X																							
140-12817-17	1	T	17:25	X																							
140-12817-20	1	T	17:25	X																							
140-12817-23	1	T	17:25	X																							
140-12817-25	1	T	17:25	X																							
ZZZZZZ			17:25																								
ZZZZZZ			17:25																								

Prep Types:
T = Total/NA

FORM XIII-IN

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Knoxville Job No.: 140-12817-1

SDG No.:

Instrument ID: FT_Gross Analysis Method: 5

Start Date: 10/01/2018 13:01 End Date: 10/01/2018 13:01

Lab Sample Id	D/F	Type	Time	Analytes																							
				TPM																							
140-12817-2	1	T	13:01	X																							
140-12817-4	1	T	13:01	X																							
140-12817-6	1	T	13:01	X																							
140-12817-8	1	T	13:01	X																							
140-12817-1	1	T	13:01	X																							
140-12817-3	1	T	13:01	X																							
140-12817-5	1	T	13:01	X																							
140-12817-7	1	T	13:01	X																							

Prep Types:
T = Total/NA

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Knoxville Job No.: 140-12817-1

SDG No.:

Batch Number: 23973 Batch Start Date: 09/26/18 17:22 Batch Analyst: Nedkova, Teodora S

Batch Method: 202 InOrg CPM Batch End Date: 10/01/18 16:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	TareWeight	TareDateTime	InitialAmount	Initial pH	BuretStart1	BuretStop1
140-12817-A-10	M202-H2O-1	202 InOrg CPM	T	67.79510 g	09/27/2018 10:00	275 mL	1 SU	0 mL	15.31 mL
140-12817-A-13	M202-H2O-2	202 InOrg CPM	T	64.65964 g	09/27/2018 10:00	350 mL	1 SU	0 mL	13.35 mL
140-12817-A-16	M202-H2O-3	202 InOrg CPM	T	65.18882 g	09/27/2018 10:00	277 mL	1 SU	0 mL	25 mL
140-12817-A-19	M202-H2O-FIELD BLANK	202 InOrg CPM	T	64.72757 g	09/27/2018 10:00	140 mL	7 SU	1 mL	1 mL
140-12817-A-22	M202-H2O-PROOF BLANK	202 InOrg CPM	T	65.41429 g	09/27/2018 10:00	131 mL	7 SU	1 mL	1 mL
140-12817-A-24	M202-WATER REAGENT BLANK	202 InOrg CPM	T	67.77719 g	09/27/2018 10:00	230 mL	7 SU	1 mL	1 mL

Lab Sample ID	Client Sample ID	Method Chain	Basis	TitrantVolume1	DesDateTime	Weight1	WT1DateTime	Weight2	WT2DateTime
140-12817-A-10	M202-H2O-1	202 InOrg CPM	T	15.31 mL	09/29/2018 14:30	67.89980 g	10/01/2018 09:40	67.89996 g	10/01/2018 15:45
140-12817-A-13	M202-H2O-2	202 InOrg CPM	T	13.35 mL	09/29/2018 14:30	64.75479 g	10/01/2018 09:40	64.75481 g	10/01/2018 15:45
140-12817-A-16	M202-H2O-3	202 InOrg CPM	T	25 mL	09/29/2018 14:30	65.35940 g	10/01/2018 09:40	65.35926 g	10/01/2018 15:45
140-12817-A-19	M202-H2O-FIELD BLANK	202 InOrg CPM	T	0 mL	09/29/2018 14:30	64.73079 g	10/01/2018 09:40	64.73072 g	10/01/2018 15:45
140-12817-A-22	M202-H2O-PROOF BLANK	202 InOrg CPM	T	0 mL	09/29/2018 14:30	65.41718 g	10/01/2018 09:40	65.41720 g	10/01/2018 15:45
140-12817-A-24	M202-WATER REAGENT BLANK	202 InOrg CPM	T	0 mL	09/29/2018 14:30	67.77940 g	10/01/2018 09:40	67.77946 g	10/01/2018 15:45

Lab Sample ID	Client Sample ID	Method Chain	Basis	AvgWeight	CalcMsg				
140-12817-A-10	M202-H2O-1	202 InOrg CPM	T	67.89988 g	OK				
140-12817-A-13	M202-H2O-2	202 InOrg CPM	T	64.7548 g	OK				
140-12817-A-16	M202-H2O-3	202 InOrg CPM	T	65.35933 g	OK				
140-12817-A-19	M202-H2O-FIELD BLANK	202 InOrg CPM	T	64.730755 g	OK				
140-12817-A-22	M202-H2O-PROOF BLANK	202 InOrg CPM	T	65.41719 g	OK				
140-12817-A-24	M202-WATER REAGENT BLANK	202 InOrg CPM	T	67.77943 g	OK				

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Knoxville Job No.: 140-12817-1

SDG No.:

Batch Number: 23973 Batch Start Date: 09/26/18 17:22 Batch Analyst: Nedkova, Teodora S

Batch Method: 202 InOrg CPM Batch End Date: 10/01/18 16:00

Batch Notes	
Balance ID	B3
Normality of Base	0.0816 N
Field Volume Marked (Y/N)	n
Sulfuric Acid ID	160465
Volume of H2SO4	20 mL
Leakage Noted (Y/N)	n
Ammonium Hydroxide ID	160464
Volume of NH4OH	24.5 mL
Oven, Bath or Block Temperature 1	28 Degrees C
Oven ID	ACSOV1

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Knoxville Job No.: 140-12817-1

SDG No.:

Batch Number: 23975 Batch Start Date: 09/26/18 17:25 Batch Analyst: Nedkova, Teodora S

Batch Method: 202 Org CPM Batch End Date: 10/01/18 16:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	TareWeight	TareDateTime	DesDateTime	Weight1	WT1DateTime	Weight2
140-12817-A-8	M5/M202-ACETONE REAGENT BLANK	202 Org CPM	T	63.31864 g	09/27/2018 10:00	09/29/2018 14:30	63.31989 g	10/01/2018 09:30	63.31989 g
140-12817-A-11	M202-ORG-1	202 Org CPM	T	66.33753 g	09/27/2018 10:00	09/29/2018 14:30	66.34175 g	10/01/2018 09:30	66.34174 g
140-12817-A-14	M202-ORG-2	202 Org CPM	T	63.95438 g	09/27/2018 10:00	09/29/2018 14:30	63.95852 g	10/01/2018 09:30	63.95850 g
140-12817-A-17	M202-ORG-3	202 Org CPM	T	65.81337 g	09/27/2018 10:00	09/29/2018 14:30	65.82070 g	10/01/2018 09:30	65.82079 g
140-12817-A-20	M202-ORG-FIELD BLANK	202 Org CPM	T	64.79710 g	09/27/2018 10:00	09/29/2018 14:30	64.80043 g	10/01/2018 09:30	64.80044 g
140-12817-A-23	M202-ORG-PROOF BLANK	202 Org CPM	T	63.60669 g	09/27/2018 10:00	09/29/2018 14:30	63.60928 g	10/01/2018 09:30	63.60977 g
140-12817-A-25	M202-HEXANE REAGENT BLANK	202 Org CPM	T	63.88901 g	09/27/2018 10:00	09/29/2018 14:30	63.89012 g	10/01/2018 09:30	63.89022 g

Lab Sample ID	Client Sample ID	Method Chain	Basis	WT2DateTime	AvgWeight	CalcMsg	AnalysisComment		
140-12817-A-8	M5/M202-ACETONE REAGENT BLANK	202 Org CPM	T	10/01/2018 15:35	63.31989 g	OK	210ml		
140-12817-A-11	M202-ORG-1	202 Org CPM	T	10/01/2018 15:35	66.341745 g	OK	200ml		
140-12817-A-14	M202-ORG-2	202 Org CPM	T	10/01/2018 15:35	63.95851 g	OK	182ml		
140-12817-A-17	M202-ORG-3	202 Org CPM	T	10/01/2018 15:35	65.820745 g	OK	180ml		
140-12817-A-20	M202-ORG-FIELD BLANK	202 Org CPM	T	10/01/2018 15:35	64.800435 g	OK	171ml		
140-12817-A-23	M202-ORG-PROOF BLANK	202 Org CPM	T	10/01/2018 15:35	63.609525 g	OK	168ml		
140-12817-A-25	M202-HEXANE REAGENT BLANK	202 Org CPM	T	10/01/2018 15:35	63.89017 g	OK	220ml		

Batch Notes	
Balance ID	B3
Oven, Bath or Block Temperature 1	28 Degrees C
Oven ID	ACSOV1

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Knoxville Job No.: 140-12817-1

SDG No.:

Batch Number: 24112 Batch Start Date: 10/01/18 13:01 Batch Analyst: Nedkova, Teodora S

Batch Method: 5 Batch End Date: 10/01/18 22:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	SampleVolume					
140-12817-A-2	M5-PNR-1	5	T	68 mL					
140-12817-A-4	M5-PNR-2	5	T	68 mL					
140-12817-A-6	M5-PNR-3	5	T	47 mL					
140-12817-A-8	M5/M202-ACETONE REAGENT BLANK	5	T	210 mL					

Batch Notes	
Batch Comment	in oven 092718, 0930; in desc 092718, 1230

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

TestAmerica Knoxville Particulate Matter Determination Data Review/Narrative Checklist
Method: EPA Method 202 by SOP KNOX-WC-0006, Rev. 11

Batch Number:	23973	**Job Number(s):**	140 - 12817
Analyst Name:	TBN	**Method Citation:**	M202
Drying Temperature	Filters ☐ Ambient ☐ Other____ ☐ Extracted and Combined per Method____ Inorganic CPE (202) ☐ Ambient ☑ Other 28°C Organic CPE (202) ☐ Ambient ☐ Other____		

Review Items **Section 1: Calibration**	N/A	Y	N	If No, why is data reportable?	2nd √
1. Was the daily balance calibration check performed and recorded in the balance calibration check log book?		✓			✓
2. Was the balance zero and calibration checked with three weights that bracket the range to be measured prior to use?		✓		☐ Other weights bracketing weight range were used.	✓
3. Was the balance checked with 100 gram weight per 10 samples and at the end of weighing session?		✓		☐ Another weight was used.(____ grams)	✓
4. Was the balance zero checked per 10 samples and at the end of weighing session?		✓			✓
5. Was the balance tared before each weighing?		✓			✓
6. Was the balance ID documented?		✓			✓
7. Was the oven ID documented? ACSW1		✓			✓
Section 2: Tare Weight Procedure					
1. Were the beakers weighed in TALS batch?		✓		☐ FilterTracIV	✓
2. Were the beakers baked before weighing?		✓			✓
3. Were all tare weights performed in duplicate?			✓	☑ Duplicate weights not required for baked beakers.	✓
4. Were all tare weights averaged?	✓				✓
Section 3: Procedure					
1. Were all special project requirements met? **(Review all Backlog Comments and Project Documents.)**		✓			✓
2. Were sample IDs verified? **(Review Job Numbers and Client IDs on sample labels.)**		✓			✓
3. Were all sample weights performed in duplicate (at least)?		✓			✓
4. Was the average of the last two weights used?		✓			✓
5. Calculations checked for error? Sample 12817-10. (Weight 1 + Weight 2) / 2 = (67.89980+67.89996)/2 = 67.89988g Gross Weight Average – Tare Weight Average = NA		✓			✓
Section 4: TALS Reporting					
1. Was Batch Information added? Correct analyst name recorded?		✓			✓
2. Does the analytical time match the beginning of the last set of weights?		✓			✓
3. Were applicable documents scanned and added?	✓				✓
4. Are all non-conformances documented?	✓			**NCM No.:** ✓	✓
5. Was appropriate narrative NCM added?		✓		**NCM No:** ✓ **[6054]**	✓
6. Final report acceptable? (Results, units, analysis dates are correct. Flags and/or errors were addressed.)		✓			✓

1st Level Reviewer: Nedkova	Date: 10/02/18	2nd Level Reviewer: Jessica A. Holmes	Date: 10-02-18
Comments:		**Comments:**	
67.89988g - 67.79510g = 0.10478g x1000 = 104.78 mg			
Correction: 0.0817 x 17.03 x 15.31 = 21.30			
104.78 - 21.30 = 83.48 mg			

WC106R0, 09/08/17

TestAmerica Knoxville Particulate Matter Determination Data Review/Narrative Checklist
Method: EPA Method 202 by SOP KNOX-WC-0006, Rev. 11

Batch Number:	23975	**Job Number(s):**	140 – 12817
Analyst Name:	TBN	**Method Citation:**	M202
Drying Temperature	Filters ☐ Ambient ☐ Other_____ ☐ Extracted and Combined per Method_____ Inorganic CPE (202) ☐ Ambient ☐ Other_____ Organic CPE (202) ☐ Ambient ☒ Other 28		

Review Items **Section 1: Calibration**	N/A	Y	N	If No, why is data reportable?	2nd √
1. Was the daily balance calibration check performed and recorded in the balance calibration check log book?		√			√
2. Was the balance zero and calibration checked with three weights that bracket the range to be measured prior to use?		√		☐ Other weights bracketing weight range were used.	√
3. Was the balance checked with 100 gram weight per 10 samples and at the end of weighing session?		√		☐ Another weight was used.(_____ grams)	√
4. Was the balance zero checked per 10 samples and at the end of weighing session?		√			√
5. Was the balance tared before each weighing?		√			√
6. Was the balance ID documented?		√			√
7. Was the oven ID documented? KUM		√			√
Section 2: Tare Weight Procedure					
1. Were the beakers weighed in TALS batch?		√		☐ FilterTracIV	√
2. Were the beakers baked before weighing?		√			√
3. Were all tare weights performed in duplicate?			√	☑ Duplicate weights not required for baked beakers.	√
4. Were all tare weights averaged?	√				√
Section 3: Procedure					
1. Were all special project requirements met? **(Review all Backlog Comments and Project Documents.)**		√			√
2. Were sample IDs verified? **(Review Job Numbers and Client IDs on sample labels.)**		√			√
3. Were all sample weights performed in duplicate (at least)?		√			√
4. Was the average of the last two weights used?		√			√
5. Calculations checked for error? Sample 12817-8. (Weight 1 + Weight 2) / 2 = (63.31889g + 63.31989g)/2 = 63.31989g Gross Weight Average – Tare Weight Average = 63.31989 – 63.31864 = 1.25mg		√			√
Section 4: TALS Reporting					
1. Was Batch Information added? Correct analyst name recorded?		√			√
2. Does the analytical time match the beginning of the last set of weights?		√			√
3. Were applicable documents scanned and added?	√				√
4. Are all non-conformances documented?	√			**NCM No.:**	√
5. Was appropriate narrative NCM added?		√		**NCM No:** √ [6054]	√
6. Final report acceptable? (Results, units, analysis dates are correct. Flags and/or errors were addressed.)		√			√

1st Level Reviewer: Ned Kurd	**Date:** 10/02/18	**2nd Level Reviewer:** Jessica A. Holmes	**Date:** 10-02-18
Comments:		**Comments:**	

WC106R0, 09/08/17

TestAmerica Knoxville
High Volume Particulate Filter Gross Weight Data

Analyst: TSN

Temp °C: 23

% Humidity: 41

weight date:	09/26/2018	09/27/2018	09/28/2018	10/01/2018
weight time	17:37	16:39	08:53	13:01

Balance Model: Mettler-Toledo XSE205DU B3

Balance SN: 412417296

Method: 5 method 5

Particulates

Weight Type	LIMS Sample ID	LIMS Tare Sample ID	Filter ID Number	Tare Weight (g)	Gross Weight (g) 1	Gross Weight (g) 2	Gross Weight (g) 3	Gross Weight (g) 4	Gross Weight (g)	Reference Δ (mg)	Δ OK	Temp during Tare	Temp within Tolerance	Humid during Tare	Humidity within Tolerance	Particulate Weight (total µg)
Rererence Weight 1g				0.99996	0.99997	0.99995	0.99997		0.99997	0.03	OK					10
Rererence Weight 5g				4.99993	4.99995	4.99990	4.99995		4.99995	0.05	OK					20
Reference Weight 100g				99.99970	99.99960	99.99960	99.99960		99.99960	0.40	OK					-100
Filter Weight	140-12817-A-2			64.18787	64.19585	64.19743	64.19746		64.19745	0.03	OK					9575
Filter Weight	140-12817-A-4			63.59414	63.60699	63.60813	63.60836		63.60825	0.23	OK					14105
Filter Weight	140-12817-A-6			65.09352	65.12995	65.13089	65.13112		65.13101	0.23	OK					37485
Filter Weight	140-12817-A-8			63.31864	63.31924	63.31919			63.31922	0.05	OK					575
Filter Weight	140-12817-A-1	99677		0.39237	0.44185	0.44153			0.44169	0.32	OK	23	OK	37	OK	49320
Filter Weight	140-12817-A-3	99685		0.37412	0.61577	0.61558			0.61568	0.19	OK	21.7	OK	38	OK	241555
Filter Weight	140-12817-A-5	99684		0.37500	0.43229	0.43260			0.43245	0.31	OK	21.7	OK	38	OK	57445
FIlter Weight	140-12817-A-7	118211		0.40665	0.40728	0.40737			0.40733	0.09	OK	22	OK	39	OK	675
Zero Check				0.00000	0.00000	0.00000	0.00000		0.00000	0.00	OK					0
Reference Weight 100g				99.99980	99.99980	99.99970	99.99960		99.99960	0.40	OK					-200

File Name
\\KNXSVR03\WetChem\FilterTracIV\gross_batch_20180926(3).xls

version 4.0.a

Printed 10/2/2018 8:43 AM
Page 1 of 1

TestAmerica Knoxville Particulate Matter Determination Data Review/Narrative Checklist
Method: SW-846 Method 0050 by SOP KNOX-WC-0006, Rev. 11

Batch Number:	24112	**Job Number(s):**	140 – 12817
Analyst Name:	TBN	**Method Citation**	☒M5 ☐M5B ☐M5I ☐M17 ☐M201A ☐Other _____
Drying Temperature	Filters	☐ Ambient	☒ 105ºC ☐ 160ºC ☐ Other_____
	Probe & Nozzle Rinses	☐ Ambient	☒ 105ºC ☐ 160ºC ☐ Other_____

Review Items **Section 1: Calibration**	N/A	Y	N	If No, why is data reportable?	2nd √
1. Was the daily balance calibration check performed and recorded in the balance calibration check log book?		√			√
2. Was the balance zero and calibration checked with three weights that bracket the range to be measured immediately prior to use?		√			√
3. Was balance calibration checked with a bracketing weight above the highest sample weight once per 10 samples and at end of weighing session?		√		☐ Another weight was used.(_____ grams)	√
4. Was balance zero checked per 10 samples and at end of weighing session?		√			√
5. Was the balance tared before each weighing?		√			√
6. Was the balance ID documented?		√			√
7. If used, was the oven ID documented? ACSOVA		√			√
Section 2: Tare Weight Procedure					
1. Were filters and/or beakers weighed in FilterTracIV?		√			√
2. Was a TALS job created for tracking the tared filters and their weights?		√			√
3. Was tare weight data uploaded to TALS?		√			√
4. Were all sample weights performed in duplicate (at least)?		√			√
Section 3: Sample Procedure					
5. Were all special project requirements met? ***(Review all Backlog Comments and Project Documents.)***		√			√
6. Were sample IDs verified? ***(Review Filter ID, Job Numbers and Client IDs on sample labels.)***		√			√
7. Was tare weight data entered directly from TALS?		√		***If no, scan documents for tare weights.***	√
8. Were all sample weights performed in duplicate (at least)?		√			√
9. Was the average of the last two weights used?		√			√
10. Calculations checked for error? Sample 12817-2. (Weight 1 + Weight 2) / 2 = (64.19743+64.19746)/2=64.19746g Gross Weight Average – Tare Weight Average = 64.19745g-64.18787g=.00958g		√			√
Section 4: TALS Reporting					
1. Was Equipment ID entered?		√			√
2. Is the correct analyst name recorded?		√			√
3. Does analytical date time match last weighing sequence in FilterTracIV?		√			√
4. Did FilterTracIV correctly upload data to TALS?		√			√
5. Were applicable documents scanned and added?		√			√
6. Are all non-conformances documented?	√			NCM No.: _____	√
7. Was appropriate narrative NCM added?		√		NCM No.: √[5893] __[6053]__[Other]_____	√
8. Final report acceptable? (Results, units, analysis dates are correct. Flags and/or errors were addressed.)		√			√

1st Level Reviewer: [signature]	Date: 10/02/18	2nd Level Reviewer: Jessica A. Holmes	Date: 10-02-18
Comments:		Comments:	

WC107R0, 7/31/17

Shipping and Receiving Documents

AECOM

Chain of Custody Record

Project	Granite City Operations
Site	Bypass Vent Stack No. 6
	60582380.4
Prepared by:	

Test America
5815 Middlebrook Pike
Knoxville, TN 37921

Sample ID	Sample Matrix	Date/Time	Method 5 post test weight	Residue by Method 202					Comments
M5-filt-1	Quartz Filter	9/18/2018	X						
M5-filt-2	Quartz Filter	9/18/2018	X						
M5-filt-3	Quartz Filter	9/19/2018	X						
M5-filt-blank	Quartz Filter	9/19/2018	X						
M5-PNR-1	Probe and nozzle acetone rinse	9/18/2018	X						
M5-PNR-2	Probe and nozzle acetone rinse	9/18/2018	X						
M5-PNR-3	Probe and nozzle acetone rinse	9/19/2018	X						
M5/M202-acetone reagent blank	Reagent blank	9/19/2018	X	X					Reagent blank for M5 and M202

Contact: John Carson 865.425.7014; john.r.carson@aecom.com; Courtney Adkins 865.291.3019

Relinquished by:	Date	Time	Received by:	Date	Time	Relinquished by:	Date	Time
John Carson	9/25/18	16:50	[illegible]	9-25-18	16:50			
Received by:	Date	Time	Relinquished by:	Date	Time			

Received for Laboratory by:	Date	Time	Air bill No.	Opened by:	Seal #	Date	Time	Temp (C)

Seal #	Condition

Remarks

HAND DELIVERED
NO CUSTODY SEALS
RECEIVED AMBIENT RT 20.6/CT 20.7°C
BD 9-25-18

140-12817 Chain of Custody

AECOM

Chain of Custody Record

Project	Granite City Operations
Site	Bypass Vent Stack No. 6
Purchase Order	60582380.4
Prepared by:	

Test America
5815 Middlebrook Pike
Knoxville, TN 37921

Sample ID	Sample Matrix	Date/Time	Residue by Method 202						Comments
M202-filt-1	Teflon filter	9/18/2018	X						
M202-filt-2	Teflon filter	9/18/2018	X						
M202-filt-3	Teflon filter	9/19/2018	X						
M202-filt-field	Teflon filter	9/19/2018	X						Field blank
M202-filt-proof	Teflon filter	9/18/2018	X						Proof blank

Contact: John Carson 865.425.7014; john.r.carson@aecom.com; Courtney Adkins 865.291.3019

Relinquished by:	Date	Time	Received by:	Date	Time	Relinquished by:	Date	Time
John Carson	9/25/18	16/50	[signature] TA KNX	9-25-18	16:50			
Received by:	Date	Time	Relinquished by:	Date	Time			
Received for Laboratory by:	Date	Time	Air bill No.	Opened by:	Seal #	Date	Time	Temp (C)
Seal #	Condition							

Remarks
* Analyze field and proof blanks (filter, H_2O, + organic) same as samples.

AECOM

Chain of Custody Record

Project	Granite City Operations
Site	Bypass Vent Stack No. 6
Purchase Order	60582380.4
Prepared by:	

Test America
5815 Middlebrook Pike
Knoxville, TN 37921

Sample ID	Sample Matrix	Date/Time	Residue by Method 202						Comments
M202-org-1	Acetone/hexane rinse	9/18/2018	X						
M202-org-2	Acetone/hexane rinse	9/18/2018	X						
M202-org-3	Acetone/hexane rinse	9/19/2018	X						
M202-org-field	Acetone/hexane rinse	9/19/2018	X						Field blank
M202-org-proof	Acetone/hexane rinse	9/18/2018	X						Proof blank
M202-hexane reagent blank	Hexane	9/19/2018	X						Reagent blank

Contact: John Carson 865.425.7014; john.r.carson@aecom.com; Courtney Adkins 865.291.3019

Relinquished by:	Date	Time	Received by:	Date	Time	Relinquished by:	Date	Time
John Carson	9/25/18	16:50	[illegible] TA KNX	9-25-18	16:50			
Received by:	Date	Time	Relinquished by:	Date	Time			

Received for Laboratory by:	Date	Time	Air bill No.	Opened by:	Seal #	Date	Time	Temp (C)

Seal #	Condition

Remarks

See note on page 3

AECOM

Chain of Custody Record

Project	Granite City Operations
Site	Bypass Vent Stack No. 6
Purchase Order	60582380.4
Prepared by:	

Test America
5815 Middlebrook Pike
Knoxville, TN 37921

Sample ID	Sample Matrix	Date/Time	Residue by Method 202						Comments
M202-H2O-1	Water rinse	9/18/2018	X						
M202-H2O-2	Water rinse	9/18/2018	X						
M202-H2O-3	Water rinse	9/19/2018	X						
M202-H2O-field	Water rinse	9/19/2018	X						Field blank
M202-H2O-proof	Water rinse	9/18/2018	X						Proof blank
M202-water reagent blank	Water	9/19/2018	X						Reagent blank

Contact: John Carson 865.425.7014; john.r.carson@aecom.com; Courtney Adkins 865.291.3019

Relinquished by:	Date	Time	Received by:	Date	Time	Relinquished by:	Date	Time
John Carson	9/24/18	16:50	[illegible] TA KNX	9-25-18	16:50			
Received by:	Date	Time	Relinquished by:	Date	Time			

Received for Laboratory by:	Date	Time	Air bill No.	Opened by:	Seal #	Date	Time	Temp (C)

Seal #	Condition

Remarks

See note on page 3.

Loc: 140
12817

TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Log In Number:

Review Items	Yes	No	NA	If No, what was the problem?
1. Are the shipping containers intact?	/			☐ **Containers, Broken**
2. Were ambient air containers received intact?			/	☐ Checked in lab
3. The coolers/containers custody seal if present, is it intact?			/	☐ Yes ☐ NA
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID :_____ Correction factor: _____	/		/	☐ **Cooler Out of Temp, Client Contacted, Proceed/Cancel** ☐ **Cooler Out of Temp, Same Day Receipt**
5. Were all of the sample containers received intact?	/			☐ **Containers, Broken**
6. Were samples received in appropriate containers?	/			☐ **Containers, Improper; Client Contacted; Proceed/Cancel**
7. Do sample container labels match COC? (IDs, Dates, Times)	/			☐ **COC & Samples Do Not Match** ☐ **COC Incorrect/Incomplete** ☐ **COC Not Received**
8. Were all of the samples listed on the COC received?	/			☐ **Sample Received, Not on COC** ☐ **Sample on COC, Not Received**
9. Is the date/time of sample collection noted?	/			☐ **COC; No Date/Time; Client Contacted**
10. Was the sampler identified on the COC?			/	☐ **Sampler Not Listed on COC**
11. Is the client and project name/# identified?	/			☐ **COC Incorrect/Incomplete**
12. Are tests/parameters listed for each sample?	/			☐ **COC No tests on COC**
13. Is the matrix of the samples noted?	/			☐ **COC Incorrect/Incomplete**
14. Was COC relinquished? (Signed/Dated/Timed)	/			☐ **COC Incorrect/Incomplete**
15. Were samples received within holding time?	/			☐ **Holding Time - Receipt**
16. Were samples received with correct chemical preservative (excluding Encore)?			/	☐ **pH Adjusted, pH Included (See box 16A)** ☐ **Incorrect Preservative**
17. Were VOA samples received without headspace?			/	☐ **Headspace (VOA only)**
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:_____			/	☐ **Residual Chlorine**
19. For 1613B water samples is pH<9?			/	☐ If no, lab will adjust
20. For rad samples was sample activity info. Provided?			/	☐ Project missing info

Comments/Actions Taken

Labeling Verified by: **Date:**

pH test strip lot number:

	Box 16A: pH Preservation	Box 18A: Residual Chlorine
Preservative:		
Lot Number:		
Exp Date:		
Analyst:		
Date:		
Time:		

Project #: 14004550 PM Instructions: _____

Sample Receiving Associate: [signature] Date: 9-26-18

QA026R30.doc, 080916

ANALYTICAL REPORT

Job Number: 140-12832-1

Job Description: Granite City - M29

For:
URS Corporation
105 Mitchell Road, Suite 200
Oak Ridge, TN 37830

Attention: John Carson

Approved for release.
Courtney M Adkins
Project Manager I
10/17/2018 9:42 AM

Courtney M Adkins, Project Manager I
5815 Middlebrook Pike, Knoxville, TN, 37921
(865)291-3000
courtney.adkins@testamericainc.com
10/17/2018

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Table of Contents

Cover Title Page 1

Data Summaries 4

- Definitions 4
- Method Summary 5
- Sample Summary 6
- Case Narrative 7
- QC Association 8
- Client Sample Results 12
- Default Detection Limits 16
- QC Sample Results 17
- Chronicle 21
- Certification Summary 31

Inorganic Sample Data 32

- Metals Data 32
  - Met Cover Page 33
  - Met Sample Data 34
  - Met QC Data 53
    - Met ICV/CCV 53
    - Met CRQL 64
    - Met Blanks 66
    - Met ICSA/ICSAB 79
    - Met MS/MSD/PDS 83
    - Met LCS/LCSD 95
  - Met MDL 105
  - Met IECF 119
  - Met Linear Ranges 122

Table of Contents

Met Preparation Log 123
Met Analysis Run Log 130
Met Internal Standards 137
Met Prep Data 139
Met Raw Data 162
Shipping and Receiving Documents 654
Client Chain of Custody 655

Qualifiers

Metals

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Method Summary

Client: URS Corporation
Project/Site: Granite City - M29

TestAmerica Job ID: 140-12832-1

Method	Method Description	Protocol	Laboratory
29/6010C	Metals (ICP), Stationary Source	EPA	TAL KNX
29/7470A	Mercury (CVAA), Stationary Source	EPA	TAL KNX
Air Train Vol.	Air Train Volume	None	TAL KNX
AT Prep (BH)	Preparation, Mercury (Stationary Source)	EPA	TAL KNX
AT Prep (BH)	Preparation, Total Metals (Stationary Source)	EPA	TAL KNX
AT Prep (Empty)	Preparation, Mercury (Stationary Source)	EPA	TAL KNX
AT Prep (FH)	Preparation, Total Metals (Stationary Source)	EPA	TAL KNX
AT Prep (HCl)	Preparation, Mercury (Stationary Source)	EPA	TAL KNX
AT Prep (KMnO4)	Preparation, Mercury (Stationary Source)	EPA	TAL KNX
AT Prep FH	Preparation, Mercury (Stationary Source) FH	EPA	TAL KNX

Protocol References:

EPA = US Environmental Protection Agency
None = None

Laboratory References:

TAL KNX = TestAmerica Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Sample Summary

Client: URS Corporation
Project/Site: Granite City - M29

TestAmerica Job ID: 140-12832-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
140-12832-1	M29-FILT/PNR-1	Air	09/19/18 00:00	09/25/18 16:50
140-12832-2	M29-IMP 1&2-1	Air	09/19/18 00:00	09/25/18 16:50
140-12832-3	M29-IMP 3-1	Air	09/19/18 00:00	09/25/18 16:50
140-12832-4	M29-IMP 4&5-1	Air	09/19/18 00:00	09/25/18 16:50
140-12832-5	M29-HCL-1	Air	09/19/18 00:00	09/25/18 16:50
140-12832-6	M29-FILT/PNR-2	Air	09/20/18 00:00	09/25/18 16:50
140-12832-7	M29-IMP 1&2-2	Air	09/20/18 00:00	09/25/18 16:50
140-12832-8	M29-IMP 3-2	Air	09/20/18 00:00	09/25/18 16:50
140-12832-9	M29-IMP 4&5-2	Air	09/20/18 00:00	09/25/18 16:50
140-12832-10	M29-HCL-2	Air	09/20/18 00:00	09/25/18 16:50
140-12832-11	M29-FILT/PNR-3	Air	09/20/18 00:00	09/25/18 16:50
140-12832-12	M29-IMP 1&2-3	Air	09/20/18 00:00	09/25/18 16:50
140-12832-13	M29-IMP 3-3	Air	09/20/18 00:00	09/25/18 16:50
140-12832-14	M29-IMP 4&5-3	Air	09/20/18 00:00	09/25/18 16:50
140-12832-15	M29-HCL-3	Air	09/20/18 00:00	09/25/18 16:50
140-12832-16	M29-FILT/HNO3 BLANK	Air	09/20/18 00:00	09/25/18 16:50
140-12832-17	M29-HNO3/H2O2 BLANK	Air	09/19/18 00:00	09/25/18 16:50
140-12832-18	M29-WATER/KMNO4 BLANK	Air	09/20/18 00:00	09/25/18 16:50
140-12832-19	M29-HCL BLANK	Air	09/20/18 00:00	09/25/18 16:50

Job Narrative
140-12832-1

Sample Receipt

The samples were received on September 25, 2018 at 4:50 PM in good condition and properly preserved. The temperature of the cooler at receipt was 20.7º C.

Quality Control and Data Interpretation

Unless otherwise noted, all holding times, and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

Metals

Multi-Metals Train Preparation and Analysis

These stack gas samples were prepared and analyzed using TestAmerica Knoxville standard operating procedure KNOX-MT-0006 which is based on EPA SW-846 Method 0060, “Determination of Metals in Stack Emissions” and Method 29, “Determination of Metals Emissions from Stationary Sources”. SW-846 Methods 6010C and 7470A as incorporated in TestAmerica Knoxville standard operating procedures KNOX-MT-0007 and KNOX-MT-0009 were used to perform the final instrument analysis.

Acid digestion was performed on the front half particulate filter and the nitric acid probe rinse fractions separately using HNO3 and HF. After digestion, these two fractions were combined, and the HF was sequestered using H3BO3 followed by another heating cycle. This digestate was adjusted to final volume and analyzed by ICP. A portion of the ICP digestate was prepared for CVAA analysis in order to determine the particle-bound mercury. Results were calculated using the following equations:

ICP Analyte, µg/sample = (Raw Sample Concentration, µg/L) x (Bench DF) x (Final Volume ICP Digestate, L)

Hg, µg/sample = (Raw Sample Concentration, µg/L) x (Bench DF) x (Final Volume ICP Digestate, L) x (Final Volume Hg Digestate, mL / Volume ICP Digestate Used, mL)

The 5%HNO3/10%H2O2 impinger samples were reduced in volume to 100 mL. A 20 milliliter portion of the concentrated sample was removed and processed for mercury. The remaining 80 mL of concentrated sample was digested using HNO3 and H2O2, adjusted to a final volume of 80 mL, and analyzed by ICP. Results were calculated using the following equations:

ICP Analyte, µg/sample = (Raw Sample Concentration, µg/L) x (Bench DF) x (Final Volume Concentrated Sample, L) x (Final Volume ICP Digestate, mL / Volume Conc. Sample Digested, mL)

Hg, µg/sample = (Raw Sample Concentration, µg/L) x (Bench DF) x (Final Volume Concentrated Sample, L) x (Final Volume Hg Digestate, mL / Volume Conc. Sample Digested, mL)

For the 0.1N HNO3 rinse samples (empty impingers), a 2.5 milliliter portion of the sample as received was removed and processed for mercury.

The 4% KMnO4/10%H2SO4 impinger samples were filtered to remove MnO2, followed by removal of a 25 mL portion of filtrate for mercury processing. The filtered MnO2 residue was digested in HCl, combined with the HCl rinse sample and analyzed for mercury.

Results for the 0.1N HNO3 rinse samples and the KMnO4 filtrate were calculated using the following equation:

Hg, µg/sample = (Raw Sample Concentration, µg/L) x (Bench DF) x (Total Sample Volume, L) x (Final Volume Hg Digestate, mL / Volume Sample Digested, mL)

Results for the combined MnO2 residue HCl digestates and HCl rinse samples were calculated as follows:

Hg, µg/sample = (Raw Sample Concentration, µg/L) x (Bench DF) x (Total Sample Volume, L + MnO2 HCl Volume, L) x (Final Volume Hg Digestate, mL / Volume Sample Digested, mL)

Note: The total sample volume for the 5%HNO3/10%H2O2 impinger samples is the final volume of the concentrated sample. The total sample volume for the combined MnO2 residue HCl digestates and HCl rinse samples is equal to the total sample volume plus the MnO2 HCl volume.

Method 29/6010C: The following samples were diluted due to the presence of Silicon which interferes with Lead: M29-FILT/PNR-1 (140-12832-1), M29-FILT/PNR-2 (140-12832-6), M29-FILT/PNR-3 (140-12832-11), M29-FILT/HNO3 BLANK (140-12832-16), (140-12832-A-6-A PDS) and (140-12832-A-6-A PDSD). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

QC Association Summary

Client: URS Corporation
Project/Site: Granite City - M29

TestAmerica Job ID: 140-12832-1

Metals

Prep Batch: 24135

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-12832-2	M29-IMP 1&2-1	Total/NA	Air	AT Prep (BH)	
140-12832-7	M29-IMP 1&2-2	Total/NA	Air	AT Prep (BH)	
140-12832-12	M29-IMP 1&2-3	Total/NA	Air	AT Prep (BH)	
140-12832-17	M29-HNO3/H2O2 BLANK	Total/NA	Air	AT Prep (BH)	
MB 140-24135/18-A	Method Blank	Total/NA	Air	AT Prep (BH)	
LCS 140-24135/19-A	Lab Control Sample	Total/NA	Air	AT Prep (BH)	
LCSD 140-24135/20-A	Lab Control Sample Dup	Total/NA	Air	AT Prep (BH)	

Prep Batch: 24136

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-12832-1	M29-FILT/PNR-1	Total/NA	Air	AT Prep (FH)	
140-12832-6	M29-FILT/PNR-2	Total/NA	Air	AT Prep (FH)	
140-12832-11	M29-FILT/PNR-3	Total/NA	Air	AT Prep (FH)	
140-12832-16	M29-FILT/HNO3 BLANK	Total/NA	Air	AT Prep (FH)	
MB 140-24136/18-A	Method Blank	Total/NA	Air	AT Prep (FH)	
MB 140-24136/18-B	Method Blank	Total/NA	Air	AT Prep (FH)	
LCS 140-24136/19-A	Lab Control Sample	Total/NA	Air	AT Prep (FH)	
LCS 140-24136/19-B	Lab Control Sample	Total/NA	Air	AT Prep (FH)	
LCSD 140-24136/20-A	Lab Control Sample Dup	Total/NA	Air	AT Prep (FH)	
LCSD 140-24136/20-B	Lab Control Sample Dup	Total/NA	Air	AT Prep (FH)	

Pre Prep Batch: 24265

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-12832-2	M29-IMP 1&2-1	Total/NA	Air	Air Train Vol.	
140-12832-7	M29-IMP 1&2-2	Total/NA	Air	Air Train Vol.	
140-12832-12	M29-IMP 1&2-3	Total/NA	Air	Air Train Vol.	
140-12832-17	M29-HNO3/H2O2 BLANK	Total/NA	Air	Air Train Vol.	
MB 140-24265/8-B	Method Blank	Total/NA	Air	Air Train Vol.	
LCS 140-24265/9-B	Lab Control Sample	Total/NA	Air	Air Train Vol.	
140-12832-7 MS	M29-IMP 1&2-2	Total/NA	Air	Air Train Vol.	
140-12832-7 MSD	M29-IMP 1&2-2	Total/NA	Air	Air Train Vol.	

Prep Batch: 24266

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-12832-2	M29-IMP 1&2-1	Total/NA	Air	AT Prep (BH)	24265
140-12832-7	M29-IMP 1&2-2	Total/NA	Air	AT Prep (BH)	24265
140-12832-12	M29-IMP 1&2-3	Total/NA	Air	AT Prep (BH)	24265
140-12832-17	M29-HNO3/H2O2 BLANK	Total/NA	Air	AT Prep (BH)	24265
MB 140-24265/8-B	Method Blank	Total/NA	Air	AT Prep (BH)	24265
LCS 140-24265/9-B	Lab Control Sample	Total/NA	Air	AT Prep (BH)	24265
140-12832-7 MS	M29-IMP 1&2-2	Total/NA	Air	AT Prep (BH)	24265
140-12832-7 MSD	M29-IMP 1&2-2	Total/NA	Air	AT Prep (BH)	24265

Pre Prep Batch: 24267

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-12832-3	M29-IMP 3-1	Total/NA	Air	Air Train Vol.	
140-12832-8	M29-IMP 3-2	Total/NA	Air	Air Train Vol.	
140-12832-13	M29-IMP 3-3	Total/NA	Air	Air Train Vol.	
MB 140-24267/6-B	Method Blank	Total/NA	Air	Air Train Vol.	
LCS 140-24267/7-B	Lab Control Sample	Total/NA	Air	Air Train Vol.	
140-12832-8 MS	M29-IMP 3-2	Total/NA	Air	Air Train Vol.	

Metals (Continued)

Pre Prep Batch: 24267 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-12832-8 MSD	M29-IMP 3-2	Total/NA	Air	Air Train Vol.	

Prep Batch: 24268

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-12832-3	M29-IMP 3-1	Total/NA	Air	AT Prep (Empty)	24267
140-12832-8	M29-IMP 3-2	Total/NA	Air	AT Prep (Empty)	24267
140-12832-13	M29-IMP 3-3	Total/NA	Air	AT Prep (Empty)	24267
MB 140-24267/6-B	Method Blank	Total/NA	Air	AT Prep (Empty)	24267
LCS 140-24267/7-B	Lab Control Sample	Total/NA	Air	AT Prep (Empty)	24267
140-12832-8 MS	M29-IMP 3-2	Total/NA	Air	AT Prep (Empty)	24267
140-12832-8 MSD	M29-IMP 3-2	Total/NA	Air	AT Prep (Empty)	24267

Cleanup Batch: 24272

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-12832-1	M29-FILT/PNR-1	Total/NA	Air	AT Prep FH	24136
140-12832-6	M29-FILT/PNR-2	Total/NA	Air	AT Prep FH	24136
140-12832-11	M29-FILT/PNR-3	Total/NA	Air	AT Prep FH	24136
140-12832-16	M29-FILT/HNO3 BLANK	Total/NA	Air	AT Prep FH	24136
MB 140-24136/18-B	Method Blank	Total/NA	Air	AT Prep FH	24136
LCS 140-24136/19-B	Lab Control Sample	Total/NA	Air	AT Prep FH	24136
LCSD 140-24136/20-B	Lab Control Sample Dup	Total/NA	Air	AT Prep FH	24136

Analysis Batch: 24315

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-12832-1	M29-FILT/PNR-1	Total/NA	Air	29/7470A	24272
140-12832-2	M29-IMP 1&2-1	Total/NA	Air	29/7470A	24266
140-12832-3	M29-IMP 3-1	Total/NA	Air	29/7470A	24268
140-12832-6	M29-FILT/PNR-2	Total/NA	Air	29/7470A	24272
140-12832-7	M29-IMP 1&2-2	Total/NA	Air	29/7470A	24266
140-12832-8	M29-IMP 3-2	Total/NA	Air	29/7470A	24268
140-12832-11	M29-FILT/PNR-3	Total/NA	Air	29/7470A	24272
140-12832-12	M29-IMP 1&2-3	Total/NA	Air	29/7470A	24266
140-12832-13	M29-IMP 3-3	Total/NA	Air	29/7470A	24268
140-12832-16	M29-FILT/HNO3 BLANK	Total/NA	Air	29/7470A	24272
140-12832-17	M29-HNO3/H2O2 BLANK	Total/NA	Air	29/7470A	24266
MB 140-24136/18-B	Method Blank	Total/NA	Air	29/7470A	24272
MB 140-24265/8-B	Method Blank	Total/NA	Air	29/7470A	24266
MB 140-24267/6-B	Method Blank	Total/NA	Air	29/7470A	24268
LCS 140-24136/19-B	Lab Control Sample	Total/NA	Air	29/7470A	24272
LCS 140-24265/9-B	Lab Control Sample	Total/NA	Air	29/7470A	24266
LCS 140-24267/7-B	Lab Control Sample	Total/NA	Air	29/7470A	24268
LCSD 140-24136/20-B	Lab Control Sample Dup	Total/NA	Air	29/7470A	24272
140-12832-7 MS	M29-IMP 1&2-2	Total/NA	Air	29/7470A	24266
140-12832-7 MSD	M29-IMP 1&2-2	Total/NA	Air	29/7470A	24266
140-12832-8 MS	M29-IMP 3-2	Total/NA	Air	29/7470A	24268
140-12832-8 MSD	M29-IMP 3-2	Total/NA	Air	29/7470A	24268

Pre Prep Batch: 24317

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-12832-4	M29-IMP 4&5-1	Total/NA	Air	Air Train Vol.	
140-12832-9	M29-IMP 4&5-2	Total/NA	Air	Air Train Vol.	

Metals (Continued)

Pre Prep Batch: 24317 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-12832-14	M29-IMP 4&5-3	Total/NA	Air	Air Train Vol.	
140-12832-18	M29-WATER/KMNO4 BLANK	Total/NA	Air	Air Train Vol.	
MB 140-24317/8-B	Method Blank	Total/NA	Air	Air Train Vol.	
LCS 140-24317/9-B	Lab Control Sample	Total/NA	Air	Air Train Vol.	
140-12832-9 MS	M29-IMP 4&5-2	Total/NA	Air	Air Train Vol.	
140-12832-9 MSD	M29-IMP 4&5-2	Total/NA	Air	Air Train Vol.	

Pre Prep Batch: 24318

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-12832-5	M29-HCL-1	Total/NA	Air	Air Train Vol.	
140-12832-10	M29-HCL-2	Total/NA	Air	Air Train Vol.	
140-12832-15	M29-HCL-3	Total/NA	Air	Air Train Vol.	
140-12832-19	M29-HCL BLANK	Total/NA	Air	Air Train Vol.	
MB 140-24318/8-B	Method Blank	Total/NA	Air	Air Train Vol.	
LCS 140-24318/9-B	Lab Control Sample	Total/NA	Air	Air Train Vol.	
140-12832-10 MS	M29-HCL-2	Total/NA	Air	Air Train Vol.	
140-12832-10 MSD	M29-HCL-2	Total/NA	Air	Air Train Vol.	

Analysis Batch: 24319

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-12832-2	M29-IMP 1&2-1	Total/NA	Air	29/6010C	24135
140-12832-7	M29-IMP 1&2-2	Total/NA	Air	29/6010C	24135
140-12832-12	M29-IMP 1&2-3	Total/NA	Air	29/6010C	24135
140-12832-17	M29-HNO3/H2O2 BLANK	Total/NA	Air	29/6010C	24135
MB 140-24135/18-A	Method Blank	Total/NA	Air	29/6010C	24135
LCS 140-24135/19-A	Lab Control Sample	Total/NA	Air	29/6010C	24135
LCSD 140-24135/20-A	Lab Control Sample Dup	Total/NA	Air	29/6010C	24135

Prep Batch: 24322

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-12832-4	M29-IMP 4&5-1	Total/NA	Air	AT Prep (KMnO4)	24317
140-12832-9	M29-IMP 4&5-2	Total/NA	Air	AT Prep (KMnO4)	24317
140-12832-14	M29-IMP 4&5-3	Total/NA	Air	AT Prep (KMnO4)	24317
140-12832-18	M29-WATER/KMNO4 BLANK	Total/NA	Air	AT Prep (KMnO4)	24317
MB 140-24317/8-B	Method Blank	Total/NA	Air	AT Prep (KMnO4)	24317
LCS 140-24317/9-B	Lab Control Sample	Total/NA	Air	AT Prep (KMnO4)	24317
140-12832-9 MS	M29-IMP 4&5-2	Total/NA	Air	AT Prep (KMnO4)	24317
140-12832-9 MSD	M29-IMP 4&5-2	Total/NA	Air	AT Prep (KMnO4)	24317

Prep Batch: 24323

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-12832-5	M29-HCL-1	Total/NA	Air	AT Prep (HCl)	24318
140-12832-10	M29-HCL-2	Total/NA	Air	AT Prep (HCl)	24318
140-12832-15	M29-HCL-3	Total/NA	Air	AT Prep (HCl)	24318
140-12832-19	M29-HCL BLANK	Total/NA	Air	AT Prep (HCl)	24318

Metals (Continued)

Prep Batch: 24323 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 140-24318/8-B	Method Blank	Total/NA	Air	AT Prep (HCl)	24318
LCS 140-24318/9-B	Lab Control Sample	Total/NA	Air	AT Prep (HCl)	24318
140-12832-10 MS	M29-HCL-2	Total/NA	Air	AT Prep (HCl)	24318
140-12832-10 MSD	M29-HCL-2	Total/NA	Air	AT Prep (HCl)	24318

Analysis Batch: 24349

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-12832-1	M29-FILT/PNR-1	Total/NA	Air	29/6010C	24136
140-12832-6	M29-FILT/PNR-2	Total/NA	Air	29/6010C	24136
140-12832-11	M29-FILT/PNR-3	Total/NA	Air	29/6010C	24136
140-12832-16	M29-FILT/HNO3 BLANK	Total/NA	Air	29/6010C	24136
MB 140-24136/18-A	Method Blank	Total/NA	Air	29/6010C	24136
LCS 140-24136/19-A	Lab Control Sample	Total/NA	Air	29/6010C	24136
LCSD 140-24136/20-A	Lab Control Sample Dup	Total/NA	Air	29/6010C	24136

Analysis Batch: 24378

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-12832-4	M29-IMP 4&5-1	Total/NA	Air	29/7470A	24322
140-12832-5	M29-HCL-1	Total/NA	Air	29/7470A	24323
140-12832-9	M29-IMP 4&5-2	Total/NA	Air	29/7470A	24322
140-12832-10	M29-HCL-2	Total/NA	Air	29/7470A	24323
140-12832-14	M29-IMP 4&5-3	Total/NA	Air	29/7470A	24322
140-12832-15	M29-HCL-3	Total/NA	Air	29/7470A	24323
140-12832-18	M29-WATER/KMNO4 BLANK	Total/NA	Air	29/7470A	24322
140-12832-19	M29-HCL BLANK	Total/NA	Air	29/7470A	24323
MB 140-24317/8-B	Method Blank	Total/NA	Air	29/7470A	24322
MB 140-24318/8-B	Method Blank	Total/NA	Air	29/7470A	24323
LCS 140-24317/9-B	Lab Control Sample	Total/NA	Air	29/7470A	24322
LCS 140-24318/9-B	Lab Control Sample	Total/NA	Air	29/7470A	24323
140-12832-9 MS	M29-IMP 4&5-2	Total/NA	Air	29/7470A	24322
140-12832-9 MSD	M29-IMP 4&5-2	Total/NA	Air	29/7470A	24322
140-12832-10 MS	M29-HCL-2	Total/NA	Air	29/7470A	24323
140-12832-10 MSD	M29-HCL-2	Total/NA	Air	29/7470A	24323

Client Sample Results

Client: URS Corporation
Project/Site: Granite City - M29

TestAmerica Job ID: 140-12832-1

Client Sample ID: M29-FILT/PNR-1 — Lab Sample ID: 140-12832-1

Date Collected: 09/19/18 00:00
Matrix: Air
Date Received: 09/25/18 16:50
Sample Container: Petri/Filter

Method: 29/6010C - Metals (ICP), Stationary Source

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1190		2.00	1.04	ug/Sample		10/03/18 08:00	10/10/18 13:45	2

Method: 29/7470A - Mercury (CVAA), Stationary Source

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.200	0.0800	ug/Sample		10/03/18 08:00	10/09/18 10:56	1

Client Sample ID: M29-IMP 1&2-1 — Lab Sample ID: 140-12832-2

Date Collected: 09/19/18 00:00
Matrix: Air
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 1 liter Wide - unpreserved

Method: 29/6010C - Metals (ICP), Stationary Source

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.62		1.00	0.280	ug/Sample		10/03/18 08:00	10/09/18 11:20	1

Method: 29/7470A - Mercury (CVAA), Stationary Source

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	28.9		0.800	0.240	ug/Sample		10/08/18 10:25	10/09/18 12:07	2

Client Sample ID: M29-IMP 3-1 — Lab Sample ID: 140-12832-3

Date Collected: 09/19/18 00:00
Matrix: Air
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 250ml - unpreserved

Method: 29/7470A - Mercury (CVAA), Stationary Source

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	1.63		0.200	0.0600	ug/Sample		10/08/18 10:34	10/09/18 11:49	1

Client Sample ID: M29-IMP 4&5-1 — Lab Sample ID: 140-12832-4

Date Collected: 09/19/18 00:00
Matrix: Air
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 500mL - unpreserved

Method: 29/7470A - Mercury (CVAA), Stationary Source

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	2.66		0.160	0.0480	ug/Sample		10/10/18 08:30	10/11/18 10:47	1

Client Sample ID: M29-HCL-1 — Lab Sample ID: 140-12832-5

Date Collected: 09/19/18 00:00
Matrix: Air
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 250ml - unpreserved

Method: 29/7470A - Mercury (CVAA), Stationary Source

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	1.02		0.275	0.0825	ug/Sample		10/10/18 08:30	10/11/18 11:14	1

Client Sample ID: M29-FILT/PNR-2

Lab Sample ID: 140-12832-6

Date Collected: 09/20/18 00:00
Matrix: Air
Date Received: 09/25/18 16:50
Sample Container: Petri/Filter

Method: 29/6010C - Metals (ICP), Stationary Source

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	556		2.00	1.04	ug/Sample		10/03/18 08:00	10/10/18 13:50	2

Method: 29/7470A - Mercury (CVAA), Stationary Source

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.200	0.0800	ug/Sample		10/03/18 08:00	10/09/18 10:58	1

Client Sample ID: M29-IMP 1&2-2

Lab Sample ID: 140-12832-7

Date Collected: 09/20/18 00:00
Matrix: Air
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 1 liter Wide - unpreserved

Method: 29/6010C - Metals (ICP), Stationary Source

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.31		1.00	0.280	ug/Sample		10/03/18 08:00	10/09/18 11:25	1

Method: 29/7470A - Mercury (CVAA), Stationary Source

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	28.4		0.800	0.240	ug/Sample		10/08/18 10:25	10/09/18 12:09	2

Client Sample ID: M29-IMP 3-2

Lab Sample ID: 140-12832-8

Date Collected: 09/20/18 00:00
Matrix: Air
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 250ml - unpreserved

Method: 29/7470A - Mercury (CVAA), Stationary Source

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	1.38		0.160	0.0480	ug/Sample		10/08/18 10:34	10/09/18 11:51	1

Client Sample ID: M29-IMP 4&5-2

Lab Sample ID: 140-12832-9

Date Collected: 09/20/18 00:00
Matrix: Air
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 500mL - unpreserved

Method: 29/7470A - Mercury (CVAA), Stationary Source

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	2.21		0.152	0.0456	ug/Sample		10/10/18 08:30	10/11/18 10:49	1

Client Sample ID: M29-HCL-2

Lab Sample ID: 140-12832-10

Date Collected: 09/20/18 00:00
Matrix: Air
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 250ml - unpreserved

Method: 29/7470A - Mercury (CVAA), Stationary Source

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.425		0.275	0.0825	ug/Sample		10/10/18 08:30	10/11/18 11:16	1

Client Sample Results

Client: URS Corporation
Project/Site: Granite City - M29

TestAmerica Job ID: 140-12832-1

Client Sample ID: M29-FILT/PNR-3 — Lab Sample ID: 140-12832-11

Date Collected: 09/20/18 00:00
Matrix: Air
Date Received: 09/25/18 16:50
Sample Container: Petri/Filter

Method: 29/6010C - Metals (ICP), Stationary Source

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	695		2.00	1.04	ug/Sample		10/03/18 08:00	10/10/18 14:05	2

Method: 29/7470A - Mercury (CVAA), Stationary Source

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.200	0.0800	ug/Sample		10/03/18 08:00	10/09/18 11:06	1

Client Sample ID: M29-IMP 1&2-3 — Lab Sample ID: 140-12832-12

Date Collected: 09/20/18 00:00
Matrix: Air
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 1 liter Wide - unpreserved

Method: 29/6010C - Metals (ICP), Stationary Source

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.50		1.00	0.280	ug/Sample		10/03/18 08:00	10/09/18 11:40	1

Method: 29/7470A - Mercury (CVAA), Stationary Source

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	34.7		2.00	0.600	ug/Sample		10/08/18 10:25	10/09/18 12:16	5

Client Sample ID: M29-IMP 3-3 — Lab Sample ID: 140-12832-13

Date Collected: 09/20/18 00:00
Matrix: Air
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 250ml - unpreserved

Method: 29/7470A - Mercury (CVAA), Stationary Source

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	3.01		0.200	0.0600	ug/Sample		10/08/18 10:34	10/09/18 11:59	1

Client Sample ID: M29-IMP 4&5-3 — Lab Sample ID: 140-12832-14

Date Collected: 09/20/18 00:00
Matrix: Air
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 500mL - unpreserved

Method: 29/7470A - Mercury (CVAA), Stationary Source

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	3.57		0.160	0.0480	ug/Sample		10/10/18 08:30	10/11/18 10:56	1

Client Sample ID: M29-HCL-3 — Lab Sample ID: 140-12832-15

Date Collected: 09/20/18 00:00
Matrix: Air
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 250ml - unpreserved

Method: 29/7470A - Mercury (CVAA), Stationary Source

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.280		0.265	0.0795	ug/Sample		10/10/18 08:30	10/11/18 11:23	1

Client Sample ID: M29-FILT/HNO3 BLANK — Lab Sample ID: 140-12832-16

Date Collected: 09/20/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50
Sample Container: Petri/Filter

Method: 29/6010C - Metals (ICP), Stationary Source

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		2.00	1.04	ug/Sample		10/03/18 08:00	10/10/18 14:10	2

Method: 29/7470A - Mercury (CVAA), Stationary Source

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.200	0.0800	ug/Sample		10/03/18 08:00	10/09/18 11:08	1

Client Sample ID: M29-HNO3/H2O2 BLANK — Lab Sample ID: 140-12832-17

Date Collected: 09/19/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 250ml - unpreserved

Method: 29/6010C - Metals (ICP), Stationary Source

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		1.00	0.280	ug/Sample		10/03/18 08:00	10/09/18 11:55	1

Method: 29/7470A - Mercury (CVAA), Stationary Source

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.400	0.120	ug/Sample		10/08/18 10:25	10/09/18 11:36	1

Client Sample ID: M29-WATER/KMNO4 BLANK — Lab Sample ID: 140-12832-18

Date Collected: 09/20/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 250ml - unpreserved

Method: 29/7470A - Mercury (CVAA), Stationary Source

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.0400	0.0120	ug/Sample		10/10/18 08:30	10/11/18 11:04	1

Client Sample ID: M29-HCL BLANK — Lab Sample ID: 140-12832-19

Date Collected: 09/20/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 250ml - unpreserved

Method: 29/7470A - Mercury (CVAA), Stationary Source

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.150	0.0450	ug/Sample		10/10/18 08:30	10/11/18 11:26	1

Default Detection Limits

Client: URS Corporation
Project/Site: Granite City - M29

TestAmerica Job ID: 140-12832-1

Method: 29/6010C - Metals (ICP), Stationary Source
Prep: AT Prep (BH)

Analyte	RL	MDL	Units	Method
Lead	1.00	0.280	ug/Sample	29/6010C

Method: 29/6010C - Metals (ICP), Stationary Source
Prep: AT Prep (FH)

Analyte	RL	MDL	Units	Method
Lead	1.00	0.520	ug/Sample	29/6010C

Method: 29/7470A - Mercury (CVAA), Stationary Source
Prep: AT Prep (BH)

Analyte	RL	MDL	Units	Method
Mercury	0.400	0.120	ug/Sample	29/7470A

Method: 29/7470A - Mercury (CVAA), Stationary Source
Prep: AT Prep (Empty)

Analyte	RL	MDL	Units	Method
Mercury	0.200	0.0600	ug/Sample	29/7470A

Method: 29/7470A - Mercury (CVAA), Stationary Source
Prep: AT Prep (FH)

Analyte	RL	MDL	Units	Method
Mercury	0.200	0.0800	ug/Sample	29/7470A

Method: 29/7470A - Mercury (CVAA), Stationary Source
Prep: AT Prep (HCl)

Analyte	RL	MDL	Units	Method
Mercury	0.0500	0.0150	ug/Sample	29/7470A

Method: 29/7470A - Mercury (CVAA), Stationary Source
Prep: AT Prep (KMnO4)

Analyte	RL	MDL	Units	Method
Mercury	0.0200	0.00600	ug/Sample	29/7470A

Method: 29/6010C - Metals (ICP), Stationary Source

Lab Sample ID: MB 140-24135/18-A — **Client Sample ID: Method Blank**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24319 — **Prep Batch: 24135**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		1.00	0.280	ug/Sample		10/03/18 08:00	10/09/18 10:56	1

Lab Sample ID: LCS 140-24135/19-A — **Client Sample ID: Lab Control Sample**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24319 — **Prep Batch: 24135**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	10.0	9.966		ug/Sample		100	80 - 120

Lab Sample ID: LCSD 140-24135/20-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24319 — **Prep Batch: 24135**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Lead	10.0	9.981		ug/Sample		100	80 - 120	0	20

Lab Sample ID: MB 140-24136/18-A — **Client Sample ID: Method Blank**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24349 — **Prep Batch: 24136**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		1.00	0.520	ug/Sample		10/03/18 08:00	10/10/18 10:44	1

Lab Sample ID: LCS 140-24136/19-A — **Client Sample ID: Lab Control Sample**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24349 — **Prep Batch: 24136**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	10.0	10.15		ug/Sample		102	80 - 120

Lab Sample ID: LCSD 140-24136/20-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24349 — **Prep Batch: 24136**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Lead	10.0	10.07		ug/Sample		101	80 - 120	1	20

Method: 29/7470A - Mercury (CVAA), Stationary Source

Lab Sample ID: MB 140-24136/18-B — **Client Sample ID: Method Blank**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24315 — **Prep Batch: 24136**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.200	0.0800	ug/Sample		10/03/18 08:00	10/09/18 10:39	1

Method: 29/7470A - Mercury (CVAA), Stationary Source (Continued)

Lab Sample ID: LCS 140-24136/19-B — **Client Sample ID: Lab Control Sample**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24315 — **Prep Batch: 24136**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	5.00	5.090		ug/Sample		102	80 - 120

Lab Sample ID: LCSD 140-24136/20-B — **Client Sample ID: Lab Control Sample Dup**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24315 — **Prep Batch: 24136**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	5.00	5.120		ug/Sample		102	80 - 120	1	20

Lab Sample ID: MB 140-24265/8-B — **Client Sample ID: Method Blank**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24315 — **Prep Batch: 24266**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.400	0.120	ug/Sample		10/08/18 10:25	10/09/18 11:11	1

Lab Sample ID: LCS 140-24265/9-B — **Client Sample ID: Lab Control Sample**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24315 — **Prep Batch: 24266**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	10.0	9.840		ug/Sample		98	80 - 120

Lab Sample ID: 140-12832-7 MS — **Client Sample ID: M29-IMP 1&2-2**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24315 — **Prep Batch: 24266**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	28.4		2.00	30.56	4	ug/Sample		106	80 - 120

Lab Sample ID: 140-12832-7 MSD — **Client Sample ID: M29-IMP 1&2-2**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24315 — **Prep Batch: 24266**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	28.4		2.00	30.52	4	ug/Sample		104	80 - 120	0	20

Lab Sample ID: MB 140-24267/6-B — **Client Sample ID: Method Blank**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24315 — **Prep Batch: 24268**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.200	0.0600	ug/Sample		10/08/18 10:34	10/09/18 11:44	1

Lab Sample ID: LCS 140-24267/7-B — **Client Sample ID: Lab Control Sample**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24315 — **Prep Batch: 24268**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	5.00	5.000		ug/Sample		100	80 - 120

Lab Sample ID: 140-12832-8 MS — **Client Sample ID: M29-IMP 3-2**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24315 — **Prep Batch: 24268**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	1.38		0.800	2.168		ug/Sample		99	80 - 120

Lab Sample ID: 140-12832-8 MSD — **Client Sample ID: M29-IMP 3-2**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24315 — **Prep Batch: 24268**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	1.38		0.800	2.192		ug/Sample		102	80 - 120	1	20

Lab Sample ID: MB 140-24317/8-B — **Client Sample ID: Method Blank**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24378 — **Prep Batch: 24322**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.0200	0.00600	ug/Sample		10/10/18 08:30	10/11/18 10:40	1

Lab Sample ID: LCS 140-24317/9-B — **Client Sample ID: Lab Control Sample**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24378 — **Prep Batch: 24322**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.500	0.5080		ug/Sample		102	80 - 120

Lab Sample ID: 140-12832-9 MS — **Client Sample ID: M29-IMP 4&5-2**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24378 — **Prep Batch: 24322**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	2.21		0.760	2.956		ug/Sample		98	80 - 120

Lab Sample ID: 140-12832-9 MSD — **Client Sample ID: M29-IMP 4&5-2**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24378 — **Prep Batch: 24322**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	2.21		0.760	2.903		ug/Sample		91	80 - 120	2	20

Lab Sample ID: MB 140-24318/8-B — **Client Sample ID: Method Blank**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24378 — **Prep Batch: 24323**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.0500	0.0150	ug/Sample		10/10/18 08:30	10/11/18 11:06	1

Lab Sample ID: LCS 140-24318/9-B — **Client Sample ID: Lab Control Sample**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24378 — **Prep Batch: 24323**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	1.25	1.265		ug/Sample		101	80 - 120

Method: 29/7470A - Mercury (CVAA), Stationary Source (Continued)

Lab Sample ID: 140-12832-10 MS — **Client Sample ID: M29-HCL-2**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24378 — **Prep Batch: 24323**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury	0.425		1.38	1.774		ug/Sample		98	80 - 120		

Lab Sample ID: 140-12832-10 MSD — **Client Sample ID: M29-HCL-2**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24378 — **Prep Batch: 24323**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.425		1.38	1.760		ug/Sample		97	80 - 120	1	20

Lab Chronicle

Client: URS Corporation
Project/Site: Granite City - M29

TestAmerica Job ID: 140-12832-1

Client Sample ID: M29-FILT/PNR-1 — Lab Sample ID: 140-12832-1

Date Collected: 09/19/18 00:00
Date Received: 09/25/18 16:50
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	AT Prep (FH)			1 Sample	100 mL	24136	10/03/18 08:00	KNC	TAL KNX
Total/NA	Analysis	29/6010C		2			24349	10/10/18 13:45	KNC	TAL KNX
	Instrument ID:	DUO								
Total/NA	Prep	AT Prep (FH)			1 Sample	100 mL	24136	10/03/18 08:00	KNC	TAL KNX
Total/NA	Cleanup	AT Prep FH			5.0 mL	50.0 mL	24272	10/08/18 11:07	DKW	TAL KNX
Total/NA	Analysis	29/7470A		1			24315	10/09/18 10:56	DKW	TAL KNX
	Instrument ID:	HG								

Client Sample ID: M29-IMP 1&2-1 — Lab Sample ID: 140-12832-2

Date Collected: 09/19/18 00:00
Date Received: 09/25/18 16:50
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	AT Prep (BH)			1 Sample	100 mL	24135	10/03/18 08:00	KNC	TAL KNX
Total/NA	Analysis	29/6010C		1			24319	10/09/18 11:20	KNC	TAL KNX
	Instrument ID:	DUO								
Total/NA	Pre Prep	Air Train Vol.			1 Sample	100 mL	24265	10/08/18 10:18	DKW	TAL KNX
Total/NA	Prep	AT Prep (BH)			2.5 mL	50.0 mL	24266	10/08/18 10:25	DKW	TAL KNX
Total/NA	Analysis	29/7470A		2			24315	10/09/18 12:07	DKW	TAL KNX
	Instrument ID:	HG								

Client Sample ID: M29-IMP 3-1 — Lab Sample ID: 140-12832-3

Date Collected: 09/19/18 00:00
Date Received: 09/25/18 16:50
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	Air Train Vol.			1 Sample	50.0 mL	24267	10/08/18 10:32	DKW	TAL KNX
Total/NA	Prep	AT Prep (Empty)			2.5 mL	50.0 mL	24268	10/08/18 10:34	DKW	TAL KNX
Total/NA	Analysis	29/7470A		1			24315	10/09/18 11:49	DKW	TAL KNX
	Instrument ID:	HG								

Client Sample ID: M29-IMP 4&5-1 — Lab Sample ID: 140-12832-4

Date Collected: 09/19/18 00:00
Date Received: 09/25/18 16:50
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	Air Train Vol.			1 Sample	400 mL	24317	10/09/18 10:00	DKW	TAL KNX
Total/NA	Prep	AT Prep (KMnO4)			25.0 mL	50.0 mL	24322	10/10/18 08:30	DKW	TAL KNX
Total/NA	Analysis	29/7470A		1			24378	10/11/18 10:47	DKW	TAL KNX
	Instrument ID:	HG								

Lab Chronicle

Client: URS Corporation
Project/Site: Granite City - M29

TestAmerica Job ID: 140-12832-1

Client Sample ID: M29-HCL-1 — Lab Sample ID: 140-12832-5

Date Collected: 09/19/18 00:00
Date Received: 09/25/18 16:50
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	Air Train Vol.			1 Sample	275 mL	24318	10/09/18 13:23	DKW	TAL KNX
Total/NA	Prep	AT Prep (HCl)			10.0 mL	50.0 mL	24323	10/10/18 08:30	DKW	TAL KNX
Total/NA	Analysis	29/7470A		1			24378	10/11/18 11:14	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: M29-FILT/PNR-2 — Lab Sample ID: 140-12832-6

Date Collected: 09/20/18 00:00
Date Received: 09/25/18 16:50
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	AT Prep (FH)			1 Sample	100 mL	24136	10/03/18 08:00	KNC	TAL KNX
Total/NA	Analysis	29/6010C		2			24349	10/10/18 13:50	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	AT Prep (FH)			1 Sample	100 mL	24136	10/03/18 08:00	KNC	TAL KNX
Total/NA	Cleanup	AT Prep FH			5.0 mL	50.0 mL	24272	10/08/18 11:07	DKW	TAL KNX
Total/NA	Analysis	29/7470A		1			24315	10/09/18 10:58	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: M29-IMP 1&2-2 — Lab Sample ID: 140-12832-7

Date Collected: 09/20/18 00:00
Date Received: 09/25/18 16:50
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	AT Prep (BH)			1 Sample	100 mL	24135	10/03/18 08:00	KNC	TAL KNX
Total/NA	Analysis	29/6010C		1			24319	10/09/18 11:25	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Pre Prep	Air Train Vol.			1 Sample	100 mL	24265	10/08/18 10:18	DKW	TAL KNX
Total/NA	Prep	AT Prep (BH)			2.5 mL	50.0 mL	24266	10/08/18 10:25	DKW	TAL KNX
Total/NA	Analysis	29/7470A		2			24315	10/09/18 12:09	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: M29-IMP 3-2 — Lab Sample ID: 140-12832-8

Date Collected: 09/20/18 00:00
Date Received: 09/25/18 16:50
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	Air Train Vol.			1 Sample	40.0 mL	24267	10/08/18 10:32	DKW	TAL KNX
Total/NA	Prep	AT Prep (Empty)			2.5 mL	50.0 mL	24268	10/08/18 10:34	DKW	TAL KNX
Total/NA	Analysis	29/7470A		1			24315	10/09/18 11:51	DKW	TAL KNX
	Instrument ID: HG									

Lab Chronicle

Client: URS Corporation
Project/Site: Granite City - M29

TestAmerica Job ID: 140-12832-1

Client Sample ID: M29-IMP 4&5-2 — Lab Sample ID: 140-12832-9

Date Collected: 09/20/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	Air Train Vol.			1 Sample	380 mL	24317	10/09/18 10:00	DKW	TAL KNX
Total/NA	Prep	AT Prep (KMnO4)			25.0 mL	50.0 mL	24322	10/10/18 08:30	DKW	TAL KNX
Total/NA	Analysis	29/7470A		1			24378	10/11/18 10:49	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: M29-HCL-2 — Lab Sample ID: 140-12832-10

Date Collected: 09/20/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	Air Train Vol.			1 Sample	275 mL	24318	10/09/18 13:23	DKW	TAL KNX
Total/NA	Prep	AT Prep (HCl)			10.0 mL	50.0 mL	24323	10/10/18 08:30	DKW	TAL KNX
Total/NA	Analysis	29/7470A		1			24378	10/11/18 11:16	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: M29-FILT/PNR-3 — Lab Sample ID: 140-12832-11

Date Collected: 09/20/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	AT Prep (FH)			1 Sample	100 mL	24136	10/03/18 08:00	KNC	TAL KNX
Total/NA	Analysis	29/6010C		2			24349	10/10/18 14:05	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	AT Prep (FH)			1 Sample	100 mL	24136	10/03/18 08:00	KNC	TAL KNX
Total/NA	Cleanup	AT Prep FH			5.0 mL	50.0 mL	24272	10/08/18 11:07	DKW	TAL KNX
Total/NA	Analysis	29/7470A		1			24315	10/09/18 11:06	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: M29-IMP 1&2-3 — Lab Sample ID: 140-12832-12

Date Collected: 09/20/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	AT Prep (BH)			1 Sample	100 mL	24135	10/03/18 08:00	KNC	TAL KNX
Total/NA	Analysis	29/6010C		1			24319	10/09/18 11:40	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Pre Prep	Air Train Vol.			1 Sample	100 mL	24265	10/08/18 10:18	DKW	TAL KNX
Total/NA	Prep	AT Prep (BH)			2.5 mL	50.0 mL	24266	10/08/18 10:25	DKW	TAL KNX
Total/NA	Analysis	29/7470A		5			24315	10/09/18 12:16	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: M29-IMP 3-3 — Lab Sample ID: 140-12832-13

Date Collected: 09/20/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	Air Train Vol.			1 Sample	50.0 mL	24267	10/08/18 10:32	DKW	TAL KNX
Total/NA	Prep	AT Prep (Empty)			2.5 mL	50.0 mL	24268	10/08/18 10:34	DKW	TAL KNX
Total/NA	Analysis	29/7470A		1			24315	10/09/18 11:59	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: M29-IMP 4&5-3 — Lab Sample ID: 140-12832-14

Date Collected: 09/20/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	Air Train Vol.			1 Sample	400 mL	24317	10/09/18 10:00	DKW	TAL KNX
Total/NA	Prep	AT Prep (KMnO4)			25.0 mL	50.0 mL	24322	10/10/18 08:30	DKW	TAL KNX
Total/NA	Analysis	29/7470A		1			24378	10/11/18 10:56	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: M29-HCL-3 — Lab Sample ID: 140-12832-15

Date Collected: 09/20/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	Air Train Vol.			1 Sample	265 mL	24318	10/09/18 13:23	DKW	TAL KNX
Total/NA	Prep	AT Prep (HCl)			10.0 mL	50.0 mL	24323	10/10/18 08:30	DKW	TAL KNX
Total/NA	Analysis	29/7470A		1			24378	10/11/18 11:23	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: M29-FILT/HNO3 BLANK — Lab Sample ID: 140-12832-16

Date Collected: 09/20/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	AT Prep (FH)			1 Sample	100 mL	24136	10/03/18 08:00	KNC	TAL KNX
Total/NA	Analysis	29/6010C		2			24349	10/10/18 14:10	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	AT Prep (FH)			1 Sample	100 mL	24136	10/03/18 08:00	KNC	TAL KNX
Total/NA	Cleanup	AT Prep FH			5.0 mL	50.0 mL	24272	10/08/18 11:07	DKW	TAL KNX
Total/NA	Analysis	29/7470A		1			24315	10/09/18 11:08	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: M29-HNO3/H2O2 BLANK — Lab Sample ID: 140-12832-17

Date Collected: 09/19/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	AT Prep (BH)			1 Sample	100 mL	24135	10/03/18 08:00	KNC	TAL KNX

Client Sample ID: M29-HNO3/H2O2 BLANK — Lab Sample ID: 140-12832-17

Date Collected: 09/19/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	29/6010C		1			24319	10/09/18 11:55	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Pre Prep	Air Train Vol.			1 Sample	100 mL	24265	10/08/18 10:18	DKW	TAL KNX
Total/NA	Prep	AT Prep (BH)			2.5 mL	50.0 mL	24266	10/08/18 10:25	DKW	TAL KNX
Total/NA	Analysis	29/7470A		1			24315	10/09/18 11:36	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: M29-WATER/KMNO4 BLANK — Lab Sample ID: 140-12832-18

Date Collected: 09/20/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	Air Train Vol.			1 Sample	100 mL	24317	10/09/18 10:00	DKW	TAL KNX
Total/NA	Prep	AT Prep (KMnO4)			25.0 mL	50.0 mL	24322	10/10/18 08:30	DKW	TAL KNX
Total/NA	Analysis	29/7470A		1			24378	10/11/18 11:04	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: M29-HCL BLANK — Lab Sample ID: 140-12832-19

Date Collected: 09/20/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	Air Train Vol.			1 Sample	150 mL	24318	10/09/18 13:23	DKW	TAL KNX
Total/NA	Prep	AT Prep (HCl)			10.0 mL	50.0 mL	24323	10/10/18 08:30	DKW	TAL KNX
Total/NA	Analysis	29/7470A		1			24378	10/11/18 11:26	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: Method Blank — Lab Sample ID: MB 140-24135/18-A

Date Collected: N/A — **Matrix: Air**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	AT Prep (BH)			1 Sample	100 mL	24135	10/03/18 08:00	KNC	TAL KNX
Total/NA	Analysis	29/6010C		1			24319	10/09/18 10:56	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank — Lab Sample ID: MB 140-24136/18-A

Date Collected: N/A — **Matrix: Air**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	AT Prep (FH)			1 Sample	100 mL	24136	10/03/18 08:00	KNC	TAL KNX
Total/NA	Analysis	29/6010C		1			24349	10/10/18 10:44	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank — Lab Sample ID: MB 140-24136/18-B

Date Collected: N/A
Date Received: N/A
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	AT Prep (FH)			1 Sample	100 mL	24136	10/03/18 08:00	KNC	TAL KNX
Total/NA	Cleanup	AT Prep FH			5.0 mL	50.0 mL	24272	10/08/18 11:07	DKW	TAL KNX
Total/NA	Analysis	29/7470A		1			24315	10/09/18 10:39	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: Method Blank — Lab Sample ID: MB 140-24265/8-B

Date Collected: N/A
Date Received: N/A
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	Air Train Vol.			1 Sample	100 mL	24265	10/08/18 10:18	DKW	TAL KNX
Total/NA	Prep	AT Prep (BH)			2.5 mL	50.0 mL	24266	10/08/18 10:25	DKW	TAL KNX
Total/NA	Analysis	29/7470A		1			24315	10/09/18 11:11	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: Method Blank — Lab Sample ID: MB 140-24267/6-B

Date Collected: N/A
Date Received: N/A
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	Air Train Vol.			1 Sample	50.0 mL	24267	10/08/18 10:32	DKW	TAL KNX
Total/NA	Prep	AT Prep (Empty)			2.5 mL	50.0 mL	24268	10/08/18 10:34	DKW	TAL KNX
Total/NA	Analysis	29/7470A		1			24315	10/09/18 11:44	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: Method Blank — Lab Sample ID: MB 140-24317/8-B

Date Collected: N/A
Date Received: N/A
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	Air Train Vol.			1 Sample	50 mL	24317	10/09/18 10:00	DKW	TAL KNX
Total/NA	Prep	AT Prep (KMnO4)			25.0 mL	50.0 mL	24322	10/10/18 08:30	DKW	TAL KNX
Total/NA	Analysis	29/7470A		1			24378	10/11/18 10:40	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: Method Blank — Lab Sample ID: MB 140-24318/8-B

Date Collected: N/A
Date Received: N/A
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	Air Train Vol.			1 Sample	50 mL	24318	10/09/18 13:23	DKW	TAL KNX
Total/NA	Prep	AT Prep (HCl)			10.0 mL	50.0 mL	24323	10/10/18 08:30	DKW	TAL KNX
Total/NA	Analysis	29/7470A		1			24378	10/11/18 11:06	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: Lab Control Sample — Lab Sample ID: LCS 140-24135/19-A

Date Collected: N/A — **Matrix: Air**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	AT Prep (BH)			1 Sample	100 mL	24135	10/03/18 08:00	KNC	TAL KNX
Total/NA	Analysis	29/6010C		1			24319	10/09/18 11:01	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample — Lab Sample ID: LCS 140-24136/19-A

Date Collected: N/A — **Matrix: Air**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	AT Prep (FH)			1 Sample	100 mL	24136	10/03/18 08:00	KNC	TAL KNX
Total/NA	Analysis	29/6010C		1			24349	10/10/18 10:49	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample — Lab Sample ID: LCS 140-24136/19-B

Date Collected: N/A — **Matrix: Air**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	AT Prep (FH)			1 Sample	100 mL	24136	10/03/18 08:00	KNC	TAL KNX
Total/NA	Cleanup	AT Prep FH			5.0 mL	50.0 mL	24272	10/08/18 11:07	DKW	TAL KNX
Total/NA	Analysis	29/7470A		1			24315	10/09/18 10:41	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: Lab Control Sample — Lab Sample ID: LCS 140-24265/9-B

Date Collected: N/A — **Matrix: Air**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	Air Train Vol.			1 Sample	100 mL	24265	10/08/18 10:19	DKW	TAL KNX
Total/NA	Prep	AT Prep (BH)			2.5 mL	50.0 mL	24266	10/08/18 10:25	DKW	TAL KNX
Total/NA	Analysis	29/7470A		1			24315	10/09/18 11:13	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: Lab Control Sample — Lab Sample ID: LCS 140-24267/7-B

Date Collected: N/A — **Matrix: Air**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	Air Train Vol.			1 Sample	50.0 mL	24267	10/08/18 10:32	DKW	TAL KNX
Total/NA	Prep	AT Prep (Empty)			2.5 mL	50.0 mL	24268	10/08/18 10:34	DKW	TAL KNX
Total/NA	Analysis	29/7470A		1			24315	10/09/18 11:46	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: Lab Control Sample — Lab Sample ID: LCS 140-24317/9-B

Date Collected: N/A — **Matrix: Air**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	Air Train Vol.			1 Sample	50 mL	24317	10/09/18 10:00	DKW	TAL KNX
Total/NA	Prep	AT Prep (KMnO4)			25.0 mL	50.0 mL	24322	10/10/18 08:30	DKW	TAL KNX
Total/NA	Analysis	29/7470A		1			24378	10/11/18 10:42	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: Lab Control Sample — Lab Sample ID: LCS 140-24318/9-B

Date Collected: N/A — **Matrix: Air**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	Air Train Vol.			1 Sample	50 mL	24318	10/09/18 13:23	DKW	TAL KNX
Total/NA	Prep	AT Prep (HCl)			10.0 mL	50.0 mL	24323	10/10/18 08:30	DKW	TAL KNX
Total/NA	Analysis	29/7470A		1			24378	10/11/18 11:08	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: Lab Control Sample Dup — Lab Sample ID: LCSD 140-24135/20-A

Date Collected: N/A — **Matrix: Air**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	AT Prep (BH)			1 Sample	100 mL	24135	10/03/18 08:00	KNC	TAL KNX
Total/NA	Analysis	29/6010C		1			24319	10/09/18 11:06	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup — Lab Sample ID: LCSD 140-24136/20-A

Date Collected: N/A — **Matrix: Air**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	AT Prep (FH)			1 Sample	100 mL	24136	10/03/18 08:00	KNC	TAL KNX
Total/NA	Analysis	29/6010C		1			24349	10/10/18 10:54	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup — Lab Sample ID: LCSD 140-24136/20-B

Date Collected: N/A — **Matrix: Air**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	AT Prep (FH)			1 Sample	100 mL	24136	10/03/18 08:00	KNC	TAL KNX
Total/NA	Cleanup	AT Prep FH			5.0 mL	50.0 mL	24272	10/08/18 11:07	DKW	TAL KNX
Total/NA	Analysis	29/7470A		1			24315	10/09/18 10:45	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: M29-IMP 1&2-2 — Lab Sample ID: 140-12832-7 MS

Date Collected: 09/20/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	Air Train Vol.			1 Sample	100 mL	24265	10/08/18 10:18	DKW	TAL KNX
Total/NA	Prep	AT Prep (BH)			2.5 mL	50.0 mL	24266	10/08/18 10:25	DKW	TAL KNX
Total/NA	Analysis	29/7470A		2			24315	10/09/18 12:12	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: M29-IMP 1&2-2 — Lab Sample ID: 140-12832-7 MSD

Date Collected: 09/20/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	Air Train Vol.			1 Sample	100 mL	24265	10/08/18 10:18	DKW	TAL KNX
Total/NA	Prep	AT Prep (BH)			2.5 mL	50.0 mL	24266	10/08/18 10:25	DKW	TAL KNX
Total/NA	Analysis	29/7470A		2			24315	10/09/18 12:14	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: M29-IMP 3-2 — Lab Sample ID: 140-12832-8 MS

Date Collected: 09/20/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	Air Train Vol.			1 Sample	40.0 mL	24267	10/08/18 10:32	DKW	TAL KNX
Total/NA	Prep	AT Prep (Empty)			2.5 mL	50.0 mL	24268	10/08/18 10:34	DKW	TAL KNX
Total/NA	Analysis	29/7470A		1			24315	10/09/18 11:54	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: M29-IMP 3-2 — Lab Sample ID: 140-12832-8 MSD

Date Collected: 09/20/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	Air Train Vol.			1 Sample	40.0 mL	24267	10/08/18 10:32	DKW	TAL KNX
Total/NA	Prep	AT Prep (Empty)			2.5 mL	50.0 mL	24268	10/08/18 10:34	DKW	TAL KNX
Total/NA	Analysis	29/7470A		1			24315	10/09/18 11:56	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: M29-IMP 4&5-2 — Lab Sample ID: 140-12832-9 MS

Date Collected: 09/20/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	Air Train Vol.			1 Sample	380 mL	24317	10/09/18 10:00	DKW	TAL KNX
Total/NA	Prep	AT Prep (KMnO4)			25.0 mL	50.0 mL	24322	10/10/18 08:30	DKW	TAL KNX
Total/NA	Analysis	29/7470A		1			24378	10/11/18 10:52	DKW	TAL KNX
	Instrument ID: HG									

Lab Chronicle

Client: URS Corporation
Project/Site: Granite City - M29

TestAmerica Job ID: 140-12832-1

Client Sample ID: M29-IMP 4&5-2
Lab Sample ID: 140-12832-9 MSD

Date Collected: 09/20/18 00:00
Matrix: Air
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	Air Train Vol.			1 Sample	380 mL	24317	10/09/18 10:00	DKW	TAL KNX
Total/NA	Prep	AT Prep (KMnO4)			25.0 mL	50.0 mL	24322	10/10/18 08:30	DKW	TAL KNX
Total/NA	Analysis	29/7470A		1			24378	10/11/18 10:54	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: M29-HCL-2
Lab Sample ID: 140-12832-10 MS

Date Collected: 09/20/18 00:00
Matrix: Air
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	Air Train Vol.			1 Sample	275 mL	24318	10/09/18 13:23	DKW	TAL KNX
Total/NA	Prep	AT Prep (HCl)			10.0 mL	50.0 mL	24323	10/10/18 08:30	DKW	TAL KNX
Total/NA	Analysis	29/7470A		1			24378	10/11/18 11:18	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: M29-HCL-2
Lab Sample ID: 140-12832-10 MSD

Date Collected: 09/20/18 00:00
Matrix: Air
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	Air Train Vol.			1 Sample	275 mL	24318	10/09/18 13:23	DKW	TAL KNX
Total/NA	Prep	AT Prep (HCl)			10.0 mL	50.0 mL	24323	10/10/18 08:30	DKW	TAL KNX
Total/NA	Analysis	29/7470A		1			24378	10/11/18 11:21	DKW	TAL KNX
	Instrument ID: HG									

Laboratory References:

TAL KNX = TestAmerica Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Accreditation/Certification Summary

Client: URS Corporation
Project/Site: Granite City - M29

TestAmerica Job ID: 140-12832-1

Laboratory: TestAmerica Knoxville

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
	AFCEE		N/A	
ANAB	DoD ELAP		L2311	02-13-19
Arkansas DEQ	State Program	6	88-0688	06-16-19
California	State Program	9	2423	06-30-19
Colorado	State Program	8	TN00009	02-28-19
Connecticut	State Program	1	PH-0223	09-30-19
Florida	NELAP	4	E87177	06-30-19
Georgia	State Program	4	906	04-13-20
Hawaii	State Program	9	N/A	04-13-19
Kansas	NELAP	7	E-10349	10-31-18
Kentucky (DW)	State Program	4	90101	12-31-18
Louisiana	NELAP	6	83979	06-30-19
Louisiana (DW)	NELAP	6	LA160005	12-31-18
Maryland	State Program	3	277	03-31-19
Michigan	State Program	5	9933	04-13-20
Nevada	State Program	9	TN00009	07-31-19
New Jersey	NELAP	2	TN001	06-30-19
New York	NELAP	2	10781	03-31-19
North Carolina (DW)	State Program	4	21705	07-31-19
North Carolina (WW/SW)	State Program	4	64	12-31-18
Ohio VAP	State Program	5	CL0059	08-28-20
Oklahoma	State Program	6	9415	08-31-19
Oregon	NELAP	10	TNI0189	01-01-19
Pennsylvania	NELAP	3	68-00576	12-31-18
Tennessee	State Program	4	2014	04-13-20
Texas	NELAP	6	T104704380-16-9	08-31-19
US Fish & Wildlife	Federal		LE-058448-0	07-31-19
USDA	Federal		P330-16-00262	08-20-19
Utah	NELAP	8	TN00009	07-31-18 *
Virginia	NELAP	3	460176	09-14-19
Washington	State Program	10	C593	01-19-19
West Virginia (DW)	State Program	3	9955C	12-31-18
West Virginia DEP	State Program	3	345	04-30-19
Wisconsin	State Program	5	998044300	08-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

METALS

COVER PAGE
METALS

Lab Name: TestAmerica Knoxville Job Number: 140-12832-1

SDG No.:

Project: Granite City - M29

Client Sample ID	Lab Sample ID
M29-FILT/PNR-1	140-12832-1
M29-IMP 1&2-1	140-12832-2
M29-IMP 3-1	140-12832-3
M29-IMP 4&5-1	140-12832-4
M29-HCL-1	140-12832-5
M29-FILT/PNR-2	140-12832-6
M29-IMP 1&2-2	140-12832-7
M29-IMP 3-2	140-12832-8
M29-IMP 4&5-2	140-12832-9
M29-HCL-2	140-12832-10
M29-FILT/PNR-3	140-12832-11
M29-IMP 1&2-3	140-12832-12
M29-IMP 3-3	140-12832-13
M29-IMP 4&5-3	140-12832-14
M29-HCL-3	140-12832-15
M29-FILT/HNO3 BLANK	140-12832-16
M29-HNO3/H2O2 BLANK	140-12832-17
M29-WATER/KMNO4 BLANK	140-12832-18
M29-HCL BLANK	140-12832-19

Comments:

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: M29-FILT/PNR-1

Lab Sample ID: 140-12832-1

Lab Name: TestAmerica Knoxville

Job No.: 140-12832-1

SDG ID.:

Matrix: Air

Date Sampled: 09/19/2018 00:00

Reporting Basis: WET

Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7439-92-1	Lead	1190	2.00	1.04	ug/Sample			2	29/6010C
7439-97-6	Mercury	ND	0.200	0.0800	ug/Sample			1	29/7470A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: M29-IMP 1&2-1

Lab Sample ID: 140-12832-2

Lab Name: TestAmerica Knoxville

Job No.: 140-12832-1

SDG ID.:

Matrix: Air

Date Sampled: 09/19/2018 00:00

Reporting Basis: WET

Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7439-92-1	Lead	1.62	1.00	0.280	ug/Sample			1	29/6010C
7439-97-6	Mercury	28.9	0.800	0.240	ug/Sample			2	29/7470A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: M29-IMP 3-1

Lab Sample ID: 140-12832-3

Lab Name: TestAmerica Knoxville

Job No.: 140-12832-1

SDG ID.:

Matrix: Air

Date Sampled: 09/19/2018 00:00

Reporting Basis: WET

Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7439-97-6	Mercury	1.63	0.200	0.0600	ug/Sample			1	29/7470A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: M29-IMP 4&5-1

Lab Sample ID: 140-12832-4

Lab Name: TestAmerica Knoxville

Job No.: 140-12832-1

SDG ID.:

Matrix: Air

Date Sampled: 09/19/2018 00:00

Reporting Basis: WET

Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7439-97-6	Mercury	2.66	0.160	0.0480	ug/Sample			1	29/7470A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: M29-HCL-1

Lab Sample ID: 140-12832-5

Lab Name: TestAmerica Knoxville

Job No.: 140-12832-1

SDG ID.:

Matrix: Air

Date Sampled: 09/19/2018 00:00

Reporting Basis: WET

Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7439-97-6	Mercury	1.02	0.275	0.0825	ug/Sample			1	29/7470A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: M29-FILT/PNR-2

Lab Sample ID: 140-12832-6

Lab Name: TestAmerica Knoxville

Job No.: 140-12832-1

SDG ID.:

Matrix: Air

Date Sampled: 09/20/2018 00:00

Reporting Basis: WET

Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7439-92-1	Lead	556	2.00	1.04	ug/Sample			2	29/6010C
7439-97-6	Mercury	ND	0.200	0.0800	ug/Sample			1	29/7470A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: M29-IMP 1&2-2

Lab Sample ID: 140-12832-7

Lab Name: TestAmerica Knoxville

Job No.: 140-12832-1

SDG ID.:

Matrix: Air

Date Sampled: 09/20/2018 00:00

Reporting Basis: WET

Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7439-92-1	Lead	1.31	1.00	0.280	ug/Sample			1	29/6010C
7439-97-6	Mercury	28.4	0.800	0.240	ug/Sample			2	29/7470A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: M29-IMP 3-2

Lab Sample ID: 140-12832-8

Lab Name: TestAmerica Knoxville

Job No.: 140-12832-1

SDG ID.:

Matrix: Air

Date Sampled: 09/20/2018 00:00

Reporting Basis: WET

Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7439-97-6	Mercury	1.38	0.160	0.0480	ug/Sample			1	29/7470A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: M29-IMP 4&5-2

Lab Sample ID: 140-12832-9

Lab Name: TestAmerica Knoxville

Job No.: 140-12832-1

SDG ID.:

Matrix: Air

Date Sampled: 09/20/2018 00:00

Reporting Basis: WET

Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7439-97-6	Mercury	2.21	0.152	0.0456	ug/Sample			1	29/7470A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: M29-HCL-2

Lab Sample ID: 140-12832-10

Lab Name: TestAmerica Knoxville

Job No.: 140-12832-1

SDG ID.:

Matrix: Air

Date Sampled: 09/20/2018 00:00

Reporting Basis: WET

Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7439-97-6	Mercury	0.425	0.275	0.0825	ug/Sample			1	29/7470A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: M29-FILT/PNR-3

Lab Sample ID: 140-12832-11

Lab Name: TestAmerica Knoxville

Job No.: 140-12832-1

SDG ID.:

Matrix: Air

Date Sampled: 09/20/2018 00:00

Reporting Basis: WET

Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7439-92-1	Lead	695	2.00	1.04	ug/Sample			2	29/6010C
7439-97-6	Mercury	ND	0.200	0.0800	ug/Sample			1	29/7470A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: M29-IMP 1&2-3

Lab Sample ID: 140-12832-12

Lab Name: TestAmerica Knoxville

Job No.: 140-12832-1

SDG ID.:

Matrix: Air

Date Sampled: 09/20/2018 00:00

Reporting Basis: WET

Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7439-92-1	Lead	2.50	1.00	0.280	ug/Sample			1	29/6010C
7439-97-6	Mercury	34.7	2.00	0.600	ug/Sample			5	29/7470A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: M29-IMP 3-3

Lab Sample ID: 140-12832-13

Lab Name: TestAmerica Knoxville

Job No.: 140-12832-1

SDG ID.:

Matrix: Air

Date Sampled: 09/20/2018 00:00

Reporting Basis: WET

Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7439-97-6	Mercury	3.01	0.200	0.0600	ug/Sample			1	29/7470A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: M29-IMP 4&5-3

Lab Sample ID: 140-12832-14

Lab Name: TestAmerica Knoxville

Job No.: 140-12832-1

SDG ID.:

Matrix: Air

Date Sampled: 09/20/2018 00:00

Reporting Basis: WET

Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7439-97-6	Mercury	3.57	0.160	0.0480	ug/Sample			1	29/7470A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: M29-HCL-3

Lab Sample ID: 140-12832-15

Lab Name: TestAmerica Knoxville

Job No.: 140-12832-1

SDG ID.:

Matrix: Air

Date Sampled: 09/20/2018 00:00

Reporting Basis: WET

Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7439-97-6	Mercury	0.280	0.265	0.0795	ug/Sample			1	29/7470A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: M29-FILT/HNO3 BLANK

Lab Sample ID: 140-12832-16

Lab Name: TestAmerica Knoxville

Job No.: 140-12832-1

SDG ID.:

Matrix: Air

Date Sampled: 09/20/2018 00:00

Reporting Basis: WET

Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7439-92-1	Lead	ND	2.00	1.04	ug/Sample			2	29/6010C
7439-97-6	Mercury	ND	0.200	0.0800	ug/Sample			1	29/7470A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: M29-HNO3/H2O2 BLANK

Lab Sample ID: 140-12832-17

Lab Name: TestAmerica Knoxville

Job No.: 140-12832-1

SDG ID.:

Matrix: Air

Date Sampled: 09/19/2018 00:00

Reporting Basis: WET

Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7439-92-1	Lead	ND	1.00	0.280	ug/Sample			1	29/6010C
7439-97-6	Mercury	ND	0.400	0.120	ug/Sample			1	29/7470A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: M29-WATER/KMNO4 BLANK

Lab Sample ID: 140-12832-18

Lab Name: TestAmerica Knoxville

Job No.: 140-12832-1

SDG ID.:

Matrix: Air

Date Sampled: 09/20/2018 00:00

Reporting Basis: WET

Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7439-97-6	Mercury	ND	0.0400	0.0120	ug/Sample			1	29/7470A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: M29-HCL BLANK

Lab Sample ID: 140-12832-19

Lab Name: TestAmerica Knoxville

Job No.: 140-12832-1

SDG ID.:

Matrix: Air

Date Sampled: 09/20/2018 00:00

Reporting Basis: WET

Date Received: 09/25/2018 16:50

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7439-97-6	Mercury	ND	0.150	0.0450	ug/Sample			1	29/7470A

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

ICV Source: 90XXICVS_00065 Concentration Units: ug/L

CCV Source: 90CVCCVP_00287

Analyte	ICV 140-24319/4 10/09/2018 10:21				CCV 140-24319/9 10/09/2018 10:46				CCV 140-24319/21 10/09/2018 11:45			
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Lead	253.2		250	101	498.1		500	100	504.0		500	101

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

ICV Source: 90XXICVS_00065 Concentration Units: ug/L

CCV Source: 90CVCCVP_00287

Analyte	CCV 140-24319/33 10/09/2018 12:44											
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Lead	502.6		500	101								

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

ICV Source: 90XXICVS_00065 Concentration Units: ug/L

CCV Source: 90XXCCVLP_00254

Analyte	CCVL 140-24319/3 10/09/2018 10:16				ICV 140-24319/4 10/09/2018 10:21							
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Lead	254.4		250	102	253.2		250	101				

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

ICV Source: 90XXICVS_00066 Concentration Units: ug/L

CCV Source: 90CVCCVP_00288

Analyte	ICV 140-24349/4 10/10/2018 10:00				CCV 140-24349/10 10/10/2018 10:34				CCV 140-24349/22 10/10/2018 11:34			
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Lead	256.4		250	103	502.9		500	101	502.4		500	100

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

ICV Source: 90XXICVS_00066 Concentration Units: ug/L

CCV Source: 90CVCCVP_00288

Analyte	CCV 140-24349/42 10/10/2018 13:17				CCV 140-24349/54 10/10/2018 14:25				CCV 140-24349/66 10/10/2018 15:26			
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Lead	497.9		500	100	485.1		500	97	492.9		500	99

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

ICV Source: 90XXICVS_00066 Concentration Units: ug/L

CCV Source: 90XXCCVLP_00255

Analyte	CCVL 140-24349/3 10/10/2018 09:55				ICV 140-24349/4 10/10/2018 10:00							
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Lead	259.0		250	104	256.4		250	103				

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

ICV Source: 90L1HGDayVER_00266 Concentration Units: ug/L

CCV Source: 90L1HGDayCAL_00292

Analyte	ICV 140-24272/16-A 10/09/2018 10:10				CCV 140-24272/19-A 10/09/2018 10:18				CCV 140-24272/19-A 10/09/2018 10:50			
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Mercury	2.540		2.50	102	4.950		5.00	99	4.930		5.00	99

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

ICV Source: 90L1HGDayVER_00266 Concentration Units: ug/L

CCV Source: 90L1HGDayCAL_00292

Analyte	CCV 140-24272/19-A 10/09/2018 11:20				CCV 140-24272/19-A 10/09/2018 11:38				CCV 140-24272/19-A 10/09/2018 12:02			
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Mercury	4.890		5.00	98	4.890		5.00	98	4.910		5.00	98

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

ICV Source: 90L1HGDayVER_00266 Concentration Units: ug/L

CCV Source: 90L1HGDayCAL_00292

Analyte	CCV 140-24272/19-A 10/09/2018 12:19											
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Mercury	4.940		5.00	99								

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

ICV Source: 90L1HGDayVER_00267 Concentration Units: ug/L

CCV Source: 90L1HGDayCAL_00293

Analyte	ICV 140-24322/17-A 10/11/2018 10:21				CCV 140-24322/20-A 10/11/2018 10:29				CCV 140-24322/20-A 10/11/2018 10:59			
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Mercury	2.630		2.50	105	5.060		5.00	101	4.940		5.00	99

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

ICV Source: 90L1HGDayVER_00267 Concentration Units: ug/L

CCV Source: 90L1HGDayCAL_00293

Analyte	CCV 140-24322/20-A 10/11/2018 11:29											
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Mercury	4.930		5.00	99								

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2B-IN
CRQL CHECK STANDARD
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Method: 29/6010C Instrument ID: DUO

Lab Sample ID: CRI 140-24319/8 Concentration Units: ug/L

CRQL Check Standard Source: 90XXCRDL100P_00298

Analyte	CRQL Check Standard				
	True	Found	Qualifiers	%R(1)	Limits
Lead	10.0	9.260	J	93	50-150

Lab Sample ID: CRI 140-24319/40 Concentration Units: ug/L

CRQL Check Standard Source: 90XXCRDL100P_00298

Analyte	CRQL Check Standard				
	True	Found	Qualifiers	%R(1)	Limits
Lead	10.0	10.59		106	50-150

Lab Sample ID: CRI 140-24349/9 Concentration Units: ug/L

CRQL Check Standard Source: 90XXCRDL100P_00299

Analyte	CRQL Check Standard				
	True	Found	Qualifiers	%R(1)	Limits
Lead	10.0	10.58		106	50-150

Lab Sample ID: CRI 140-24349/69 Concentration Units: ug/L

CRQL Check Standard Source: 90XXCRDL100P_00299

Analyte	CRQL Check Standard				
	True	Found	Qualifiers	%R(1)	Limits
Lead	10.0	8.070	J	81	50-150

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM IIB-IN

2B-IN
CRQL CHECK STANDARD
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Method: 29/7470A Instrument ID: HG

Lab Sample ID: CRA 140-24272/18-A Concentration Units: ug/L

CRQL Check Standard Source: 90L1HGDayCAL_00292

Analyte	CRQL Check Standard				
	True	Found	Qualifiers	%R(1)	Limits
Mercury	0.200	0.2140		107	70-130

Lab Sample ID: CRA 140-24322/19-A Concentration Units: ug/L

CRQL Check Standard Source: 90L1HGDayCAL_00293

Analyte	CRQL Check Standard				
	True	Found	Qualifiers	%R(1)	Limits
Mercury	0.200	0.1990	J	100	70-130

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM IIB-IN

3-IN
INSTRUMENT BLANKS
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Concentration Units: ug/L

Analyte	RL	ICB 140-24319/5 10/09/2018 10:26		CCB 140-24319/10 10/09/2018 10:51		CCB 140-24319/22 10/09/2018 11:50		CCB 140-24319/34 10/09/2018 12:49	
		Found	C	Found	C	Found	C	Found	C
Lead	10.0	ND		ND		ND		ND	

Italicized analytes were not requested for this sequence.

3-IN
INSTRUMENT BLANKS
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Concentration Units: ug/L

Analyte	RL	ICB 140-24349/5 10/10/2018 10:05		CCB 140-24349/11 10/10/2018 10:38		CCB 140-24349/23 10/10/2018 11:39		CCB 140-24349/35 10/10/2018 12:40	
		Found	C	Found	C	Found	C	Found	C
Lead	10.0	ND		ND		ND		ND	

Italicized analytes were not requested for this sequence.

3-IN
INSTRUMENT BLANKS
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Concentration Units: ug/L

Analyte	RL	CCB 140-24349/43 10/10/2018 13:21		CCB 140-24349/55 10/10/2018 14:30		CCB 140-24349/67 10/10/2018 15:31			
		Found	C	Found	C	Found	C	Found	C
Lead	10.0	ND		ND		ND			

Italicized analytes were not requested for this sequence.

3-IN
INSTRUMENT BLANKS
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Concentration Units: ug/L

Analyte	RL	ICB 140-24272/17-A 10/09/2018 10:12		CCB 140-24272/20-A 10/09/2018 10:20		CCB 140-24272/20-A 10/09/2018 10:53		CCB 140-24272/20-A 10/09/2018 11:23	
		Found	C	Found	C	Found	C	Found	C
Mercury	0.200	ND		ND		ND		ND	

Italicized analytes were not requested for this sequence.

3-IN
INSTRUMENT BLANKS
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Concentration Units: ug/L

Analyte	RL	CCB 140-24272/20-A 10/09/2018 11:41		CCB 140-24272/20-A 10/09/2018 12:04		CCB 140-24272/20-A 10/09/2018 12:21			
		Found	C	Found	C	Found	C	Found	C
Mercury	0.200	ND		ND		ND			

Italicized analytes were not requested for this sequence.

3-IN
INSTRUMENT BLANKS
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Concentration Units: ug/L

Analyte	RL	ICB 140-24322/18-A 10/11/2018 10:24		CCB 140-24322/21-A 10/11/2018 10:32		CCB 140-24322/21-A 10/11/2018 11:01		CCB 140-24322/21-A 10/11/2018 11:31	
		Found	C	Found	C	Found	C	Found	C
Mercury	0.200	ND		ND		ND		ND	

Italicized analytes were not requested for this sequence.

3-IN
METHOD BLANK
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Concentration Units: ug/Sample Lab Sample ID: MB 140-24135/18-A

Instrument Code: DUO Batch No.: 24319

CAS No.	Analyte	Concentration	C	Q	Method
7439-92-1	Lead	ND			29_6010C

3-IN
METHOD BLANK
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Concentration Units: ug/Sample Lab Sample ID: MB 140-24136/18-A

Instrument Code: DUO Batch No.: 24349

CAS No.	Analyte	Concentration	C	Q	Method
7439-92-1	Lead	ND			29_6010C

FORM III-IN

3-IN
METHOD BLANK
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Concentration Units: ug/Sample Lab Sample ID: MB 140-24136/18-B

Instrument Code: HG Batch No.: 24315

CAS No.	Analyte	Concentration	C	Q	Method
7439-97-6	Mercury	ND			29_7470A

FORM III-IN

3-IN
METHOD BLANK
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Concentration Units: ug/Sample Lab Sample ID: MB 140-24265/8-B

Instrument Code: HG Batch No.: 24315

CAS No.	Analyte	Concentration	C	Q	Method
7439-97-6	Mercury	ND			29_7470A

FORM III-IN

3-IN
METHOD BLANK
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Concentration Units: ug/Sample Lab Sample ID: MB 140-24267/6-B

Instrument Code: HG Batch No.: 24315

CAS No.	Analyte	Concentration	C	Q	Method
7439-97-6	Mercury	ND			29_7470A

FORM III-IN

3-IN
METHOD BLANK
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Concentration Units: ug/Sample Lab Sample ID: MB 140-24317/8-B

Instrument Code: HG Batch No.: 24378

CAS No.	Analyte	Concentration	C	Q	Method
7439-97-6	Mercury	ND			29_7470A

FORM III-IN

3-IN
METHOD BLANK
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Concentration Units: ug/Sample Lab Sample ID: MB 140-24318/8-B

Instrument Code: HG Batch No.: 24378

CAS No.	Analyte	Concentration	C	Q	Method
7439-97-6	Mercury	ND			29_7470A

FORM III-IN

4A-IN
INTERFERENCE CHECK STANDARD
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Lab Sample ID: ICSA 140-24319/6 Instrument ID: DUO

Lab File ID: F100918.asc ICS Source: 90XXICSAP_00022

Concentration Units: ug/L

Analyte	True Solution A	Found Solution A	Percent Recovery
Lead		**-8.28**	
Aluminum	*500000*	*501300*	*100*
Antimony		*4.03*	
Arsenic		*0.960*	
Barium		*0.190*	
Beryllium		*-0.360*	
Boron		*6.99*	
Cadmium		*-1.71*	
Calcium	*500000*	*459790*	*92*
Chromium		*2.36*	
Cobalt		*-1.09*	
Copper		*-0.360*	
Iron	*200000*	*186860*	*93*
Lithium		*14.2*	
Magnesium	*500000*	*498650*	*100*
Manganese		*-6.96*	
Molybdenum		*-1.59*	
Nickel		*0.520*	
Phosphorus		*0.920*	
Potassium		*138*	
Selenium		*0.900*	
Silicon		*-0.950*	
Silver		*-0.840*	
Sodium		*55.2*	
Strontium		*4.48*	
Thallium		*0.440*	
Tin		*-0.850*	
Titanium		*-12.1*	
Vanadium		*2.60*	
Zinc		*0.420*	

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM IVA-IN

4A-IN
INTERFERENCE CHECK STANDARD
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Lab Sample ID: ICSAB 140-24319/7 Instrument ID: DUO

Lab File ID: F100918.asc ICS Source: 90XXICSABP_00025

Concentration Units: ug/L

Analyte	True Solution AB	Found Solution AB	Percent Recovery
Lead	**50.0**	**43.4**	**87**
Aluminum	*250000*	*247560*	*99*
Antimony	*600*	*607*	*101*
Arsenic	*100*	*101*	*101*
Barium	*500*	*498*	*100*
Beryllium	*500*	*503*	*101*
Boron	*1000*	*1003*	*100*
Cadmium	*1000*	*963*	*96*
Calcium	*250000*	*236210*	*94*
Chromium	*500*	*482*	*96*
Cobalt	*500*	*473*	*95*
Copper	*500*	*505*	*101*
Iron	*100000*	*95883*	*96*
Lithium	*1000*	*1038*	*104*
Magnesium	*250000*	*247740*	*99*
Manganese	*500*	*483*	*97*
Molybdenum	*1000*	*979*	*98*
Nickel	*1000*	*941*	*94*
Phosphorus	*1000*	*957*	*96*
Potassium	*10000*	*11051*	*111*
Selenium	*50.0*	*46.3*	*93*
Silicon	*1000*	*1048*	*105*
Silver	*200*	*205*	*103*
Sodium	*10000*	*10414*	*104*
Strontium	*1000*	*996*	*100*
Thallium	*100*	*95.2*	*95*
Tin	*1000*	*956*	*96*
Titanium	*1000*	*998*	*100*
Vanadium	*500*	*483*	*97*
Zinc	*1000*	*988*	*99*

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM IVA-IN

4A-IN
INTERFERENCE CHECK STANDARD
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Lab Sample ID: ICSA 140-24349/7 Instrument ID: DUO

Lab File ID: F101018.asc ICS Source: 90XXICSASiP_00022

Concentration Units: ug/L

Analyte	True Solution A	Found Solution A	Percent Recovery
Lead		**9.49**	
Aluminum	*500000*	*484650*	*97*
Antimony		*9.88*	
Arsenic		*3.51*	
Barium		*10.4*	
Beryllium		*-0.390*	
Boron		*11.6*	
Cadmium		*-1.70*	
Calcium	*500000*	*453080*	*91*
Chromium		*4.71*	
Cobalt		*-3.90*	
Copper		*-1.88*	
Iron	*200000*	*182040*	*91*
Lithium		*13.8*	
Magnesium	*500000*	*496620*	*99*
Manganese		*-7.08*	
Molybdenum		*-1.84*	
Nickel		*-3.82*	
Phosphorus		*-15.2*	
Potassium		*31.0*	
Selenium		*1.82*	
Silicon	*1000000*	*949890*	*95*
Silver		*-0.610*	
Sodium		*40.7*	
Strontium		*4.88*	
Thallium		*-2.62*	
Tin		*-2.59*	
Titanium		*-9.96*	
Vanadium		*5.17*	
Zinc		*8.70*	

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM IVA-IN

4A-IN
INTERFERENCE CHECK STANDARD
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Lab Sample ID: ICSAB 140-24349/8 Instrument ID: DUO

Lab File ID: F101018.asc ICS Source: 90XXICSABP_00025

Concentration Units: ug/L

Analyte	True Solution AB	Found Solution AB	Percent Recovery
Lead	**50.0**	**51.3**	**103**
Aluminum	*250000*	*246250*	*99*
Antimony	*600*	*608*	*101*
Arsenic	*100*	*100*	*100*
Barium	*500*	*496*	*99*
Beryllium	*500*	*506*	*101*
Boron	*1000*	*991*	*99*
Cadmium	*1000*	*973*	*97*
Calcium	*250000*	*236160*	*94*
Chromium	*500*	*487*	*97*
Cobalt	*500*	*479*	*96*
Copper	*500*	*504*	*101*
Iron	*100000*	*95876*	*96*
Lithium	*1000*	*1018*	*102*
Magnesium	*250000*	*248020*	*99*
Manganese	*500*	*488*	*98*
Molybdenum	*1000*	*993*	*99*
Nickel	*1000*	*944*	*94*
Phosphorus	*1000*	*956*	*96*
Potassium	*10000*	*10643*	*106*
Selenium	*50.0*	*50.5*	*101*
Silver	*200*	*204*	*102*
Sodium	*10000*	*10094*	*101*
Strontium	*1000*	*1005*	*101*
Thallium	*100*	*92.7*	*93*
Tin	*1000*	*965*	*97*
Titanium	*1000*	*995*	*100*
Vanadium	*500*	*488*	*98*
Zinc	*1000*	*997*	*100*

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM IVA-IN

5A-IN
MATRIX SPIKE SAMPLE RECOVERY
METALS

Client ID: M29-IMP 1&2-2 MS

Lab ID: 140-12832-7 MS

Lab Name: TestAmerica Knoxville

Job No.: 140-12832-1

SDG No.:

Matrix: Air

Concentration Units: ug/Sample

% Solids:

Analyte	SSR	C	Sample Result (SR)	C	Spike Added (SA)	%R	Control Limit %R	Q	Method
Mercury	30.56		28.4		2.00	106	80-120	4	29/7470A

SSR = Spiked Sample Result

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VA - IN

5A-IN
MATRIX SPIKE SAMPLE RECOVERY
METALS

Client ID: M29-IMP 3-2 MS

Lab ID: 140-12832-8 MS

Lab Name: TestAmerica Knoxville

Job No.: 140-12832-1

SDG No.:

Matrix: Air

Concentration Units: ug/Sample

% Solids:

Analyte	SSR	C	Sample Result (SR)	C	Spike Added (SA)	%R	Control Limit %R	Q	Method
Mercury	2.168		1.38		0.800	99	80-120		29/7470A

SSR = Spiked Sample Result

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VA - IN

5A-IN
MATRIX SPIKE SAMPLE RECOVERY
METALS

Client ID: M29-IMP 4&5-2 MS

Lab ID: 140-12832-9 MS

Lab Name: TestAmerica Knoxville

Job No.: 140-12832-1

SDG No.:

Matrix: Air

Concentration Units: ug/Sample

% Solids:

Analyte	SSR	C	Sample Result (SR)	C	Spike Added (SA)	%R	Control Limit %R	Q	Method
Mercury	2.956		2.21		0.760	98	80-120		29/7470A

SSR = Spiked Sample Result

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VA - IN

5A-IN
MATRIX SPIKE SAMPLE RECOVERY
METALS

Client ID: M29-HCL-2 MS

Lab ID: 140-12832-10 MS

Lab Name: TestAmerica Knoxville

Job No.: 140-12832-1

SDG No.:

Matrix: Air

Concentration Units: ug/Sample

% Solids:

Analyte	SSR	C	Sample Result (SR)	C	Spike Added (SA)	%R	Control Limit %R	Q	Method
Mercury	1.774		0.425		1.38	98	80-120		29/7470A

SSR = Spiked Sample Result

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VA - IN

5A-IN
MATRIX SPIKE DUPLICATE SAMPLE RECOVERY
METALS

Client ID: M29-IMP 1&2-2 MSD

Lab ID: 140-12832-7 MSD

Lab Name: TestAmerica Knoxville

Job No.: 140-12832-1

SDG No.:

Matrix: Air

Concentration Units: ug/Sample

% Solids:

Analyte	(SDR)	C	Spike Added (SA)	%R	Control Limit %R	RPD	RPD Limit	Q	Method
Mercury	30.52		2.00	104	80-120	0	20	4	29/7470A

SDR = Sample Duplicate Result

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VD - IN

5A-IN
MATRIX SPIKE DUPLICATE SAMPLE RECOVERY
METALS

Client ID: M29-IMP 3-2 MSD

Lab ID: 140-12832-8 MSD

Lab Name: TestAmerica Knoxville

Job No.: 140-12832-1

SDG No.:

Matrix: Air

Concentration Units: ug/Sample

% Solids:

Analyte	(SDR)	C	Spike Added (SA)	%R	Control Limit %R	RPD	RPD Limit	Q	Method
Mercury	2.192		0.800	102	80-120	1	20		29/7470A

SDR = Sample Duplicate Result

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VD - IN

5A-IN
MATRIX SPIKE DUPLICATE SAMPLE RECOVERY
METALS

Client ID: M29-IMP 4&5-2 MSD

Lab ID: 140-12832-9 MSD

Lab Name: TestAmerica Knoxville

Job No.: 140-12832-1

SDG No.:

Matrix: Air

Concentration Units: ug/Sample

% Solids:

Analyte	(SDR)	C	Spike Added (SA)	%R	Control Limit %R	RPD	RPD Limit	Q	Method
Mercury	2.903		0.760	91	80-120	2	20		29/7470A

SDR = Sample Duplicate Result

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VD - IN

5A-IN
MATRIX SPIKE DUPLICATE SAMPLE RECOVERY
METALS

Client ID: M29-HCL-2 MSD

Lab ID: 140-12832-10 MSD

Lab Name: TestAmerica Knoxville

Job No.: 140-12832-1

SDG No.:

Matrix: Air

Concentration Units: ug/Sample

% Solids:

Analyte	(SDR)	C	Spike Added (SA)	%R	Control Limit %R	RPD	RPD Limit	Q	Method
Mercury	1.760		1.38	97	80-120	1	20		29/7470A

SDR = Sample Duplicate Result

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VD - IN

5B-IN
POST DIGESTION SPIKE SAMPLE RECOVERY
METALS

Client ID: M29-FILT/PNR-2 PDS Lab ID: 140-12832-6 PDS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Matrix: Air Concentration Units: ug/Sample

Analyte	SSR	C	Sample Result (SR)	C	Spike Added (SA)	%R	Control Limit %R	Q	Method
Lead	1463		556		1000	91	75-125		29/6010C
Mercury	1.050		ND		1.00	105	75-125		29/7470A

SSR = Spiked Sample Result

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VB - IN

5B-IN
POST DIGESTION SPIKE SAMPLE RECOVERY
METALS

Client ID: M29-IMP 1&2-2 PDS

Lab ID: 140-12832-7 PDS

Lab Name: TestAmerica Knoxville

Job No.: 140-12832-1

SDG No.:

Matrix: Air

Concentration Units: ug/Sample

Analyte	SSR	C	Sample Result (SR)	C	Spike Added (SA)	%R	Control Limit %R	Q	Method
Lead	10.88		1.31		10.0	96	75-125		29/6010C

SSR = Spiked Sample Result

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VB - IN

5B-IN
POST DIGESTION SPIKE DUPLICATE SAMPLE RECOVERY
METALS

Client ID: M29-FILT/PNR-2 PDSD

Lab ID: 140-12832-6 PDSD

Lab Name: TestAmerica Knoxville

Job No.: 140-12832-1

SDG No.:

Matrix: Air

Concentration Units: ug/Sample

Analyte	(SDR)	C	Spike Added (SA)	%R	Control Limit %R	RPD	RPD Limit	Q	Method
Lead	1463		1000	91	75-125	0			29/6010C
Mercury	1.060		1.00	106	75-125	0.9			29/7470A

SDR = Sample Duplicate Result

Calculations are performed before rounding to avoid round-off errors in calculated results.

5B-IN
POST DIGESTION SPIKE DUPLICATE SAMPLE RECOVERY
METALS

Client ID: M29-IMP 1&2-2 PDSD

Lab ID: 140-12832-7 PDSD

Lab Name: TestAmerica Knoxville

Job No.: 140-12832-1

SDG No.:

Matrix: Air

Concentration Units: ug/Sample

Analyte	(SDR)	C	Spike Added (SA)	%R	Control Limit %R	RPD	RPD Limit	Q	Method
Lead	10.89		10.0	96	75-125	0.1			29/6010C

SDR = Sample Duplicate Result

Calculations are performed before rounding to avoid round-off errors in calculated results.

7A-IN
LAB CONTROL SAMPLE
METALS

Lab ID: LCS 140-24135/19-A

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

Sample Matrix: Air LCS Source: 90SPB1REV-1P_00014

Analyte	Air(ug/Sample)							
	True	Found	C	%R	Limits		Q	Method
Lead	10.0	9.966		100	80	120		29/6010C

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIIA - IN

7D-IN
LAB CONTROL SAMPLE DUPLICATE
METALS

Lab ID: LCSD 140-24135/20-A

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

Sample Matrix: Air LCS Source: 90SPB1REV-1P_00014

Analyte	(SDR)	C	Spike Added	%R	Control Limit %R	RPD	RPD Limit	Q	Method
Lead	9.981		10.0	100	80-120	0	20		29/6010C

SDR = Spike Duplicate Results
Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIID - IN

7A-IN
LAB CONTROL SAMPLE
METALS

Lab ID: LCS 140-24136/19-A

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

Sample Matrix: Air LCS Source: 90SPB1REV-1P_00014

Analyte	Air(ug/Sample)							
	True	Found	C	%R	Limits		Q	Method
Lead	10.0	10.15		102	80	120		29/6010C

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIIA - IN

7D-IN
LAB CONTROL SAMPLE DUPLICATE
METALS

Lab ID: LCSD 140-24136/20-A

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

Sample Matrix: Air LCS Source: 90SPB1REV-1P_00014

Analyte	(SDR)	C	Spike Added	%R	Control Limit %R	RPD	RPD Limit	Q	Method
Lead	10.07		10.0	101	80-120	1	20		29/6010C

SDR = Spike Duplicate Results
Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIID - IN

7A-IN
LAB CONTROL SAMPLE
METALS

Lab ID: LCS 140-24136/19-B

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

Sample Matrix: Air LCS Source: 90L1HgCA1000P_00030

Analyte	Air(ug/Sample)							
	True	Found	C	%R	Limits		Q	Method
Mercury	5.00	5.090		102	80	120		29/7470A

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIIA - IN

7D-IN
LAB CONTROL SAMPLE DUPLICATE
METALS

Lab ID: LCSD 140-24136/20-B

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

Sample Matrix: Air LCS Source: 90L1HgCA1000P_00030

Analyte	(SDR)	C	Spike Added	%R	Control Limit %R	RPD	RPD Limit	Q	Method
Mercury	5.120		5.00	102	80-120	1	20		29/7470A

SDR = Spike Duplicate Results
Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIID - IN

7A-IN
LAB CONTROL SAMPLE
METALS

Lab ID: LCS 140-24265/9-B

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

Sample Matrix: Air LCS Source: 90L1HGDayCAL_00292

Analyte	Air(ug/Sample)							
	True	Found	C	%R	Limits		Q	Method
Mercury	10.0	9.840		98	80	120		29/7470A

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIIA - IN

7A-IN
LAB CONTROL SAMPLE
METALS

Lab ID: LCS 140-24267/7-B

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

Sample Matrix: Air LCS Source: 90L1HGDayCAL_00292

Analyte	Air(ug/Sample)							
	True	Found	C	%R	Limits		Q	Method
Mercury	5.00	5.000		100	80	120		29/7470A

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIIA - IN

7A-IN
LAB CONTROL SAMPLE
METALS

Lab ID: LCS 140-24317/9-B

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

Sample Matrix: Air LCS Source: 90L1HGDayCAL_00293

Analyte	Air(ug/Sample)							
	True	Found	C	%R	Limits		Q	Method
Mercury	0.500	0.5080		102	80	120		29/7470A

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIIA - IN

7A-IN
LAB CONTROL SAMPLE
METALS

Lab ID: LCS 140-24318/9-B

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

Sample Matrix: Air LCS Source: 90L1HGDayCAL_00293

Analyte	Air(ug/Sample)							
	True	Found	C	%R	Limits		Q	Method
Mercury	1.25	1.265		101	80	120		29/7470A

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIIA - IN

9-IN
CALIBRATION BLANK DETECTION LIMITS
METALS

Lab Name: TestAmerica Knoxville Job Number: 140-12832-1

SDG Number:

Matrix: Air Instrument ID: DUO

Method: 29/6010C XMDL Date: 01/01/2015 10:57

Analyte	Wavelength/ Mass	XRL (ug/L)	XMDL (ug/L)
Lead		10	2.6

9-IN
DETECTION LIMITS
METALS

Lab Name: TestAmerica Knoxville Job Number: 140-12832-1

SDG Number:

Matrix: Air Instrument ID: DUO

Method: 29/6010C MDL Date: 03/09/2015 14:15

Prep Method: AT Prep (BH)

Analyte	Wavelength/ Mass	RL (ug/Sample)	MDL (ug/Sample)
Lead	220.353	1	0.28

9-IN
CALIBRATION BLANK DETECTION LIMITS
METALS

Lab Name: TestAmerica Knoxville Job Number: 140-12832-1

SDG Number:

Matrix: Air Instrument ID: DUO

Method: 29/6010C XMDL Date: 01/01/2015 10:57

Analyte	Wavelength/ Mass	XRL (ug/L)	XMDL (ug/L)
Lead		10	2.6

9-IN
DETECTION LIMITS
METALS

Lab Name: TestAmerica Knoxville Job Number: 140-12832-1

SDG Number:

Matrix: Air Instrument ID: DUO

Method: 29/6010C MDL Date: 02/26/2015 13:40

Prep Method: AT Prep (FH)

Analyte	Wavelength/ Mass	RL (ug/Sample)	MDL (ug/Sample)
Lead	220.353	1	0.52

FORM IX - IN

9-IN
CALIBRATION BLANK DETECTION LIMITS
METALS

Lab Name: TestAmerica Knoxville Job Number: 140-12832-1

SDG Number:

Matrix: Air Instrument ID: HG

Method: 29/7470A XMDL Date: 01/01/2015 16:54

Analyte	Wavelength/ Mass	XRL (ug/L)	XMDL (ug/L)
Mercury		0.2	0.06

9-IN
DETECTION LIMITS
METALS

Lab Name: TestAmerica Knoxville Job Number: 140-12832-1

SDG Number:

Matrix: Air Instrument ID: HG

Method: 29/7470A MDL Date: 01/01/2015 16:47

Prep Method: AT Prep (BH)

Analyte	Wavelength/ Mass	RL (ug/Sample)	MDL (ug/Sample)
Mercury		0.4	0.12

9-IN
CALIBRATION BLANK DETECTION LIMITS
METALS

Lab Name: TestAmerica Knoxville Job Number: 140-12832-1

SDG Number:

Matrix: Air Instrument ID: HG

Method: 29/7470A XMDL Date: 01/01/2015 16:54

Analyte	Wavelength/ Mass	XRL (ug/L)	XMDL (ug/L)
Mercury		0.2	0.06

9-IN
DETECTION LIMITS
METALS

Lab Name: TestAmerica Knoxville Job Number: 140-12832-1

SDG Number:

Matrix: Air Instrument ID: HG

Method: 29/7470A MDL Date: 01/01/2015 16:48

Prep Method: AT Prep (Empty)

Analyte	Wavelength/ Mass	RL (ug/Sample)	MDL (ug/Sample)
Mercury		0.2	0.06

9-IN
CALIBRATION BLANK DETECTION LIMITS
METALS

Lab Name: TestAmerica Knoxville Job Number: 140-12832-1

SDG Number:

Matrix: Air Instrument ID: HG

Method: 29/7470A XMDL Date: 01/01/2015 16:54

Analyte	Wavelength/ Mass	XRL (ug/L)	XMDL (ug/L)
Mercury		0.2	0.06

9-IN
DETECTION LIMITS
METALS

Lab Name: TestAmerica Knoxville Job Number: 140-12832-1

SDG Number:

Matrix: Air Instrument ID: HG

Method: 29/7470A MDL Date: 01/01/2015 16:50

Prep Method: AT Prep (FH)

Analyte	Wavelength/ Mass	RL (ug/Sample)	MDL (ug/Sample)
Mercury		0.2	0.08

9-IN
CALIBRATION BLANK DETECTION LIMITS
METALS

Lab Name: TestAmerica Knoxville Job Number: 140-12832-1

SDG Number:

Matrix: Air Instrument ID: HG

Method: 29/7470A XMDL Date: 01/01/2015 16:54

Analyte	Wavelength/ Mass	XRL (ug/L)	XMDL (ug/L)
Mercury		0.2	0.06

9-IN
DETECTION LIMITS
METALS

Lab Name: TestAmerica Knoxville Job Number: 140-12832-1

SDG Number:

Matrix: Air Instrument ID: HG

Method: 29/7470A MDL Date: 01/01/2015 16:51

Prep Method: AT Prep (HCl)

Analyte	Wavelength/ Mass	RL (ug/Sample)	MDL (ug/Sample)
Mercury		0.05	0.015

9-IN
CALIBRATION BLANK DETECTION LIMITS
METALS

Lab Name: TestAmerica Knoxville Job Number: 140-12832-1

SDG Number:

Matrix: Air Instrument ID: HG

Method: 29/7470A XMDL Date: 01/01/2015 16:54

Analyte	Wavelength/ Mass	XRL (ug/L)	XMDL (ug/L)
Mercury		0.2	0.06

9-IN
DETECTION LIMITS
METALS

Lab Name: TestAmerica Knoxville Job Number: 140-12832-1

SDG Number:

Matrix: Air Instrument ID: HG

Method: 29/7470A MDL Date: 01/01/2015 16:51

Prep Method: AT Prep (KMnO4)

Analyte	Wavelength/ Mass	RL (ug/Sample)	MDL (ug/Sample)
Mercury		0.02	0.006

FORM IX - IN

10-IN
ICP-AES INTERELEMENT CORRECTION FACTORS
METALS

Lab Name: TestAmerica Knoxville Job Number: 140-12832-1

SDG No.:

ICP-AES Instrument ID: DUO Date: 09/04/2018

Analyte	Wave Length	Al	As	B	Ba	Be	Ca	Cd	Co	Cr	Cu	Fe	K	Li	Mg
Aluminum	308.215														
Antimony	206.833									0.014628					
Arsenic	189.042									-0.001498		-0.000040			
Beryllium	313.042														
Boron	249.678								0			-0.000339			
Cadmium	226.502											0.000096			
Chromium	267.716														
Cobalt	228.616														
Copper	324.754											-0.000059			
Lead	220.353	-0.000042							-0.000412			0.000012			
Manganese	257.610											0.000011			0.000041
Nickel	231.604											-0.000026			
Selenium	196.090											-0.000084			
Silicon	250.690								0.010341						
Silver	328.068														
Sodium	589.592														
Thallium	190.856								0.004877	0.000327					
Titanium	334.941														0.000032
Tungsten	207.911														
Vanadium	292.402									-0.000909		-0.000032			
Zinc	213.856										0.001101	0.000110			

X-IN

10-IN
ICP-AES INTERELEMENT CORRECTION FACTORS
METALS

Lab Name: TestAmerica Knoxville Job Number: 140-12832-1

SDG No.:

ICP-AES Instrument ID: DUO Date: 09/04/2018

Analyte	Wave Length	Mn	Mo	Na	Ni	P	Pb	Sb	Se	Si	Sn	Sr	Ti	Tl	V
Aluminum	308.215		0.016430												0.040677
Antimony	206.833										-0.002189				-0.001659
Arsenic	189.042		0.000593							-0.000024					
Beryllium	313.042														0.000228
Boron	249.678														
Cadmium	226.502				-0.000086										
Chromium	267.716														
Cobalt	228.616		-0.001285							-0.000009			0.001531		
Copper	324.754														
Lead	220.353		-0.001590							0.000070			-0.000511		
Manganese	257.610														
Nickel	231.604									-0.000013				0.000164	
Selenium	196.090	0.000576								0.000016					
Silicon	250.690														
Silver	328.068														
Sodium	589.592														
Thallium	190.856									-0.000010			-0.000563		0.002619
Titanium	334.941														
Tungsten	207.911														
Vanadium	292.402		-0.000547												
Zinc	213.856				0.005220										

X-IN

10-IN
ICP-AES INTERELEMENT CORRECTION FACTORS
METALS

Lab Name: TestAmerica Knoxville Job Number: 140-12832-1

SDG No.:

ICP-AES Instrument ID: DUO Date: 09/04/2018

Analyte	Wave Length	W	Zn												
Aluminum	308.215														
Antimony	206.833														
Arsenic	189.042														
Beryllium	313.042														
Boron	249.678														
Cadmium	226.502														
Chromium	267.716														
Cobalt	228.616														
Copper	324.754														
Lead	220.353														
Manganese	257.610														
Nickel	231.604														
Selenium	196.090														
Silicon	250.690														
Silver	328.068														
Sodium	589.592														
Thallium	190.856														
Titanium	334.941														
Tungsten	207.911														
Vanadium	292.402														
Zinc	213.856														

X-IN

11-IN
LINEAR RANGES
METALS

Lab Name: TestAmerica Knoxville Job No: 140-12832-1

SDG No.:

Instrument ID: DUO Date: 09/05/2018 00:00

Analyte	Integ. Time (Sec.)	Concentration (ug/L)	Method
Lead		90000	29/6010C

FORM XI - IN

12-IN
PREPARATION LOG
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Prep Method: AT Prep (BH)

Lab Sample ID	Preparation Date	Prep Batch	Initial Weight (Sample)	Initial Volume	Final Volume (mL)
140-12832-2	10/03/2018 08:00	24135	1		100
140-12832-7	10/03/2018 08:00	24135	1		100
140-12832-12	10/03/2018 08:00	24135	1		100
140-12832-17	10/03/2018 08:00	24135	1		100
MB 140-24135/18-A	10/03/2018 08:00	24135	1		100
LCS 140-24135/19-A	10/03/2018 08:00	24135	1		100
LCSD 140-24135/20-A	10/03/2018 08:00	24135	1		100

FORM XII-IN

12-IN
PREPARATION LOG
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Prep Method: AT Prep (FH)

Lab Sample ID	Preparation Date	Prep Batch	Initial Weight (Sample)	Initial Volume	Final Volume (mL)
140-12832-1	10/03/2018 08:00	24136	1		100
140-12832-6	10/03/2018 08:00	24136	1		100
140-12832-11	10/03/2018 08:00	24136	1		100
140-12832-16	10/03/2018 08:00	24136	1		100
MB 140-24136/18-A	10/03/2018 08:00	24136	1		100
LCS 140-24136/19-A	10/03/2018 08:00	24136	1		100
LCSD 140-24136/20-A	10/03/2018 08:00	24136	1		100

FORM XII-IN

12-IN
PREPARATION LOG
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Prep Method: AT Prep (FH)

Lab Sample ID	Preparation Date	Prep Batch	Initial Weight (Sample)	Initial Volume	Final Volume (mL)
140-12832-1	10/03/2018 08:00	24136	1		100
140-12832-6	10/03/2018 08:00	24136	1		100
140-12832-11	10/03/2018 08:00	24136	1		100
140-12832-16	10/03/2018 08:00	24136	1		100
MB 140-24136/18-B	10/03/2018 08:00	24136	1		100
LCS 140-24136/19-B	10/03/2018 08:00	24136	1		100
LCSD 140-24136/20-B	10/03/2018 08:00	24136	1		100

FORM XII-IN

12-IN
PREPARATION LOG
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Prep Method: AT Prep (BH)

Lab Sample ID	Preparation Date	Prep Batch	Initial Weight	Initial Volume (mL)	Final Volume (mL)
140-12832-2	10/08/2018 10:25	24266		2.5	50.0
140-12832-7	10/08/2018 10:25	24266		2.5	50.0
140-12832-7 MS	10/08/2018 10:25	24266		2.5	50.0
140-12832-7 MSD	10/08/2018 10:25	24266		2.5	50.0
140-12832-12	10/08/2018 10:25	24266		2.5	50.0
140-12832-17	10/08/2018 10:25	24266		2.5	50.0
MB 140-24265/8-B	10/08/2018 10:25	24266		2.5	50.0
LCS 140-24265/9-B	10/08/2018 10:25	24266		2.5	50.0

FORM XII-IN

12-IN
PREPARATION LOG
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Prep Method: AT Prep (Empty)

Lab Sample ID	Preparation Date	Prep Batch	Initial Weight	Initial Volume (mL)	Final Volume (mL)
140-12832-3	10/08/2018 10:34	24268		2.5	50.0
140-12832-8	10/08/2018 10:34	24268		2.5	50.0
140-12832-8 MS	10/08/2018 10:34	24268		2.5	50.0
140-12832-8 MSD	10/08/2018 10:34	24268		2.5	50.0
140-12832-13	10/08/2018 10:34	24268		2.5	50.0
MB 140-24267/6-B	10/08/2018 10:34	24268		2.5	50.0
LCS 140-24267/7-B	10/08/2018 10:34	24268		2.5	50.0

FORM XII-IN

12-IN
PREPARATION LOG
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Prep Method: AT Prep (KMnO4)

Lab Sample ID	Preparation Date	Prep Batch	Initial Weight	Initial Volume (mL)	Final Volume (mL)
140-12832-4	10/10/2018 08:30	24322		25.0	50.0
140-12832-9	10/10/2018 08:30	24322		25.0	50.0
140-12832-9 MS	10/10/2018 08:30	24322		25.0	50.0
140-12832-9 MSD	10/10/2018 08:30	24322		25.0	50.0
140-12832-14	10/10/2018 08:30	24322		25.0	50.0
140-12832-18	10/10/2018 08:30	24322		25.0	50.0
MB 140-24317/8-B	10/10/2018 08:30	24322		25.0	50.0
LCS 140-24317/9-B	10/10/2018 08:30	24322		25.0	50.0

FORM XII-IN

12-IN
PREPARATION LOG
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Prep Method: AT Prep (HCl)

Lab Sample ID	Preparation Date	Prep Batch	Initial Weight	Initial Volume (mL)	Final Volume (mL)
140-12832-5	10/10/2018 08:30	24323		10.0	50.0
140-12832-10	10/10/2018 08:30	24323		10.0	50.0
140-12832-10 MS	10/10/2018 08:30	24323		10.0	50.0
140-12832-10 MSD	10/10/2018 08:30	24323		10.0	50.0
140-12832-15	10/10/2018 08:30	24323		10.0	50.0
140-12832-19	10/10/2018 08:30	24323		10.0	50.0
MB 140-24318/8-B	10/10/2018 08:30	24323		10.0	50.0
LCS 140-24318/9-B	10/10/2018 08:30	24323		10.0	50.0

FORM XII-IN

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Instrument ID: DUO Analysis Method: 29/6010C

Start Date: 10/09/2018 10:06 End Date: 10/09/2018 13:29

Lab Sample Id	D/F	Type	Time	Analytes																							
				Pb																							
ICIS 140-24319/1	1		10:06	X																							
ZZZZZZ			10:11																								
CCVL 140-24319/3	1		10:16	X																							
ICV 140-24319/4	1		10:21	X																							
ICB 140-24319/5	1		10:26	X																							
ICSA 140-24319/6	1		10:31	X																							
ICSAB 140-24319/7	1		10:36	X																							
CRI 140-24319/8	1		10:41	X																							
CCV 140-24319/9	1		10:46	X																							
CCB 140-24319/10	1		10:51	X																							
MB 140-24135/18-A	1	T	10:56	X																							
LCS 140-24135/19-A	1	T	11:01	X																							
LCSD 140-24135/20-A	1	T	11:06	X																							
ZZZZZZ			11:10																								
ZZZZZZ			11:15																								
140-12832-2	1	T	11:20	X																							
140-12832-7	1	T	11:25	X																							
140-12832-7 PDS	1	T	11:30	X																							
140-12832-7 PDSD	1	T	11:35	X																							
140-12832-12	1	T	11:40	X																							
CCV 140-24319/21	1		11:45	X																							
CCB 140-24319/22	1		11:50	X																							
140-12832-17	1	T	11:55	X																							
ZZZZZZ			12:00																								
ZZZZZZ			12:05																								
ZZZZZZ			12:10																								
ZZZZZZ			12:15																								
ZZZZZZ			12:19																								
ZZZZZZ			12:24																								
ZZZZZZ			12:29																								
ZZZZZZ			12:34																								
ZZZZZZ			12:39																								
CCV 140-24319/33	1		12:44	X																							
CCB 140-24319/34	1		12:49	X																							
ZZZZZZ			12:54																								
ZZZZZZ			12:59																								
ZZZZZZ			13:04																								
ZZZZZZ			13:09																								
ZZZZZZ			13:14																								
CRI 140-24319/40	1		13:19	X																							
CCV 140-24319/41			13:24																								
CCB 140-24319/42			13:29																								

FORM XIII-IN

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Instrument ID: DUO Analysis Method: 29/6010C

Start Date: 10/09/2018 10:06 End Date: 10/09/2018 13:29

Lab Sample Id	D/F	Type	Time	Analytes																							
				Pb																							

Prep Types:
T = Total/NA

FORM XIII-IN

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Instrument ID: DUO Analysis Method: 29/6010C

Start Date: 10/10/2018 09:45 End Date: 10/10/2018 15:56

Lab Sample Id	D/F	Type	Time	Analytes																							
				Pb																							
ICIS 140-24349/1	1		09:45	X																							
ZZZZZZ			09:50																								
CCVL 140-24349/3	1		09:55	X																							
ICV 140-24349/4	1		10:00	X																							
ICB 140-24349/5	1		10:05	X																							
ICSA 140-24349/6			10:10																								
ICSA 140-24349/7	1		10:18	X																							
ICSAB 140-24349/8	1		10:24	X																							
CRI 140-24349/9	1		10:29	X																							
CCV 140-24349/10	1		10:34	X																							
CCB 140-24349/11	1		10:38	X																							
MB 140-24136/18-A	1	T	10:44	X																							
LCS 140-24136/19-A	1	T	10:49	X																							
LCSD 140-24136/20-A	1	T	10:54	X																							
ZZZZZZ			10:59																								
ZZZZZZ			11:04																								
ZZZZZZ			11:09																								
ZZZZZZ			11:14																								
ZZZZZZ			11:19																								
ZZZZZZ			11:24																								
ZZZZZZ			11:29																								
CCV 140-24349/22	1		11:34	X																							
CCB 140-24349/23	1		11:39	X																							
ZZZZZZ			11:44																								
ZZZZZZ			11:49																								
ZZZZZZ			11:54																								
ZZZZZZ			12:00																								
ZZZZZZ			12:05																								
ZZZZZZ			12:10																								
ZZZZZZ			12:15																								
ZZZZZZ			12:20																								
ZZZZZZ			12:25																								
ZZZZZZ			12:31																								
CCV 140-24349/34	1		12:36																								
CCB 140-24349/35	1		12:40	X																							
ZZZZZZ			12:45																								
ZZZZZZ			12:51																								
ZZZZZZ			12:56																								
ZZZZZZ			13:01																								
ZZZZZZ			13:06																								
ZZZZZZ			13:12																								
CCV 140-24349/42	1		13:17	X																							

FORM XIII-IN

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Instrument ID: DUO Analysis Method: 29/6010C

Start Date: 10/10/2018 09:45 End Date: 10/10/2018 15:56

Lab Sample Id	D/F	Type	Time	Analytes																							
				Pb																							
CCB 140-24349/43	1		13:21	X																							
ZZZZZZ			13:35																								
ZZZZZZ			13:40																								
140-12832-1	2	T	13:45	X																							
140-12832-6	2	T	13:50	X																							
140-12832-6 PDS	2	T	13:55	X																							
140-12832-6 PDSD	2	T	14:00	X																							
140-12832-11	2	T	14:05	X																							
140-12832-16	2	T	14:10	X																							
ZZZZZZ			14:15																								
ZZZZZZ			14:20																								
CCV 140-24349/54	1		14:25	X																							
CCB 140-24349/55	1		14:30	X																							
ZZZZZZ			14:35																								
ZZZZZZ			14:40																								
ZZZZZZ			14:45																								
ZZZZZZ			14:50																								
ZZZZZZ			14:55																								
ZZZZZZ			15:00																								
ZZZZZZ			15:05																								
ZZZZZZ			15:11																								
ZZZZZZ			15:16																								
ZZZZZZ			15:21																								
CCV 140-24349/66	1		15:26	X																							
CCB 140-24349/67	1		15:31	X																							
ZZZZZZ			15:36																								
CRI 140-24349/69	1		15:41	X																							
CCV 140-24349/70			15:46																								
CCB 140-24349/71			15:51																								
ZZZZZZ			15:56																								

Prep Types:
T = Total/NA

FORM XIII-IN

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Instrument ID: HG Analysis Method: 29/7470A

Start Date: 10/09/2018 09:51 End Date: 10/09/2018 12:21

Lab Sample Id	D/F	Type	Time	Analytes																							
				Hg																							
STD01REP1 140-24315/1 IC			09:51	X																							
STD02REP1 140-24315/2 IC			09:54	X																							
STD03REP1 140-24315/3 IC			09:56	X																							
STD04REP1 140-24315/4 IC			10:00	X																							
STD05REP1 140-24315/5 IC			10:02	X																							
STD06REP1 140-24315/6 IC			10:05	X																							
STD07REP1 140-24315/7 IC			10:08	X																							
ICV 140-24272/16-A	1		10:10	X																							
ICB 140-24272/17-A	1		10:12	X																							
CRA 140-24272/18-A	1		10:15	X																							
CCV 140-24272/19-A	1		10:18	X																							
CCB 140-24272/20-A	1		10:20	X																							
ZZZZZZ			10:24																								
ZZZZZZ			10:26																								
ZZZZZZ			10:28																								
ZZZZZZ			10:31																								
ZZZZZZ			10:33																								
ZZZZZZ			10:36																								
MB 140-24136/18-B	1	T	10:39	X																							
LCS 140-24136/19-B	1	T	10:41	X																							
LCSD 140-24136/20-B	1	T	10:45	X																							
ZZZZZZ			10:47																								
CCV 140-24272/19-A	1		10:50	X																							
CCB 140-24272/20-A	1		10:53	X																							
140-12832-1	1	T	10:56	X																							
140-12832-6	1	T	10:58	X																							
140-12832-6 PDS	1	T	11:00	X																							
140-12832-6 PDSD	1	T	11:03	X																							
140-12832-11	1	T	11:06	X																							
140-12832-16	1	T	11:08	X																							
MB 140-24265/8-B	1	T	11:11	X																							
LCS 140-24265/9-B	1	T	11:13	X																							
ZZZZZZ			11:16																								
ZZZZZZ			11:18																								
CCV 140-24272/19-A	1		11:20	X																							
CCB 140-24272/20-A	1		11:23	X																							
ZZZZZZ			11:25																								
ZZZZZZ			11:28																								
ZZZZZZ			11:31																								
ZZZZZZ			11:33																								
140-12832-17	1	T	11:36	X																							
CCV 140-24272/19-A	1		11:38	X																							

FORM XIII-IN

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Instrument ID: HG Analysis Method: 29/7470A

Start Date: 10/09/2018 09:51 End Date: 10/09/2018 12:21

Lab Sample Id	D/F	Type	Time	Analytes																							
				Hg																							
CCB 140-24272/20-A	1		11:41	X																							
MB 140-24267/6-B	1	T	11:44	X																							
LCS 140-24267/7-B	1	T	11:46	X																							
140-12832-3	1	T	11:49	X																							
140-12832-8	1	T	11:51	X																							
140-12832-8 MS	1	T	11:54	X																							
140-12832-8 MSD	1	T	11:56	X																							
140-12832-13	1	T	11:59	X																							
CCV 140-24272/19-A	1		12:02	X																							
CCB 140-24272/20-A	1		12:04	X																							
140-12832-2	2	T	12:07	X																							
140-12832-7	2	T	12:09	X																							
140-12832-7 MS	2	T	12:12	X																							
140-12832-7 MSD	2	T	12:14	X																							
140-12832-12	5	T	12:16	X																							
CCV 140-24272/19-A	1		12:19	X																							
CCB 140-24272/20-A	1		12:21	X																							

Prep Types:
T = Total/NA

FORM XIII-IN

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Instrument ID: HG Analysis Method: 29/7470A

Start Date: 10/11/2018 09:55 End Date: 10/11/2018 11:31

Lab Sample Id	D/F	Type	Time	Analytes																							
				Hg																							
STD01REP1 140-24378/1 IC			09:55	X																							
STD01REP1 140-24378/2 IC			09:59	X																							
STD02REP1 140-24378/3 IC			10:02	X																							
STD03REP1 140-24378/4 IC			10:04	X																							
STD04REP1 140-24378/5 IC			10:06	X																							
STD05REP1 140-24378/6 IC			10:10	X																							
STD06REP1 140-24378/7 IC			10:13	X																							
STD07REP1 140-24378/8 IC			10:15	X																							
ICV 140-24322/17-A	1		10:21	X																							
ICB 140-24322/18-A	1		10:24	X																							
CRA 140-24322/19-A	1		10:26	X																							
CCV 140-24322/20-A	1		10:29	X																							
CCB 140-24322/21-A	1		10:32	X																							
ZZZZZZ			10:34																								
ZZZZZZ			10:37																								
MB 140-24317/8-B	1	T	10:40	X																							
LCS 140-24317/9-B	1	T	10:42	X																							
ZZZZZZ			10:44																								
140-12832-4	1	T	10:47	X																							
140-12832-9	1	T	10:49	X																							
140-12832-9 MS	1	T	10:52	X																							
140-12832-9 MSD	1	T	10:54	X																							
140-12832-14	1	T	10:56	X																							
CCV 140-24322/20-A	1		10:59	X																							
CCB 140-24322/21-A	1		11:01	X																							
140-12832-18	1	T	11:04	X																							
MB 140-24318/8-B	1	T	11:06	X																							
LCS 140-24318/9-B	1	T	11:08	X																							
ZZZZZZ			11:11																								
140-12832-5	1	T	11:14	X																							
140-12832-10	1	T	11:16	X																							
140-12832-10 MS	1	T	11:18	X																							
140-12832-10 MSD	1	T	11:21	X																							
140-12832-15	1	T	11:23	X																							
140-12832-19	1	T	11:26	X																							
CCV 140-24322/20-A	1		11:29	X																							
CCB 140-24322/21-A	1		11:31	X																							

Prep Types:
T = Total/NA

FORM XIII-IN

15-IN
ICP INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

ICP Instrument ID: DUO Start Date: 10/09/2018 End Date: 10/09/2018

Lab Sample ID	Time	Internal Standards %RI For:									
		Element Y 224.306	Q	Element Y 371.030	Q	Element	Q	Element	Q	Element	Q
ICIS 140-24319/1	10:06										
CCVL 140-24319/3	10:16	100		100							
ICV 140-24319/4	10:21	99		99							
ICB 140-24319/5	10:26	100		100							
ICSA 140-24319/6	10:31	90		90							
ICSAB 140-24319/7	10:36	94		95							
CRI 140-24319/8	10:41	99		99							
CCV 140-24319/9	10:46	97		98							
CCB 140-24319/10	10:51	101		100							
MB 140-24135/18-A	10:56	99		99							
LCS 140-24135/19-A	11:01	98		98							
LCSD 140-24135/20-A	11:06	97		98							
140-12832-2	11:20	95		95							
140-12832-7	11:25	95		96							
140-12832-7 PDS	11:30	94		95							
140-12832-7 PDSD	11:35										
140-12832-12	11:40	94		95							
CCV 140-24319/21	11:45	97		98							
CCB 140-24319/22	11:50	99		100							
140-12832-17	11:55	98		98							
CCV 140-24319/33	12:44	97		97							
CCB 140-24319/34	12:49	99		99							
CRI 140-24319/40	13:19	99		99							

FORM XV - IN

15-IN
ICP INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY
METALS

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

ICP Instrument ID: DUO Start Date: 10/10/2018 End Date: 10/10/2018

Lab Sample ID	Time	Internal Standards %RI For:									
		Element Y 224.306	Q	Element Y 371.030	Q	Element	Q	Element	Q	Element	Q
ICIS 140-24349/1	09:45										
CCVL 140-24349/3	09:55	99		100							
ICV 140-24349/4	10:00	100		100							
ICB 140-24349/5	10:05	100		99							
ICSA 140-24349/7	10:18	88		91							
ICSAB 140-24349/8	10:24	94		97							
CRI 140-24349/9	10:29	99		100							
CCV 140-24349/10	10:34	97		99							
CCB 140-24349/11	10:38	100		100							
MB 140-24136/18-A	10:44	99		101							
LCS 140-24136/19-A	10:49	97		99							
LCSD 140-24136/20-A	10:54	97		99							
140-12832-1	11:14	99		100							
140-12832-6	11:19	101		102							
140-12832-6 PDS	11:24	99		100							
140-12832-6 PDSD	11:29										
CCV 140-24349/22	11:34	97		99							
CCB 140-24349/23	11:39	100		100							
140-12832-11	11:44	101		102							
140-12832-16	11:49	99		99							
CCV 140-24349/34	12:36	97		97							
CCB 140-24349/35	12:40	100		99							
CCV 140-24349/42	13:17	97		98							
CCB 140-24349/43	13:21	99		100							
140-12832-1	13:45	99		100							
140-12832-6	13:50	100		101							
140-12832-6 PDS	13:55	100		100							
140-12832-6 PDSD	14:00										
140-12832-11	14:05	99		100							
140-12832-16	14:10	99		98							
CCV 140-24349/54	14:25	97		98							
CCB 140-24349/55	14:30	99		99							
CCV 140-24349/66	15:26	96		97							
CCB 140-24349/67	15:31	99		99							
CRI 140-24349/69	15:41	99		99							

FORM XV - IN

METALS BATCH WORKSHEET

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Batch Number: 24135 Batch Start Date: 10/03/18 08:00 Batch Analyst: Collins, Kerry N

Batch Method: AT Prep (BH) Batch End Date: 10/04/18 16:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	BH_pH	BH_IV	90SPAREV-1P 00014	90SPB1REV-1P 00014
140-12832-A-2	M29-IMP 1&2-1	AT Prep (BH), 29/6010C	T	1 Sample	100 mL	<2 SU	460 mL		
140-12832-A-7	M29-IMP 1&2-2	AT Prep (BH), 29/6010C	T	1 Sample	100 mL	<2 SU	420 mL		
140-12832-A-12	M29-IMP 1&2-3	AT Prep (BH), 29/6010C	T	1 Sample	100 mL	<2 SU	420 mL		
140-12832-A-17	M29-HNO3/H2O2 BLANK	AT Prep (BH), 29/6010C	T	1 Sample	100 mL	<2 SU	100 mL		
MB 140-24135/18		AT Prep (BH), 29/6010C		1 Sample	100 mL				
LCS 140-24135/19		AT Prep (BH), 29/6010C		1 Sample	100 mL			1 mL	1 mL
LCSD 140-24135/20		AT Prep (BH), 29/6010C		1 Sample	100 mL			1 mL	1 mL

Lab Sample ID	Client Sample ID	Method Chain	Basis	90SPCREV-1P 00015					
140-12832-A-2	M29-IMP 1&2-1	AT Prep (BH), 29/6010C	T						
140-12832-A-7	M29-IMP 1&2-2	AT Prep (BH), 29/6010C	T						
140-12832-A-12	M29-IMP 1&2-3	AT Prep (BH), 29/6010C	T						
140-12832-A-17	M29-HNO3/H2O2 BLANK	AT Prep (BH), 29/6010C	T						
MB 140-24135/18		AT Prep (BH), 29/6010C							
LCS 140-24135/19		AT Prep (BH), 29/6010C		1 mL					

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Batch Number: 24135 Batch Start Date: 10/03/18 08:00 Batch Analyst: Collins, Kerry N

Batch Method: AT Prep (BH) Batch End Date: 10/04/18 16:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	90SPCREV-1P 00015					
LCSD 140-24135/20		AT Prep (BH), 29/6010C		1 mL					

Batch Notes	
End date/time for BH digestion	10/04/2018 16:00
Start date/time for BH digestion	10/03/2018 08:00
Filter Paper ID	40825501-8127-A
Hydrogen Peroxide ID	166267 0.540ml
Hydrochloric Acid ID	180887 8ml
Nitric Acid ID	183158 16ml
Hot Plate ID	A,B
Oven, Bath or Block Temperature 1	A 10/3/18 95 10/4/18 92 B 10/3/18 94 10/4/18 93 Degrees C
Pipette/Syringe/Dispenser ID	met-016
Thermometer ID	A metals 15 B metals 6

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Batch Number: 24136 Batch Start Date: 10/03/18 08:00 Batch Analyst: Collins, Kerry N

Batch Method: AT Prep (FH) Batch End Date: 10/04/18 17:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	HNO3ProbeRinseVol	HNO3ProbeRinsepH	90L1HgCA1000P 00030	90SPAREV-1P 00014
140-12832-A-1	M29-FILT/PNR-1	AT Prep (FH), 29/6010C	T	1 Sample	100 mL	120 mL	<2 SU		
140-12832-A-6	M29-FILT/PNR-2	AT Prep (FH), 29/6010C	T	1 Sample	100 mL	100 mL	<2 SU		
140-12832-A-11	M29-FILT/PNR-3	AT Prep (FH), 29/6010C	T	1 Sample	100 mL	140 mL	<2 SU		
140-12832-A-16	M29-FILT/HNO3 BLANK	AT Prep (FH), 29/6010C	T	1 Sample	100 mL				
MB 140-24136/18		AT Prep (FH), 29/6010C		1 Sample	100 mL				
LCS 140-24136/19		AT Prep (FH), 29/6010C		1 Sample	100 mL			0.5 mL	1 mL
LCSD 140-24136/20		AT Prep (FH), 29/6010C		1 Sample	100 mL			0.5 mL	1 mL

Lab Sample ID	Client Sample ID	Method Chain	Basis	90SPB1REV-1P 00014	90SPCREV-1P 00015				
140-12832-A-1	M29-FILT/PNR-1	AT Prep (FH), 29/6010C	T						
140-12832-A-6	M29-FILT/PNR-2	AT Prep (FH), 29/6010C	T						
140-12832-A-11	M29-FILT/PNR-3	AT Prep (FH), 29/6010C	T						
140-12832-A-16	M29-FILT/HNO3 BLANK	AT Prep (FH), 29/6010C	T						
MB 140-24136/18		AT Prep (FH), 29/6010C							
LCS 140-24136/19		AT Prep (FH), 29/6010C		1 mL	1 mL				

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Batch Number: 24136 Batch Start Date: 10/03/18 08:00 Batch Analyst: Collins, Kerry N

Batch Method: AT Prep (FH) Batch End Date: 10/04/18 17:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	90SPB1REV-1P 00014	90SPCREV-1P 00015				
LCSD 140-24136/20		AT Prep (FH), 29/6010C		1 mL	1 mL				

Batch Notes	
0.1N HNO3 ID	176246 20ml
Boric Acid ID	182288 2ml
End date/time for FH digestion	10/04/2018 17:00
Start date/time for FH digestion	10/03/2018 08:00
Filter Paper ID	40825501-8127-A
Hydrochloric Acid ID	180887 5ml
Hydrofluoric Acid ID	170515 3ml
Nitric Acid ID	177168 4ml
Hot Plate ID	C
Microwave Oven ID	CEMII
Oven, Bath or Block Temperature 1	91 Degrees C
Pipette/Syringe/Dispenser ID	met-016
Program Name	Air1600 1600W
Thermometer ID	metals 17

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Batch Number: 24136 Batch Start Date: 10/03/18 08:00 Batch Analyst: Collins, Kerry N

Batch Method: AT Prep (FH) Batch End Date: 10/04/18 17:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	HNO3ProbeRinseVol	HNO3ProbeRinsepH	90L1HgCA1000P 00030	90SPAREV-1P 00014
140-12832-A-1	M29-FILT/PNR-1	AT Prep (FH), AT Prep FH, 29/7470A	T	1 Sample	100 mL	120 mL	<2 SU		
140-12832-A-6	M29-FILT/PNR-2	AT Prep (FH), AT Prep FH, 29/7470A	T	1 Sample	100 mL	100 mL	<2 SU		
140-12832-A-11	M29-FILT/PNR-3	AT Prep (FH), AT Prep FH, 29/7470A	T	1 Sample	100 mL	140 mL	<2 SU		
140-12832-A-16	M29-FILT/HNO3 BLANK	AT Prep (FH), AT Prep FH, 29/7470A	T	1 Sample	100 mL				
MB 140-24136/18		AT Prep (FH), AT Prep FH, 29/7470A		1 Sample	100 mL				
LCS 140-24136/19		AT Prep (FH), AT Prep FH, 29/7470A		1 Sample	100 mL			0.5 mL	1 mL
LCSD 140-24136/20		AT Prep (FH), AT Prep FH, 29/7470A		1 Sample	100 mL			0.5 mL	1 mL

Lab Sample ID	Client Sample ID	Method Chain	Basis	90SPB1REV-1P 00014	90SPCREV-1P 00015				
140-12832-A-1	M29-FILT/PNR-1	AT Prep (FH), AT Prep FH, 29/7470A	T						
140-12832-A-6	M29-FILT/PNR-2	AT Prep (FH), AT Prep FH, 29/7470A	T						

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Batch Number: 24136 Batch Start Date: 10/03/18 08:00 Batch Analyst: Collins, Kerry N

Batch Method: AT Prep (FH) Batch End Date: 10/04/18 17:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	90SPB1REV-1P 00014	90SPCREV-1P 00015				
140-12832-A-11	M29-FILT/PNR-3	AT Prep (FH), AT Prep FH, 29/7470A	T						
140-12832-A-16	M29-FILT/HNO3 BLANK	AT Prep (FH), AT Prep FH, 29/7470A	T						
MB 140-24136/18		AT Prep (FH), AT Prep FH, 29/7470A							
LCS 140-24136/19		AT Prep (FH), AT Prep FH, 29/7470A		1 mL	1 mL				
LCSD 140-24136/20		AT Prep (FH), AT Prep FH, 29/7470A		1 mL	1 mL				

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Batch Number: 24136 Batch Start Date: 10/03/18 08:00 Batch Analyst: Collins, Kerry N

Batch Method: AT Prep (FH) Batch End Date: 10/04/18 17:00

Batch Notes	
0.1N HNO3 ID	176246 20ml
Boric Acid ID	182288 2ml
End date/time for FH digestion	10/04/2018 17:00
Start date/time for FH digestion	10/03/2018 08:00
Filter Paper ID	40825501-8127-A
Hydrochloric Acid ID	180887 5ml
Hydrofluoric Acid ID	170515 3ml
Nitric Acid ID	177168 4ml
Hot Plate ID	C
Microwave Oven ID	CEMII
Oven, Bath or Block Temperature 1	91 Degrees C
Pipette/Syringe/Dispenser ID	met-016
Program Name	Air1600 1600W
Thermometer ID	metals 17

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Batch Number: 24265 Batch Start Date: 10/08/18 10:18 Batch Analyst: Wilburn, Donna K

Batch Method: Air Train Vol. Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount				
140-12832-A-2	M29-IMP 1&2-1	Air Train Vol., AT Prep (BH), 29/7470A	T	1 Sample	100 mL				
140-12832-A-7	M29-IMP 1&2-2	Air Train Vol., AT Prep (BH), 29/7470A	T	1 Sample	100 mL				
140-12832-A-7 MS	M29-IMP 1&2-2	Air Train Vol., AT Prep (BH), 29/7470A	T	1 Sample	100 mL				
140-12832-A-7 MSD	M29-IMP 1&2-2	Air Train Vol., AT Prep (BH), 29/7470A	T	1 Sample	100 mL				
140-12832-A-12	M29-IMP 1&2-3	Air Train Vol., AT Prep (BH), 29/7470A	T	1 Sample	100 mL				
140-12832-A-17	M29-HNO3/H2O2 BLANK	Air Train Vol., AT Prep (BH), 29/7470A	T	1 Sample	100 mL				
MB 140-24265/8		Air Train Vol., AT Prep (BH), 29/7470A		1 Sample	100 mL				
LCS 140-24265/9		Air Train Vol., AT Prep (BH), 29/7470A		1 Sample	100 mL				

Batch Notes	

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Batch Number: 24266 Batch Start Date: 10/08/18 10:25 Batch Analyst: Wilburn, Donna K

Batch Method: AT Prep (BH) Batch End Date: 10/08/18 17:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	90L1HGDayCAL 00292	AnalysisComment		
140-12832-A-2-B	M29-IMP 1&2-1	AT Prep (BH), 29/7470A	T	2.5 mL	50.0 mL		Aded an additioal 7.5mL of potassium permanganate		
140-12832-A-7-B	M29-IMP 1&2-2	AT Prep (BH), 29/7470A	T	2.5 mL	50.0 mL		Aded an additioal 7.5mL of potassium permanganate		
140-12832-A-7-C MS	M29-IMP 1&2-2	AT Prep (BH), 29/7470A	T	2.5 mL	50.0 mL	0.5 mL	Aded an additioal 7.5mL of potassium permanganate		
140-12832-A-7-D MSD	M29-IMP 1&2-2	AT Prep (BH), 29/7470A	T	2.5 mL	50.0 mL	0.5 mL	Aded an additioal 7.5mL of potassium permanganate		
140-12832-A-12-B	M29-IMP 1&2-3	AT Prep (BH), 29/7470A	T	2.5 mL	50.0 mL		Aded an additioal 7.5mL of potassium permanganate		
140-12832-A-17-B	M29-HNO3/H2O2 BLANK	AT Prep (BH), 29/7470A	T	2.5 mL	50.0 mL		Aded an additioal 7.5mL of potassium permanganate		
MB 140-24265/8-A		AT Prep (BH), 29/7470A		2.5 mL	50.0 mL		Aded an additioal 7.5mL of potassium permanganate		
LCS 140-24265/9-A		AT Prep (BH), 29/7470A		2.5 mL	50.0 mL	2.5 mL	Aded an additioal 7.5mL of potassium permanganate		

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Batch Number: 24266 Batch Start Date: 10/08/18 10:25 Batch Analyst: Wilburn, Donna K

Batch Method: AT Prep (BH) Batch End Date: 10/08/18 17:00

Batch Notes	
Hydroxylamine Hydrochloride ID	179663
Sulfuric Acid Lot Number	180890
Lot # of hydrochloric acid	180884
Lot # of Nitric Acid	177166
Hood ID	# 4
Hot Block ID	D
Potassium Persulfate ID	179267
Potassium Permanganate ID	184773
Oven, Bath or Block Temperature 1	15:00 Celsius
Oven, Bath or Block Temperature 2	17:00 Celsius
Pipette/Syringe/Dispenser ID	MET- 015_016_017
Temperature	93 Celsius
Thermometer ID	Metals 14
Digestion Tube/Cup ID	121517
Uncorrected Temperature	93 Celsius
Uncorrected Temperature 2	93 Celsius

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Batch Number: 24267 Batch Start Date: 10/08/18 10:32 Batch Analyst: Wilburn, Donna K

Batch Method: Air Train Vol. Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount				
140-12832-A-3	M29-IMP 3-1	Air Train Vol., AT Prep (Empty), 29/7470A	T	1 Sample	50.0 mL				
140-12832-A-8	M29-IMP 3-2	Air Train Vol., AT Prep (Empty), 29/7470A	T	1 Sample	40.0 mL				
140-12832-A-8 MS	M29-IMP 3-2	Air Train Vol., AT Prep (Empty), 29/7470A	T	1 Sample	40.0 mL				
140-12832-A-8 MSD	M29-IMP 3-2	Air Train Vol., AT Prep (Empty), 29/7470A	T	1 Sample	40.0 mL				
140-12832-A-13	M29-IMP 3-3	Air Train Vol., AT Prep (Empty), 29/7470A	T	1 Sample	50.0 mL				
MB 140-24267/6		Air Train Vol., AT Prep (Empty), 29/7470A		1 Sample	50.0 mL				
LCS 140-24267/7		Air Train Vol., AT Prep (Empty), 29/7470A		1 Sample	50.0 mL				

Batch Notes	

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Batch Number: 24267 Batch Start Date: 10/08/18 10:32 Batch Analyst: Wilburn, Donna K

Batch Method: Air Train Vol. Batch End Date:

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Batch Number: 24268 Batch Start Date: 10/08/18 10:34 Batch Analyst: Wilburn, Donna K

Batch Method: AT Prep (Empty) Batch End Date: 10/08/18 17:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	90L1HGDayCAL 00292			
140-12832-A-3-A	M29-IMP 3-1	AT Prep (Empty), 29/7470A	T	2.5 mL	50.0 mL				
140-12832-A-8-A	M29-IMP 3-2	AT Prep (Empty), 29/7470A	T	2.5 mL	50.0 mL				
140-12832-A-8-B MS	M29-IMP 3-2	AT Prep (Empty), 29/7470A	T	2.5 mL	50.0 mL	0.5 mL			
140-12832-A-8-C MSD	M29-IMP 3-2	AT Prep (Empty), 29/7470A	T	2.5 mL	50.0 mL	0.5 mL			
140-12832-A-13-A	M29-IMP 3-3	AT Prep (Empty), 29/7470A	T	2.5 mL	50.0 mL				
MB 140-24267/6-A		AT Prep (Empty), 29/7470A		2.5 mL	50.0 mL				
LCS 140-24267/7-A		AT Prep (Empty), 29/7470A		2.5 mL	50.0 mL	2.5 mL			

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Batch Number: 24268 Batch Start Date: 10/08/18 10:34 Batch Analyst: Wilburn, Donna K

Batch Method: AT Prep (Empty) Batch End Date: 10/08/18 17:00

Batch Notes	
Hydroxylamine Hydrochloride ID	179663 3.0mL
Sulfuric Acid Lot Number	180890 2.5mL
Lot # of hydrochloric acid	180884 2.0mL
Lot # of Nitric Acid	177166 1.25mL
Hood ID	# 4
Hot Block ID	D
Potassium Persulfate ID	179267 4.0mL
Potassium Permanganate ID	184773 7.5mL
Oven, Bath or Block Temperature 1	15:00 Celsius
Oven, Bath or Block Temperature 2	17:00 Celsius
Pipette/Syringe/Dispenser ID	MET-016_017
Temperature	93
Thermometer ID	Metals 14
Digestion Tube/Cup ID	121517
Uncorrected Temperature	93 Celsius
Uncorrected Temperature 2	93 Celsius

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Batch Number: 24272 Batch Start Date: 10/08/18 11:07 Batch Analyst: Wilburn, Donna K

Batch Method: AT Prep FH Batch End Date: 10/08/18 17:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	90L1HGDayCAL 00292	90L1HGDayVER 00266		
140-12832-A-1-A	M29-FILT/PNR-1	AT Prep FH, 29/7470A	T	5.0 mL	50.0 mL				
140-12832-A-6-A	M29-FILT/PNR-2	AT Prep FH, 29/7470A	T	5.0 mL	50.0 mL				
140-12832-A-11-A	M29-FILT/PNR-3	AT Prep FH, 29/7470A	T	5.0 mL	50.0 mL				
140-12832-A-16-A	M29-FILT/HNO3 BLANK	AT Prep FH, 29/7470A	T	5.0 mL	50.0 mL				
MB 140-24136/18-A		AT Prep FH, 29/7470A		5.0 mL	50.0 mL				
LCS 140-24136/19-A		AT Prep FH, 29/7470A		5.0 mL	50.0 mL				
LCSD 140-24136/20-A		AT Prep FH, 29/7470A		5.0 mL	50.0 mL				
ICV 140-24272/16		AT Prep FH, 29/7470A		50.0 mL	50.0 mL		1.25 mL		
ICB 140-24272/17		AT Prep FH, 29/7470A		50.0 mL	50.0 mL				
CRA 140-24272/18		AT Prep FH, 29/7470A		50.0 mL	50.0 mL	0.1 mL			
CCV 140-24272/19		AT Prep FH, 29/7470A		50.0 mL	50.0 mL	2.5 mL			
CCB 140-24272/20		AT Prep FH, 29/7470A		50.0 mL	50.0 mL				

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Batch Number: 24272 Batch Start Date: 10/08/18 11:07 Batch Analyst: Wilburn, Donna K

Batch Method: AT Prep FH Batch End Date: 10/08/18 17:00

Batch Notes	
Hydroxylamine Hydrochloride ID	179663 3.0mL
Sulfuric Acid ID	180890 2.5mL
Hydrochloric Acid ID	180884 2.0mL
Nitric Acid ID	177166 1.25mL
Hood ID	# 4
Hot Block ID	D
Potassium Persulfate ID	179267 4.0mL
Potassium Permanganate ID	184773 7.5mL
Oven, Bath or Block Temperature 1	15:00 Degrees C
Oven, Bath or Block Temperature 2	17:00 Degrees C
Pipette/Syringe/Dispenser ID	MET-015_016_017
Thermometer ID	Metals 14
Digestion Tube/Cup ID	121517
Uncorrected Temperature	93 Degrees C
Uncorrected Temperature 2	93 Degrees C

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Batch Number: 24317 Batch Start Date: 10/09/18 10:00 Batch Analyst: Wilburn, Donna K

Batch Method: Air Train Vol. Batch End Date: 10/09/18 12:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount				
140-12832-A-4	M29-IMP 4&5-1	Air Train Vol., AT Prep (KMnO4), 29/7470A	T	1 Sample	400 mL				
140-12832-A-9	M29-IMP 4&5-2	Air Train Vol., AT Prep (KMnO4), 29/7470A	T	1 Sample	380 mL				
140-12832-A-9 MS	M29-IMP 4&5-2	Air Train Vol., AT Prep (KMnO4), 29/7470A	T	1 Sample	380 mL				
140-12832-A-9 MSD	M29-IMP 4&5-2	Air Train Vol., AT Prep (KMnO4), 29/7470A	T	1 Sample	380 mL				
140-12832-A-14	M29-IMP 4&5-3	Air Train Vol., AT Prep (KMnO4), 29/7470A	T	1 Sample	400 mL				
140-12832-A-18	M29-WATER/KMNO4 BLANK	Air Train Vol., AT Prep (KMnO4), 29/7470A	T	1 Sample	100 mL				
MB 140-24317/8		Air Train Vol., AT Prep (KMnO4), 29/7470A		1 Sample	50 mL				
LCS 140-24317/9		Air Train Vol., AT Prep (KMnO4), 29/7470A		1 Sample	50 mL				

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Batch Number: 24317 Batch Start Date: 10/09/18 10:00 Batch Analyst: Wilburn, Donna K

Batch Method: Air Train Vol. Batch End Date: 10/09/18 12:00

Batch Notes	

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Batch Number: 24318 Batch Start Date: 10/09/18 13:23 Batch Analyst: Wilburn, Donna K

Batch Method: Air Train Vol. Batch End Date: 10/09/18 15:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount				
140-12832-A-5	M29-HCL-1	Air Train Vol., AT Prep (HCl), 29/7470A	T	1 Sample	275 mL				
140-12832-A-10	M29-HCL-2	Air Train Vol., AT Prep (HCl), 29/7470A	T	1 Sample	275 mL				
140-12832-A-10 MS	M29-HCL-2	Air Train Vol., AT Prep (HCl), 29/7470A	T	1 Sample	275 mL				
140-12832-A-10 MSD	M29-HCL-2	Air Train Vol., AT Prep (HCl), 29/7470A	T	1 Sample	275 mL				
140-12832-A-15	M29-HCL-3	Air Train Vol., AT Prep (HCl), 29/7470A	T	1 Sample	265 mL				
140-12832-A-19	M29-HCL BLANK	Air Train Vol., AT Prep (HCl), 29/7470A	T	1 Sample	150 mL				
MB 140-24318/8		Air Train Vol., AT Prep (HCl), 29/7470A		1 Sample	50 mL				
LCS 140-24318/9		Air Train Vol., AT Prep (HCl), 29/7470A		1 Sample	50 mL				

Batch Notes	

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Batch Number: 24322 Batch Start Date: 10/10/18 08:30 Batch Analyst: Wilburn, Donna K

Batch Method: AT Prep (KMnO4) Batch End Date: 10/10/18 15:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	90L1HGDayCAL 00293	90L1HGDayVER 00267		
140-12832-A-4-A	M29-IMP 4&5-1	AT Prep (KMnO4), 29/7470A	T	25.0 mL	50.0 mL				
140-12832-A-9-A	M29-IMP 4&5-2	AT Prep (KMnO4), 29/7470A	T	25.0 mL	50.0 mL				
140-12832-A-9-B MS	M29-IMP 4&5-2	AT Prep (KMnO4), 29/7470A	T	25.0 mL	50.0 mL	0.5 mL			
140-12832-A-9-C MSD	M29-IMP 4&5-2	AT Prep (KMnO4), 29/7470A	T	25.0 mL	50.0 mL	0.5 mL			
140-12832-A-14-A	M29-IMP 4&5-3	AT Prep (KMnO4), 29/7470A	T	25.0 mL	50.0 mL				
140-12832-A-18-A	M29-WATER/KMNO4 BLANK	AT Prep (KMnO4), 29/7470A	T	25.0 mL	50.0 mL				
MB 140-24317/8-A		AT Prep (KMnO4), 29/7470A		25.0 mL	50.0 mL				
LCS 140-24317/9-A		AT Prep (KMnO4), 29/7470A		25.0 mL	50.0 mL	2.5 mL			
ICV 140-24322/17		AT Prep (KMnO4), 29/7470A		50.0 mL	50.0 mL		1.25 mL		
ICB 140-24322/18		AT Prep (KMnO4), 29/7470A		50.0 mL	50.0 mL				
CRA 140-24322/19		AT Prep (KMnO4), 29/7470A		50.0 mL	50.0 mL	0.1 mL			
CCV 140-24322/20		AT Prep (KMnO4), 29/7470A		50.0 mL	50.0 mL	2.5 mL			
CCB 140-24322/21		AT Prep (KMnO4), 29/7470A		50.0 mL	50.0 mL				

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Batch Number: 24322 Batch Start Date: 10/10/18 08:30 Batch Analyst: Wilburn, Donna K

Batch Method: AT Prep (KMnO4) Batch End Date: 10/10/18 15:00

Batch Notes	
Hydroxylamine Hydrochloride ID	179663 3.0mL
Filter ID	9811397
Sulfuric Acid Lot Number	180890 2.5mL
Lot # of hydrochloric acid	180884 2.0mL
Lot # of Nitric Acid	177166 1.25mL
Hood ID	# 4
Hot Block ID	D
Potassium Persulfate ID	185342 4.0mL
Potassium Permanganate ID	184773 7.5mL
Oven, Bath or Block Temperature 1	13:00 Degrees C
Oven, Bath or Block Temperature 2	15:00 Degrees C
Pipette ID	MET-015_016_017
Temperature	93 Degrees C
Thermometer ID	Metals 14
Digestion Tube/Cup ID	121517
Uncorrected Temperature	93 Degrees C
Uncorrected Temperature 2	93 Degrees C

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Batch Number: 24323 Batch Start Date: 10/10/18 08:30 Batch Analyst: Wilburn, Donna K

Batch Method: AT Prep (HCl) Batch End Date: 10/10/18 15:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	ImpingerVol	KMnO4_HCLRinse	InitialAmount	FinalAmount	90L1HGDayCAL 00293	
140-12832-A-5-A	M29-HCL-1	AT Prep (HCl), 29/7470A	T	225 mL	50.0 mL	10.0 mL	50.0 mL		
140-12832-A-10-A	M29-HCL-2	AT Prep (HCl), 29/7470A	T	225 mL	50.0 mL	10.0 mL	50.0 mL		
140-12832-A-10-B MS	M29-HCL-2	AT Prep (HCl), 29/7470A	T	225 mL	50.0 mL	10.0 mL	50.0 mL	0.5 mL	
140-12832-A-10-C MSD	M29-HCL-2	AT Prep (HCl), 29/7470A	T	225 mL	50.0 mL	10.0 mL	50.0 mL	0.5 mL	
140-12832-A-15-A	M29-HCL-3	AT Prep (HCl), 29/7470A	T	215 mL	50.0 mL	10.0 mL	50.0 mL		
140-12832-A-19-A	M29-HCL BLANK	AT Prep (HCl), 29/7470A	T	100 mL	50.0 mL	10.0 mL	50.0 mL		
MB 140-24318/8-A		AT Prep (HCl), 29/7470A				10.0 mL	50.0 mL		
LCS 140-24318/9-A		AT Prep (HCl), 29/7470A				10.0 mL	50.0 mL	2.5 mL	

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: TestAmerica Knoxville Job No.: 140-12832-1

SDG No.:

Batch Number: 24323 Batch Start Date: 10/10/18 08:30 Batch Analyst: Wilburn, Donna K

Batch Method: AT Prep (HCl) Batch End Date: 10/10/18 15:00

Batch Notes	
Hydroxylamine Hydrochloride ID	179663 3.0mL
Filter ID	9811397
Sulfuric Acid Lot Number	180890 2.5mL
Lot # of hydrochloric acid	180884 2.0mL
Hydrochloric Acid ID	161203 50.0mL
Lot # of Nitric Acid	177166 1.25mL
Hood ID	# 4
Hot Block ID	D
Potassium Persulfate ID	185342 4.0mL
Potassium Permanganate ID	184773 7.5mL
Oven, Bath or Block Temperature 1	13:00 Celsius
Oven, Bath or Block Temperature 2	15:00 Celsius
Pipette ID	MET-015_016
Temperature	93 Celsius
Thermometer ID	Metals14
Digestion Tube/Cup ID	121517
Uncorrected Temperature	93 Celsius
Uncorrected Temperature 2	93 Celsius

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

	Pos ID	Rack	Row	Col	Type	Samplename	Comment	Custom ID1	Custom ID2
1	1	1	1	1	QC	CCVL			
2	2	1	2	1	QC	ICV			
3	3	1	3	1	Unk	ICB			
4	4	1	4	1	Unk	ICSA			
5	5	1	5	1	Unk	ICSAB			
6	6	1	6	1	QC	CRI			
7	7	1	7	1	QC	CCV			
8	8	1	8	1	Unk	CCB			
9	9	1	9	1	Unk	mb 140-24135/18-a			
10	10	1	10	1	QC	lcs 140-24135/19-a			
11	11	1	11	1	QC	lcsd 140-24135/20-a			
12	12	1	12	1	Unk	140-12876-a-2-a mdlv			
13	13	1	1	2	Unk	140-12876-a-7-a mdlv			
14	14	1	2	2	Unk	140-12832-a-2-a			
15	15	1	3	2	Unk	140-12832-a-7-a			
16	16	1	4	2	Unk	140-12832-a-7-a PDS			
17	17	1	5	2	Unk	140-12832-a-7-a PDSD			
18	18	1	6	2	Unk	140-12832-a-12-a			
19	19	1	7	2	QC	CCV			
20	20	1	8	2	Unk	CCB			
21	21	1	9	2	Unk	140-12832-a-17-a			
22	22	1	10	2	Unk	140-12855-a-2-a			
23	23	1	11	2	Unk	140-12855-a-4-a			
24	24	1	12	2	Unk	140-12855-a-6-a			
25	25	1	1	3	Unk	140-12855-a-6-a PDS			
26	26	1	2	3	Unk	140-12855-a-6-a PDSD			
27	27	1	3	3	Unk	140-12855-a-8-a			
28	28	1	4	3	Unk	140-12855-a-10-a			
29	29	1	5	3	Unk	140-12855-a-12-a			
30	30	1	6	3	Unk	140-12855-a-6-a SD@5	2ML TO 10ML		
31	31	1	7	3	QC	CCV			
32	32	1	8	3	Unk	CCB			
33	33	1	9	3	Unk	140-12855-a-14-a			
34	34	1	10	3	Unk	140-12855-a-16-a			
35	35	1	11	3	Unk	140-12855-a-18-a			
36	36	1	12	3	Unk	140-12855-a-20-a			
37	37	1	1	4	Unk	140-12855-a-21-a			
38	38	1	2	4	QC	CRI			
39	39	1	3	4	QC	CCV			
40	40	1	4	4	Unk	CCB			
41	41	1	5	4	Unk	Sample-36			
42	42	1	6	4	Unk	Sample-37			
43	43	1	7	4	Unk	Sample-38			
44	44	1	8	4	Unk	Sample-39			
45	45	1	9	4	Unk	Sample-40			
46	46	1	10	4	Unk	Sample-41			

	Pos ID	Rack	Row	Col	Type	Samplename	Comment	Custom ID1	Custom ID2
1	1	1	1	1	QC	CCVL			
2	2	1	2	1	QC	ICV			
3	3	1	3	1	Unk	ICB			
4	4	1	4	1	Unk	ICSA			
5	5	1	5	1	Unk	ICSAB			
6	6	1	6	1	QC	CRI			
7	7	1	7	1	QC	CCV			
8	8	1	8	1	Unk	CCB			
9	9	1	9	1	Unk	mb 140-24135/18-a			
10	10	1	10	1	QC	lcs 140-24135/19-a			
11	11	1	11	1	QC	lcsd 140-24135/20-a			
12	12	1	12	1	Unk	140-12876-a-2-a mdlv			
13	13	1	1	2	Unk	140-12876-a-7-a mdlv			
14	14	1	2	2	Unk	140-12832-a-2-a			
15	15	1	3	2	Unk	140-12832-a-7-a			
16	16	1	4	2	Unk	140-12832-a-7-a PDS ✓			
17	17	1	5	2	Unk	140-12832-a-7-a PDSD ✓			
18	18	1	6	2	Unk	140-12832-a-12-a			
19	19	1	7	2	QC	CCV			
20	20	1	8	2	Unk	CCB			
21	21	1	9	2	Unk	140-12832-a-17-a			
22	22	1	10	2	Unk	140-12855-a-2-a			
23	23	1	11	2	Unk	140-12855-a-4-a			
24	24	1	12	2	Unk	140-12855-a-6-a			
25	25	1	1	3	Unk	140-12855-a-6-a PDS ✓			
26	26	1	2	3	Unk	140-12855-a-6-a PDSD ✓			
27	27	1	3	3	Unk	140-12855-a-8-a			
28	28	1	4	3	Unk	140-12855-a-10-a			
29	29	1	5	3	Unk	140-12855-a-12-a			
30	30	1	6	3	Unk	140-12855-a-6-a SD@5 ✓	2ML TO 10ML		
31	31	1	7	3	QC	CCV			
32	32	1	8	3	Unk	CCB			
33	33	1	9	3	Unk	140-12855-a-14-a			
34	34	1	10	3	Unk	140-12855-a-16-a			
35	35	1	11	3	Unk	140-12855-a-18-a			
36	36	1	12	3	Unk	140-12855-a-20-a			
37	37	1	1	4	Unk	140-12855-a-21-a			
38	38	1	2	4	QC	CRI			
39	39	1	3	4	QC	CCV			
40	40	1	4	4	Unk	CCB			
41	41	1	5	4	Unk	Sample-36			
42	42	1	6	4	Unk	Sample-37			
43	43	1	7	4	Unk	Sample-38			
44	44	1	8	4	Unk	Sample-39			
45	45	1	9	4	Unk	Sample-40			
46	46	1	10	4	Unk	Sample-41			

F100918

Sl - 80

CCVL - 254

ICV - 65

ICSA - 22

ICSAB - 25

CRI - 298

CCV - 287

Y - 41

H2O - 14

MDLV = Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Se, Sn, Sr, Ti, Tl, V, Zn

832 = Pb

855 = As, Cd, Co, Cr, Cu, Mn, Ni, Pb, Sb, Tl, V

[Ag, Ba, Be, P, Se, Zn]

TestAmerica Knoxville
Data Quality Checks

Sequence: F100918

Internal Standard

ICB Internal Standard	Area	LCL	UCL
Y_2243A	6780	4746	8814
Y_3710A	219522	153665	285378
Y_3710R	14919	10443	19395

09-Oct-18 01:37 PM 42 Samples were checked against the internal standard area limits

09-Oct-18 01:37 PM 0 Sample(s) failed the limits check

Date/Time	Lab ID	Problem

Relative Standard Deviation

09-Oct-18 1:37 PM 6 Standards were checked against the CCV/ICV %RSD limits

09-Oct-18 1:37 PM 0 Standard(s) failed the limits check

Date/Time	Lab ID	Problem

29_BH_P Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 140-24135

Analyst: Collins, Kerry N

Batch Open: 10/3/2018 8:00:00AM

Batch End: 10/4/2018 4:00:00PM

Preparation, Total Metals (Stationary Source)

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	Matrix	Initial Amount	Final Amount	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1	140-12876-A-2~MDLV (29_6010C)	Q4 - Metals Source Air LODVs (140-12876-1)	Air Train Ba	1 Sample	100 mL	12/27/18	61_Days	N/A		140-12876-A-2-A MDLV
2	140-12876-A-7~MDLV (29_6010C)	Q4 - Metals Source Air LODVs (140-12876-1)	Air Train Ba	1 Sample	100 mL	12/27/18	61_Days	N/A		140-12876-A-7-A MDLV
3	140-12832-A-2 (29_6010C)	N/A (140-12832-1)	Air Train Ba	1 Sample	100 mL	10/12/18	13_Days	4		140-12832-A-2-A
4	140-12832-A-7 (29_6010C)	N/A (140-12832-1)	Air Train Ba	1 Sample	100 mL	10/12/18	13_Days	4		140-12832-A-7-A
	140-12832-A-12 (29_6010C)	N/A (140-12832-1)	Air Train Ba	1 Sample	100 mL	10/12/18	13_Days	4		140-12832-A-12-A
	140-12832-A-17 (29_6010C)	N/A (140-12832-1)	Air Train Ba	1 Sample	100 mL	10/12/18	13_Days	4		140-12832-A-17-A
	140-12855-A-2 (29_6010C)	N/A (140-12855-1)	Air Train Ba	1 Sample	100 mL	10/16/18	13_Days	4		140-12855-A-2-A
8	140-12855-A-4 (29_6010C)	N/A (140-12855-1)	Air Train Ba	1 Sample	100 mL	10/16/18	13_Days	4		140-12855-A-4-A
9	140-12855-A-6 (29_6010C)	N/A (140-12855-1)	Air Train Ba	1 Sample	100 mL	10/16/18	13_Days	4		140-12855-A-6-A
10	140-12855-A-8 (29_6010C)	N/A (140-12855-1)	Air Train Ba	1 Sample	100 mL	10/16/18	13_Days	4		140-12855-A-8-A
11	140-12855-A-10 (29_6010C)	N/A (140-12855-1)	Air Train Ba	1 Sample	100 mL	10/16/18	13_Days	4		140-12855-A-10-A
12	140-12855-A-12 (29_6010C)	N/A (140-12855-1)	Air Train Ba	1 Sample	100 mL	10/16/18	13_Days	4		140-12855-A-12-A
13	140-12855-A-14 (29_6010C)	N/A (140-12855-1)	Air Train Ba	1 Sample	100 mL	10/16/18	13_Days	4		140-12855-A-14-A
14	140-12855-A-16 (29_6010C)	N/A (140-12855-1)	Air Train Ba	1 Sample	100 mL	10/16/18	13_Days	4		140-12855-A-16-A

29_BH_P Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 140-24135

Analyst: Collins, Kerry N

Batch Open: 10/3/2018 8:00:00AM

Batch End: 10/4/2018 4:00:00PM

15	140-12855-A-18 (29_6010C)	N/A (140-12855-1)	Air Train Ba	1 Sample	100 mL	10/16/18	13_Days	4		140-12855-A-18-A
16	140-12855-A-20 (29_6010C)	N/A (140-12855-1)	Air Train Ba	1 Sample	100 mL	10/16/18	13_Days	4		140-12855-A-20-A
17	140-12855-A-21 (29_6010C)	N/A (140-12855-1)	Air Train Ba	1 Sample	100 mL	10/16/18	13_Days	4	add 1ml conc HN03 to acidify to pH <2	140-12855-A-21-A
18	MB~140-24135/18 N/A	N/A		1 Sample	100 mL	N/A	N/A	N/A		MB 140-24135/18-A
19	LCS~140-24135/19 N/A	N/A		1 Sample	100 mL	N/A	N/A	N/A		LCS 140-24135/19-A
20	LCSD~140-24135/20 N/A	N/A		1 Sample	100 mL	N/A	N/A	N/A		LCSD 140-24135/20-A

Sample Name: ICIS Acquired: 10/9/2018 10:06:12 Type: Cal
Method: MT0007(v23) HF 083118(v3) Mode: IR Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	-.00021	.00097	-.00119	.00021	.00244	-.00015
Stddev	.00002	.00006	.00002	.00002	.00037	.00000
%RSD	10.613	6.6116	1.7758	10.453	15.109	2.6847
#1	-.00020	.00104	-.00121	.00023	.00225	-.00015
#2	-.00023	.00091	-.00119	.00021	.00287	-.00015
#3	-.00019	.00096	-.00116	.00019	.00221	-.00016

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00477	-.00184	-.00218	-.00001	.00023	.00005
Stddev	.00007	.00006	.00006	.00001	.00001	.00008
%RSD	1.4008	3.0587	2.6668	81.335	6.4960	145.10
#1	.00481	-.00183	-.00211	-.00001	.00022	.00014
#2	.00470	-.00179	-.00219	-.00000	.00025	-.00000
#3	.00482	-.00190	-.00223	-.00002	.00022	.00002

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00302	-.00217	.00000	.00009	.00046	-.00017
Stddev	.00082	.00042	.00002	.00002	.00010	.00004
%RSD	27.055	19.194	589.77	21.672	22.650	23.816
#1	.00300	-.00201	.00002	.00008	.00034	-.00020
#2	.00222	-.00186	-.00002	.00007	.00051	-.00012
#3	.00385	-.00264	.00001	.00011	.00052	-.00017

Sample Name: ICIS Acquired: 10/9/2018 10:06:12 Type: Cal
Method: MT0007(v23) HF 083118(v3) Mode: IR Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	-.00023	-.00375	.00040	.00002	.00045	.00124
Stddev	.00038	.00012	.00005	.00002	.00007	.00011
%RSD	165.08	3.2864	11.696	74.546	16.501	9.0554
#1	.00020	-.00362	.00045	.00002	.00044	.00117
#2	-.00038	-.00387	.00036	.00001	.00054	.00137
#3	-.00051	-.00377	.00038	.00004	.00039	.00118

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00090	.00029	.00024	-.00152	-.00025	-.00074
Stddev	.00008	.00016	.00011	.00025	.00014	.00008
%RSD	9.3969	53.728	45.123	16.615	54.563	10.289
#1	.00098	.00024	.00017	-.00123	-.00021	-.00066
#2	.00082	.00047	.00037	-.00170	-.00014	-.00081
#3	.00089	.00017	.00018	-.00163	-.00041	-.00076

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	Cts/S	Cts/S
Avg	.00007	.00722
Stddev	.00001	.00008
%RSD	16.500	1.0893
#1	.00006	.00730
#2	.00008	.00715
#3	.00007	.00721

Sample Name: ICIS Acquired: 10/9/2018 10:06:12 Type: Cal
Method: MT0007(v23) HF 083118(v3) Mode: IR Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6790.6	220290.	15254.
Stddev	30.4	966.	71.
%RSD	.44774	.43850	.46575
#1	6758.0	219230.	15176.
#2	6795.6	220540.	15268.
#3	6818.1	221110.	15316.

Sample Name: S1 Acquired: 10/9/2018 10:11:14 Type: Cal
Method: MT0007(v23) HF 083118(v3) Mode: IR Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.14642	.73795	.06416	.10387	13.845	7.0374
Stddev	.00026	.00152	.00038	.00029	.016	.0464
%RSD	.17819	.20595	.58821	.27643	.11389	.65906
#1	.14662	.73897	.06456	.10395	13.837	7.0086
#2	.14612	.73869	.06412	.10355	13.863	7.0126
#3	.14651	.73621	.06381	.10411	13.834	7.0909

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	10.250	1.3922	3.7414	.24508	.48334	2.6761
Stddev	.042	.0019	.0002	.00060	.00152	.0142
%RSD	.41007	.13578	.00586	.24313	.31524	.52904
#1	10.203	1.3942	3.7414	.24440	.48509	2.6599
#2	10.285	1.3905	3.7413	.24539	.48235	2.6859
#3	10.262	1.3918	3.7417	.24546	.48257	2.6825

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3.6323	4.3757	.85021	1.3243	1.4264	.03035
Stddev	.0092	.0081	.00656	.0089	.0014	.00019
%RSD	.25267	.18463	.77212	.66823	.09477	.61830
#1	3.6335	4.3705	.84275	1.3236	1.4279	.03014
#2	3.6408	4.3850	.85511	1.3159	1.4256	.03048
#3	3.6226	4.3715	.85278	1.3335	1.4256	.03044

Sample Name: S1 Acquired: 10/9/2018 10:11:14 Type: Cal
Method: MT0007(v23) HF 083118(v3) Mode: IR Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	14.360	2.4306	.16531	.00431	.13009	.07766
Stddev	.041	.0027	.00019	.00001	.00029	.00007
%RSD	.28447	.10892	.11794	.16821	.22422	.09401
#1	14.407	2.4330	.16553	.00431	.12984	.07764
#2	14.346	2.4278	.16517	.00430	.13001	.07760
#3	14.329	2.4311	.16522	.00432	.13041	.07774

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.03871	.03617	.67137	16.705	.98771	.08153
Stddev	.00012	.00012	.00036	.191	.00167	.00029
%RSD	.32125	.32216	.05379	1.1431	.16935	.35131
#1	.03885	.03607	.67178	16.528	.98613	.08159
#2	.03867	.03614	.67108	16.679	.98946	.08122
#3	.03861	.03629	.67127	16.908	.98754	.08179

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	Cts/S	Cts/S
Avg	.38723	5.7145
Stddev	.00044	.0060
%RSD	.11442	.10560
#1	.38678	5.7215
#2	.38767	5.7115
#3	.38723	5.7107

Sample Name: S1 Acquired: 10/9/2018 10:11:14 Type: Cal
Method: MT0007(v23) HF 083118(v3) Mode: IR Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6405.7	209420.	14708.
Stddev	22.8	920.	37.
%RSD	.35667	.43929	.25141
#1	6379.8	208380.	14741.
#2	6414.8	210120.	14668.
#3	6422.7	209780.	14715.

Sample Name: CCVL Acquired: 10/9/2018 10:16:21 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.48490	12.284	.24890	.99969	.99514	1.0236
Stddev	.00213	.041	.00145	.00539	.00129	.0102
%RSD	.43950	.33650	.58076	.53917	.12948	.99382
#1	.48488	12.331	.24979	.99809	.99371	1.0183
#2	.48278	12.253	.24723	.99528	.99622	1.0172
#3	.48704	12.268	.24968	1.0057	.99549	1.0354
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	24.995	.25438	1.0148	1.0082	.97891	12.536
Stddev	.024	.00068	.0017	.0033	.00269	.009
%RSD	.09493	.26879	.17163	.32479	.27437	.07379
#1	25.017	.25369	1.0136	1.0088	.97998	12.526
#2	24.970	.25438	1.0140	1.0047	.97586	12.541
#3	24.997	.25506	1.0168	1.0112	.98090	12.542
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCVL Acquired: 10/9/2018 10:16:21 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	25.723	.98694	24.101	1.0167	1.0088	24.100
Stddev	.087	.00488	.066	.0049	.0003	.250
%RSD	.33868	.49478	.27457	.48326	.02640	1.0391
#1	25.624	.98130	24.164	1.0166	1.0091	24.077
#2	25.755	.98971	24.106	1.0119	1.0085	24.362
#3	25.789	.98980	24.032	1.0217	1.0089	23.862
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	25.223	1.0216	.99299	.25518	.25442	.24447
Stddev	.056	.0022	.00311	.00661	.00120	.00115
%RSD	.22231	.21696	.31326	2.5895	.47222	.47065
#1	25.158	1.0199	.99651	.26270	.25555	.24463
#2	25.259	1.0208	.99186	.25030	.25455	.24554
#3	25.251	1.0241	.99060	.25254	.25316	.24325
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCVL Acquired: 10/9/2018 10:16:21 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.24392	.99019	1.0125	.99358	.99985	.51995
Stddev	.00372	.00909	.0006	.00125	.00266	.00176
%RSD	1.5257	.91801	.05878	.12556	.26643	.33831
#1	.24141	.99682	1.0123	.99254	.99678	.52197
#2	.24820	.99393	1.0120	.99497	1.0013	.51873
#3	.24215	.97983	1.0132	.99324	1.0015	.51915
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.99964	1.0067
Stddev	.00485	.0006
%RSD	.48522	.05607
#1	1.0012	1.0061
#2	.99420	1.0073
#3	1.0035	1.0067
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCVL Acquired: 10/9/2018 10:16:21 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6765.5	220730.	15181.
Stddev	21.1	834.	77.
%RSD	.31233	.37765	.50707
#1	6744.4	219980.	15095.
#2	6765.3	221620.	15205.
#3	6786.6	220580.	15244.

Sample Name: ICV Acquired: 10/9/2018 10:21:15 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.48777	11.950	.24853	1.0067	.96662	1.0125
Stddev	.00144	.027	.00140	.0060	.00673	.0073
%RSD	.29594	.22895	.56414	.59412	.69581	.71920
#1	.48943	11.959	.24732	1.0136	.97386	1.0050
#2	.48705	11.920	.25007	1.0025	.96545	1.0131
#3	.48683	11.972	.24820	1.0041	.96056	1.0195
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	24.275	.25303	.99064	.98104	.95485	12.131
Stddev	.141	.00014	.00045	.00091	.00442	.037
%RSD	.58060	.05451	.04562	.09258	.46323	.30721
#1	24.171	.25315	.99012	.98114	.95797	12.160
#2	24.220	.25305	.99087	.98190	.95680	12.089
#3	24.436	.25288	.99094	.98009	.94979	12.145
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: ICV Acquired: 10/9/2018 10:21:15 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	25.140	.98922	23.326	.99656	.99418	22.924
Stddev	.179	.01016	.135	.00211	.00097	.121
%RSD	.71322	1.0271	.57678	.21213	.09717	.52680
#1	25.282	.99987	23.286	.99834	.99496	22.995
#2	25.201	.98816	23.217	.99422	.99448	22.993
#3	24.939	.97964	23.477	.99711	.99310	22.785
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	24.487	.99342	.96537	.25397	.25324	.24196
Stddev	.144	.00078	.00430	.00236	.00163	.00123
%RSD	.58839	.07827	.44532	.92852	.64267	.50795
#1	24.618	.99409	.96730	.25254	.25444	.24228
#2	24.511	.99360	.96836	.25669	.25139	.24060
#3	24.333	.99257	.96044	.25268	.25390	.24299
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: ICV Acquired: 10/9/2018 10:21:15 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.24295	.97183	1.0045	.96532	.99539	.52819
Stddev	.00290	.00901	.0009	.00568	.00420	.00663
%RSD	1.1944	.92746	.08770	.58871	.42198	1.2554
#1	.23963	.96976	1.0054	.97185	1.0002	.52247
#2	.24422	.96403	1.0037	.96263	.99257	.53546
#3	.24501	.98170	1.0043	.96147	.99337	.52663
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.98425	.97540
Stddev	.00264	.00039
%RSD	.26846	.03950
#1	.98123	.97521
#2	.98614	.97515
#3	.98538	.97584
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: ICV Acquired: 10/9/2018 10:21:15 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6722.4	217740.	15002.
Stddev	23.6	610.	74.
%RSD	.35069	.28015	.49320
#1	6705.0	217330.	14987.
#2	6712.9	218440.	15083.
#3	6749.2	217440.	14937.

Sample Name: ICB Acquired: 10/9/2018 10:26:10 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00021	-.01719	.00027	.00312	.00003	.00000
Stddev	.00016	.01465	.00032	.00038	.00014	.00000
%RSD	77.687	85.229	117.57	12.175	524.08	500.83
#1	-.00032	-.02481	-.00009	.00326	-.00012	.00001
#2	-.00027	-.00030	.00042	.00340	.00015	-.00000
#3	-.00002	-.02646	.00050	.00269	.00005	-.00000
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00094	-.00003	-.00004	.00004	-.00000	-.00003
Stddev	.00391	.00003	.00008	.00022	.00006	.00111
%RSD	417.90	87.832	209.74	494.44	2276.0	3468.8
#1	.00343	-.00003	-.00012	.00020	-.00006	.00071
#2	-.00410	-.00007	-.00005	-.00021	-.00001	.00050
#3	-.00214	-.00001	.00005	.00014	.00006	-.00131
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: ICB Acquired: 10/9/2018 10:26:10 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.06724	.00165	-.00331	.00000	-.00012	-.70226
Stddev	.00719	.00049	.00743	.00002	.00016	.95190
%RSD	10.689	29.915	224.51	645.14	136.30	135.55
#1	.07034	.00144	.00477	.00001	-.00031	-1.2057
#2	.07235	.00221	-.00984	-.00002	-.00004	-1.2968
#3	.05902	.00129	-.00486	.00001	-.00001	.39563
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01901	.00006	-.00001	-.00094	-.00250	.00077
Stddev	.00419	.00016	.00176	.00068	.00068	.00021
%RSD	22.029	290.11	16449.	72.485	27.125	26.870
#1	.02248	-.00011	-.00120	-.00067	-.00303	.00053
#2	.01436	.00007	.00201	-.00172	-.00174	.00090
#3	.02019	.00021	-.00084	-.00044	-.00275	.00089
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: ICB Acquired: 10/9/2018 10:26:10 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00076	.01062	-.00008	.00007	.00024	.00293
Stddev	.00038	.00357	.00032	.00010	.00058	.00151
%RSD	50.406	33.668	397.12	147.16	245.19	51.678
#1	.00087	.01355	-.00019	.00019	.00086	.00158
#2	.00033	.01166	.00028	.00000	-.00029	.00457
#3	.00107	.00664	-.00033	.00002	.00015	.00265
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00010	-.00007
Stddev	.00017	.00005
%RSD	168.36	75.363
#1	-.00006	-.00005
#2	.00028	-.00013
#3	.00009	-.00003
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: ICB Acquired: 10/9/2018 10:26:10 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6780.0	219520.	14919.
Stddev	9.1	951.	51.
%RSD	.13449	.43330	.34046
#1	6778.5	218880.	14874.
#2	6771.7	220610.	14974.
#3	6789.7	219070.	14909.

Sample Name: ICSA Acquired: 10/9/2018 10:31:12 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00084	501.30	.00096	.00699	.00019	-.00036
Stddev	.00006	2.62	.00143	.00078	.00002	.00001
%RSD	6.7554	.52306	149.11	11.158	8.9239	1.4872
#1	-.00090	498.35	.00228	.00626	.00020	-.00036
#2	-.00079	503.36	.00115	.00689	.00017	-.00037
#3	-.00083	502.20	-.00055	.00781	.00020	-.00036
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	459.79	-.00171	-.00109	.00236	-.00036	186.86
Stddev	3.88	.00014	.00020	.00029	.00006	1.20
%RSD	.84325	8.2888	18.131	12.273	15.946	.64074
#1	455.69	-.00163	-.00089	.00225	-.00035	185.70
#2	460.29	-.00163	-.00110	.00269	-.00031	186.80
#3	463.40	-.00188	-.00128	.00214	-.00043	188.09
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: ICSA Acquired: 10/9/2018 10:31:12 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.13758	.01419	498.65	-.00696	-.00159	-1.4233
Stddev	.02708	.00105	4.50	.00008	.00035	.0554
%RSD	19.679	7.4312	.90206	1.1032	22.024	3.8904
#1	.13934	.01472	493.57	-.00691	-.00192	-1.4864
#2	.10967	.01297	500.25	-.00705	-.00122	-1.4008
#3	.16374	.01487	502.13	-.00692	-.00163	-1.3827
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05519	.00052	.00092	.00747	F -.00828	.00403
Stddev	.00563	.00016	.00264	.00203	.00187	.00388
%RSD	10.198	30.996	286.20	27.178	22.604	96.129
#1	.05627	.00058	.00069	.00801	-.00615	.00471
#2	.06019	.00034	.00367	.00522	-.00900	.00753
#3	.04909	.00065	-.00159	.00917	-.00968	-.00014
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass
High Limit					.00800	
Low Limit					-.00800	

Sample Name: ICSA Acquired: 10/9/2018 10:31:12 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00090	-.00095	-.00085	.00448	-.01210	.00044
Stddev	.00048	.01104	.00061	.00012	.00103	.00352
%RSD	53.445	1168.5	72.671	2.7166	8.5326	794.66
#1	.00035	.01091	-.00051	.00444	-.01096	-.00280
#2	.00112	-.01094	-.00155	.00461	-.01240	.00419
#3	.00124	-.00281	-.00047	.00438	-.01295	-.00007
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00260	.00042
Stddev	.00028	.00028
%RSD	10.736	66.187
#1	.00256	.00062
#2	.00290	.00053
#3	.00235	.00010
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: ICSA Acquired: 10/9/2018 10:31:12 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6119.6	198980.	14195.
Stddev	9.5	870.	112.
%RSD	.15580	.43729	.78864
#1	6108.8	199930.	14323.
#2	6126.8	198790.	14122.
#3	6123.2	198220.	14138.

Sample Name: ICSAB Acquired: 10/9/2018 10:36:18 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.20546	247.56	.10068	1.0033	.49784	.50275
Stddev	.00083	.58	.00146	.0054	.00103	.00071
%RSD	.40400	.23272	1.4458	.54262	.20692	.14112
#1	.20627	248.20	.10106	1.0080	.49847	.50342
#2	.20549	247.10	.10190	1.0046	.49839	.50281
#3	.20461	247.37	.09907	.99731	.49665	.50201
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	236.21	.96306	.47316	.48181	.50500	95.883
Stddev	3.72	.00113	.00078	.00198	.00208	.142
%RSD	1.5764	.11726	.16381	.41087	.41111	.14774
#1	236.86	.96414	.47390	.48409	.50529	95.840
#2	232.21	.96315	.47325	.48054	.50692	95.768
#3	239.57	.96188	.47235	.48080	.50280	96.041
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: ICSAB Acquired: 10/9/2018 10:36:18 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	11.051	1.0375	247.74	.48337	.97882	8.3098
Stddev	.056	.0030	.68	.00179	.00303	.7102
%RSD	.50307	.28673	.27461	.37082	.30976	8.5467
#1	11.003	1.0379	247.76	.48541	.98048	7.6307
#2	11.112	1.0402	247.06	.48265	.98066	8.2511
#3	11.039	1.0343	248.42	.48205	.97532	9.0475
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.414	.94068	.95749	.05232	.04342	.60720
Stddev	.036	.00046	.00185	.00347	.00026	.00222
%RSD	.34649	.04877	.19366	6.6234	.59855	.36606
#1	10.447	.94065	.95829	.04873	.04346	.60976
#2	10.420	.94115	.95536	.05261	.04365	.60612
#3	10.376	.94023	.95880	.05564	.04314	.60573
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: ICSAB Acquired: 10/9/2018 10:36:18 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04630	1.0479	.95576	.99643	.99838	.09517
Stddev	.00078	.0143	.00104	.00224	.00264	.00157
%RSD	1.6815	1.3640	.10854	.22496	.26481	1.6537
#1	.04622	1.0332	.95657	.99672	1.0012	.09612
#2	.04712	1.0489	.95612	.99852	.99810	.09336
#3	.04556	1.0617	.95459	.99406	.99589	.09605
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.48333	.98833
Stddev	.00091	.00220
%RSD	.18873	.22275
#1	.48364	.99077
#2	.48405	.98649
#3	.48231	.98774
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: ICSAB Acquired: 10/9/2018 10:36:18 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6398.6	208720.	14496.
Stddev	20.1	979.	99.
%RSD	.31402	.46921	.68286
#1	6375.6	208090.	14428.
#2	6407.6	208220.	14610.
#3	6412.6	209850.	14452.

Sample Name: CRI Acquired: 10/9/2018 10:41:13 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00955	.16793	.01044	.20371	.01012	.00545
Stddev	.00026	.00338	.00026	.00123	.00031	.00005
%RSD	2.7133	2.0119	2.5015	.60257	3.0449	.90968
#1	.00925	.16537	.01020	.20264	.01022	.00541
#2	.00967	.16667	.01041	.20505	.00977	.00543
#3	.00972	.17176	.01072	.20344	.01036	.00551
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.0366	.00539	.05104	.01062	.02473	.11725
Stddev	.0243	.00008	.00022	.00021	.00022	.00193
%RSD	.48261	1.4479	.43495	2.0056	.88269	1.6497
#1	5.0282	.00531	.05096	.01040	.02493	.11503
#2	5.0177	.00546	.05129	.01065	.02475	.11861
#3	5.0640	.00538	.05087	.01082	.02450	.11810
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CRI Acquired: 10/9/2018 10:41:13 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.2579	.05074	4.7741	.01562	.04093	4.5987
Stddev	.0166	.00004	.0204	.00008	.00026	.7516
%RSD	.31560	.08274	.42775	.50735	.63314	16.344
#1	5.2563	.05069	4.7784	.01557	.04095	4.8181
#2	5.2422	.05077	4.7519	.01558	.04118	3.7618
#3	5.2753	.05075	4.7921	.01571	.04066	5.2163
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.9334	.04102	.30196	.00894	.00926	.06170
Stddev	.0258	.00007	.00197	.00254	.00073	.00152
%RSD	.52361	.17185	.65360	28.408	7.8461	2.4605
#1	4.9631	.04095	.30199	.00603	.00986	.06018
#2	4.9164	.04103	.30392	.01072	.00949	.06172
#3	4.9207	.04109	.29997	.01007	.00845	.06321
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CRI Acquired: 10/9/2018 10:41:13 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00901	.47202	.10448	.04921	.05043	.01409
Stddev	.00222	.02520	.00023	.00018	.00076	.00090
%RSD	24.662	5.3380	.22338	.36092	1.5029	6.3901
#1	.00961	.45877	.10438	.04916	.05092	.01444
#2	.00655	.50108	.10474	.04941	.04956	.01306
#3	.01088	.45621	.10431	.04907	.05082	.01475
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.02520	.02201
Stddev	.00030	.00010
%RSD	1.2003	.44825
#1	.02515	.02198
#2	.02492	.02212
#3	.02552	.02192
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CRI Acquired: 10/9/2018 10:41:13 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6704.4	217980.	14805.
Stddev	14.9	633.	50.
%RSD	.22288	.29060	.33794
#1	6687.2	218550.	14786.
#2	6713.0	218100.	14862.
#3	6713.1	217300.	14767.

Sample Name: CCV Acquired: 10/9/2018 10:46:13 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.96376	24.326	.48876	1.9619	1.9693	2.0026
Stddev	.00262	.073	.00148	.0025	.0069	.0053
%RSD	.27148	.30024	.30355	.12828	.34982	.26471
#1	.96581	24.319	.48774	1.9598	1.9755	1.9970
#2	.96081	24.402	.49046	1.9647	1.9705	2.0075
#3	.96467	24.256	.48807	1.9613	1.9619	2.0033
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.027	.49861	1.9941	1.9837	1.9535	24.704
Stddev	.233	.00052	.0024	.0106	.0132	.083
%RSD	.47558	.10399	.12300	.53283	.67719	.33661
#1	48.784	.49920	1.9968	1.9892	1.9504	24.610
#2	49.249	.49834	1.9920	1.9905	1.9422	24.765
#3	49.048	.49827	1.9935	1.9716	1.9680	24.738
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 10/9/2018 10:46:13 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.037	1.9438	48.069	1.9882	1.9934	48.286
Stddev	.232	.0161	.301	.0084	.0034	.147
%RSD	.46342	.82827	.62629	.42339	.17012	.30380
#1	50.176	1.9619	47.722	1.9896	1.9968	48.128
#2	50.166	1.9385	48.235	1.9958	1.9900	48.310
#3	49.770	1.9311	48.251	1.9792	1.9935	48.419
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.704	1.9957	1.9603	.50017	.49809	.48619
Stddev	.277	.0015	.0104	.00279	.00159	.00292
%RSD	.55753	.07345	.53210	.55878	.32013	.60039
#1	49.987	1.9973	1.9495	.50081	.49960	.48866
#2	49.691	1.9945	1.9704	.49712	.49642	.48297
#3	49.433	1.9952	1.9610	.50260	.49823	.48693
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 10/9/2018 10:46:13 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.49229	1.9538	1.9971	1.9665	1.9777	1.0042
Stddev	.00642	.0156	.0017	.0064	.0055	.0038
%RSD	1.3033	.79996	.08482	.32550	.27542	.37767
#1	.49920	1.9508	1.9988	1.9710	1.9775	1.0024
#2	.48653	1.9707	1.9970	1.9693	1.9833	1.0016
#3	.49113	1.9399	1.9954	1.9592	1.9724	1.0085
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	1.9772	1.9857
Stddev	.0049	.0010
%RSD	.24627	.05117
#1	1.9778	1.9864
#2	1.9817	1.9862
#3	1.9720	1.9845
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV Acquired: 10/9/2018 10:46:13 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6612.1	215840.	14892.
Stddev	33.9	413.	95.
%RSD	.51295	.19118	.63925
#1	6573.0	215370.	14936.
#2	6631.7	216120.	14783.
#3	6631.7	216040.	14957.

Sample Name: CCB Acquired: 10/9/2018 10:51:06 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00010	-.00750	.00173	.00271	.00004	.00001
Stddev	.00011	.01003	.00085	.00089	.00012	.00000
%RSD	111.82	133.71	48.785	32.653	338.64	21.312
#1	-.00003	-.00105	.00250	.00332	.00015	.00002
#2	.00017	-.00240	.00083	.00312	-.00009	.00001
#3	.00016	-.01905	.00188	.00170	.00004	.00001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00165	.00003	-.00001	.00010	.00017	-.00216
Stddev	.00314	.00002	.00011	.00026	.00009	.00230
%RSD	190.82	56.152	1846.8	260.61	54.071	106.22
#1	.00194	.00005	.00006	-.00018	.00025	-.00249
#2	-.00391	.00002	-.00013	.00034	.00007	.00028
#3	-.00297	.00003	.00005	.00014	.00019	-.00428
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 10/9/2018 10:51:06 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.07657	.00181	.00422	-.00000	-.00018	-.28243
Stddev	.01863	.00083	.01603	.00005	.00011	.33339
%RSD	24.332	45.714	380.31	980.71	59.289	118.04
#1	.07481	.00268	-.01241	.00005	-.00013	.08074
#2	.09601	.00170	.01958	-.00004	-.00010	-.35346
#3	.05887	.00104	.00547	-.00002	-.00030	-.57458
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.02232	.00018	.00075	-.00066	-.00114	-.00002
Stddev	.00397	.00016	.00106	.00093	.00059	.00068
%RSD	17.773	92.523	140.20	140.45	51.662	2907.3
#1	.02315	.00034	.00052	.00038	-.00149	-.00062
#2	.02581	.00018	-.00017	-.00095	-.00046	.00071
#3	.01800	.00001	.00190	-.00140	-.00147	-.00016
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 10/9/2018 10:51:06 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00212	-.00209	.00010	-.00011	-.00031	.00201
Stddev	.00389	.00423	.00045	.00008	.00038	.00113
%RSD	183.24	202.02	451.98	72.370	123.16	56.309
#1	-.00644	-.00190	-.00018	-.00007	.00004	.00321
#2	-.00106	.00204	-.00014	-.00006	-.00071	.00185
#3	.00112	-.00641	.00062	-.00021	-.00025	.00096
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	-.00004	-.00025
Stddev	.00023	.00010
%RSD	574.83	42.542
#1	-.00023	-.00037
#2	-.00010	-.00020
#3	.00021	-.00017
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB Acquired: 10/9/2018 10:51:06 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6860.7	219290.	14774.
Stddev	131.7	764.	58.
%RSD	1.9193	.34842	.39469
#1	7012.4	218440.	14841.
#2	6776.0	219930.	14737.
#3	6793.7	219500.	14743.

Sample Name: mb 140-24135/18-a Acquired: 10/9/2018 10:56:10 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00007	-.01419	.00108	.01467	.00003	-.00001
Stddev	.00027	.01996	.00141	.00040	.00012	.00000
%RSD	386.11	140.62	130.81	2.7308	403.36	27.505
#1	-.00016	-.02689	.00072	.01477	.00002	-.00001
#2	-.00001	.00881	-.00012	.01502	-.00009	-.00001
#3	.00038	-.02449	.00263	.01423	.00015	-.00001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.07486	-.00002	-.00004	.00027	.00013	.00241
Stddev	.00523	.00010	.00006	.00009	.00018	.00341
%RSD	6.9896	406.90	160.53	33.749	139.26	141.70
#1	.07313	.00005	-.00008	.00021	.00030	-.00086
#2	.07071	-.00013	-.00006	.00037	.00013	.00595
#3	.08074	.00001	.00003	.00022	-.00005	.00214
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: mb 140-24135/18-a Acquired: 10/9/2018 10:56:10 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05702	.00353	.02042	.00007	-.00013	-.46159
Stddev	.00218	.00063	.00287	.00004	.00002	.60836
%RSD	3.8175	17.729	14.044	63.987	13.445	131.80
#1	.05479	.00401	.01846	.00002	-.00012	-.84559
#2	.05914	.00282	.02371	.00008	-.00012	-.77901
#3	.05713	.00376	.01908	.00010	-.00015	.23984
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05695	-.00007	.00238	-.00026	-.00011	.00012
Stddev	.00562	.00020	.00057	.00236	.00102	.00054
%RSD	9.8694	296.72	24.102	912.80	966.26	453.19
#1	.06330	.00016	.00272	-.00148	.00057	.00067
#2	.05495	-.00020	.00172	.00246	-.00127	-.00040
#3	.05260	-.00015	.00271	-.00175	.00039	.00008
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: mb 140-24135/18-a Acquired: 10/9/2018 10:56:10 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00035	.04887	.00241	-.00007	.00041	.00233
Stddev	.00250	.00410	.00019	.00002	.00132	.00132
%RSD	704.32	8.3800	7.9415	27.619	323.88	56.631
#1	.00146	.04423	.00226	-.00009	.00186	.00081
#2	.00211	.05042	.00234	-.00005	-.00073	.00319
#3	-.00250	.05196	.00262	-.00008	.00009	.00300
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00002	.00118
Stddev	.00024	.00002
%RSD	1264.6	1.6053
#1	.00002	.00116
#2	-.00022	.00119
#3	.00026	.00118
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: mb 140-24135/18-a Acquired: 10/9/2018 10:56:10 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6740.2	217860.	14782.
Stddev	22.9	1780.	48.
%RSD	.33919	.81680	.32561
#1	6719.9	215910.	14794.
#2	6765.0	219390.	14824.
#3	6735.8	218290.	14729.

Sample Name: lcs 140-24135/19-a Acquired: 10/9/2018 11:01:13 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04891	1.9366	.10042	1.0095	.09939	.05284
Stddev	.00095	.0189	.00032	.0071	.00022	.00008
%RSD	1.9440	.97437	.31559	.70609	.22016	.15158
#1	.04962	1.9553	.10061	1.0058	.09932	.05277
#2	.04783	1.9176	.10005	1.0051	.09922	.05293
#3	.04929	1.9368	.10060	1.0178	.09964	.05282
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.234	.05178	.10064	.20255	.24640	1.0313
Stddev	.214	.00018	.00006	.00053	.00103	.0053
%RSD	.43384	.33967	.05857	.26393	.41930	.51563
#1	48.988	.05162	.10071	.20207	.24604	1.0297
#2	49.350	.05175	.10062	.20312	.24559	1.0269
#3	49.365	.05196	.10060	.20246	.24757	1.0372
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: lcs 140-24135/19-a Acquired: 10/9/2018 11:01:13 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.525	.10468	9.3860	.10157	.51880	49.443
Stddev	.208	.00115	.1031	.00040	.00107	.394
%RSD	.41962	1.0975	1.0982	.39683	.20579	.79601
#1	49.764	.10600	9.2764	.10150	.51864	49.534
#2	49.387	.10398	9.4006	.10120	.51783	49.012
#3	49.423	.10405	9.4810	.10200	.51995	49.784
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.761	.50380	4.9918	.10182	.09966	.50011
Stddev	.290	.00060	.0075	.00136	.00263	.00260
%RSD	.58283	.11847	.14999	1.3380	2.6385	.51981
#1	50.092	.50355	4.9951	.10338	.10262	.50304
#2	49.550	.50336	4.9971	.10088	.09873	.49807
#3	49.642	.50448	4.9833	.10119	.09762	.49923
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: lcs 140-24135/19-a Acquired: 10/9/2018 11:01:13 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.15045	5.1065	.51663	.49098	.10844	.41948
Stddev	.00105	.0252	.00091	.00185	.00033	.00300
%RSD	.69533	.49422	.17677	.37747	.30508	.71467
#1	.15009	5.0829	.51622	.49261	.10879	.42082
#2	.14964	5.1036	.51599	.48897	.10838	.41604
#3	.15163	5.1331	.51768	.49136	.10814	.42157
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.20200	.50112
Stddev	.00054	.00038
%RSD	.26682	.07670
#1	.20140	.50079
#2	.20244	.50103
#3	.20217	.50154
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: lcs 140-24135/19-a Acquired: 10/9/2018 11:01:13 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6641.4	215460.	14928.
Stddev	16.0	922.	42.
%RSD	.24077	.42772	.27847
#1	6623.1	214400.	14946.
#2	6648.9	215990.	14881.
#3	6652.4	216000.	14958.

Sample Name: lcsd 140-24135/20-a Acquired: 10/9/2018 11:06:02 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04753	1.8957	.09985	.99430	.09809	.05225
Stddev	.00045	.0172	.00141	.00388	.00020	.00032
%RSD	.93732	.90881	1.4105	.39011	.20393	.62110
#1	.04752	1.8981	.09829	.99830	.09789	.05209
#2	.04709	1.8774	.10023	.99056	.09829	.05203
#3	.04798	1.9115	.10103	.99403	.09808	.05262
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.739	.05106	.09911	.20079	.24357	.98189
Stddev	.112	.00009	.00009	.00140	.00104	.00549
%RSD	.22981	.18097	.08759	.69744	.42536	.55926
#1	48.616	.05106	.09921	.20097	.24404	.98510
#2	48.834	.05115	.09907	.19931	.24429	.98502
#3	48.768	.05097	.09905	.20210	.24238	.97555
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: lcsd 140-24135/20-a Acquired: 10/9/2018 11:06:02 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.723	.10290	9.2879	.09968	.51310	47.779
Stddev	.042	.00100	.0468	.00043	.00138	.708
%RSD	.08616	.97008	.50405	.42888	.26888	1.4808
#1	48.771	.10374	9.2363	.09984	.51384	47.036
#2	48.704	.10317	9.2996	.09919	.51396	47.855
#3	48.694	.10180	9.3277	.10000	.51151	48.445
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.868	.49564	4.9317	.10044	.09981	.49557
Stddev	.071	.00036	.0023	.00362	.00125	.00300
%RSD	.14464	.07312	.04599	3.6057	1.2540	.60519
#1	48.943	.49525	4.9343	.09785	.10013	.49768
#2	48.861	.49597	4.9304	.10458	.10086	.49214
#3	48.802	.49569	4.9304	.09889	.09842	.49690
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: lcsd 140-24135/20-a Acquired: 10/9/2018 11:06:02 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.14994	5.0581	.50973	.48506	.10177	.41093
Stddev	.00253	.0400	.00048	.00185	.00129	.00238
%RSD	1.6886	.79120	.09490	.38188	1.2644	.57991
#1	.14702	5.1039	.51029	.48717	.10308	.41288
#2	.15124	5.0409	.50941	.48370	.10174	.41162
#3	.15156	5.0296	.50950	.48432	.10051	.40827
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.19972	.49871
Stddev	.00103	.00128
%RSD	.51720	.25612
#1	.19913	.50017
#2	.19911	.49818
#3	.20091	.49779
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: lcsd 140-24135/20-a Acquired: 10/9/2018 11:06:02 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6619.2	214880.	14751.
Stddev	50.8	788.	94.
%RSD	.76781	.36656	.63890
#1	6561.7	214060.	14713.
#2	6637.8	215630.	14681.
#3	6658.1	214950.	14858.

Sample Name: 140-12876-a-2-a mdlv Acquired: 10/9/2018 11:10:52 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00901	.17246	.00914	.02235	.00968	.00094
Stddev	.00042	.01472	.00049	.00120	.00015	.00002
%RSD	4.6172	8.5340	5.3378	5.3677	1.5164	1.7359
#1	.00870	.18923	.00945	.02373	.00953	.00092
#2	.00886	.16168	.00858	.02161	.00983	.00095
#3	.00949	.16647	.00939	.02170	.00967	.00095
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.98160	.00198	.00466	.01038	.01153	.09830
Stddev	.00682	.00004	.00006	.00025	.00018	.00178
%RSD	.69503	1.8945	1.2103	2.4491	1.5297	1.8143
#1	.97671	.00197	.00465	.01067	.01171	.09733
#2	.97870	.00194	.00472	.01030	.01135	.10036
#3	.98939	.00202	.00461	.01018	.01152	.09722
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12876-a-2-a mdlv Acquired: 10/9/2018 11:10:52 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.0650	.01671	.43810	.01427	.03837	4.6935
Stddev	.0232	.00077	.03070	.00005	.00023	.3239
%RSD	1.1214	4.5924	7.0079	.31659	.60302	6.9004
#1	2.0885	.01686	.40388	.01432	.03862	4.7430
#2	2.0645	.01738	.44721	.01423	.03832	4.9898
#3	2.0422	.01587	.46322	.01426	.03817	4.3478
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.5569	.03857	.21132	.00824	.00920	.02907
Stddev	.0373	.00005	.00105	.00028	.00233	.00152
%RSD	.81922	.14137	.49568	3.3651	25.322	5.2233
#1	4.5959	.03863	.21046	.00804	.01079	.03056
#2	4.5534	.03852	.21249	.00812	.01028	.02912
#3	4.5215	.03855	.21101	.00855	.00653	.02753
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12876-a-2-a mdlv Acquired: 10/9/2018 11:10:52 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00999	.08408	1.0366	.02268	.04670	.01087
Stddev	.00173	.00471	.0025	.00019	.00126	.00080
%RSD	17.333	5.5988	.24241	.85802	2.7088	7.3614
#1	.00802	.07864	1.0391	.02289	.04664	.01040
#2	.01065	.08686	1.0365	.02264	.04799	.01042
#3	.01129	.08673	1.0341	.02251	.04546	.01180
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00930	.01995
Stddev	.00010	.00007
%RSD	1.1178	.37294
#1	.00926	.02002
#2	.00921	.01995
#3	.00941	.01987
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12876-a-2-a mdlv Acquired: 10/9/2018 11:10:52 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6710.0	219030.	14811.
Stddev	40.4	844.	10.
%RSD	.60167	.38522	.06482
#1	6663.5	218060.	14801.
#2	6735.7	219560.	14820.
#3	6730.9	219480.	14812.

Sample Name: 140-12876-a-7-a mdlv Acquired: 10/9/2018 11:15:52 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00911	.19046	.00955	.02473	.01008	.00099
Stddev	.00018	.01646	.00052	.00044	.00004	.00001
%RSD	1.9228	8.6435	5.4687	1.7657	.40527	1.0956
#1	.00900	.19471	.00938	.02444	.01013	.00098
#2	.00931	.20438	.01014	.02452	.01008	.00100
#3	.00902	.17229	.00913	.02524	.01004	.00098
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.0239	.00192	.00514	.01041	.01214	.10423
Stddev	.0078	.00010	.00018	.00051	.00018	.00269
%RSD	.75822	5.3839	3.5591	4.8773	1.5078	2.5769
#1	1.0156	.00181	.00523	.01035	.01235	.10335
#2	1.0253	.00193	.00525	.00994	.01201	.10209
#3	1.0309	.00202	.00493	.01095	.01205	.10724
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12876-a-7-a mdlv Acquired: 10/9/2018 11:15:52 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.0330	.01653	.45423	.01500	.04025	5.6706
Stddev	.0161	.00006	.02220	.00006	.00023	.8444
%RSD	.79189	.35444	4.8874	.42968	.56527	14.890
#1	2.0359	.01647	.43192	.01495	.04001	4.7545
#2	2.0156	.01656	.47632	.01507	.04029	6.4177
#3	2.0474	.01658	.45445	.01498	.04045	5.8397
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.7897	.03999	.14029	.01060	.00920	.03049
Stddev	.0074	.00037	.00058	.00052	.00140	.00078
%RSD	.15415	.93355	.41488	4.9402	15.174	2.5476
#1	4.7825	.03961	.14042	.01059	.00766	.02989
#2	4.7895	.04035	.14079	.01008	.00954	.03137
#3	4.7972	.04002	.13965	.01113	.01039	.03021
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12876-a-7-a mdlv Acquired: 10/9/2018 11:15:52 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00919	.10472	.99358	.02392	.05085	.01166
Stddev	.00075	.01214	.00436	.00016	.00074	.00166
%RSD	8.1851	11.593	.43907	.66617	1.4491	14.212
#1	.00850	.09071	.98906	.02407	.05001	.01349
#2	.00907	.11166	.99392	.02375	.05120	.01126
#3	.00999	.11181	.99777	.02393	.05135	.01025
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00984	.02091
Stddev	.00017	.00004
%RSD	1.7731	.17520
#1	.01003	.02093
#2	.00980	.02094
#3	.00968	.02087
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12876-a-7-a mdlv Acquired: 10/9/2018 11:15:52 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6668.2	217750.	14759.
Stddev	23.5	718.	76.
%RSD	.35249	.32996	.51406
#1	6641.1	216950.	14686.
#2	6682.9	217950.	14837.
#3	6680.6	218340.	14753.

Sample Name: 140-12832-a-2-a Acquired: 10/9/2018 11:20:50 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00047	.58449	2.1606	3.2684	.04168	.00003
Stddev	.00013	.01565	.0155	.0108	.00046	.00001
%RSD	27.308	2.6781	.71858	.32988	1.1071	43.957
#1	.00032	.59668	2.1704	3.2771	.04218	.00002
#2	.00053	.58996	2.1688	3.2717	.04156	.00004
#3	.00056	.56684	2.1427	3.2563	.04128	.00004
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.1343	.00032	.00004	.00956	.20502	.38349
Stddev	.0136	.00004	.00008	.00080	.00006	.00200
%RSD	.43280	12.815	182.71	8.3378	.02948	.52275
#1	3.1391	.00035	.00003	.01015	.20508	.38118
#2	3.1447	.00027	-.00003	.00987	.20502	.38473
#3	3.1189	.00033	.00013	.00865	.20495	.38457
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12832-a-2-a Acquired: 10/9/2018 11:20:50 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.66203	.00847	.79853	.03885	.00381	5.7339
Stddev	.02382	.00137	.01600	.00008	.00028	.5915
%RSD	3.5986	16.218	2.0036	.19865	7.3467	10.316
#1	.66389	.00994	.78009	.03893	.00413	6.3669
#2	.68488	.00722	.80679	.03886	.00362	5.6394
#3	.63734	.00823	.80871	.03877	.00368	5.1953
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.5903	.01339	5.6554	.01580	.01623	.00367
Stddev	.0582	.00013	.0379	.00257	.00059	.00121
%RSD	1.0411	.96497	.67088	16.281	3.6456	33.084
#1	5.6559	.01329	5.6799	.01381	.01587	.00386
#2	5.5698	.01334	5.6746	.01870	.01591	.00477
#3	5.5451	.01354	5.6117	.01489	.01692	.00237
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12832-a-2-a Acquired: 10/9/2018 11:20:50 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.8368	11.046	.31931	.00665	.03554	-.00022
Stddev	.0170	.021	.00165	.00010	.00087	.00208
%RSD	.92787	.19371	.51615	1.5424	2.4503	928.38
#1	1.8492	11.068	.32107	.00655	.03453	-.00073
#2	1.8439	11.026	.31905	.00666	.03607	.00206
#3	1.8174	11.043	.31780	.00675	.03601	-.00200
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00098	.05410
Stddev	.00006	.00037
%RSD	5.6214	.68880
#1	.00092	.05430
#2	.00100	.05433
#3	.00103	.05367
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12832-a-2-a Acquired: 10/9/2018 11:20:50 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6434.5	210040.	14390.
Stddev	65.8	2107.	197.
%RSD	1.0218	1.0030	1.3691
#1	6367.7	207870.	14179.
#2	6436.7	210170.	14422.
#3	6499.1	212080.	14570.

Sample Name: 140-12832-a-7-a Acquired: 10/9/2018 11:25:44 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00025	.53656	.46142	2.6093	.02873	.00001
Stddev	.00018	.01357	.00155	.0117	.00018	.00001
%RSD	70.449	2.5294	.33675	.44865	.61232	100.85
#1	.00028	.53817	.46207	2.6166	.02854	.00003
#2	.00006	.52225	.46254	2.6154	.02889	.00001
#3	.00041	.54925	.45965	2.5958	.02876	.00000
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.2710	.00013	-.00004	.00816	.19079	.32944
Stddev	.0121	.00007	.00008	.00026	.00091	.00420
%RSD	.53253	53.606	218.92	3.1844	.47798	1.2739
#1	2.2597	.00011	-.00009	.00842	.18981	.33353
#2	2.2694	.00008	.00006	.00790	.19095	.32964
#3	2.2838	.00021	-.00009	.00815	.19161	.32515
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12832-a-7-a Acquired: 10/9/2018 11:25:44 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.51541	.00454	.52974	.03062	.00284	3.7706
Stddev	.03780	.00086	.00536	.00021	.00012	1.1277
%RSD	7.3340	18.957	1.0126	.68452	4.1347	29.908
#1	.47296	.00427	.53159	.03073	.00298	4.3268
#2	.54545	.00384	.53393	.03075	.00277	2.4729
#3	.52781	.00550	.52369	.03037	.00278	4.5123
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.0149	.01735	.90332	.01526	.01307	.00412
Stddev	.0276	.00012	.01165	.00048	.00183	.00123
%RSD	.68774	.67136	1.2901	3.1539	13.974	29.829
#1	4.0082	.01736	.91398	.01549	.01124	.00552
#2	4.0452	.01746	.90510	.01558	.01308	.00365
#3	3.9912	.01723	.89088	.01470	.01489	.00320
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12832-a-7-a Acquired: 10/9/2018 11:25:44 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.82537	11.980	.24397	.00421	.02927	-.00076
Stddev	.01091	.003	.00104	.00005	.00071	.00150
%RSD	1.3217	.02140	.42607	1.1662	2.4371	197.45
#1	.83618	11.978	.24310	.00425	.02971	.00001
#2	.82557	11.981	.24512	.00421	.02965	.00020
#3	.81436	11.983	.24368	.00416	.02845	-.00249
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00044	.04609
Stddev	.00017	.00030
%RSD	38.445	.66030
#1	.00025	.04638
#2	.00048	.04611
#3	.00057	.04578
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12832-a-7-a Acquired: 10/9/2018 11:25:44 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6468.6	212410.	14482.
Stddev	65.2	2231.	116.
%RSD	1.0080	1.0502	.80402
#1	6398.2	209850.	14353.
#2	6480.6	213460.	14580.
#3	6527.0	213920.	14513.

Sample Name: 140-12832-a-7-a PDS Acquired: 10/9/2018 11:30:41 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04760	2.4064	.55192	3.4388	.12780	.05347
Stddev	.00038	.0302	.00219	.0242	.00075	.00079
%RSD	.80399	1.2551	.39721	.70301	.58556	1.4702
#1	.04723	2.3846	.55026	3.4190	.12724	.05264
#2	.04759	2.3936	.55109	3.4316	.12751	.05357
#3	.04799	2.4409	.55441	3.4657	.12865	.05420
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	51.957	.05046	.09997	.20991	.43613	1.3229
Stddev	.674	.00049	.00115	.00408	.00300	.0267
%RSD	1.2977	.97944	1.1543	1.9434	.68900	2.0207
#1	51.186	.04999	.09904	.20567	.43454	1.2960
#2	52.250	.05042	.09961	.21027	.43425	1.3232
#3	52.435	.05098	.10126	.21380	.43960	1.3495
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12832-a-7-a PDS Acquired: 10/9/2018 11:30:41 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.902	.10212	9.7478	.12870	.52538	52.097
Stddev	.053	.00144	.1645	.00180	.00406	1.411
%RSD	.10866	1.4104	1.6878	1.4003	.77232	2.7088
#1	48.868	.10143	9.5655	.12691	.52144	52.214
#2	48.875	.10115	9.7926	.12869	.52515	50.632
#3	48.963	.10377	9.8852	.13051	.52954	53.447
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	52.968	.51407	5.8795	.10647	.10881	.49015
Stddev	.145	.00628	.0411	.00441	.00076	.00632
%RSD	.27381	1.2218	.69855	4.1444	.69850	1.2892
#1	53.093	.50786	5.8352	.10465	.10795	.48292
#2	52.809	.51394	5.8869	.11151	.10939	.49291
#3	53.003	.52042	5.9164	.10327	.10908	.49461
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12832-a-7-a PDS Acquired: 10/9/2018 11:30:41 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.99668	16.288	.72653	.49764	.13269	.39794
Stddev	.00096	.232	.00480	.00491	.00220	.00538
%RSD	.09667	1.4270	.66109	.98736	1.6553	1.3516
#1	.99564	16.050	.72137	.49338	.13161	.39233
#2	.99753	16.299	.72734	.49651	.13125	.39845
#3	.99687	16.515	.73088	.50301	.13522	.40305
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.20253	.53966
Stddev	.00228	.00624
%RSD	1.1256	1.1566
#1	.20033	.53331
#2	.20240	.53987
#3	.20488	.54579
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12832-a-7-a PDS Acquired: 10/9/2018 11:30:41 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6396.6	209740.	14303.
Stddev	21.8	974.	53.
%RSD	.34058	.46432	.37039
#1	6372.9	208670.	14359.
#2	6401.1	210010.	14254.
#3	6415.8	210560.	14297.

Sample Name: 140-12832-a-7-a PDSD Acquired: 10/9/2018 11:35:28 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04799	2.4412	.56173	3.4879	.12910	.05388
Stddev	.00130	.0565	.00453	.0180	.00120	.00111
%RSD	2.7151	2.3155	.80609	.51493	.93107	2.0591
#1	.04653	2.3788	.55738	3.4684	.12771	.05282
#2	.04842	2.4558	.56141	3.4915	.12980	.05379
#3	.04903	2.4890	.56641	3.5038	.12977	.05503
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	51.765	.05077	.10050	.21059	.43715	1.3206
Stddev	1.045	.00095	.00173	.00401	.00344	.0235
%RSD	2.0194	1.8713	1.7257	1.9031	.78592	1.7770
#1	50.652	.04980	.09884	.20680	.43443	1.2978
#2	51.917	.05082	.10036	.21018	.43601	1.3193
#3	52.726	.05170	.10230	.21478	.44101	1.3447
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12832-a-7-a PDSD Acquired: 10/9/2018 11:35:28 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.041	.10450	9.7413	.12998	.52755	53.016
Stddev	.359	.00074	.2011	.00211	.00717	.673
%RSD	.73267	.70419	2.0643	1.6221	1.3590	1.2691
#1	48.628	.10366	9.5323	.12788	.52051	53.474
#2	49.209	.10502	9.7583	.12995	.52728	53.330
#3	49.285	.10481	9.9334	.13209	.53484	52.243
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	53.128	.51816	5.9275	.10868	.10893	.49413
Stddev	.344	.00983	.0596	.00381	.00195	.00711
%RSD	.64764	1.8966	1.0060	3.5042	1.7929	1.4379
#1	52.731	.50835	5.8662	.10591	.10669	.48768
#2	53.340	.51812	5.9311	.10711	.10987	.49298
#3	53.312	.52800	5.9853	.11303	.11024	.50175
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12832-a-7-a PDSD Acquired: 10/9/2018 11:35:28 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.0100	16.537	.72955	.50285	.13314	.40342
Stddev	.0048	.129	.00647	.00887	.00128	.00536
%RSD	.47536	.78119	.88671	1.7646	.95868	1.3277
#1	1.0047	16.388	.72318	.49362	.13171	.39892
#2	1.0111	16.600	.72936	.50363	.13351	.40201
#3	1.0141	16.621	.73612	.51131	.13418	.40934
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.20423	.54335
Stddev	.00350	.00997
%RSD	1.7128	1.8356
#1	.20091	.53289
#2	.20389	.54440
#3	.20788	.55275
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12832-a-7-a PDSD Acquired: 10/9/2018 11:35:28 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6317.5	206970.	14183.
Stddev	30.5	1385.	18.
%RSD	.48281	.66923	.12517
#1	6284.1	205480.	14176.
#2	6324.3	207190.	14203.
#3	6344.0	208220.	14170.

Sample Name: 140-12832-a-12-a Acquired: 10/9/2018 11:40:17 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00050	.64252	.85886	2.7584	.03237	.00002
Stddev	.00016	.01179	.00123	.0205	.00035	.00001
%RSD	32.030	1.8351	.14270	.74506	1.0802	50.099
#1	.00040	.65549	.85744	2.7348	.03208	.00003
#2	.00041	.63243	.85947	2.7723	.03276	.00001
#3	.00068	.63966	.85965	2.7681	.03228	.00003
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.3230	.00033	-.00008	.01103	.21135	.43097
Stddev	.0521	.00002	.00021	.00027	.00084	.00789
%RSD	1.5686	5.1099	269.07	2.4384	.39957	1.8301
#1	3.2679	.00031	-.00017	.01100	.21053	.43089
#2	3.3297	.00035	.00016	.01078	.21221	.42312
#3	3.3715	.00033	-.00022	.01131	.21132	.43890
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12832-a-12-a Acquired: 10/9/2018 11:40:17 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.52623	.00509	.68185	.03824	.00192	4.4473
Stddev	.01373	.00046	.00995	.00024	.00015	.8594
%RSD	2.6091	9.0339	1.4592	.63526	7.7087	19.325
#1	.52037	.00456	.67637	.03796	.00188	4.5778
#2	.51641	.00543	.69334	.03835	.00179	3.5301
#3	.54192	.00527	.67585	.03840	.00208	5.2340
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.8390	.01241	1.1030	.02531	.02496	.00483
Stddev	.0020	.00024	.0031	.00095	.00091	.00069
%RSD	.04120	1.8948	.28257	3.7650	3.6413	14.356
#1	4.8383	.01216	1.1054	.02536	.02596	.00483
#2	4.8413	.01243	1.1041	.02434	.02473	.00552
#3	4.8375	.01263	1.0994	.02624	.02418	.00413
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12832-a-12-a Acquired: 10/9/2018 11:40:17 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.3049	13.661	.30793	.00486	.03697	-.00002
Stddev	.0039	.144	.00102	.00009	.00035	.00107
%RSD	.29751	1.0524	.33121	1.7506	.95407	6190.2
#1	1.3091	13.496	.30692	.00490	.03704	-.00123
#2	1.3039	13.730	.30791	.00476	.03659	.00082
#3	1.3016	13.758	.30896	.00492	.03729	.00036
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00089	.06156
Stddev	.00010	.00004
%RSD	11.490	.06599
#1	.00078	.06161
#2	.00091	.06153
#3	.00098	.06154
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12832-a-12-a Acquired: 10/9/2018 11:40:17 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6377.6	210160.	14357.
Stddev	29.6	249.	61.
%RSD	.46344	.11841	.42801
#1	6348.4	209900.	14376.
#2	6377.1	210190.	14406.
#3	6407.5	210390.	14288.

Sample Name: CCV Acquired: 10/9/2018 11:45:15 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.97278	24.976	.49715	1.9810	2.0322	2.0518
Stddev	.00292	.003	.00143	.0066	.0056	.0159
%RSD	.30007	.01028	.28732	.33259	.27625	.77740
#1	.96986	24.975	.49673	1.9749	2.0336	2.0351
#2	.97278	24.979	.49598	1.9801	2.0260	2.0669
#3	.97569	24.974	.49874	1.9879	2.0369	2.0535
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.885	.50777	2.0383	2.0192	2.0061	25.202
Stddev	.216	.00046	.0013	.0048	.0069	.178
%RSD	.43269	.09042	.06527	.23770	.34276	.70664
#1	49.636	.50780	2.0384	2.0218	2.0010	25.030
#2	50.020	.50822	2.0369	2.0137	2.0033	25.190
#3	49.999	.50730	2.0396	2.0222	2.0139	25.386
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 10/9/2018 11:45:15 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.965	1.9744	48.705	1.9937	2.0422	47.919
Stddev	.105	.0101	.406	.0039	.0013	1.235
%RSD	.20692	.50927	.83437	.19687	.06379	2.5765
#1	51.085	1.9770	48.237	1.9902	2.0437	47.470
#2	50.886	1.9634	48.924	1.9931	2.0416	46.971
#3	50.925	1.9830	48.956	1.9980	2.0413	49.315
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.941	2.0226	1.9883	.50235	.50399	.49753
Stddev	.216	.0013	.0053	.00167	.00146	.00174
%RSD	.42348	.06240	.26873	.33150	.28957	.34882
#1	51.165	2.0235	1.9922	.50394	.50379	.49798
#2	50.734	2.0212	1.9822	.50249	.50555	.49899
#3	50.923	2.0231	1.9906	.50062	.50265	.49561
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 10/9/2018 11:45:15 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.50436	1.9780	2.0298	2.0213	2.0424	1.0139
Stddev	.00295	.0090	.0023	.0066	.0056	.0027
%RSD	.58473	.45432	.11312	.32532	.27494	.26164
#1	.50677	1.9733	2.0315	2.0202	2.0386	1.0109
#2	.50107	1.9724	2.0272	2.0153	2.0396	1.0157
#3	.50523	1.9884	2.0308	2.0283	2.0488	1.0151
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	2.0238	2.0294
Stddev	.0065	.0015
%RSD	.31925	.07497
#1	2.0225	2.0292
#2	2.0181	2.0280
#3	2.0308	2.0310
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV Acquired: 10/9/2018 11:45:15 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6569.6	215240.	14800.
Stddev	16.1	531.	54.
%RSD	.24550	.24663	.36432
#1	6563.8	214970.	14848.
#2	6587.9	214900.	14742.
#3	6557.3	215850.	14809.

Sample Name: CCB Acquired: 10/9/2018 11:50:10 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00026	-.02598	.00020	.00386	-.00002	.00001
Stddev	.00015	.01207	.00019	.00048	.00026	.00001
%RSD	57.759	46.440	93.602	12.448	1057.6	152.13
#1	-.00040	-.01804	.00015	.00441	.00010	.00001
#2	-.00010	-.02004	.00004	.00353	.00014	.00000
#3	-.00027	-.03987	.00041	.00364	-.00032	-.00000
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00223	.00004	-.00003	-.00026	.00015	.00229
Stddev	.00237	.00004	.00009	.00005	.00003	.00131
%RSD	106.34	105.87	335.99	20.432	20.320	57.436
#1	.00089	.00001	.00006	-.00020	.00012	.00135
#2	.00496	.00002	-.00004	-.00029	.00018	.00173
#3	.00083	.00008	-.00011	-.00028	.00016	.00379
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 10/9/2018 11:50:10 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.09004	.00179	-.01556	.00002	-.00003	.44771
Stddev	.00428	.00025	.01792	.00006	.00018	.38619
%RSD	4.7546	14.201	115.21	277.98	643.05	86.260
#1	.08715	.00157	-.03114	.00004	.00014	.46468
#2	.08801	.00207	.00403	-.00004	-.00001	.05331
#3	.09496	.00173	-.01955	.00007	-.00021	.82514
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.03009	.00002	-.00023	.00181	-.00074	-.00060
Stddev	.00069	.00011	.00207	.00181	.00124	.00140
%RSD	2.2914	614.42	902.92	100.13	167.72	232.19
#1	.03000	-.00007	-.00259	.00051	-.00131	.00058
#2	.03083	.00014	.00132	.00388	-.00158	-.00214
#3	.02946	-.00001	.00058	.00103	.00068	-.00024
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 10/9/2018 11:50:10 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00071	.00657	-.00017	-.00008	-.00068	.00058
Stddev	.00219	.02300	.00059	.00003	.00194	.00079
%RSD	307.45	350.02	342.14	40.866	286.80	135.21
#1	-.00064	.03229	-.00078	-.00009	-.00291	.00148
#2	-.00294	-.00058	.00039	-.00011	.00034	.00028
#3	.00144	-.01200	-.00013	-.00004	.00055	-.00001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00004	-.00016
Stddev	.00012	.00009
%RSD	300.85	58.363
#1	-.00010	-.00005
#2	.00009	-.00018
#3	.00013	-.00023
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB Acquired: 10/9/2018 11:50:10 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6742.3	219910.	15114.
Stddev	15.5	942.	125.
%RSD	.22996	.42819	.82486
#1	6724.8	219100.	15227.
#2	6754.3	219680.	14980.
#3	6747.7	220940.	15134.

Sample Name: 140-12832-a-17-a Acquired: 10/9/2018 11:55:13 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00023	.00369	-.00143	.03656	.00032	-.00000
Stddev	.00024	.02428	.00175	.00069	.00014	.00002
%RSD	105.09	657.32	122.21	1.8960	43.326	497.82
#1	.00025	-.00758	-.00233	.03736	.00042	.00000
#2	-.00002	-.01290	.00059	.03620	.00036	-.00002
#3	.00045	.03156	-.00256	.03611	.00016	.00001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.12841	-.00003	-.00027	.00161	.00083	.01843
Stddev	.00049	.00004	.00002	.00028	.00011	.00179
%RSD	.38370	128.53	7.4520	17.318	13.539	9.7317
#1	.12785	.00001	-.00025	.00152	.00093	.01636
#2	.12866	-.00008	-.00029	.00138	.00071	.01953
#3	.12873	-.00003	-.00028	.00192	.00086	.01940
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12832-a-17-a Acquired: 10/9/2018 11:55:13 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.15949	.00210	.01992	.00059	.00000	-.41500
Stddev	.02026	.00040	.02127	.00005	.00014	.47780
%RSD	12.705	19.225	106.81	8.2268	4011.2	115.13
#1	.17060	.00208	.01082	.00054	.00005	-.60336
#2	.13610	.00252	.00470	.00064	.00012	.12827
#3	.17177	.00171	.04422	.00060	-.00016	-.76991
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.22347	.00131	.08100	-.00042	-.00008	.00200
Stddev	.00164	.00025	.00132	.00025	.00163	.00117
%RSD	.73584	19.073	1.6349	57.964	2176.5	58.345
#1	.22386	.00110	.08127	-.00066	-.00131	.00296
#2	.22489	.00124	.08217	-.00017	-.00069	.00233
#3	.22167	.00158	.07956	-.00045	.00178	.00070
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12832-a-17-a Acquired: 10/9/2018 11:55:13 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00263	.13259	.08758	.00011	.00144	.00058
Stddev	.00259	.01371	.00016	.00014	.00100	.00299
%RSD	98.294	10.338	.18108	125.29	69.436	513.14
#1	.00334	.14758	.08752	.00027	.00054	.00131
#2	-.00023	.12070	.08746	.00007	.00252	-.00270
#3	.00480	.12948	.08776	-.00000	.00126	.00314
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00012	.00177
Stddev	.00019	.00009
%RSD	155.77	5.2354
#1	.00025	.00184
#2	-.00009	.00182
#3	.00021	.00167
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12832-a-17-a Acquired: 10/9/2018 11:55:13 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6633.5	216710.	14740.
Stddev	39.3	783.	56.
%RSD	.59271	.36144	.37864
#1	6588.1	215810.	14675.
#2	6654.8	217060.	14770.
#3	6657.5	217260.	14774.

Sample Name: 140-12855-a-2-a Acquired: 10/9/2018 12:00:16 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00380	.34194	-.00048	.80490	.00870	-.00000
Stddev	.00018	.02471	.00061	.00596	.00013	.00001
%RSD	4.7067	7.2277	128.37	.73990	1.5322	208.16
#1	.00401	.36367	-.00118	.81170	.00869	-.00001
#2	.00372	.31506	-.00002	.80244	.00885	.00000
#3	.00368	.34708	-.00023	.80057	.00858	-.00000
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.1456	.00076	.00242	.02546	.02779	.38631
Stddev	.0045	.00002	.00008	.00054	.00016	.00182
%RSD	.39597	2.9630	3.4581	2.1029	.59345	.47170
#1	1.1403	.00078	.00233	.02563	.02796	.38690
#2	1.1483	.00074	.00248	.02486	.02776	.38426
#3	1.1480	.00076	.00245	.02589	.02764	.38776
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-2-a Acquired: 10/9/2018 12:00:16 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.76951	.00369	.10076	.00830	.00276	1.5256
Stddev	.02776	.00114	.01099	.00002	.00024	.6364
%RSD	3.6071	30.901	10.912	.22613	8.6796	41.717
#1	.78405	.00247	.09421	.00832	.00297	2.2541
#2	.78697	.00473	.11345	.00829	.00280	1.2446
#3	.73750	.00388	.09461	.00830	.00250	1.0780
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.8530	.02347	.28094	.01114	.01059	.00129
Stddev	.0077	.00018	.00196	.00109	.00255	.00089
%RSD	.41479	.77756	.69723	9.7761	24.103	69.264
#1	1.8587	.02363	.28202	.00990	.00775	.00097
#2	1.8559	.02349	.28212	.01193	.01131	.00060
#3	1.8443	.02327	.27868	.01160	.01270	.00230
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-2-a Acquired: 10/9/2018 12:00:16 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01606	1.5600	.14678	.00472	.00732	-.00096
Stddev	.00422	.0064	.00089	.00016	.00016	.00290
%RSD	26.300	.41236	.60833	3.3996	2.2393	301.75
#1	.01258	1.5532	.14720	.00484	.00748	-.00158
#2	.02076	1.5610	.14738	.00479	.00715	-.00350
#3	.01485	1.5659	.14575	.00454	.00733	.00220
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00031	.19790
Stddev	.00012	.00085
%RSD	37.949	.43112
#1	.00018	.19869
#2	.00041	.19803
#3	.00036	.19699
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12855-a-2-a Acquired: 10/9/2018 12:00:16 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6579.0	216110.	14499.
Stddev	71.0	2669.	126.
%RSD	1.0788	1.2349	.87059
#1	6504.1	213040.	14371.
#2	6587.6	217880.	14623.
#3	6645.3	217420.	14503.

Sample Name: 140-12855-a-4-a Acquired: 10/9/2018 12:05:16 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.51644	.37338	-.00021	.84926	.00727	-.00000
Stddev	.00148	.01575	.00257	.00357	.00017	.00001
%RSD	.28732	4.2192	1240.2	.42053	2.3910	1972.1
#1	.51712	.36524	-.00222	.85107	.00709	.00001
#2	.51747	.39154	-.00109	.85157	.00743	-.00001
#3	.51474	.36337	.00269	.84515	.00729	-.00001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.1124	.00087	.00220	.02227	.02608	.46726
Stddev	.0094	.00009	.00013	.00009	.00024	.00505
%RSD	.84867	10.089	5.7168	.39847	.93930	1.0806
#1	1.1020	.00077	.00231	.02234	.02636	.47287
#2	1.1203	.00090	.00206	.02230	.02594	.46309
#3	1.1150	.00093	.00222	.02217	.02593	.46581
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-4-a Acquired: 10/9/2018 12:05:16 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.68428	.00328	.09673	.00715	.00240	1.5166
Stddev	.01631	.00035	.00414	.00010	.00025	.8834
%RSD	2.3837	10.665	4.2778	1.3320	10.263	58.247
#1	.67992	.00317	.09596	.00714	.00212	2.4730
#2	.67059	.00366	.09304	.00705	.00253	.73142
#3	.70233	.00299	.10120	.00724	.00256	1.3452
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.6830	.01802	.25152	.01523	.01398	.00271
Stddev	.0096	.00014	.00148	.00068	.00073	.00159
%RSD	.57232	.76165	.58666	4.4487	5.2551	58.724
#1	1.6920	.01817	.25316	.01565	.01344	.00238
#2	1.6843	.01796	.25111	.01445	.01369	.00445
#3	1.6728	.01791	.25030	.01560	.01482	.00131
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-4-a Acquired: 10/9/2018 12:05:16 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01014	1.5004	.14701	.00457	.00634	.00047
Stddev	.00132	.0127	.00138	.00006	.00061	.00122
%RSD	12.994	.84600	.94058	1.3009	9.5997	257.79
#1	.01044	1.4944	.14700	.00456	.00570	.00004
#2	.00870	1.4918	.14839	.00463	.00691	-.00047
#3	.01129	1.5150	.14563	.00451	.00641	.00186
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00052	.14864
Stddev	.00024	.00052
%RSD	46.597	.35086
#1	.00077	.14913
#2	.00029	.14870
#3	.00049	.14809
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12855-a-4-a Acquired: 10/9/2018 12:05:16 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6633.3	216820.	14564.
Stddev	61.6	1812.	76.
%RSD	.92865	.83573	.52252
#1	6566.5	214730.	14494.
#2	6645.7	217780.	14553.
#3	6687.8	217950.	14645.

Sample Name: 140-12855-a-6-a Acquired: 10/9/2018 12:10:15 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.47298	.33211	-.00011	.59078	.00868	.00002
Stddev	.00317	.00989	.00114	.00320	.00019	.00000
%RSD	.67042	2.9782	1064.4	.54149	2.2441	20.572
#1	.47564	.34109	-.00034	.59445	.00890	.00002
#2	.47382	.32151	-.00110	.58858	.00854	.00002
#3	.46947	.33373	.00113	.58931	.00858	.00003
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.4874	.00068	.00122	.02674	.03280	.50386
Stddev	.0089	.00003	.00017	.00040	.00056	.00263
%RSD	.60205	4.4996	13.619	1.4950	1.6932	.52129
#1	1.4818	.00068	.00105	.02628	.03344	.50441
#2	1.4977	.00070	.00138	.02692	.03249	.50100
#3	1.4826	.00064	.00123	.02702	.03246	.50616
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-6-a Acquired: 10/9/2018 12:10:15 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.76092	.00296	.10728	.00896	.00233	1.6245
Stddev	.01166	.00029	.02263	.00004	.00017	.5826
%RSD	1.5324	9.9217	21.093	.49158	7.3494	35.863
#1	.75468	.00329	.08189	.00895	.00214	1.8410
#2	.75370	.00275	.11463	.00892	.00246	.96463
#3	.77437	.00282	.12532	.00901	.00241	2.0678
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.5447	.03565	.31843	.00745	.00771	.01146
Stddev	.0156	.00024	.00288	.00167	.00051	.00102
%RSD	1.0096	.67446	.90546	22.456	6.5835	8.8752
#1	1.5342	.03540	.32072	.00931	.00712	.01179
#2	1.5372	.03587	.31937	.00696	.00795	.01228
#3	1.5626	.03568	.31519	.00608	.00804	.01032
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-6-a Acquired: 10/9/2018 12:10:15 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00595	1.2495	.13600	.00578	.00769	.00072
Stddev	.00053	.0127	.00032	.00014	.00107	.00246
%RSD	8.9048	1.0201	.23284	2.3484	13.890	343.23
#1	.00591	1.2441	.13608	.00567	.00858	-.00139
#2	.00544	1.2641	.13564	.00574	.00799	.00342
#3	.00650	1.2404	.13626	.00593	.00650	.00012
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00039	.20019
Stddev	.00015	.00033
%RSD	38.365	.16651
#1	.00055	.20057
#2	.00033	.20004
#3	.00027	.19995
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12855-a-6-a Acquired: 10/9/2018 12:10:15 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6722.7	219280.	14814.
Stddev	52.2	1194.	159.
%RSD	.77621	.54436	1.0752
#1	6668.2	218010.	14660.
#2	6727.6	219470.	14804.
#3	6772.3	220370.	14978.

Sample Name: 140-12855-a-6-a PDS Acquired: 10/9/2018 12:15:13 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.51911	2.2698	.10023	1.5342	.11032	.05328
Stddev	.00121	.0294	.00204	.0202	.00206	.00132
%RSD	.23370	1.2964	2.0360	1.3173	1.8652	2.4690
#1	.51774	2.2359	.09850	1.5116	.10824	.05180
#2	.51953	2.2852	.10248	1.5406	.11036	.05370
#3	.52006	2.2884	.09971	1.5505	.11235	.05433
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.677	.05268	.10375	.23008	.28285	1.5230
Stddev	1.346	.00090	.00160	.00466	.00441	.0222
%RSD	2.6565	1.7126	1.5412	2.0251	1.5601	1.4583
#1	49.189	.05178	.10201	.22473	.27801	1.4975
#2	51.032	.05267	.10408	.23224	.28387	1.5378
#3	51.811	.05358	.10516	.23326	.28666	1.5338
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-6-a PDS Acquired: 10/9/2018 12:15:13 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.797	.10448	9.5382	.11025	.52854	50.413
Stddev	.931	.00252	.3132	.00239	.00686	.904
%RSD	1.9075	2.4076	3.2832	2.1637	1.2978	1.7928
#1	47.823	.10157	9.1849	.10758	.52072	49.465
#2	48.890	.10594	9.6481	.11098	.53133	51.264
#3	49.677	.10593	9.7817	.11218	.53356	50.508
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.352	.54064	5.0878	.10403	.10760	.49665
Stddev	.826	.00808	.0565	.00557	.00257	.00575
%RSD	1.6401	1.4953	1.1103	5.3497	2.3855	1.1574
#1	49.530	.53166	5.0249	.09879	.10592	.49026
#2	50.344	.54293	5.1042	.10342	.10633	.49829
#3	51.181	.54734	5.1342	.10988	.11056	.50140
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-6-a PDS Acquired: 10/9/2018 12:15:13 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.17268	6.1470	.63398	.51106	.11223	.41201
Stddev	.00096	.1045	.00619	.00954	.00285	.00807
%RSD	.55611	1.6995	.97603	1.8670	2.5359	1.9585
#1	.17180	6.0269	.62712	.50064	.10895	.40279
#2	.17255	6.2167	.63566	.51318	.11390	.41550
#3	.17370	6.1974	.63915	.51937	.11385	.41776
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.20658	.70339
Stddev	.00402	.00661
%RSD	1.9456	.93933
#1	.20206	.69604
#2	.20795	.70530
#3	.20974	.70883
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12855-a-6-a PDS Acquired: 10/9/2018 12:15:13 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6565.9	214240.	14523.
Stddev	48.2	1192.	28.
%RSD	.73445	.55638	.18984
#1	6513.7	213040.	14540.
#2	6575.4	214250.	14491.
#3	6608.7	215430.	14538.

Sample Name: 140-12855-a-6-a PDSD Acquired: 10/9/2018 12:19:59 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.51727	2.2520	.09875	1.5282	.11044	.05312
Stddev	.00163	.0262	.00242	.0056	.00181	.00081
%RSD	.31489	1.1635	2.4497	.36850	1.6415	1.5314
#1	.51805	2.2470	.09725	1.5229	.10835	.05218
#2	.51836	2.2287	.09747	1.5341	.11158	.05360
#3	.51540	2.2803	.10154	1.5274	.11140	.05358
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.498	.05235	.10339	.22932	.28335	1.5109
Stddev	.343	.00035	.00082	.00223	.00307	.0165
%RSD	.68018	.67488	.78989	.97258	1.0843	1.0915
#1	50.148	.05198	.10253	.22674	.27984	1.5009
#2	50.512	.05241	.10350	.23063	.28465	1.5018
#3	50.834	.05268	.10415	.23058	.28556	1.5299
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-6-a PDSD Acquired: 10/9/2018 12:19:59 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.772	.10426	9.5287	.10985	.52726	50.303
Stddev	.524	.00093	.0442	.00088	.00097	.608
%RSD	1.0738	.89259	.46335	.80118	.18459	1.2093
#1	48.171	.10319	9.4913	.10884	.52638	49.650
#2	49.133	.10487	9.5173	.11033	.52709	50.404
#3	49.011	.10472	9.5774	.11039	.52830	50.854
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.368	.53785	5.0659	.10763	.10618	.49635
Stddev	.588	.00264	.0028	.00285	.00127	.00210
%RSD	1.1678	.49082	.05577	2.6465	1.1948	.42315
#1	49.692	.53496	5.0663	.10547	.10473	.49583
#2	50.761	.53847	5.0629	.10657	.10706	.49866
#3	50.652	.54013	5.0686	.11086	.10675	.49456
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-6-a PDSD Acquired: 10/9/2018 12:19:59 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.17021	6.1105	.62982	.51097	.11201	.40740
Stddev	.00227	.0670	.00351	.00739	.00207	.00255
%RSD	1.3361	1.0968	.55719	1.4467	1.8441	.62649
#1	.17084	6.0485	.62588	.50248	.10962	.40505
#2	.16769	6.1014	.63261	.51440	.11326	.40704
#3	.17211	6.1816	.63098	.51602	.11314	.41012
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.20631	.70059
Stddev	.00303	.00148
%RSD	1.4696	.21194
#1	.20282	.69909
#2	.20829	.70206
#3	.20783	.70062
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12855-a-6-a PDSD Acquired: 10/9/2018 12:19:59 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6603.5	214800.	14610.
Stddev	57.4	1283.	177.
%RSD	.86939	.59718	1.2135
#1	6541.2	213570.	14405.
#2	6614.9	214690.	14708.
#3	6654.3	216130.	14715.

Sample Name: 140-12855-a-8-a Acquired: 10/9/2018 12:24:46 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.50563	.21145	-.00026	.26381	.00463	-.00000
Stddev	.00191	.03335	.00044	.00138	.00037	.00002
%RSD	.37847	15.774	165.37	.52370	8.0089	474.52
#1	.50361	.23644	-.00077	.26540	.00463	-.00002
#2	.50586	.22433	.00001	.26302	.00500	.00001
#3	.50742	.17358	-.00003	.26300	.00426	.00001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.0139	.00066	.00035	.01364	.02243	.33827
Stddev	.0280	.00008	.00010	.00035	.00017	.01122
%RSD	2.7573	11.924	28.197	2.5725	.77699	3.3157
#1	1.0243	.00057	.00024	.01391	.02250	.34454
#2	1.0352	.00070	.00042	.01324	.02223	.34495
#3	.98227	.00071	.00040	.01375	.02255	.32532
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-8-a Acquired: 10/9/2018 12:24:46 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.53823	.00103	.09842	.00509	.00140	.21533
Stddev	.01787	.00069	.02457	.00004	.00020	.66832
%RSD	3.3207	66.697	24.963	.71163	13.960	310.37
#1	.55252	.00159	.11086	.00506	.00157	-.29701
#2	.54399	.00026	.11428	.00509	.00146	.97127
#3	.51819	.00124	.07012	.00513	.00119	-.02828
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.84254	.01307	.23315	.00442	.00559	.00064
Stddev	.02630	.00013	.00281	.00178	.00040	.00182
%RSD	3.1209	.99345	1.2063	40.153	7.1815	282.59
#1	.86141	.01300	.23636	.00237	.00529	.00267
#2	.85371	.01299	.23194	.00548	.00605	.00012
#3	.81251	.01322	.23114	.00542	.00544	-.00086
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-8-a Acquired: 10/9/2018 12:24:46 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01050	.63708	.20798	.00318	.00505	.00367
Stddev	.00203	.04218	.00050	.00012	.00061	.00072
%RSD	19.332	6.6209	.23821	3.9017	12.053	19.733
#1	.01204	.67260	.20824	.00317	.00575	.00431
#2	.00820	.64818	.20741	.00330	.00464	.00382
#3	.01125	.59046	.20829	.00306	.00476	.00289
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00029	.08332
Stddev	.00033	.00009
%RSD	111.43	.10852
#1	.00033	.08342
#2	-.00005	.08324
#3	.00060	.08331
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12855-a-8-a Acquired: 10/9/2018 12:24:46 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6755.1	220060.	15092.
Stddev	44.6	605.	386.
%RSD	.66088	.27499	2.5573
#1	6708.3	220750.	14887.
#2	6797.2	219820.	14853.
#3	6759.8	219620.	15538.

Sample Name: 140-12855-a-10-a Acquired: 10/9/2018 12:29:43 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.52957	.17106	-.00103	.24751	.00471	-.00001
Stddev	.00648	.00926	.00071	.00329	.00013	.00001
%RSD	1.2242	5.4155	69.008	1.3296	2.7508	79.374
#1	.52214	.17546	-.00180	.24379	.00486	-.00000
#2	.53249	.17730	-.00090	.24869	.00463	-.00001
#3	.53408	.16042	-.00040	.25005	.00464	-.00002
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.0298	.00047	.00017	.01345	.02191	.34885
Stddev	.0028	.00004	.00008	.00008	.00022	.00050
%RSD	.27607	9.6157	51.234	.62680	1.0019	.14404
#1	1.0274	.00051	.00008	.01336	.02172	.34892
#2	1.0329	.00046	.00025	.01345	.02186	.34832
#3	1.0290	.00042	.00016	.01353	.02215	.34932
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-10-a Acquired: 10/9/2018 12:29:43 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.51738	.00194	.07516	.00500	.00126	-.32663
Stddev	.00826	.00085	.02277	.00011	.00015	1.4067
%RSD	1.5963	43.890	30.297	2.2099	11.633	430.67
#1	.50790	.00178	.08949	.00489	.00142	-1.8197
#2	.52298	.00286	.08709	.00501	.00121	.97394
#3	.52127	.00118	.04890	.00511	.00114	-.13418
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.79602	.01070	.23177	.00507	.00622	.00224
Stddev	.00432	.00017	.00125	.00079	.00080	.00079
%RSD	.54312	1.5946	.53916	15.641	12.882	35.125
#1	.80062	.01061	.23249	.00530	.00570	.00254
#2	.79539	.01060	.23032	.00572	.00715	.00134
#3	.79204	.01090	.23249	.00419	.00583	.00283
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-10-a Acquired: 10/9/2018 12:29:43 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00984	.58640	.18607	.00248	.00512	.00149
Stddev	.00128	.00750	.00118	.00009	.00053	.00218
%RSD	13.005	1.2787	.63643	3.8152	10.340	146.26
#1	.01032	.57818	.18541	.00237	.00551	.00150
#2	.00839	.58815	.18744	.00254	.00534	.00367
#3	.01081	.59286	.18536	.00253	.00452	-.00069
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00012	.09984
Stddev	.00010	.00013
%RSD	84.268	.12567
#1	.00022	.09999
#2	.00003	.09980
#3	.00010	.09975
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12855-a-10-a Acquired: 10/9/2018 12:29:43 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6618.8	217620.	14557.
Stddev	42.9	940.	101.
%RSD	.64811	.43192	.69254
#1	6572.9	218710.	14485.
#2	6625.6	217000.	14515.
#3	6657.9	217170.	14672.

Sample Name: 140-12855-a-12-a Acquired: 10/9/2018 12:34:40 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.47748	.27623	-.00022	.27384	.00511	-.00000
Stddev	.00321	.02406	.00135	.00137	.00015	.00000
%RSD	.67206	8.7085	603.84	.49946	2.8779	135.14
#1	.48061	.26198	-.00157	.27542	.00528	-.00001
#2	.47764	.26270	-.00022	.27318	.00505	-.00000
#3	.47419	.30400	.00113	.27293	.00500	-.00000
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.2316	.00060	.00040	.01537	.02056	.41723
Stddev	.0084	.00009	.00013	.00007	.00011	.00224
%RSD	.67994	14.492	32.887	.43236	.53516	.53746
#1	1.2226	.00054	.00028	.01537	.02067	.41476
#2	1.2391	.00056	.00054	.01544	.02056	.41915
#3	1.2331	.00070	.00038	.01530	.02045	.41776
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-12-a Acquired: 10/9/2018 12:34:40 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.45675	.00095	.13613	.00592	.00121	.48236
Stddev	.00533	.00037	.02392	.00003	.00028	.46138
%RSD	1.1661	39.479	17.575	.56915	23.100	95.650
#1	.46140	.00138	.10858	.00596	.00143	-.04002
#2	.45790	.00079	.15168	.00591	.00089	.83413
#3	.45094	.00068	.14812	.00589	.00130	.65298
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.86906	.01140	.23421	.00541	.00290	.00080
Stddev	.00653	.00033	.00117	.00213	.00041	.00091
%RSD	.75110	2.8828	.50151	39.313	14.283	113.17
#1	.87091	.01114	.23553	.00300	.00332	.00166
#2	.87446	.01129	.23381	.00623	.00249	.00090
#3	.86180	.01177	.23329	.00701	.00290	-.00015
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-12-a Acquired: 10/9/2018 12:34:40 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01146	.66179	.20892	.00369	.00548	-.00123
Stddev	.00012	.00142	.00101	.00007	.00046	.00361
%RSD	1.0489	.21410	.48230	1.9376	8.4778	294.46
#1	.01132	.66031	.20786	.00376	.00532	-.00263
#2	.01152	.66192	.20905	.00368	.00600	.00288
#3	.01154	.66313	.20986	.00362	.00511	-.00392
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00044	.07900
Stddev	.00014	.00037
%RSD	32.584	.46635
#1	.00059	.07941
#2	.00031	.07888
#3	.00042	.07870
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12855-a-12-a Acquired: 10/9/2018 12:34:40 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6762.9	219330.	14902.
Stddev	41.4	1617.	50.
%RSD	.61256	.73737	.33826
#1	6716.3	217500.	14929.
#2	6776.8	219920.	14844.
#3	6795.6	220570.	14934.

Sample Name: 140-12855-a-6-a SD@5 Acquired: 10/9/2018 12:39:37 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.10054	.05040	.00042	.12910	.00184	-.00001
Stddev	.00053	.00470	.00080	.00082	.00017	.00000
%RSD	.53058	9.3177	191.84	.63269	9.2779	64.566
#1	.10109	.04594	.00104	.12819	.00196	-.00001
#2	.10002	.04996	-.00049	.12935	.00192	-.00000
#3	.10051	.05530	.00070	.12976	.00165	-.00001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.31134	.00023	.00030	.00559	.00698	.14468
Stddev	.00313	.00005	.00009	.00021	.00012	.00334
%RSD	1.0050	23.228	31.248	3.7948	1.6813	2.3110
#1	.30796	.00018	.00020	.00580	.00710	.14654
#2	.31414	.00029	.00038	.00560	.00686	.14082
#3	.31193	.00021	.00034	.00538	.00698	.14668
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-6-a SD@5 Acquired: 10/9/2018 12:39:37 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.18228	.00058	.01359	.00204	.00050	-1.5150
Stddev	.02434	.00158	.02163	.00010	.00013	.4592
%RSD	13.350	270.87	159.11	5.0881	26.608	30.308
#1	.20482	.00047	.00503	.00195	.00055	-1.1694
#2	.15648	-.00094	.03819	.00202	.00059	-2.0360
#3	.18556	.00221	-.00244	.00215	.00035	-1.3395
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.34118	.00754	.06741	.00085	.00008	.00145
Stddev	.00399	.00028	.00156	.00178	.00044	.00051
%RSD	1.1688	3.7181	2.3193	209.04	528.55	35.444
#1	.34126	.00729	.06921	.00235	.00058	.00112
#2	.34513	.00784	.06643	.00130	-.00011	.00204
#3	.33715	.00748	.06659	-.00111	-.00023	.00119
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-6-a SD@5 Acquired: 10/9/2018 12:39:37 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00114	.27588	.02868	.00108	.00183	.00204
Stddev	.00288	.01345	.00095	.00011	.00066	.00198
%RSD	252.54	4.8758	3.2988	10.574	36.263	96.778
#1	.00446	.27427	.02962	.00106	.00231	.00384
#2	-.00057	.26331	.02773	.00098	.00210	-.00008
#3	-.00047	.29007	.02871	.00121	.00107	.00237
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00017	.04322
Stddev	.00013	.00013
%RSD	78.355	.28983
#1	.00031	.04312
#2	.00015	.04317
#3	.00005	.04336
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12855-a-6-a SD@5 Acquired: 10/9/2018 12:39:37 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6752.6	219060.	14951.
Stddev	12.4	825.	141.
%RSD	.18348	.37673	.94321
#1	6740.7	218110.	14987.
#2	6765.4	219400.	14796.
#3	6751.7	219650.	15071.

Sample Name: CCV Acquired: 10/9/2018 12:44:37 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.96463	24.693	.49414	1.9714	2.0209	2.0489
Stddev	.00066	.026	.00175	.0024	.0025	.0135
%RSD	.06799	.10504	.35493	.12132	.12455	.65642
#1	.96539	24.694	.49577	1.9740	2.0220	2.0640
#2	.96425	24.719	.49436	1.9693	2.0180	2.0442
#3	.96425	24.667	.49228	1.9709	2.0227	2.0384
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.651	.50663	2.0375	2.0164	1.9928	25.428
Stddev	.046	.00032	.0018	.0053	.0029	.023
%RSD	.09300	.06269	.08938	.26158	.14613	.08868
#1	49.704	.50652	2.0384	2.0111	1.9954	25.409
#2	49.618	.50699	2.0354	2.0165	1.9896	25.453
#3	49.631	.50638	2.0387	2.0217	1.9933	25.423
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 10/9/2018 12:44:37 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.969	1.9456	48.977	1.9882	2.0369	48.523
Stddev	.194	.0036	.038	.0020	.0032	.653
%RSD	.38816	.18291	.07759	.10246	.15479	1.3464
#1	50.123	1.9479	48.935	1.9865	2.0396	48.471
#2	49.751	1.9415	48.988	1.9877	2.0335	49.201
#3	50.032	1.9474	49.009	1.9905	2.0377	47.898
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.977	2.0097	1.9798	.49854	.50264	.48751
Stddev	.137	.0020	.0034	.00343	.00068	.00140
%RSD	.27502	.09780	.17364	.68860	.13432	.28794
#1	50.042	2.0096	1.9826	.49595	.50265	.48828
#2	49.819	2.0078	1.9760	.49724	.50197	.48589
#3	50.069	2.0118	1.9808	.50243	.50332	.48836
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 10/9/2018 12:44:37 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.49909	1.9943	2.0217	2.0167	2.0249	.99672
Stddev	.00325	.0046	.0002	.0005	.0032	.00089
%RSD	.65178	.23097	.00788	.02404	.15921	.08911
#1	.50161	1.9977	2.0216	2.0169	2.0251	.99769
#2	.50024	1.9961	2.0219	2.0162	2.0216	.99596
#3	.49542	1.9890	2.0218	2.0171	2.0280	.99651
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	2.0243	2.0268
Stddev	.0047	.0023
%RSD	.23254	.11460
#1	2.0191	2.0288
#2	2.0253	2.0242
#3	2.0284	2.0274
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV Acquired: 10/9/2018 12:44:37 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6598.2	214620.	14641.
Stddev	27.2	1754.	20.
%RSD	.41227	.81722	.13670
#1	6568.7	212800.	14619.
#2	6622.2	214780.	14657.
#3	6603.8	216290.	14646.

Sample Name: CCB Acquired: 10/9/2018 12:49:30 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00030	-.02633	-.00026	.00274	.00001	.00001
Stddev	.00041	.00421	.00059	.00045	.00007	.00002
%RSD	136.26	15.971	223.51	16.431	672.33	264.99
#1	.00069	-.02725	.00041	.00321	.00009	.00001
#2	.00031	-.03000	-.00051	.00231	-.00006	.00002
#3	-.00012	-.02174	-.00069	.00269	-.00000	-.00001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00253	.00010	.00004	.00009	-.00003	-.00004
Stddev	.00298	.00008	.00007	.00033	.00024	.00248
%RSD	117.82	76.880	163.56	367.96	938.59	5831.9
#1	.00395	.00016	.00000	.00047	.00025	.00189
#2	-.00090	.00001	.00000	-.00013	-.00014	.00082
#3	.00454	.00013	.00012	-.00007	-.00019	-.00284
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 10/9/2018 12:49:30 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.06647	.00081	-.00430	.00003	-.00020	-.84654
Stddev	.02115	.00063	.00991	.00002	.00017	.65174
%RSD	31.817	77.280	230.70	58.904	86.443	76.988
#1	.06666	.00122	-.00876	.00002	-.00034	-.44126
#2	.08752	.00113	-.01119	.00005	-.00001	-1.5983
#3	.04523	.00009	.00706	.00002	-.00025	-.50003
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.02373	-.00012	-.00109	-.00117	-.00147	.00148
Stddev	.00300	.00020	.00081	.00207	.00118	.00023
%RSD	12.633	170.89	74.014	177.74	79.690	15.432
#1	.02641	-.00019	-.00199	-.00349	-.00156	.00169
#2	.02429	.00011	-.00042	.00051	-.00261	.00124
#3	.02049	-.00027	-.00087	-.00052	-.00026	.00149
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 10/9/2018 12:49:30 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00058	.00528	-.00013	-.00005	.00048	.00533
Stddev	.00034	.00561	.00053	.00006	.00086	.00268
%RSD	58.931	106.29	422.58	123.10	178.88	50.227
#1	.00028	.00257	.00042	-.00001	-.00020	.00255
#2	.00096	.01173	-.00016	-.00011	.00144	.00554
#3	.00051	.00154	-.00064	-.00002	.00020	.00789
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	-.00003	-.00022
Stddev	.00049	.00006
%RSD	1643.3	27.047
#1	.00043	-.00024
#2	.00002	-.00026
#3	-.00054	-.00015
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB Acquired: 10/9/2018 12:49:30 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6724.5	218620.	14899.
Stddev	16.7	585.	87.
%RSD	.24816	.26765	.58686
#1	6707.2	219160.	14990.
#2	6740.5	218690.	14893.
#3	6725.9	218000.	14815.

Sample Name: 140-12855-a-14-a Acquired: 10/9/2018 12:54:33 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.37156	.28121	-.00141	.34037	.00725	.00000
Stddev	.00068	.00905	.00070	.00102	.00010	.00001
%RSD	.18337	3.2175	49.689	.30054	1.3212	482.08
#1	.37177	.28036	-.00114	.33970	.00735	.00001
#2	.37211	.29066	-.00220	.33988	.00721	-.00000
#3	.37080	.27262	-.00088	.34155	.00717	-.00001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.6804	.00048	.00034	.01950	.02450	.54868
Stddev	.0065	.00007	.00013	.00046	.00024	.00247
%RSD	.38854	15.427	39.174	2.3357	.99017	.45064
#1	1.6755	.00056	.00037	.01944	.02477	.54686
#2	1.6878	.00048	.00020	.01908	.02441	.54769
#3	1.6779	.00041	.00046	.01999	.02431	.55150
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-14-a Acquired: 10/9/2018 12:54:33 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.50607	.00266	.10436	.00675	.00193	.44856
Stddev	.01075	.00042	.00669	.00003	.00015	.78734
%RSD	2.1245	15.838	6.4072	.39770	7.9265	175.52
#1	.51528	.00309	.10572	.00676	.00178	-.46056
#2	.49426	.00264	.09710	.00678	.00209	.89857
#3	.50867	.00225	.11026	.00672	.00193	.90768
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.77242	.01429	.23051	.00722	.00631	.00326
Stddev	.00278	.00027	.00316	.00448	.00153	.00076
%RSD	.35939	1.8808	1.3713	62.027	24.250	23.384
#1	.77559	.01439	.23272	.00719	.00649	.00399
#2	.77044	.01450	.23193	.00275	.00470	.00247
#3	.77121	.01399	.22689	.01170	.00775	.00333
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-14-a Acquired: 10/9/2018 12:54:33 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00884	.68603	.16311	.00355	.00632	.00057
Stddev	.00182	.02182	.00109	.00010	.00089	.00179
%RSD	20.559	3.1800	.66554	2.8701	14.092	313.73
#1	.01078	.70936	.16371	.00366	.00729	.00211
#2	.00858	.68260	.16376	.00353	.00610	-.00140
#3	.00717	.66613	.16185	.00345	.00556	.00101
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00038	.23417
Stddev	.00011	.00050
%RSD	28.634	.21549
#1	.00050	.23442
#2	.00028	.23449
#3	.00036	.23359
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12855-a-14-a Acquired: 10/9/2018 12:54:33 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6595.3	214480.	14479.
Stddev	52.1	1688.	166.
%RSD	.78989	.78710	1.1478
#1	6549.2	213070.	14287.
#2	6584.8	214020.	14580.
#3	6651.8	216350.	14570.

Sample Name: 140-12855-a-16-a Acquired: 10/9/2018 12:59:33 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.38774	.34701	-.00096	.28481	.00554	.00000
Stddev	.00300	.01095	.00124	.00141	.00010	.00001
%RSD	.77373	3.1553	129.99	.49609	1.8836	266.40
#1	.38872	.35188	-.00199	.28603	.00566	.00001
#2	.39013	.35467	-.00130	.28514	.00548	-.00000
#3	.38438	.33447	.00042	.28326	.00548	-.00000
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.3777	.00053	.00069	.02399	.02109	.62630
Stddev	.0198	.00006	.00007	.00028	.00016	.01039
%RSD	1.4341	11.951	9.5641	1.1841	.76735	1.6583
#1	1.3552	.00047	.00070	.02375	.02124	.61493
#2	1.3922	.00052	.00062	.02392	.02111	.63528
#3	1.3857	.00059	.00075	.02430	.02092	.62868
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-16-a Acquired: 10/9/2018 12:59:33 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.44184	.00154	.09976	.00661	.00276	-.01805
Stddev	.01163	.00028	.01639	.00009	.00022	1.5792
%RSD	2.6316	18.469	16.429	1.3015	8.0988	8750.8
#1	.44336	.00122	.11402	.00660	.00268	-1.6705
#2	.45263	.00178	.08185	.00670	.00301	1.4759
#3	.42952	.00160	.10340	.00653	.00259	.14041
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.75027	.02771	.20672	.00561	.00397	.00082
Stddev	.01636	.00037	.00206	.00198	.00071	.00136
%RSD	2.1805	1.3501	.99892	35.243	17.942	165.62
#1	.73273	.02814	.20905	.00342	.00464	.00152
#2	.76511	.02755	.20511	.00613	.00406	.00168
#3	.75297	.02744	.20600	.00727	.00322	-.00075
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-16-a Acquired: 10/9/2018 12:59:33 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00985	.46045	.16917	.00576	.00510	.00306
Stddev	.00030	.01207	.00208	.00017	.00170	.00134
%RSD	3.0448	2.6210	1.2297	2.9164	33.238	43.969
#1	.00951	.45284	.17156	.00562	.00672	.00386
#2	.01006	.47436	.16817	.00595	.00334	.00150
#3	.00999	.45413	.16778	.00572	.00524	.00381
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00051	.06982
Stddev	.00017	.00049
%RSD	34.030	.70198
#1	.00047	.07038
#2	.00036	.06962
#3	.00070	.06946
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12855-a-16-a Acquired: 10/9/2018 12:59:33 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6707.4	218620.	14889.
Stddev	64.3	2958.	77.
%RSD	.95853	1.3532	.51772
#1	6636.2	216710.	14932.
#2	6724.9	217120.	14800.
#3	6761.2	222020.	14934.

Sample Name: 140-12855-a-18-a Acquired: 10/9/2018 13:04:31 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.33642	.30812	-.00115	.22542	.00469	-.00001
Stddev	.00038	.00214	.00018	.00061	.00008	.00001
%RSD	.11381	.69433	15.887	.26872	1.6252	77.503
#1	.33672	.30811	-.00134	.22598	.00464	-.00002
#2	.33655	.31027	-.00115	.22551	.00465	-.00000
#3	.33599	.30599	-.00097	.22478	.00477	-.00002
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.6816	.00028	.00020	.01478	.02302	.41295
Stddev	.0127	.00007	.00004	.00018	.00029	.00383
%RSD	.75571	23.527	18.044	1.2299	1.2801	.92682
#1	1.6952	.00027	.00017	.01488	.02335	.41639
#2	1.6701	.00022	.00024	.01489	.02288	.41362
#3	1.6793	.00035	.00018	.01457	.02281	.40882
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-18-a Acquired: 10/9/2018 13:04:31 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.51019	.00186	.10060	.00600	.00142	1.9826
Stddev	.01165	.00126	.02096	.00004	.00004	.4122
%RSD	2.2831	67.710	20.835	.70315	2.7286	20.789
#1	.52322	.00300	.10728	.00604	.00142	2.2253
#2	.50078	.00051	.11741	.00601	.00146	1.5067
#3	.50659	.00208	.07712	.00595	.00138	2.2159
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.74890	.01516	.21048	.00215	.00183	.00098
Stddev	.00604	.00006	.00114	.00172	.00018	.00047
%RSD	.80671	.42167	.54274	80.119	9.7677	47.753
#1	.74959	.01509	.20997	.00197	.00163	.00103
#2	.74255	.01518	.20969	.00052	.00186	.00142
#3	.75457	.01522	.21179	.00395	.00198	.00049
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-18-a Acquired: 10/9/2018 13:04:31 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00892	.63040	.15245	.00350	.00701	-.00111
Stddev	.00138	.00996	.00053	.00014	.00091	.00022
%RSD	15.485	1.5807	.34564	4.0921	12.997	19.535
#1	.00753	.62690	.15304	.00353	.00625	-.00109
#2	.01029	.64164	.15228	.00362	.00802	-.00090
#3	.00894	.62266	.15203	.00334	.00676	-.00134
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00029	.07265
Stddev	.00012	.00028
%RSD	42.008	.38188
#1	.00038	.07296
#2	.00034	.07260
#3	.00015	.07241
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12855-a-18-a Acquired: 10/9/2018 13:04:31 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6624.6	216070.	14519.
Stddev	41.2	1766.	180.
%RSD	.62206	.81739	1.2414
#1	6577.2	214300.	14314.
#2	6644.3	216070.	14653.
#3	6652.3	217830.	14591.

Sample Name: 140-12855-a-20-a Acquired: 10/9/2018 13:09:30 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00026	.00445	.00093	.04702	.00045	-.00002
Stddev	.00023	.00445	.00146	.00068	.00012	.00001
%RSD	88.583	99.979	157.00	1.4366	27.423	55.558
#1	-.00023	.00944	.00047	.04774	.00031	-.00001
#2	-.00051	.00303	.00256	.04693	.00055	-.00003
#3	-.00005	.00088	-.00024	.04640	.00049	-.00001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.20553	.00010	.00005	.00170	.00674	.10445
Stddev	.00267	.00008	.00006	.00019	.00011	.00238
%RSD	1.2978	77.366	127.59	11.273	1.6997	2.2756
#1	.20561	.00016	.00005	.00178	.00683	.10196
#2	.20282	.00014	-.00001	.00183	.00661	.10470
#3	.20815	.00001	.00010	.00148	.00678	.10669
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-20-a Acquired: 10/9/2018 13:09:30 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.11692	.00051	.01832	.00063	-.00008	-.08983
Stddev	.02037	.00066	.01001	.00005	.00010	.36468
%RSD	17.418	129.01	54.662	7.7385	124.14	405.95
#1	.09341	.00122	.00848	.00061	-.00020	-.30611
#2	.12896	.00042	.02850	.00069	-.00005	.33121
#3	.12840	-.00010	.01798	.00060	.00000	-.29460
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.21551	.00143	.09361	.00112	-.00095	-.00009
Stddev	.00799	.00007	.00206	.00082	.00081	.00082
%RSD	3.7079	4.6489	2.1995	73.139	85.310	899.21
#1	.21723	.00137	.09367	.00198	-.00148	-.00074
#2	.22249	.00144	.09152	.00103	-.00135	-.00037
#3	.20679	.00150	.09563	.00035	-.00002	.00083
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-20-a Acquired: 10/9/2018 13:09:30 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00150	.22762	.14284	.00024	.00009	.00249
Stddev	.00120	.01762	.00072	.00013	.00011	.00104
%RSD	80.008	7.7402	.50723	54.487	112.83	41.601
#1	-.00056	.24644	.14290	.00038	.00001	.00367
#2	-.00109	.22489	.14209	.00017	.00006	.00210
#3	-.00285	.21152	.14353	.00016	.00021	.00171
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	-.00005	.00920
Stddev	.00028	.00014
%RSD	506.40	1.4903
#1	.00022	.00936
#2	-.00005	.00913
#3	-.00033	.00911
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12855-a-20-a Acquired: 10/9/2018 13:09:30 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6738.8	219020.	14803.
Stddev	32.6	524.	142.
%RSD	.48303	.23912	.95892
#1	6707.1	218450.	14812.
#2	6772.2	219130.	14940.
#3	6737.3	219480.	14656.

Sample Name: 140-12855-a-21-a Acquired: 10/9/2018 13:14:32 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00006	-.00091	.00009	.04429	.00027	-.00000
Stddev	.00014	.01450	.00111	.00100	.00017	.00001
%RSD	221.24	1598.8	1193.2	2.2685	65.644	318.84
#1	-.00002	-.00716	-.00005	.04531	.00030	.00000
#2	.00022	.01567	-.00094	.04426	.00008	-.00001
#3	-.00002	-.01123	.00126	.04330	.00042	.00000
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.38390	.00007	-.00013	-.00030	.00255	.00308
Stddev	.00213	.00003	.00013	.00016	.00017	.00151
%RSD	.55476	46.643	101.33	55.125	6.5725	48.832
#1	.38161	.00003	.00001	-.00020	.00246	.00479
#2	.38427	.00008	-.00025	-.00021	.00244	.00197
#3	.38582	.00010	-.00015	-.00049	.00274	.00248
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-21-a Acquired: 10/9/2018 13:14:32 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.03819	.00151	.04583	.00020	-.00003	.57692
Stddev	.01894	.00066	.00994	.00006	.00008	.07062
%RSD	49.607	43.491	21.682	29.536	283.17	12.241
#1	.04497	.00191	.03640	.00027	.00006	.64055
#2	.05281	.00186	.04488	.00015	-.00008	.58927
#3	.01679	.00075	.05621	.00019	-.00006	.50093
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.40361	.00034	.00339	.00047	.00058	.00040
Stddev	.00694	.00004	.00215	.00006	.00128	.00049
%RSD	1.7189	10.769	63.616	12.623	220.77	121.54
#1	.41018	.00031	.00516	.00048	.00092	-.00005
#2	.40428	.00033	.00401	.00052	-.00084	.00033
#3	.39636	.00038	.00099	.00040	.00166	.00092
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-21-a Acquired: 10/9/2018 13:14:32 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00016	.13259	.00322	.00052	.00059	.00230
Stddev	.00140	.00479	.00040	.00006	.00037	.00210
%RSD	856.78	3.6094	12.572	11.306	61.612	91.241
#1	.00106	.12887	.00367	.00054	.00037	.00380
#2	-.00145	.13799	.00289	.00057	.00040	.00321
#3	.00088	.13091	.00309	.00045	.00102	-.00010
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	-.00011	.00638
Stddev	.00036	.00004
%RSD	315.36	.56227
#1	-.00013	.00638
#2	-.00047	.00634
#3	.00025	.00642
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12855-a-21-a Acquired: 10/9/2018 13:14:32 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6700.1	217760.	14755.
Stddev	25.4	1191.	96.
%RSD	.37915	.54705	.64767
#1	6676.3	216540.	14678.
#2	6697.1	217820.	14862.
#3	6726.8	218920.	14725.

Sample Name: CRI Acquired: 10/9/2018 13:19:33 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01000	.18493	.01069	.20019	.01031	.00545
Stddev	.00066	.01448	.00115	.00051	.00015	.00003
%RSD	6.6066	7.8323	10.799	.25451	1.4836	.62836
#1	.01041	.16836	.00997	.19970	.01035	.00541
#2	.00924	.19522	.01202	.20071	.01014	.00547
#3	.01036	.19120	.01008	.20016	.01043	.00548
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.9614	.00545	.05090	.01046	.02535	.11557
Stddev	.0094	.00003	.00014	.00022	.00029	.00089
%RSD	.18887	.61730	.26661	2.1031	1.1352	.76745
#1	4.9577	.00547	.05092	.01039	.02568	.11572
#2	4.9720	.00541	.05075	.01070	.02525	.11462
#3	4.9544	.00547	.05102	.01027	.02513	.11637
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CRI Acquired: 10/9/2018 13:19:33 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.1783	.04860	4.7073	.01548	.04084	4.2351
Stddev	.0235	.00050	.0180	.00016	.00022	1.0587
%RSD	.45361	1.0365	.38214	1.0145	.54148	24.998
#1	5.1867	.04850	4.7230	.01531	.04098	4.5725
#2	5.1964	.04915	4.7111	.01552	.04095	3.0489
#3	5.1517	.04816	4.6877	.01562	.04058	5.0840
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.8656	.04066	.30043	.01111	.01059	.05811
Stddev	.0086	.00026	.00316	.00231	.00103	.00072
%RSD	.17688	.62975	1.0508	20.826	9.6995	1.2401
#1	4.8564	.04039	.30297	.00954	.00949	.05731
#2	4.8670	.04070	.29690	.01002	.01152	.05830
#3	4.8734	.04090	.30142	.01376	.01076	.05872
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CRI Acquired: 10/9/2018 13:19:33 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00734	.48376	.10317	.04941	.05219	.01198
Stddev	.00043	.01327	.00059	.00023	.00226	.00350
%RSD	5.9020	2.7440	.56876	.45613	4.3298	29.196
#1	.00721	.49637	.10353	.04945	.04995	.01418
#2	.00698	.48502	.10249	.04917	.05217	.00795
#3	.00782	.46991	.10349	.04961	.05446	.01382
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.02526	.02173
Stddev	.00007	.00011
%RSD	.26056	.49090
#1	.02527	.02185
#2	.02519	.02164
#3	.02532	.02169
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CRI Acquired: 10/9/2018 13:19:33 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6705.8	217270.	14791.
Stddev	12.6	524.	69.
%RSD	.18840	.24116	.46684
#1	6691.2	217870.	14711.
#2	6712.3	216930.	14834.
#3	6713.8	217000.	14827.

Sample Name: CCV Acquired: 10/9/2018 13:24:31 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.97036	24.892	.49515	1.9827	2.0324	2.0552
Stddev	.00324	.007	.00257	.0090	.0099	.0100
%RSD	.33388	.02952	.51849	.45436	.48516	.48522
#1	.96740	24.897	.49810	1.9767	2.0343	2.0521
#2	.96987	24.895	.49391	1.9783	2.0218	2.0471
#3	.97382	24.883	.49344	1.9931	2.0412	2.0663
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.096	.50897	2.0435	2.0322	1.9970	25.432
Stddev	.237	.00014	.0015	.0050	.0052	.117
%RSD	.47234	.02824	.07127	.24728	.26201	.45961
#1	49.888	.50902	2.0438	2.0380	1.9914	25.307
#2	50.353	.50880	2.0419	2.0293	2.0018	25.452
#3	50.047	.50908	2.0447	2.0294	1.9978	25.538
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 10/9/2018 13:24:31 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.543	1.9523	49.151	2.0065	2.0482	48.648
Stddev	.265	.0217	.256	.0010	.0008	.670
%RSD	.52384	1.1110	.52154	.05030	.03764	1.3774
#1	50.497	1.9481	48.881	2.0061	2.0485	49.093
#2	50.304	1.9330	49.391	2.0057	2.0473	47.877
#3	50.828	1.9757	49.180	2.0076	2.0487	48.973
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.457	2.0250	1.9974	.50352	.50468	.49359
Stddev	.301	.0010	.0021	.00480	.00220	.00225
%RSD	.59712	.04814	.10327	.95343	.43530	.45658
#1	50.470	2.0257	1.9997	.50550	.50400	.49413
#2	50.150	2.0239	1.9956	.49805	.50290	.49552
#3	50.752	2.0253	1.9969	.50702	.50714	.49111
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 10/9/2018 13:24:31 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.50402	1.9869	2.0318	2.0233	2.0407	1.0139
Stddev	.00462	.0174	.0011	.0121	.0046	.0037
%RSD	.91757	.87342	.05416	.59758	.22717	.36972
#1	.50042	1.9856	2.0323	2.0206	2.0439	1.0116
#2	.50924	2.0048	2.0327	2.0128	2.0354	1.0118
#3	.50240	1.9702	2.0306	2.0366	2.0428	1.0182
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	2.0351	2.0314
Stddev	.0038	.0027
%RSD	.18569	.13535
#1	2.0370	2.0290
#2	2.0377	2.0307
#3	2.0308	2.0344
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV Acquired: 10/9/2018 13:24:31 Type: QC
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6525.1	213020.	14499.
Stddev	13.1	835.	129.
%RSD	.20072	.39185	.88702
#1	6517.0	212060.	14534.
#2	6540.2	213560.	14357.
#3	6518.1	213440.	14607.

Sample Name: CCB Acquired: 10/9/2018 13:29:24 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00008	-.00974	.00042	.00245	.00003	.00000
Stddev	.00037	.01366	.00034	.00048	.00002	.00001
%RSD	445.77	140.21	80.896	19.488	72.509	275.93
#1	.00046	.00595	.00038	.00282	.00001	-.00000
#2	.00006	-.01895	.00079	.00191	.00004	.00002
#3	-.00027	-.01624	.00011	.00261	.00004	-.00000
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00040	.00016	-.00010	.00003	.00030	-.00029
Stddev	.00108	.00008	.00003	.00009	.00015	.00056
%RSD	270.76	50.147	32.616	260.81	50.104	192.28
#1	-.00021	.00016	-.00006	.00003	.00046	-.00009
#2	.00165	.00008	-.00012	.00012	.00016	-.00092
#3	-.00024	.00023	-.00012	-.00005	.00028	.00014
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 10/9/2018 13:29:24 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.06363	.00098	-.00683	.00003	-.00001	-.73644
Stddev	.04246	.00065	.00175	.00003	.00013	.83266
%RSD	66.736	66.022	25.679	105.83	2020.0	113.06
#1	.08432	.00173	-.00496	.00006	.00008	.14676
#2	.09178	.00071	-.00708	-.00000	-.00016	-.84898
#3	.01479	.00051	-.00844	.00004	.00006	-1.5071
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01818	.00001	-.00152	-.00169	-.00087	-.00129
Stddev	.00846	.00014	.00095	.00219	.00089	.00111
%RSD	46.516	1581.6	62.592	129.17	101.21	86.163
#1	.02795	.00007	-.00042	-.00036	.00000	-.00002
#2	.01329	-.00015	-.00213	-.00050	-.00086	-.00178
#3	.01331	.00010	-.00202	-.00422	-.00177	-.00208
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 10/9/2018 13:29:24 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00012	.01622	.00005	-.00001	.00028	.00318
Stddev	.00275	.01314	.00016	.00000	.00054	.00103
%RSD	2341.5	80.964	312.28	49.656	190.09	32.383
#1	.00213	.03031	.00009	-.00001	.00003	.00262
#2	-.00301	.00432	-.00012	-.00000	.00090	.00437
#3	.00123	.01404	.00019	-.00001	-.00008	.00256
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	-.00022	-.00024
Stddev	.00011	.00004
%RSD	51.726	14.909
#1	-.00032	-.00020
#2	-.00024	-.00025
#3	-.00010	-.00026
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB Acquired: 10/9/2018 13:29:24 Type: Unk
Method: MT0007(v23) HF 083118(v3) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6675.7	216580.	14715.
Stddev	24.2	182.	92.
%RSD	.36212	.08394	.62826
#1	6673.7	216370.	14821.
#2	6700.8	216670.	14673.
#3	6652.6	216690.	14651.

TestAmerica Knoxville ICP Batch Review Checklist – SOPs: KNOX-MT-0007r15, KNOX-MT-0008r7

Chart Name:	F100918	Analysis Batch #:	24319	Analyst:	KNC	Instrument:	DUO

A. Calibration/Instrument Run QC	1st	2nd	Why is data reportable?
1. Instrument calibrated per SOP?	Y	Y	
2. Was CCVL within limits? (90-110%R)	Y	Y	
3. ICV analyzed within limits? (90-110%R and <5.0% RSD)	Y	Y	
4. CCV analyzed at required frequency & within limits? (90 - 110%R and <5.0% RSD)	Y	Y	☐ CCV reanalyzed one time; reanalysis within limits ☐ CCV - %D, High, Sample ND (NCM#_____)
5. ICB/CCB analyzed at required frequency & within limits? (Water/Soil/Waste ≤MDL; Air/SEP/PM10/JN Waste ≤RL)	Y	Y	☐ CCB reanalyzed one time; reanalysis within limits ☐ CCB-Out, Samples ND or 10x (NCM#_____)
6. ICSA/ICSAB run before samples?	Y	Y	
7. ICSAB interferents and analytes within limits? (80 - 120%R)	Y	Y	
8. ICSA criteria for non-interfering elements met? (Water/Soil/Waste ±1x RL) (Air/SEP/PM10/JN ±2x RL if RL ≤10 µg/L; ±1x RL if RL >10 µg/L)	Y	Y	☐ ICSA->2X MDL; Stock Impurities (NCM#_____)
9. Reporting Limit Check Standard (CRI) within limits? (Water/Soil/Waste=70-130%R; Air/SEP/PM10/JN Waste=50-150%)	Y	Y	
10. 6010C samples bracketed by RL Check Standards?	Y	Y	
B. Client Sample and QC Sample Results			
1. Were samples with target element concentrations > the linear range (LR) diluted and reanalyzed?	NA	NA	Comments:
2. Were all hits reported from a run with interfering elements < LR?	Y	Y	
3. Elements with F, k or ^ flags reported from a dilution if necessary?	NA	NA	
4. Were sample results reported as ND with elevated RLs?	NA	⊥	☐ RL-Dilution, Matrix (NCM# _____) ☐ RL-Dilution, Interferents (NCM# _____) ☐ RL-Dilution, Matrix, Neg. Analyte (NCM# _____)
5. Internal standard (IS) response ±30% of ICB IS? *If no, list details:*	Y	Y	☐ ISTD – Matrix, DL Required (NCM#_____) ☐ Low IS response. Reanalyzed.
6. Report flag turned to No for Mg-SEP Step1 and Na-Steps 2 & 5?	NA	NA	
7. Calculations checked for error? (Document manual calc in comments.)	Y	Y	
C. Preparation/Matrix QC			
1. Method blank done per prep batch and within limits? (Waters/Soils/Waste < ½ RL; Zn <RL; Air/SEP/PM10/JN Waste <RL)	Y	Y	☐ Method Blank–Report, ND (NCM#_____) ☐ Method Blank – Report, 10X (NCM#_____) ☐ Method Blank–Insufficient Sample (NCM#_____) ☐ See narrative-common analyte in SEP leachate.
2. LCS done per prep batch & within QC limits?	Y	Y	☐ LCS/LCSD –Insufficient Sample (NCM#_____) ☐ LCS/LCSD - %R High (NCM#_____) ☐ See narrative-SEP LCS within historical limits.
3. MS/MSD or MS/DUP run at required frequency?	NA	NA	☐ MS/MSD/DUP-Insufficient Volume (NCM#_____)
4. MS/MSD %R and RPD within QC limits?	NA	⊥	☐ LCS acceptable-matrix effects ☐ Native analyte > 4x spike level
5. DUP RPD within limits?	NA	⊥	☐ MS/MSD/DUP - %RPD (NCM#_____)
6. PDS/PDSD run at required frequency & within QC limits? (75-125%R)	Y	Y	☐ Post Digestion Spike - %R (NCM#_____) ☐ MS/MSD; High Bias; PDS Acceptable (NCM#_____)
7. Serial dilution per prep batch & ≤ 10% D for analytes >50X MDL?	Y	Y	☐ Serial Dilution - %D (NCM#_____)

D. TALS Review		1st
TALS Run Log Tab	Date and time match raw data *(to verify TALS import worked properly)*	Y
	Dilutions are correct *(instrument sample ID vs. Dilution column)*	Y
TALS Worksheet Tab	Complete and correct *(Final amount and notes populated where needed)*	Y
TALS Reagents Tab	Complete and correct	Y
TALS QC Links Tab	All samples, standards and QC linked correctly	Y
TALS Sample Results Tab	All unused data are marked Rejected or Accepted	Y
	All reported analytes are marked Primary or Secondary	Y
TALS Batch Information Screen	Documentation is complete	Y
TALS Sample List Tab	TALS Status set to appropriate review level	Y

1st Level Review by: KNC 10-12-18

2nd Level Review by: DKW 10/18/18

Calculation: Pb at 1140

$0.02496\ mg/L \times 0.080L \times \frac{0.100L}{0.080L} \times 1000\ \mu g/mg = 2.496\ \mu g$

	Pos ID	Rack	Row	Col	Type	Samplename	Comment	Custom ID1	Custom ID2
1	1	1	1	1	QC	CCVL			
2	2	1	2	1	QC	ICV			
3	3	1	3	1	Unk	ICB			
4	4	1	4	1	Unk	ICSA			
5	5	1	5	1	Unk	ICSAB			
6	6	1	6	1	QC	CRI			
7	7	1	7	1	QC	CCV			
8	8	1	8	1	Unk	CCB			
9	9	1	9	1	Unk	mb 140-24136/18-a			
10	10	1	10	1	QC	lcs 140-24136/19-a			
11	11	1	11	1	QC	lcsd 140-24136/20-a			
12	12	1	12	1	Unk	140-12876-a-5-a			
13	13	1	1	2	Unk	140-12876-a-6-a mdlv			
14	14	1	2	2	Unk	140-12876-a-1-a mdlv			
15	15	1	3	2	Unk	140-12832-a-1-a			
16	16	1	4	2	Unk	140-12832-a-6-a			
17	17	1	5	2	Unk	140-12832-a-6-a PDS			
18	18	1	6	2	Unk	140-12832-a-6-a PDSD			
19	19	1	7	2	QC	CCV			
20	20	1	8	2	Unk	CCB			
21	21	1	9	2	Unk	140-12832-a-11-a			
22	22	1	10	2	Unk	140-12832-a-16-a			
23	23	1	11	2	Unk	140-12855-a-1-a			
24	24	1	12	2	Unk	140-12855-a-3-a			
25	25	1	1	3	Unk	140-12855-a-5-a			
26	26	1	2	3	Unk	140-12855-a-5-a PDS			
27	27	1	3	3	Unk	140-12855-a-5-a PDSD			
28	28	1	4	3	Unk	140-12855-a-7-a			
29	29	1	5	3	Unk	140-12855-a-9-a			
30	30	1	6	3	Unk	140-12855-a-5-a SD@5	2ML TO 10ML		
31	31	1	7	3	QC	CCV			
32	32	1	8	3	Unk	CCB			
33	33	1	9	3	Unk	140-12855-a-11-a			
34	34	1	10	3	Unk	140-12855-a-13-a			
35	35	1	11	3	Unk	140-12855-a-15-a			
36	36	1	12	3	Unk	140-12855-a-17-a			
37	37	1	1	4	Unk	140-12855-a-19-a			
38	38	1	2	4	QC	CRI			
39	39	1	3	4	QC	CCV			
40	40	1	4	4	Unk	CCB			
41	41	1	5	4	Unk	140-12876-a-5-a @2	5ML TO 10ML		
42	42	1	6	4	Unk	12876-a-1-a mdlv @2	5ML TO 10ML		
43	43	1	7	4	Unk	140-12832-a-1-a @2	5ML TO 10ML		
44	44	1	8	4	Unk	140-12832-a-6-a @2	5ML TO 10ML		
45	45	1	9	4	Unk	12832-a-6-a PDS@2	5ML TO 10ML 5PPM PB		
46	46	1	10	4	Unk	12832-a-6-a PDSD@2	5ML TO 10ML 5PPM PB		
47	47	1	11	4	Unk	140-12832-a-11-a @2	5ML TO 10ML		
48	48	1	12	4	Unk	140-12832-a-16-a @2	5ML TO 10ML		
49	49	1	1	5	Unk	140-12855-a-1-a @2	5ML TO 10ML		
50	50	1	2	5	Unk	140-12855-a-3-a @2	5ML TO 10ML		
51	51	1	3	5	QC	CCV			
52	52	1	4	5	Unk	CCB			
53	53	1	5	5	Unk	140-12855-a-5-a @2	5ML TO 10ML (A)		
54	54	1	6	5	Unk	12855-a-5-a PDS@2	5ML TO 10ML		
55	55	1	7	5	Unk	12855-a-5-a PDSD@2	5ML TO 10ML		
56	56	1	8	5	Unk	140-12855-a-7-a @2	5ML TO 10ML		
57	57	1	9	5	Unk	140-12855-a-9-a @2	5ML TO 10ML		

	Pos ID	Rack	Row	Col	Type	Samplename	Comment	Custom ID1	Custom ID2
58	58	1	10	5	Unk	140-12855-a-11-a @2	5ML TO 10ML		
59	59	1	11	5	Unk	140-12855-a-13-a @2	5ML TO 10ML		
60	60	1	12	5	Unk	140-12855-a-15-a @2	5ML TO 10ML		
61	61	2	1	1	Unk	140-12855-a-17-a @2	5ML TO 10ML		
62	62	2	2	1	Unk	12855-a-5-a SD@10	2ML (A) TO 10ML		
63	63	2	3	1	QC	CCV			
64	64	2	4	1	Unk	CCB			
65	65	2	5	1	Unk	140-12855-a-19-a @2	5ML TO 10ML		
66	66	2	6	1	QC	CRI			
67	67	2	7	1	QC	CCV			
68	68	2	8	1	Unk	CCB			
69	69	2	9	1	Unk	Sample-61			
70	70	2	10	1	Unk	Sample-62			
71	71	2	11	1	Unk	Sample-42			

	Pos ID	Rack	Row	Col	Type	Samplename	Comment	Custom ID1	Custom ID2
1	1	1	1	1	QC	CCVL			
2	2	1	2	1	QC	ICV			
3	3	1	3	1	Unk	ICB			
4	4	1	4	1	Unk	ICSA	Adj. Cd - Rev		
5	5	1	5	1	Unk	ICSAB			
6	6	1	6	1	QC	CRI			
7	7	1	7	1	QC	CCV			
8	8	1	8	1	Unk	CCB			
9	9	1	9	1	Unk	mb 140-24136/18-a			
10	10	1	10	1	QC	lcs 140-24136/19-a	As, Co, Ni,	Pb, Se, Tl	
11	11	1	11	1	QC	lcsd 140-24136/20-a			
12	12	1	12	1	Unk	140-12876-a-5-a	Si ↑ @ 2		
13	13	1	1	2	Unk	140-12876-a-6-a mdlv			
14	14	1	2	2	Unk	140-12876-a-1-a mdlv	Si ↑ @ 2		
15	15	1	3	2	Unk	140-12832-a-1-a	Si ↑ @ 2		
16	16	1	4	2	Unk	140-12832-a-6-a	Si ↑ @ 2		
17	17	1	5	2	Unk	140-12832-a-6-a PDS	@ 2	> 4x Spike @ 5 ppm	
18	18	1	6	2	Unk	140-12832-a-6-a PDSD	@ 2		
19	19	1	7	2	QC	CCV			
20	20	1	8	2	Unk	CCB			
21	21	1	9	2	Unk	140-12832-a-11-a	Si ↑ @ 2	14667	
22	22	1	10	2	Unk	140-12832-a-16-a	Si ↑ @ 2		
23	23	1	11	2	Unk	140-12855-a-1-a	Si ↑ @ 2		
24	24	1	12	2	Unk	140-12855-a-3-a	Si ↑ @ 2		
25	25	1	1	3	Unk	140-12855-a-5-a	Si ↑ @ 2		
26	26	1	2	3	Unk	140-12855-a-5-a PDS	@ 2	14669	
27	27	1	3	3	Unk	140-12855-a-5-a PDSD	@ 2		
28	28	1	4	3	Unk	140-12855-a-7-a	Si ↑ @ 2		
29	29	1	5	3	Unk	140-12855-a-9-a	Si ↑ @ 2		
30	30	1	6	3	Unk	140-12855-a-5-a SD@5	2ML TO 10ML @ 10		
31	31	1	7	3	QC	CCV	Pb 5% RSD		
32	32	1	8	3	Unk	CCB			
33	33	1	9	3	Unk	140-12855-a-11-a	Si ↑ @ 2		
34	34	1	10	3	Unk	140-12855-a-13-a	Si ↑ @ 2		
35	35	1	11	3	Unk	140-12855-a-15-a	Si ↑ @ 2		
36	36	1	12	3	Unk	140-12855-a-17-a	Si ↑ @ 2		
37	37	1	1	4	Unk	140-12855-a-19-a	Si ↑ @ 2		
38	38	1	2	4	QC	CRI	-Tl		
39	39	1	3	4	QC	CCV			
40	40	1	4	4	Unk	CCB			
41	41	1	5	4	Unk	Sample-36			
42	42	1	6	4	Unk	Sample-37			
43	43	1	7	4	Unk	Sample-38			
44	44	1	8	4	Unk	Sample-39			
45	45	1	9	4	Unk	Sample-40			
46	46	1	10	4	Unk	Sample-41			
47	47	1	11	4	Unk	Sample-42			

F101018

Si - 80

CCVL - 255

ICV - 66

ICSA(Si) - 22

ICSAB - 25

CRI - 299

CCV - 288

Y - 41

H_2O - 14

PDS = 5 ppm Pb

1:10 50ppm

0.5 ml - 3

MDLV = Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Se, Sn, Sr, Ti, Tl, V, Zn

832 = Pb

855 = As, Cd, Co, Cr, Cu, Mn, Ni, Pb, Sb, Tl, V

[Ag, Ba, Be, P, Se, Zn]

TestAmerica Knoxville
Data Quality Checks

Sequence: F101018

Internal Standard

ICB Internal Standard	Area	LCL	UCL
Y_2243A	6921	4845	8998
Y_3710A	224124	156887	291361
Y_3710R	22198	15539	28858

10-Oct-18 04:05 PM 72 Samples were checked against the internal standard area limits

10-Oct-18 04:05 PM 0 Sample(s) failed the limits check

Date/Time	Lab ID	Problem

Relative Standard Deviation

10-Oct-18 4:05 PM 9 Standards were checked against the CCV/ICV %RSD limits

10-Oct-18 4:05 PM 1 Standard(s) failed the limits check

Date/Time	Lab ID	Problem
10-Oct-18 12:36:00 PM	CCV	B 2496A - RSD is 5.0% >= Limit of 5.0% - Analyte not reported
10-Oct-18 12:36:00 PM	CCV	Mn2576A - RSD is 5.0% >= Limit of 5.0% - 4.9849 < 5%
10-Oct-18 12:36:00 PM	CCV	Pb2203A - RSD is 5.3% >= Limit of 5.0% - All samples re-analyzed

KNR 10-10-18

29_FH_P Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 140-24136

Analyst: Collins, Kerry N

Batch Open: 10/3/2018 8:00:00AM

Batch End: 10/4/2018 5:00:00PM

Preparation, Total Metals (Stationary Source)

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	Matrix	Initial Amount	Final Amount	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1	140-12876-A-5 (29_6010C)	Q4 - Metals Source Air LODVs (140-12876-1)	Air Train Fr	1 Sample	100 mL	12/27/18	61_Days	N/A	Filter Lot# 56079 82.6mm Quartz	140-12876-A-5-A
2	140-12876-A-6~MDLV (29_6010C)	Q4 - Metals Source Air LODVs (140-12876-1)	Air Train Fr	1 Sample	100 mL	12/27/18	61_Days	N/A		140-12876-A-6-A MDLV
3	140-12876-A-1~MDLV (29_6010C)	Q4 - Metals Source Air LODVs (140-12876-1)	Air Train Fr	1 Sample	100 mL	12/27/18	61_Days	N/A	Filter Lot# 56079 82.6mm Quartz	140-12876-A-1-A MDLV
3	140-12876-A-1~MDLV (29_7470A)	Q4 - Metals Source Air LODVs (140-12876-1)	Air Train Fr	1 Sample	100 mL	12/27/18	61_Days	N/A	Filter Lot# 56079 82.6mm Quartz	140-12876-A-1-A MDLV
	140-12832-A-1 (29_6010C)	N/A (140-12832-1)	Air Train Fr	1 Sample	100 mL	10/12/18	13_Days	4		140-12832-A-1-A
	140-12832-A-1 (29_7470A)	N/A (140-12832-1)	Air Train Fr	1 Sample	100 mL	10/12/18	13_Days	4		140-12832-A-1-A
	140-12832-A-6 (29_6010C)	N/A (140-12832-1)	Air Train Fr	1 Sample	100 mL	10/12/18	13_Days	4		140-12832-A-6-A
5	140-12832-A-6 (29_7470A)	N/A (140-12832-1)	Air Train Fr	1 Sample	100 mL	10/12/18	13_Days	4		140-12832-A-6-A
6	140-12832-A-11 (29_6010C)	N/A (140-12832-1)	Air Train Fr	1 Sample	100 mL	10/12/18	13_Days	4		140-12832-A-11-A
6	140-12832-A-11 (29_7470A)	N/A (140-12832-1)	Air Train Fr	1 Sample	100 mL	10/12/18	13_Days	4		140-12832-A-11-A
7	140-12832-A-16 (29_6010C)	N/A (140-12832-1)	Air Train Fr	1 Sample	100 mL	10/12/18	13_Days	4		140-12832-A-16-A
7	140-12832-A-16 (29_7470A)	N/A (140-12832-1)	Air Train Fr	1 Sample	100 mL	10/12/18	13_Days	4		140-12832-A-16-A
8	140-12855-A-1 (29_6010C)	N/A (140-12855-1)	Air Train Fr	1 Sample	100 mL	10/16/18	13_Days	4		140-12855-A-1-A
	140-12855-A-3 (29_6010C)	N/A (140-12855-1)	Air Train Fr	1 Sample	100 mL	10/16/18	13_Days	4		140-12855-A-3-A

29_FH_P Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 140-24136

Analyst: Collins, Kerry N

Batch Open: 10/3/2018 8:00:00AM

Batch End: 10/4/2018 5:00:00PM

10	140-12855-A-5 (29_6010C) **	N/A (140-12855-1)	Air Train Fr	1 Sample	100 mL	10/16/18	13_Days	4	140-12855-A-5-A
11	140-12855-A-7 (29_6010C)	N/A (140-12855-1)	Air Train Fr	1 Sample	100 mL	10/16/18	13_Days	4	140-12855-A-7-A
12	140-12855-A-9 (29_6010C)	N/A (140-12855-1)	Air Train Fr	1 Sample	100 mL	10/16/18	13_Days	4	140-12855-A-9-A
13	140-12855-A-11 (29_6010C)	N/A (140-12855-1)	Air Train Fr	1 Sample	100 mL	10/16/18	13_Days	4	140-12855-A-11-A
14	140-12855-A-13 (29_6010C)	N/A (140-12855-1)	Air Train Fr	1 Sample	100 mL	10/16/18	13_Days	4	140-12855-A-13-A
15	140-12855-A-15 (29_6010C)	N/A (140-12855-1)	Air Train Fr	1 Sample	100 mL	10/16/18	13_Days	4	140-12855-A-15-A
	140-12855-A-17 (29_6010C)	N/A (140-12855-1)	Air Train Fr	1 Sample	100 mL	10/16/18	13_Days	4	140-12855-A-17-A
	140-12855-A-19 (29_6010C)	N/A (140-12855-1)	Air Train Fr	1 Sample	100 mL	10/16/18	13_Days	4	140-12855-A-19-A
	MB~140-24136/18 N/A	N/A		1 Sample	100 mL	N/A	N/A	N/A	MB 140-24136/18-A
19	LCS~140-24136/19 N/A	N/A		1 Sample	100 mL	N/A	N/A	N/A	LCS 140-24136/19-A
20	LCSD~140-24136/20 N/A	N/A		1 Sample	100 mL	N/A	N/A	N/A	LCSD 140-24136/20-A

Sample Name: ICIS Acquired: 10/10/2018 9:45:30 Type: Cal
Method: MT0007(v23) AIR HF 083118(v4) Mode: IR Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	-.00026	.00049	-.00099	.00017	.00171	-.00009
Stddev	.00002	.00012	.00009	.00001	.00056	.00001
%RSD	7.6651	24.548	9.3835	7.9258	32.577	13.457
#1	-.00028	.00038	-.00109	.00016	.00107	-.00008
#2	-.00025	.00062	-.00095	.00017	.00202	-.00010
#3	-.00025	.00048	-.00092	.00019	.00205	-.00008

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00396	-.00174	-.00187	.00003	.00015	.00006
Stddev	.00010	.00020	.00006	.00001	.00002	.00001
%RSD	2.5352	11.743	3.0661	52.762	11.194	23.026
#1	.00404	-.00198	-.00181	.00004	.00015	.00008
#2	.00398	-.00165	-.00193	.00001	.00017	.00005
#3	.00385	-.00160	-.00187	.00003	.00014	.00006

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00063	-.00229	-.00007	.00006	.00049	-.00022
Stddev	.00016	.00047	.00005	.00002	.00009	.00008
%RSD	25.602	20.585	80.737	32.893	18.593	35.616
#1	.00082	-.00275	-.00010	.00006	.00045	-.00025
#2	.00056	-.00230	-.00010	.00004	.00042	-.00013
#3	.00052	-.00181	-.00000	.00008	.00059	-.00029

Sample Name: ICIS Acquired: 10/10/2018 9:45:30 Type: Cal
Method: MT0007(v23) AIR HF 083118(v4) Mode: IR Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00245	-.00095	.00038	.00002	.00036	.00137
Stddev	.00023	.00014	.00003	.00001	.00011	.00013
%RSD	9.3511	14.527	7.7674	40.824	30.611	9.2396
#1	.00228	-.00104	.00035	.00001	.00028	.00128
#2	.00236	-.00079	.00041	.00001	.00032	.00132
#3	.00271	-.00102	.00037	.00003	.00049	.00152

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00073	.00021	.00030	-.00118	-.00005	-.00070
Stddev	.00006	.00004	.00004	.00010	.00010	.00004
%RSD	8.2341	16.857	14.120	8.4532	217.33	5.3425
#1	.00076	.00023	.00030	-.00117	.00007	-.00070
#2	.00066	.00017	.00033	-.00109	-.00008	-.00073
#3	.00077	.00023	.00025	-.00129	-.00013	-.00066

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	Cts/S	Cts/S
Avg	.00006	.00639
Stddev	.00004	.00009
%RSD	79.522	1.3597
#1	.00007	.00635
#2	.00001	.00634
#3	.00009	.00649

Sample Name: ICIS Acquired: 10/10/2018 9:45:30 Type: Cal
Method: MT0007(v23) AIR HF 083118(v4) Mode: IR Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6908.5	226080.	22142.
Stddev	24.6	276.	169.
%RSD	.35576	.12215	.76364
#1	6910.0	226150.	22336.
#2	6932.4	225780.	22031.
#3	6883.3	226310.	22059.

Sample Name: S1 Acquired: 10/10/2018 9:50:32 Type: Cal
Method: MT0007(v23) AIR HF 083118(v4) Mode: IR Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.15088	.68116	.06573	.10427	12.666	6.7353
Stddev	.00041	.00209	.00003	.00030	.095	.0175
%RSD	.27323	.30670	.05076	.29067	.75376	.25910
#1	.15042	.68352	.06569	.10396	12.610	6.7294
#2	.15120	.67954	.06575	.10457	12.776	6.7550
#3	.15102	.68043	.06574	.10428	12.611	6.7216

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	10.755	1.3809	3.6355	.23484	.44043	2.6766
Stddev	.039	.0039	.0053	.00146	.00158	.0056
%RSD	.35809	.28420	.14635	.62044	.35889	.20952
#1	10.785	1.3832	3.6405	.23599	.43861	2.6782
#2	10.712	1.3831	3.6361	.23533	.44131	2.6704
#3	10.768	1.3764	3.6299	.23321	.44139	2.6812

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2.9180	3.0904	.85302	1.3720	1.3737	.02874
Stddev	.0012	.0040	.00311	.0061	.0010	.00019
%RSD	.04149	.12860	.36432	.44619	.07549	.64929
#1	2.9189	3.0858	.85469	1.3776	1.3749	.02889
#2	2.9166	3.0927	.84944	1.3729	1.3730	.02854
#3	2.9184	3.0926	.85494	1.3655	1.3732	.02881

Sample Name: S1 Acquired: 10/10/2018 9:50:32 Type: Cal
Method: MT0007(v23) AIR HF 083118(v4) Mode: IR Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	10.816	2.5099	.17257	.00445	.13105	.07990
Stddev	.015	.0043	.00031	.00005	.00062	.00024
%RSD	.13930	.17043	.18018	1.0535	.46950	.29617
#1	10.799	2.5122	.17278	.00448	.13162	.07980
#2	10.819	2.5126	.17271	.00447	.13040	.07973
#3	10.829	2.5050	.17221	.00440	.13113	.08017

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.03760	.03821	.66604	15.438	.89658	.08842
Stddev	.00016	.00016	.00104	.176	.00262	.00016
%RSD	.41605	.40955	.15687	1.1411	.29207	.18594
#1	.03775	.03831	.66694	15.457	.89954	.08848
#2	.03744	.03803	.66630	15.254	.89457	.08823
#3	.03762	.03830	.66489	15.605	.89563	.08854

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	Cts/S	Cts/S
Avg	.36251	5.4582
Stddev	.00136	.0110
%RSD	.37517	.20226
#1	.36348	5.4693
#2	.36310	5.4580
#3	.36096	5.4472

Sample Name: S1 Acquired: 10/10/2018 9:50:32 Type: Cal
Method: MT0007(v23) AIR HF 083118(v4) Mode: IR Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6527.7	220110.	21904.
Stddev	9.6	758.	240.
%RSD	.14634	.34427	1.0937
#1	6521.4	219390.	21720.
#2	6523.0	220030.	22175.
#3	6538.7	220900.	21817.

Sample Name: CCVL Acquired: 10/10/2018 9:55:49 Type: QC
Method: MT0007(v23) AIR HF 083118(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.49045	12.369	.24755	1.0042	1.0017	1.0449
Stddev	.00166	.092	.00087	.0062	.0007	.0101
%RSD	.33832	.74414	.35066	.61703	.06731	.96578
#1	.48889	12.266	.24843	.99912	1.0025	1.0370
#2	.49028	12.442	.24752	1.0024	1.0012	1.0563
#3	.49219	12.399	.24669	1.0111	1.0014	1.0415
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	25.333	.25612	1.0222	1.0286	.98412	12.732
Stddev	.177	.00071	.0019	.0034	.00441	.078
%RSD	.69780	.27825	.18278	.32869	.44767	.61377
#1	25.129	.25530	1.0203	1.0292	.97996	12.777
#2	25.437	.25645	1.0240	1.0317	.98874	12.642
#3	25.434	.25661	1.0224	1.0250	.98365	12.778
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCVL Acquired: 10/10/2018 9:55:49 Type: QC
Method: MT0007(v23) AIR HF 083118(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	25.657	.98239	24.639	1.0470	1.0176	24.908
Stddev	.083	.00628	.096	.0029	.0014	.607
%RSD	.32261	.63946	.38891	.28204	.14296	2.4380
#1	25.567	.98926	24.530	1.0438	1.0159	25.011
#2	25.730	.97693	24.674	1.0476	1.0186	24.256
#3	25.675	.98098	24.711	1.0496	1.0182	25.457
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	25.071	1.0282	.99366	.25901	.25596	.24571
Stddev	.131	.0016	.00176	.00200	.00081	.00021
%RSD	.52168	.15610	.17752	.77340	.31519	.08750
#1	25.214	1.0270	.99166	.26132	.25548	.24594
#2	24.957	1.0277	.99435	.25777	.25552	.24569
#3	25.043	1.0300	.99497	.25794	.25689	.24551
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCVL Acquired: 10/10/2018 9:55:49 Type: QC
Method: MT0007(v23) AIR HF 083118(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.24408	1.0154	1.0215	1.0115	1.0070	.51864
Stddev	.00249	.0053	.0019	.0042	.0021	.00240
%RSD	1.0192	.51876	.18814	.41334	.20318	.46330
#1	.24465	1.0096	1.0196	1.0152	1.0049	.51824
#2	.24136	1.0166	1.0216	1.0070	1.0090	.51647
#3	.24623	1.0200	1.0234	1.0124	1.0070	.52122
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	1.0146	1.0087
Stddev	.0025	.0022
%RSD	.25019	.21782
#1	1.0133	1.0062
#2	1.0175	1.0105
#3	1.0129	1.0093
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCVL Acquired: 10/10/2018 9:55:49 Type: QC
Method: MT0007(v23) AIR HF 083118(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6829.2	226920.	22267.
Stddev	14.4	645.	126.
%RSD	.21128	.28443	.56751
#1	6820.9	227380.	22397.
#2	6845.8	226180.	22145.
#3	6820.8	227190.	22259.

Sample Name: ICV Acquired: 10/10/2018 10:00:42 Type: QC
Method: MT0007(v23) AIR HF 083118(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.48868	11.948	.24446	1.0112	.96736	1.0158
Stddev	.00043	.065	.00098	.0009	.00510	.0048
%RSD	.08794	.54804	.39917	.09270	.52682	.46920
#1	.48845	11.872	.24558	1.0105	.96173	1.0104
#2	.48842	11.986	.24389	1.0123	.96870	1.0194
#3	.48918	11.985	.24389	1.0108	.97166	1.0177
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	24.657	.25153	.98528	.99434	.95193	12.294
Stddev	.169	.00366	.01270	.00477	.00491	.049
%RSD	.68358	1.4553	1.2887	.47951	.51561	.39591
#1	24.538	.25431	.99482	.98908	.95058	12.251
#2	24.850	.24738	.97087	.99838	.94784	12.347
#3	24.584	.25290	.99015	.99556	.95738	12.283
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: ICV Acquired: 10/10/2018 10:00:42 Type: QC
Method: MT0007(v23) AIR HF 083118(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	24.963	.98196	23.950	1.0206	.98831	24.079
Stddev	.081	.00153	.246	.0050	.01161	.260
%RSD	.32585	.15586	1.0258	.49487	1.1750	1.0790
#1	24.876	.98024	23.853	1.0151	.99605	23.948
#2	25.038	.98315	24.230	1.0249	.97495	24.379
#3	24.975	.98250	23.768	1.0218	.99392	23.911
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	24.203	.98489	.95201	.25636	.25148	.23701
Stddev	.039	.01356	.01207	.00121	.00436	.00300
%RSD	.16079	1.3769	1.2678	.47202	1.7356	1.2649
#1	24.158	.99499	.96274	.25579	.25515	.23968
#2	24.224	.96948	.93894	.25554	.24665	.23377
#3	24.227	.99020	.95436	.25775	.25263	.23760
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: ICV Acquired: 10/10/2018 10:00:42 Type: QC
Method: MT0007(v23) AIR HF 083118(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.24342	.99365	.99759	.97712	.99941	.51999
Stddev	.00560	.00743	.01441	.00310	.00600	.00900
%RSD	2.3011	.74799	1.4447	.31746	.59992	1.7304
#1	.24371	.98530	1.0071	.97363	.99249	.52670
#2	.23769	.99609	.98100	.97815	1.0030	.50976
#3	.24888	.99955	1.0047	.97957	1.0028	.52349
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.98912	.96739
Stddev	.00254	.01115
%RSD	.25635	1.1525
#1	.98674	.97640
#2	.98883	.95492
#3	.99179	.97086
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: ICV Acquired: 10/10/2018 10:00:42 Type: QC
Method: MT0007(v23) AIR HF 083118(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6908.5	226680.	22019.
Stddev	70.4	1036.	166.
%RSD	1.0185	.45705	.75418
#1	6851.2	227740.	22094.
#2	6987.0	225670.	21829.
#3	6887.2	226620.	22135.

Sample Name: ICB Acquired: 10/10/2018 10:05:36 Type: Unk
Method: MT0007(v23) AIR HF 083118(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00009	.00722	-.00030	.00126	.00003	.00001
Stddev	.00029	.00991	.00111	.00041	.00012	.00001
%RSD	305.49	137.25	375.44	32.825	403.87	58.220
#1	-.00024	.01859	-.00134	.00167	.00016	.00002
#2	.00029	.00044	.00088	.00084	-.00009	.00001
#3	.00023	.00263	-.00043	.00127	.00002	.00001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00027	.00009	-.00002	.00012	.00023	-.00019
Stddev	.00169	.00004	.00008	.00028	.00020	.00134
%RSD	621.77	39.402	411.93	243.48	84.959	697.35
#1	.00217	.00011	-.00006	-.00000	.00045	.00020
#2	-.00026	.00005	.00008	.00044	.00005	.00091
#3	-.00109	.00011	-.00007	-.00009	.00020	-.00169
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: ICB Acquired: 10/10/2018 10:05:36 Type: Unk
Method: MT0007(v23) AIR HF 083118(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01361	.00085	-.00057	.00002	-.00011	.11792
Stddev	.00618	.00074	.00988	.00002	.00006	.82222
%RSD	45.400	86.539	1720.7	100.02	52.552	697.27
#1	.01677	.00019	.00346	.00003	-.00012	.66434
#2	.01758	.00165	.00666	.00005	-.00004	-.82769
#3	.00649	.00073	-.01184	-.00000	-.00015	.51711
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00157	.00007	.00100	-.00207	.00023	-.00006
Stddev	.00591	.00014	.00128	.00038	.00197	.00087
%RSD	376.33	206.10	127.56	18.472	845.53	1483.2
#1	.00181	-.00009	.00129	-.00164	-.00143	.00044
#2	.00188	.00018	-.00039	-.00218	-.00029	.00044
#3	-.00840	.00011	.00212	-.00238	.00241	-.00106
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: ICB Acquired: 10/10/2018 10:05:36 Type: Unk
Method: MT0007(v23) AIR HF 083118(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00071	-.00577	.00043	.00009	-.00026	.00169
Stddev	.00343	.00687	.00024	.00014	.00042	.00052
%RSD	486.36	119.05	56.242	154.68	160.72	30.448
#1	-.00058	-.01356	.00039	.00025	-.00062	.00218
#2	-.00190	-.00314	.00069	-.00002	.00020	.00116
#3	.00459	-.00061	.00021	.00005	-.00036	.00174
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	-.00006	.00000
Stddev	.00011	.00010
%RSD	174.49	8903.9
#1	-.00013	-.00009
#2	-.00012	-.00002
#3	.00007	.00011
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: ICB Acquired: 10/10/2018 10:05:36 Type: Unk
Method: MT0007(v23) AIR HF 083118(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6921.2	224120.	22198.
Stddev	18.9	3659.	304.
%RSD	.27316	1.6324	1.3683
#1	6929.5	219980.	22399.
#2	6934.6	225500.	22347.
#3	6899.6	226900.	21849.

Sample Name: ICSA Acquired: 10/10/2018 10:10:39 Type: Unk
Method: MT0007(v23) AIR HF 083118(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00063	488.64	.00849	.00989	F .01044	-.00037
Stddev	.00017	.97	.00084	.00075	.00005	.00002
%RSD	27.690	.19888	9.8669	7.5823	.46521	5.2339
#1	-.00051	489.61	.00924	.00929	.01048	-.00039
#2	-.00083	488.63	.00759	.00965	.01045	-.00037
#3	-.00055	487.67	.00863	.01073	.01038	-.00035
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass
High Limit					.01000	
Low Limit					-.01000	

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	459.03	F -.00815	-.00383	.00470	-.00196	182.35
Stddev	4.87	.00024	.00013	.00005	.00020	1.20
%RSD	1.0613	2.9616	3.4799	1.0269	10.401	.66056
#1	461.33	-.00824	-.00392	.00466	-.00173	183.69
#2	462.32	-.00833	-.00367	.00469	-.00204	181.35
#3	453.43	-.00787	-.00388	.00476	-.00211	182.03
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		.00500				
Low Limit		-.00500				

Sample Name: ICSA Acquired: 10/10/2018 10:10:39 Type: Unk
Method: MT0007(v23) AIR HF 083118(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05556	.01359	501.88	-.00705	-.00200	-.16537
Stddev	.02252	.00074	2.88	.00010	.00021	.45175
%RSD	40.527	5.4346	.57434	1.4618	10.341	273.17
#1	.08121	.01444	503.29	-.00704	-.00222	-.57483
#2	.04640	.01322	503.79	-.00716	-.00196	-.24052
#3	.03907	.01311	498.57	-.00696	-.00181	.31924
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04325	-.00401	-.01586	F .00818	.00576	.01226
Stddev	.00293	.00036	.00332	.00061	.00199	.00135
%RSD	6.7811	8.9997	20.950	7.5017	34.587	11.003
#1	.04251	-.00385	-.01620	.00877	.00426	.01076
#2	.04076	-.00376	-.01238	.00754	.00500	.01267
#3	.04649	-.00443	-.01899	.00823	.00802	.01336
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				.00800		
Low Limit				-.00800		

Sample Name: ICSA Acquired: 10/10/2018 10:10:39 Type: Unk
Method: MT0007(v23) AIR HF 083118(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00064	955.38	-.00263	.00486	-.01152	-.00231
Stddev	.00608	1.36	.00059	.00014	.00063	.00187
%RSD	943.56	.14198	22.602	2.8741	5.5101	81.032
#1	.00150	954.01	-.00329	.00478	-.01132	-.00445
#2	.00407	956.72	-.00244	.00502	-.01101	-.00152
#3	-.00750	955.40	-.00215	.00478	-.01223	-.00096
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00577	.00834
Stddev	.00055	.00033
%RSD	9.5270	3.9707
#1	.00606	.00798
#2	.00611	.00863
#3	.00513	.00842
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: ICSA Acquired: 10/10/2018 10:10:39 Type: Unk
Method: MT0007(v23) AIR HF 083118(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6070.6	206280.	21070.
Stddev	3.5	1147.	142.
%RSD	.05777	.55599	.67566
#1	6066.8	207550.	21029.
#2	6073.7	205320.	20953.
#3	6071.3	205980.	21229.

Sample Name: ICSA Acquired: 10/10/2018 10:18:55 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00061	484.65	.00351	.01158	F .01042	-.00039
Stddev	.00064	8.14	.00112	.00065	.00029	.00001
%RSD	104.88	1.6795	31.869	5.5975	2.7917	2.2456
#1	-.00044	490.02	.00383	.01232	.01053	-.00038
#2	-.00132	475.29	.00227	.01127	.01009	-.00039
#3	-.00007	488.65	.00444	.01114	.01063	-.00039
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass
High Limit					.01000	
Low Limit					-.01000	

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	453.08	-.00170	-.00390	.00471	-.00188	182.04
Stddev	3.71	.00012	.00034	.00023	.00017	1.95
%RSD	.81798	6.8950	8.7842	4.8207	9.2148	1.0725
#1	455.09	-.00183	-.00361	.00493	-.00187	184.27
#2	448.80	-.00163	-.00428	.00448	-.00206	180.65
#3	455.34	-.00163	-.00383	.00471	-.00171	181.20
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: ICSA Acquired: 10/10/2018 10:18:55 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.03101	.01379	496.62	-.00708	-.00184	-.80896
Stddev	.00989	.00029	9.38	.00016	.00009	.77366
%RSD	31.909	2.0800	1.8881	2.2003	4.7987	95.635
#1	.03012	.01367	505.14	-.00722	-.00187	-.97977
#2	.04131	.01358	486.57	-.00711	-.00191	.03582
#3	.02158	.01412	498.13	-.00692	-.00174	-1.4829
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04068	-.00382	-.01520	F .00949	.00467	.00988
Stddev	.00633	.00062	.00219	.00174	.00241	.00387
%RSD	15.565	16.118	14.411	18.369	51.694	39.236
#1	.04615	-.00321	-.01769	.00755	.00369	.00623
#2	.03374	-.00444	-.01435	.01001	.00742	.01395
#3	.04214	-.00383	-.01356	.01092	.00290	.00944
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				.00800		
Low Limit				-.00800		

Sample Name: ICSA Acquired: 10/10/2018 10:18:55 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00182	949.89	-.00259	.00488	-.00996	-.00262
Stddev	.00381	16.63	.00058	.00007	.00091	.00494
%RSD	208.60	1.7504	22.236	1.4083	9.0941	188.84
#1	.00293	961.44	-.00255	.00483	-.01085	-.00487
#2	-.00241	930.84	-.00318	.00486	-.00999	.00305
#3	.00495	957.41	-.00203	.00496	-.00904	-.00602
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00517	.00870
Stddev	.00029	.00013
%RSD	5.5950	1.4858
#1	.00508	.00855
#2	.00494	.00875
#3	.00550	.00879
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: ICSA Acquired: 10/10/2018 10:18:55 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6050.1	206260.	21188.
Stddev	25.5	1290.	312.
%RSD	.42124	.62553	1.4724
#1	6020.7	204840.	20845.
#2	6065.0	207350.	21454.
#3	6064.7	206590.	21266.

Sample Name: ICSAB Acquired: 10/10/2018 10:24:07 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.20385	246.25	.10036	.99071	.49628	.50626
Stddev	.00166	2.17	.00276	.01257	.00440	.00714
%RSD	.81384	.88094	2.7455	1.2690	.88746	1.4104
#1	.20506	246.73	.10347	.99882	.49739	.51114
#2	.20453	248.15	.09939	.99708	.50003	.50957
#3	.20196	243.89	.09822	.97623	.49143	.49806
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	236.16	.97288	.47880	.48703	.50423	95.876
Stddev	5.14	.01168	.00562	.00515	.00405	1.536
%RSD	2.1747	1.2007	1.1748	1.0573	.80299	1.6017
#1	234.87	.97436	.48099	.49101	.50290	96.053
#2	241.81	.98375	.48299	.48887	.50878	97.315
#3	231.78	.96053	.47240	.48122	.50101	94.259
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: ICSAB Acquired: 10/10/2018 10:24:07 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.643	1.0181	248.02	.48763	.99289	9.8922
Stddev	.111	.0102	4.07	.00599	.01067	.8452
%RSD	1.0410	1.0045	1.6429	1.2292	1.0742	8.5441
#1	10.654	1.0218	248.20	.49153	.99509	10.734
#2	10.748	1.0260	252.00	.49063	1.0023	9.0434
#3	10.527	1.0066	243.86	.48073	.98129	9.8994
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.094	.94377	.95588	.05130	.04713	.60753
Stddev	.123	.01058	.00641	.00287	.00152	.00730
%RSD	1.2195	1.1209	.67016	5.5904	3.2336	1.2017
#1	10.152	.94541	.95842	.05444	.04582	.60984
#2	10.176	.95343	.96063	.05063	.04881	.61339
#3	9.9522	.93247	.94859	.04882	.04678	.59935
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: ICSAB Acquired: 10/10/2018 10:24:07 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05049	F 1.9146	.96518	1.0051	.99533	.09268
Stddev	.00269	.2437	.00986	.0106	.00983	.00132
%RSD	5.3373	12.728	1.0212	1.0571	.98711	1.4254
#1	.04842	2.1687	.96854	1.0073	.99932	.09141
#2	.04950	1.8922	.97292	1.0145	1.0025	.09404
#3	.05353	1.6829	.95408	.99355	.98414	.09258
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		1.2049				
Low Limit		.79510				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.48794	.99687
Stddev	.00561	.00983
%RSD	1.1497	.98652
#1	.49237	1.0003
#2	.48983	1.0046
#3	.48163	.98579
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: ICSAB Acquired: 10/10/2018 10:24:07 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6511.4	218400.	21874.
Stddev	38.5	2377.	329.
%RSD	.59061	1.0884	1.5024
#1	6503.5	217000.	21831.
#2	6477.6	217060.	21569.
#3	6553.2	221150.	22222.

Sample Name: CRI Acquired: 10/10/2018 10:29:03 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00988	.20190	.01003	.20319	.01028	.00549
Stddev	.00009	.00807	.00135	.00041	.00005	.00002
%RSD	.95038	3.9949	13.412	.20272	.50928	.36287
#1	.00989	.20796	.00855	.20274	.01032	.00547
#2	.00978	.20500	.01118	.20326	.01022	.00548
#3	.00997	.19275	.01036	.20356	.01030	.00551
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.0431	.00546	.05116	.01037	.02457	.10641
Stddev	.0339	.00004	.00010	.00021	.00017	.00248
%RSD	.67293	.67593	.19497	2.0635	.69433	2.3294
#1	5.0417	.00545	.05106	.01061	.02438	.10645
#2	5.0777	.00543	.05126	.01020	.02468	.10887
#3	5.0098	.00550	.05116	.01030	.02466	.10391
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CRI Acquired: 10/10/2018 10:29:03 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.1821	.04995	4.8262	.01587	.04061	5.3859
Stddev	.0359	.00036	.0702	.00011	.00045	.2281
%RSD	.69268	.72147	1.4553	.71053	1.1159	4.2346
#1	5.2151	.05037	4.8653	.01583	.04082	5.1298
#2	5.1439	.04973	4.8682	.01579	.04093	5.4610
#3	5.1875	.04977	4.7451	.01600	.04009	5.5670
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.8297	.04111	.29827	.01058	.01105	.05928
Stddev	.0140	.00013	.00158	.00178	.00063	.00116
%RSD	.28988	.31270	.53025	16.793	5.7049	1.9620
#1	4.8422	.04126	.29849	.01234	.01040	.05935
#2	4.8146	.04103	.29973	.01062	.01110	.06041
#3	4.8322	.04104	.29659	.00878	.01166	.05809
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CRI Acquired: 10/10/2018 10:29:03 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01126	.74123	.10407	.04989	.05082	.01229
Stddev	.00247	.04574	.00074	.00015	.00058	.00132
%RSD	21.905	6.1713	.70676	.30239	1.1374	10.700
#1	.00978	.78204	.10490	.04985	.05148	.01239
#2	.00989	.74987	.10378	.04977	.05042	.01356
#3	.01410	.69179	.10351	.05006	.05054	.01093
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.02515	.02135
Stddev	.00013	.00012
%RSD	.53650	.57774
#1	.02507	.02123
#2	.02531	.02148
#3	.02508	.02135
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CRI Acquired: 10/10/2018 10:29:03 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6856.7	225960.	22088.
Stddev	10.3	184.	398.
%RSD	.14959	.08140	1.8041
#1	6847.3	225760.	21918.
#2	6855.2	226130.	21803.
#3	6867.6	225990.	22543.

Sample Name: CCV Acquired: 10/10/2018 10:34:03 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.96994	24.387	.48962	1.9731	1.9864	2.0323
Stddev	.00369	.053	.00288	.0030	.0018	.0120
%RSD	.38000	.21853	.58742	.15326	.08988	.58834
#1	.97418	24.325	.48887	1.9721	1.9851	2.0262
#2	.96820	24.421	.49280	1.9765	1.9884	2.0461
#3	.96745	24.414	.48720	1.9707	1.9856	2.0246
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.329	.50059	2.0033	2.0037	1.9651	24.978
Stddev	.234	.00087	.0035	.0118	.0131	.091
%RSD	.47372	.17314	.17350	.58794	.66846	.36578
#1	49.435	.50071	2.0072	1.9913	1.9801	25.057
#2	49.491	.50139	2.0025	2.0147	1.9555	25.000
#3	49.061	.49967	2.0004	2.0051	1.9598	24.878
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 10/10/2018 10:34:03 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.729	1.9410	48.854	2.0305	2.0004	48.565
Stddev	.148	.0012	.368	.0097	.0024	.702
%RSD	.29734	.06303	.75252	.47929	.11902	1.4462
#1	49.648	1.9422	49.143	2.0211	2.0031	47.996
#2	49.900	1.9410	48.978	2.0405	1.9993	48.348
#3	49.639	1.9398	48.440	2.0299	1.9988	49.350
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.392	1.9989	1.9557	.50294	.50004	.48553
Stddev	.113	.0024	.0006	.00507	.00095	.00191
%RSD	.22829	.11870	.03074	1.0081	.19022	.39309
#1	49.484	2.0013	1.9553	.49807	.49938	.48709
#2	49.425	1.9990	1.9564	.50819	.49961	.48610
#3	49.266	1.9965	1.9555	.50255	.50113	.48340
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 10/10/2018 10:34:03 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.49053	2.0939	2.0017	2.0026	1.9826	1.0021
Stddev	.00431	.0216	.0023	.0021	.0032	.0100
%RSD	.87834	1.0299	.11624	.10555	.16062	.99931
#1	.49495	2.1154	2.0044	2.0030	1.9815	1.0051
#2	.48635	2.0939	2.0007	2.0045	1.9862	.99095
#3	.49028	2.0723	2.0001	2.0003	1.9801	1.0103
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	1.9929	1.9907
Stddev	.0057	.0041
%RSD	.28728	.20660
#1	1.9882	1.9953
#2	1.9993	1.9873
#3	1.9912	1.9896
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV Acquired: 10/10/2018 10:34:03 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6714.3	223990.	22011.
Stddev	37.9	684.	197.
%RSD	.56509	.30531	.89476
#1	6680.5	224720.	21901.
#2	6755.4	223360.	21895.
#3	6707.0	223880.	22239.

Sample Name: CCB Acquired: 10/10/2018 10:38:57 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00013	-.00144	.00030	.00164	-.00001	.00001
Stddev	.00028	.00574	.00026	.00054	.00011	.00001
%RSD	218.27	398.68	86.594	33.111	845.56	129.19
#1	-.00019	-.00807	.00014	.00182	.00009	.00001
#2	.00025	.00205	.00059	.00103	-.00001	.00001
#3	.00032	.00170	.00016	.00207	-.00012	-.00000
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00166	.00010	-.00020	.00003	.00019	.00184
Stddev	.00025	.00008	.00011	.00028	.00018	.00152
%RSD	15.047	81.625	57.958	944.48	95.701	82.446
#1	.00194	.00008	-.00011	-.00029	-.00000	.00329
#2	.00145	.00003	-.00032	.00018	.00021	.00026
#3	.00159	.00019	-.00016	.00020	.00035	.00197
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 10/10/2018 10:38:57 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00971	.00090	-.00069	.00003	-.00006	-.10344
Stddev	.00775	.00068	.00305	.00002	.00009	.36602
%RSD	79.777	75.898	442.93	75.123	155.81	353.85
#1	.00170	.00070	.00161	.00001	-.00007	-.11810
#2	.01027	.00165	.00047	.00005	.00004	.26969
#3	.01716	.00034	-.00415	.00002	-.00015	-.46192
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00603	.00030	.00071	.00062	-.00017	-.00118
Stddev	.00027	.00007	.00179	.00040	.00139	.00097
%RSD	4.5559	22.493	251.89	64.983	816.61	82.698
#1	.00605	.00037	-.00057	.00059	-.00109	-.00225
#2	.00575	.00024	-.00006	.00023	-.00084	-.00094
#3	.00629	.00029	.00276	.00103	.00143	-.00034
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 10/10/2018 10:38:57 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00215	.07627	.00002	.00005	.00046	-.00002
Stddev	.00329	.00508	.00046	.00007	.00042	.00344
%RSD	153.33	6.6580	2506.3	135.47	90.679	15063.
#1	.00113	.07855	.00041	.00008	.00094	.00268
#2	.00582	.07046	-.00049	.00009	.00023	.00115
#3	-.00052	.07981	.00014	-.00003	.00020	-.00390
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	-.00007	-.00009
Stddev	.00019	.00003
%RSD	251.01	38.432
#1	-.00016	-.00007
#2	.00014	-.00013
#3	-.00021	-.00007
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB Acquired: 10/10/2018 10:38:57 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6933.8	226810.	22308.
Stddev	52.9	271.	81.
%RSD	.76339	.11969	.36138
#1	6880.7	226970.	22324.
#2	6986.6	226500.	22380.
#3	6934.0	226960.	22221.

Sample Name: mb 140-24136/18-a Acquired: 10/10/2018 10:44:01 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00014	.00309	.00252	F 135.75	.00073	.00000
Stddev	.00006	.00514	.00080	.98	.00007	.00000
%RSD	47.100	166.36	31.824	.71916	9.6600	141.38
#1	-.00020	-.00185	.00175	134.69	.00080	-.00000
#2	-.00008	.00271	.00336	136.62	.00073	.00001
#3	-.00013	.00841	.00246	135.93	.00066	.00000
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				.20000		
Low Limit				-.20000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.11215	-.00010	.00042	.00015	.00069	.00632
Stddev	.00148	.00007	.00013	.00024	.00007	.00120
%RSD	1.3176	66.450	31.405	162.62	9.7217	18.979
#1	.11284	-.00017	.00037	.00035	.00064	.00701
#2	.11316	-.00003	.00032	-.00012	.00077	.00700
#3	.11046	-.00010	.00057	.00022	.00067	.00493
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: mb 140-24136/18-a Acquired: 10/10/2018 10:44:01 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.03233	.00101	.01461	.00036	.00059	-.05657
Stddev	.01997	.00094	.01291	.00007	.00007	.45232
%RSD	61.771	92.731	88.418	18.820	12.421	799.50
#1	.05456	.00033	.01917	.00041	.00059	-.08086
#2	.01589	.00208	.00003	.00039	.00052	-.49626
#3	.02656	.00063	.02462	.00028	.00067	.40740
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.03182	.00044	.00281	.00066	-.00174	.00157
Stddev	.00532	.00018	.00078	.00322	.00067	.00056
%RSD	16.706	40.352	27.943	490.83	38.678	35.754
#1	.03461	.00064	.00368	-.00055	-.00237	.00222
#2	.03517	.00036	.00216	.00430	-.00180	.00127
#3	.02569	.00031	.00258	-.00179	-.00104	.00123
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: mb 140-24136/18-a Acquired: 10/10/2018 10:44:01 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00462	F 8.4020	.00181	.00057	-.00012	.00226
Stddev	.00041	5.7781	.00038	.00005	.00068	.00236
%RSD	8.9494	68.771	21.050	9.1598	565.06	104.45
#1	-.00415	14.758	.00144	.00059	-.00070	.00399
#2	-.00476	6.9819	.00180	.00051	-.00030	.00321
#3	-.00494	3.4663	.00220	.00061	.00063	-.00043
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		.50000				
Low Limit		-.50000				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	-.00013	.00282
Stddev	.00032	.00008
%RSD	255.39	2.6831
#1	-.00047	.00285
#2	-.00009	.00274
#3	.00018	.00288
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: mb 140-24136/18-a Acquired: 10/10/2018 10:44:01 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6862.7	227920.	22839.
Stddev	52.9	865.	130.
%RSD	.77046	.37943	.57056
#1	6804.5	228850.	22911.
#2	6907.7	227790.	22688.
#3	6876.0	227140.	22917.

Sample Name: lcs 140-24136/19-a Acquired: 10/10/2018 10:49:12 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04850	1.9066	.10446	F 136.44	.09998	.05013
Stddev	.00080	.0147	.00106	2.93	.00037	.00104
%RSD	1.6447	.77281	1.0169	2.1509	.36832	2.0649
#1	.04923	1.9005	.10338	139.44	.10036	.05086
#2	.04765	1.9234	.10551	133.58	.09997	.04895
#3	.04863	1.8959	.10448	136.28	.09962	.05058
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
Value				1.0000		
Range				20.000%		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.871	.05154	.10106	.20345	.24454	1.0063
Stddev	.093	.00017	.00009	.00414	.00524	.0014
%RSD	.19110	.33819	.09307	2.0369	2.1416	.13797
#1	48.775	.05153	.10111	.20507	.24877	1.0077
#2	48.876	.05138	.10095	.19875	.23869	1.0062
#3	48.962	.05172	.10112	.20655	.24617	1.0049
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: lcs 140-24136/19-a Acquired: 10/10/2018 10:49:12 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.916	.09949	9.4323	.10204	.51395	48.869
Stddev	.123	.00068	.0165	.00199	.00058	.307
%RSD	.25085	.68709	.17550	1.9551	.11370	.62825
#1	48.989	.09974	9.4245	.10325	.51330	48.614
#2	48.985	.10001	9.4212	.09974	.51414	48.784
#3	48.774	.09871	9.4514	.10312	.51442	49.210
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.547	.50147	5.0231	.10150	.09880	.50716
Stddev	.248	.00016	.0231	.00239	.00084	.00365
%RSD	.51041	.03232	.45931	2.3542	.84998	.71900
#1	48.819	.50130	5.0416	.10213	.09895	.50918
#2	48.491	.50147	5.0304	.09886	.09955	.50934
#3	48.333	.50163	4.9972	.10351	.09789	.50295
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: lcs 140-24136/19-a Acquired: 10/10/2018 10:49:12 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.14694	5.5489	.51189	.49538	.10153	.41697
Stddev	.00273	.0596	.00020	.00181	.00072	.00121
%RSD	1.8585	1.0749	.03915	.36501	.71125	.29052
#1	.14866	5.6174	.51212	.49710	.10235	.41730
#2	.14837	5.5208	.51176	.49554	.10098	.41563
#3	.14379	5.5085	.51180	.49349	.10127	.41799
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.20004	.50635
Stddev	.00451	.00032
%RSD	2.2544	.06274
#1	.20313	.50661
#2	.19486	.50646
#3	.20213	.50600
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: lcs 140-24136/19-a Acquired: 10/10/2018 10:49:12 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6726.2	223730.	22209.
Stddev	12.2	3705.	129.
%RSD	.18114	1.6559	.58173
#1	6714.4	221210.	22123.
#2	6725.5	227990.	22357.
#3	6738.8	222000.	22146.

Sample Name: lcsd 140-24136/20-a Acquired: 10/10/2018 10:54:08 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04899	1.9080	.10203	F 136.58	.09979	.05005
Stddev	.00011	.0071	.00124	1.55	.00023	.00023
%RSD	.21472	.36980	1.2122	1.1330	.22985	.45232
#1	.04904	1.9046	.10121	134.86	.09960	.04982
#2	.04887	1.9033	.10143	137.00	.10004	.05008
#3	.04906	1.9161	.10345	137.86	.09972	.05027
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
Value				1.0000		
Range				20.000%		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.508	.05111	.10001	.20380	.24477	.99313
Stddev	.114	.00032	.00016	.00091	.00060	.00450
%RSD	.23398	.61936	.15876	.44549	.24676	.45309
#1	48.637	.05137	.10015	.20305	.24521	.98836
#2	48.424	.05121	.10005	.20355	.24502	.99730
#3	48.463	.05076	.09984	.20481	.24408	.99373
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: lcsd 140-24136/20-a Acquired: 10/10/2018 10:54:08 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.498	.09915	9.3273	.10217	.51007	48.025
Stddev	.089	.00078	.0457	.00045	.00048	.077
%RSD	.18378	.78687	.49047	.43926	.09507	.16077
#1	48.571	.09853	9.3133	.10186	.51002	47.986
#2	48.523	.10002	9.2901	.10196	.50962	47.975
#3	48.399	.09888	9.3784	.10268	.51058	48.114
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.231	.49692	4.9876	.10068	.09864	.50306
Stddev	.127	.00098	.0140	.00074	.00058	.00102
%RSD	.26385	.19656	.27999	.73422	.59141	.20278
#1	48.090	.49666	5.0021	.09987	.09931	.50231
#2	48.264	.49610	4.9743	.10086	.09840	.50265
#3	48.338	.49800	4.9864	.10131	.09822	.50422
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: lcsd 140-24136/20-a Acquired: 10/10/2018 10:54:08 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.14611	F 7.0731	.50898	.49215	.10087	.40991
Stddev	.00201	.0136	.00085	.00109	.00089	.00196
%RSD	1.3783	.19254	.16722	.22058	.87946	.47776
#1	.14605	7.0884	.50804	.49091	.10095	.41193
#2	.14412	7.0690	.50924	.49293	.10171	.40979
#3	.14815	7.0621	.50968	.49261	.09995	.40802
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value		5.0000				
Range		20.000%				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.20063	.50238
Stddev	.00111	.00074
%RSD	.55479	.14750
#1	.19977	.50318
#2	.20022	.50172
#3	.20188	.50224
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: lcsd 140-24136/20-a Acquired: 10/10/2018 10:54:08 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6714.5	222700.	22473.
Stddev	11.5	1566.	124.
%RSD	.17119	.70301	.55149
#1	6702.7	224350.	22332.
#2	6725.6	222540.	22568.
#3	6715.4	221230.	22518.

Sample Name: 140-12876-a-5-a Acquired: 10/10/2018 10:59:05 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00007	.50014	.00990	F 125.21	.01146	.00002
Stddev	.00039	.00650	.00082	1.10	.00004	.00001
%RSD	545.84	1.3000	8.3105	.87621	.37747	21.079
#1	-.00030	.50357	.01082	125.92	.01151	.00003
#2	.00037	.50422	.00965	123.95	.01143	.00002
#3	-.00029	.49265	.00924	125.76	.01145	.00002
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.38437	-.00150	-.00383	.00808	.00371	.09752
Stddev	.00102	.00007	.00040	.00056	.00012	.00131
%RSD	.26482	4.7596	10.406	6.8760	3.3602	1.3457
#1	.38407	-.00145	-.00350	.00817	.00374	.09854
#2	.38550	-.00146	-.00371	.00748	.00382	.09604
#3	.38353	-.00158	-.00427	.00858	.00358	.09799
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12876-a-5-a Acquired: 10/10/2018 10:59:05 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.19270	.00084	.08442	.00326	.04467	.49011
Stddev	.00182	.00034	.00649	.00007	.00026	.26553
%RSD	.94385	40.533	7.6852	2.2032	.58115	54.177
#1	.19084	.00115	.08850	.00323	.04494	.50909
#2	.19279	.00048	.07694	.00321	.04467	.74565
#3	.19447	.00089	.08783	.00334	.04442	.21560
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.08980	-.00257	-.01367	-.00101	.00333	.01100
Stddev	.00097	.00052	.00077	.00417	.00250	.00149
%RSD	1.0795	20.265	5.6095	412.42	75.092	13.546
#1	.08970	-.00205	-.01403	-.00357	.00599	.00950
#2	.09082	-.00257	-.01419	-.00327	.00296	.01248
#3	.08889	-.00309	-.01279	.00380	.00104	.01104
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12876-a-5-a Acquired: 10/10/2018 10:59:05 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00564	F 1203.9	-.00236	.00214	.00845	-.00225
Stddev	.00106	3.5	.00013	.00003	.00012	.00317
%RSD	18.810	.28943	5.6021	1.4838	1.4458	140.99
#1	.00483	1201.7	-.00221	.00214	.00857	-.00548
#2	.00525	1202.0	-.00239	.00217	.00845	-.00213
#3	.00684	1207.9	-.00247	.00211	.00833	.00086
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		1000.0				
Low Limit		-1000.0				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00046	.02287
Stddev	.00017	.00018
%RSD	37.769	.79275
#1	.00066	.02287
#2	.00035	.02269
#3	.00036	.02305
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12876-a-5-a Acquired: 10/10/2018 10:59:05 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6853.8	226590.	22587.
Stddev	13.6	925.	88.
%RSD	.19816	.40814	.39108
#1	6868.5	227010.	22486.
#2	6851.4	227240.	22651.
#3	6841.6	225530.	22623.

Sample Name: 140-12876-a-6-a mdlv Acquired: 10/10/2018 11:04:16 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00950	.21210	.01391	F 137.15	.01069	.00098
Stddev	.00014	.00327	.00074	.41	.00007	.00002
%RSD	1.5194	1.5398	5.3078	.29764	.62893	2.2169
#1	.00959	.20832	.01451	137.09	.01075	.00096
#2	.00933	.21401	.01414	137.58	.01070	.00100
#3	.00957	.21395	.01309	136.78	.01061	.00099
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.1100	.00515	.02009	.01020	.01266	.11276
Stddev	.0051	.00007	.00011	.00003	.00028	.00179
%RSD	.45877	1.3659	.54831	.29335	2.2407	1.5842
#1	1.1089	.00520	.02022	.01017	.01298	.11072
#2	1.1056	.00507	.02005	.01021	.01251	.11405
#3	1.1156	.00517	.02001	.01023	.01248	.11351
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12876-a-6-a mdlv Acquired: 10/10/2018 11:04:16 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.0937	.01547	.48257	.01581	.04039	4.7900
Stddev	.0101	.00064	.01038	.00016	.00013	.6210
%RSD	.48005	4.1391	2.1505	1.0033	.32678	12.965
#1	2.0825	.01592	.48509	.01583	.04049	4.2777
#2	2.1019	.01574	.47116	.01596	.04043	5.4807
#3	2.0967	.01473	.49146	.01564	.04024	4.6116
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.8803	.04040	.14351	.01018	.00885	.02922
Stddev	.0215	.00025	.00004	.00163	.00088	.00037
%RSD	.44064	.62347	.02507	15.981	9.9042	1.2553
#1	4.8602	.04051	.14353	.01035	.00786	.02951
#2	4.8777	.04058	.14347	.01172	.00919	.02933
#3	4.9030	.04011	.14353	.00848	.00951	.02880
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12876-a-6-a mdlv Acquired: 10/10/2018 11:04:16 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00626	1.9958	.10306	.02505	.04993	.01158
Stddev	.00271	.0073	.00068	.00009	.00099	.00129
%RSD	43.307	.36617	.65811	.36618	1.9791	11.134
#1	.00591	1.9926	.10383	.02513	.04992	.01136
#2	.00374	2.0041	.10257	.02495	.05093	.01042
#3	.00912	1.9906	.10278	.02507	.04895	.01297
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.01036	.02209
Stddev	.00023	.00016
%RSD	2.2591	.73526
#1	.01047	.02221
#2	.01009	.02215
#3	.01052	.02190
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12876-a-6-a mdlv Acquired: 10/10/2018 11:04:16 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6859.5	225080.	22338.
Stddev	30.2	1837.	27.
%RSD	.43957	.81594	.12015
#1	6825.0	224930.	22356.
#2	6880.5	223320.	22307.
#3	6873.1	226980.	22350.

Sample Name: 140-12876-a-1-a mdlv Acquired: 10/10/2018 11:09:23 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00978	.72096	.01986	F 126.58	.02397	.00099
Stddev	.00030	.00595	.00097	.31	.00010	.00001
%RSD	3.0232	.82566	4.8605	.24605	.43536	.68340
#1	.00988	.72707	.02036	126.57	.02393	.00100
#2	.00944	.72064	.02048	126.89	.02388	.00099
#3	.01000	.71518	.01875	126.27	.02408	.00099
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.5794	.00336	.01482	.01923	.01735	.20361
Stddev	.0173	.00014	.00061	.00018	.00015	.00274
%RSD	1.0977	4.0758	4.1316	.94686	.83876	1.3467
#1	1.5785	.00350	.01475	.01918	.01734	.20055
#2	1.5971	.00334	.01546	.01908	.01750	.20585
#3	1.5624	.00322	.01424	.01943	.01721	.20443
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12876-a-1-a mdlv Acquired: 10/10/2018 11:09:23 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.1686	.01526	.58596	.01877	.08771	5.1547
Stddev	.0050	.00052	.01542	.00004	.00030	.5647
%RSD	.22970	3.3821	2.6310	.20430	.34574	10.955
#1	2.1735	.01475	.58524	.01875	.08738	5.8006
#2	2.1689	.01524	.60172	.01875	.08779	4.7543
#3	2.1636	.01578	.57091	.01882	.08796	4.9091
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.8800	.03514	.12308	.00769	.01447	.03884
Stddev	.0070	.00064	.00191	.00213	.00496	.00290
%RSD	.14341	1.8112	1.5532	27.726	34.254	7.4609
#1	4.8843	.03484	.12293	.01008	.01532	.03971
#2	4.8838	.03588	.12125	.00700	.00915	.03560
#3	4.8720	.03472	.12506	.00599	.01895	.04120
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12876-a-1-a mdlv Acquired: 10/10/2018 11:09:23 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01389	F 1297.1	.09229	.02808	.05667	.00799
Stddev	.00238	26.9	.00087	.00007	.00034	.00315
%RSD	17.117	2.0766	.94752	.23509	.59209	39.439
#1	.01384	1285.1	.09134	.02810	.05629	.00845
#2	.01153	1327.9	.09248	.02813	.05690	.01089
#3	.01629	1278.2	.09305	.02801	.05683	.00464
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		1000.0				
Low Limit		-1000.0				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.01059	.03205
Stddev	.00020	.00005
%RSD	1.8465	.15262
#1	.01066	.03210
#2	.01074	.03205
#3	.01037	.03200
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12876-a-1-a mdlv Acquired: 10/10/2018 11:09:23 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6796.1	225250.	22600.
Stddev	20.0	439.	240.
%RSD	.29488	.19490	1.0633
#1	6819.2	225070.	22779.
#2	6784.1	224930.	22327.
#3	6784.9	225750.	22693.

Sample Name: 140-12832-a-1-a Acquired: 10/10/2018 11:14:36 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.03964	4.0131	.97357	F 120.72	.10245	.03792
Stddev	.00043	.0080	.00195	.52	.00017	.00032
%RSD	1.0891	.20033	.20005	.43256	.16817	.83345
#1	.03940	4.0050	.97573	120.42	.10252	.03790
#2	.03939	4.0210	.97307	120.41	.10225	.03762
#3	.04014	4.0134	.97193	121.32	.10258	.03825
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.0938	.16548	.18538	.14564	4.9157	25.157
Stddev	.0298	.00019	.00118	.00033	.0102	.185
%RSD	.96326	.11288	.63484	.22798	.20792	.73650
#1	3.0602	.16527	.18411	.14538	4.9041	24.943
#2	3.1171	.16558	.18644	.14601	4.9195	25.266
#3	3.1040	.16560	.18559	.14553	4.9235	25.262
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12832-a-1-a Acquired: 10/10/2018 11:14:36 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	66.381	1.4540	.70090	.12424	.45692	11.360
Stddev	.173	.0020	.00650	.00056	.00128	.433
%RSD	.26123	.13607	.92672	.45271	.27948	3.8089
#1	66.190	1.4549	.69878	.12392	.45813	10.984
#2	66.425	1.4518	.69573	.12391	.45704	11.833
#3	66.529	1.4554	.70819	.12489	.45559	11.263
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	18.975	1.1564	22.076	11.689	11.712	.66362
Stddev	.026	.0019	.019	.088	.009	.00032
%RSD	.13940	.16579	.08423	.74885	.07971	.04822
#1	18.955	1.1546	22.081	11.681	11.704	.66328
#2	18.966	1.1584	22.092	11.606	11.722	.66365
#3	19.005	1.1562	22.056	11.781	11.710	.66392
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12832-a-1-a Acquired: 10/10/2018 11:14:36 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.07455	F 1607.6	.56157	.08154	.35880	.48927
Stddev	.00388	36.4	.00205	.00002	.00098	.00232
%RSD	5.2090	2.2664	.36534	.02747	.27405	.47412
#1	.07854	1567.0	.55924	.08154	.35800	.48914
#2	.07078	1637.4	.56311	.08151	.35989	.48702
#3	.07433	1618.4	.56236	.08156	.35850	.49165
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		1000.0				
Low Limit		-1000.0				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.19622	F 17.900
Stddev	.00048	.005
%RSD	.24375	.02728
#1	.19674	17.895
#2	.19579	17.904
#3	.19613	17.902
Check ?	Chk Pass	Chk Fail
High Limit		10.000
Low Limit		-10.000

Sample Name: 140-12832-a-1-a Acquired: 10/10/2018 11:14:36 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6872.4	226430.	22768.
Stddev	37.4	1087.	293.
%RSD	.54451	.47993	1.2870
#1	6834.1	226590.	23106.
#2	6908.8	227440.	22618.
#3	6874.4	225280.	22580.

Sample Name: 140-12832-a-6-a Acquired: 10/10/2018 11:19:37 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.03211	4.7368	.85082	F 119.53	.11643	.02899
Stddev	.00010	.0181	.00325	.49	.00030	.00010
%RSD	.30830	.38124	.38194	.40915	.26004	.34411
#1	.03207	4.7159	.85127	119.06	.11664	.02888
#2	.03222	4.7470	.85383	120.04	.11657	.02904
#3	.03203	4.7474	.84737	119.50	.11609	.02906
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.8817	.10508	.10468	.14336	3.4213	19.350
Stddev	.0120	.00005	.00028	.00046	.0253	.064
%RSD	.30811	.04518	.27218	.32024	.73953	.32928
#1	3.8849	.10508	.10469	.14308	3.4296	19.310
#2	3.8684	.10512	.10496	.14389	3.4414	19.318
#3	3.8917	.10503	.10439	.14311	3.3929	19.424
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12832-a-6-a Acquired: 10/10/2018 11:19:37 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	55.797	.77909	.81930	.10720	.43856	13.539
Stddev	.109	.00293	.01504	.00043	.00114	.571
%RSD	.19555	.37551	1.8363	.39759	.25988	4.2171
#1	55.909	.77894	.80503	.10671	.43745	12.881
#2	55.793	.77625	.83501	.10744	.43973	13.829
#3	55.690	.78209	.81786	.10746	.43852	13.906
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	15.821	.75524	12.500	5.4556	5.4599	.30278
Stddev	.063	.00118	.025	.0151	.0069	.00156
%RSD	.40012	.15659	.20182	.27755	.12589	.51649
#1	15.800	.75397	12.488	5.4381	5.4623	.30107
#2	15.770	.75630	12.529	5.4636	5.4652	.30414
#3	15.892	.75546	12.483	5.4651	5.4521	.30314
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12832-a-6-a Acquired: 10/10/2018 11:19:37 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.09859	F 1569.1	.21076	.11046	.40530	.40172
Stddev	.00302	14.8	.00182	.00017	.00123	.00272
%RSD	3.0616	.94018	.86461	.15465	.30466	.67759
#1	.10113	1558.6	.20917	.11029	.40643	.40399
#2	.09938	1585.9	.21275	.11044	.40549	.40245
#3	.09525	1562.6	.21035	.11063	.40398	.39870
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		1000.0				
Low Limit		-1000.0				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.13543	7.6107
Stddev	.00048	.0117
%RSD	.35173	.15424
#1	.13591	7.6039
#2	.13543	7.6242
#3	.13496	7.6040
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12832-a-6-a Acquired: 10/10/2018 11:19:37 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6951.2	229550.	22874.
Stddev	9.6	445.	45.
%RSD	.13875	.19389	.19745
#1	6961.0	229590.	22847.
#2	6941.8	229080.	22926.
#3	6950.8	229970.	22850.

Sample Name: 140-12832-a-6-a PDS Acquired: 10/10/2018 11:24:39 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.08034	6.5839	.92723	F 118.23	.21435	.08033
Stddev	.00010	.0378	.00260	.29	.00075	.00034
%RSD	.12602	.57351	.27998	.24766	.35145	.42914
#1	.08040	6.5745	.92436	118.18	.21354	.07999
#2	.08040	6.6255	.92791	118.55	.21446	.08031
#3	.08022	6.5518	.92941	117.97	.21503	.08068
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	52.549	.15181	.20023	.34351	3.5741	19.998
Stddev	.182	.00032	.00042	.00179	.0081	.060
%RSD	.34643	.21082	.20898	.52051	.22780	.30076
#1	52.353	.15147	.19975	.34145	3.5763	19.929
#2	52.713	.15187	.20047	.34466	3.5651	20.035
#3	52.582	.15210	.20048	.34442	3.5809	20.030
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12832-a-6-a PDS Acquired: 10/10/2018 11:24:39 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 100.06	.87051	10.103	.20641	.93439	60.412
Stddev	.26	.00275	.035	.00109	.00191	.370
%RSD	.26025	.31588	.34939	.52927	.20461	.61314
#1	99.769	.86760	10.087	.20515	.93257	60.076
#2	100.27	.87307	10.143	.20704	.93422	60.809
#3	100.14	.87087	10.078	.20705	.93638	60.352
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.00					
Low Limit	-100.00					

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	63.465	1.2108	17.042	5.4000	5.3764	.78268
Stddev	.171	.0052	.031	.0288	.0191	.00144
%RSD	.26927	.42602	.18326	.53252	.35495	.18410
#1	63.296	1.2052	17.014	5.3669	5.3569	.78360
#2	63.638	1.2121	17.036	5.4138	5.3772	.78102
#3	63.462	1.2152	17.075	5.4193	5.3950	.78342
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12832-a-6-a PDS Acquired: 10/10/2018 11:24:39 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.24002	F 1566.4	.68337	.61560	.50254	.76958
Stddev	.00508	4.7	.00317	.00114	.00148	.00132
%RSD	2.1153	.30000	.46340	.18561	.29543	.17134
#1	.24065	1561.4	.67990	.61428	.50089	.76820
#2	.24475	1570.7	.68409	.61622	.50377	.77082
#3	.23465	1567.1	.68611	.61631	.50297	.76971
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		1000.0				
Low Limit		-1000.0				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.33672	7.9407
Stddev	.00130	.0157
%RSD	.38562	.19737
#1	.33525	7.9227
#2	.33768	7.9480
#3	.33725	7.9513
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12832-a-6-a PDS Acquired: 10/10/2018 11:24:39 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6836.9	225330.	22513.
Stddev	12.9	659.	82.
%RSD	.18821	.29237	.36421
#1	6851.6	225160.	22509.
#2	6830.9	226050.	22433.
#3	6828.0	224760.	22597.

Sample Name: 140-12832-a-6-a PDSD Acquired: 10/10/2018 11:29:38 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.07928	6.5248	.92376	F 116.74	.21181	.07835
Stddev	.00233	.1067	.00193	.66	.00508	.00280
%RSD	2.9347	1.6351	.20935	.56374	2.3984	3.5706
#1	.07724	6.4279	.92229	117.18	.20699	.07578
#2	.07879	6.5075	.92304	117.06	.21131	.07792
#3	.08182	6.6391	.92595	115.99	.21711	.08133
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	52.210	.15111	.20021	.33497	3.5877	19.820
Stddev	1.125	.00295	.00607	.01038	.0157	.098
%RSD	2.1548	1.9529	3.0300	3.0976	.43808	.49425
#1	53.243	.14844	.19450	.32572	3.5971	19.765
#2	52.375	.15062	.19956	.33300	3.5963	19.762
#3	51.012	.15428	.20658	.34619	3.5695	19.933
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12832-a-6-a PDSD Acquired: 10/10/2018 11:29:38 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	99.698	.86309	10.017	.20144	.93122	60.430
Stddev	.894	.00432	.175	.00474	.02510	1.111
%RSD	.89713	.50059	1.7427	2.3544	2.6951	1.8379
#1	100.48	.86030	10.179	.19688	.90707	61.079
#2	99.891	.86091	10.041	.20111	.92943	61.063
#3	98.723	.86806	9.8318	.20635	.95717	59.148
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	62.981	1.2075	16.958	5.2817	5.3471	.77813
Stddev	1.108	.0274	.168	.0136	.0103	.01817
%RSD	1.7598	2.2660	.98873	.25781	.19201	2.3344
#1	64.075	1.1829	16.801	5.2715	5.3503	.76006
#2	63.009	1.2026	16.939	5.2972	5.3356	.77794
#3	61.859	1.2370	17.135	5.2766	5.3554	.79639
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12832-a-6-a PDSD Acquired: 10/10/2018 11:29:38 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.23838	F 1584.7	.67936	.60026	.49793	.76921
Stddev	.00728	15.9	.02240	.02519	.00435	.01837
%RSD	3.0558	1.0015	3.2975	4.1960	.87327	2.3879
#1	.23003	1596.4	.66001	.57827	.49351	.75118
#2	.24164	1566.6	.67416	.59477	.49807	.76855
#3	.24346	1591.1	.70390	.62773	.50220	.78790
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		1000.0				
Low Limit		-1000.0				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.33129	7.9102
Stddev	.00986	.0153
%RSD	2.9748	.19281
#1	.32178	7.8959
#2	.33064	7.9085
#3	.34145	7.9262
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12832-a-6-a PDSD Acquired: 10/10/2018 11:29:38 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6862.2	227800.	22583.
Stddev	23.9	964.	58.
%RSD	.34770	.42315	.25580
#1	6856.9	227190.	22649.
#2	6841.4	227290.	22542.
#3	6888.2	228910.	22557.

Sample Name: CCV Acquired: 10/10/2018 11:34:37 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.95905	24.604	.48910	1.9916	2.0350	2.0825
Stddev	.00874	.202	.00316	.0134	.0093	.0354
%RSD	.91151	.82013	.64609	.67412	.45884	1.7005
#1	.96620	24.602	.49020	1.9973	2.0416	2.0624
#2	.94931	24.403	.49157	1.9762	2.0243	2.1234
#3	.96166	24.807	.48554	2.0012	2.0391	2.0618
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.541	.50972	2.0429	2.0369	1.9841	25.614
Stddev	.708	.00206	.0107	.0186	.0203	.318
%RSD	1.4290	.40332	.52167	.91064	1.0232	1.2410
#1	49.281	.50835	2.0384	2.0381	2.0027	25.511
#2	49.000	.51208	2.0550	2.0178	1.9625	25.360
#3	50.342	.50872	2.0352	2.0549	1.9872	25.970
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 10/10/2018 11:34:37 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.434	1.9283	49.258	2.0226	2.0484	48.264
Stddev	.279	.0124	.931	.0162	.0098	.552
%RSD	.56538	.64259	1.8900	.80285	.47920	1.1443
#1	49.604	1.9394	48.823	2.0232	2.0445	48.559
#2	49.112	1.9150	48.624	2.0060	2.0596	47.627
#3	49.587	1.9307	50.327	2.0384	2.0411	48.607
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.395	2.0089	1.9618	.50243	.50670	.48447
Stddev	.296	.0094	.0072	.00413	.00153	.00448
%RSD	.59868	.46518	.36463	.82172	.30168	.92564
#1	49.492	2.0067	1.9652	.50281	.50519	.48341
#2	49.063	2.0192	1.9667	.49812	.50824	.48939
#3	49.630	2.0009	1.9536	.50635	.50667	.48062
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 10/10/2018 11:34:37 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.50151	F 12.251	2.0309	2.0477	2.0268	.99742
Stddev	.00251	.172	.0135	.0112	.0178	.00909
%RSD	.50093	1.4074	.66262	.54843	.87956	.91153
#1	.50177	12.209	2.0236	2.0536	2.0237	.99797
#2	.50387	12.104	2.0464	2.0348	2.0107	1.0062
#3	.49887	12.441	2.0225	2.0548	2.0460	.98806
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value		2.0000				
Range		10.500%				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	2.0353	2.0317
Stddev	.0190	.0095
%RSD	.93224	.46911
#1	2.0384	2.0278
#2	2.0149	2.0426
#3	2.0525	2.0248
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV Acquired: 10/10/2018 11:34:37 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6719.6	223980.	22063.
Stddev	26.2	1524.	319.
%RSD	.39018	.68056	1.4437
#1	6710.1	222660.	22186.
#2	6699.5	225650.	22301.
#3	6749.2	223650.	21701.

Sample Name: CCB Acquired: 10/10/2018 11:39:30 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00017	.00298	-.00039	.04165	.00008	-.00000
Stddev	.00030	.00327	.00086	.00098	.00009	.00002
%RSD	179.75	109.86	222.70	2.3429	106.69	17124.
#1	-.00016	.00473	.00049	.04179	.00018	.00002
#2	.00024	.00501	-.00123	.04061	.00005	-.00000
#3	.00042	-.00080	-.00041	.04255	.00001	-.00002
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00350	.00008	.00008	.00008	.00006	-.00010
Stddev	.00070	.00005	.00015	.00075	.00031	.00054
%RSD	20.071	56.682	196.88	937.18	483.42	532.11
#1	.00431	.00010	.00000	.00047	.00042	-.00000
#2	.00320	.00003	-.00002	-.00078	-.00007	-.00068
#3	.00300	.00012	.00024	.00055	-.00016	.00038
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 10/10/2018 11:39:30 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.07447	.00097	-.00079	.00005	-.00013	-.04073
Stddev	.00823	.00035	.00916	.00004	.00021	.13808
%RSD	11.052	35.899	1165.2	78.904	162.37	339.01
#1	.06586	.00057	-.01019	.00003	.00003	.11601
#2	.08226	.00120	-.00028	.00002	-.00005	-.14441
#3	.07530	.00113	.00811	.00009	-.00037	-.09378
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00733	.00040	-.00035	-.00077	-.00033	-.00264
Stddev	.00338	.00032	.00200	.00239	.00255	.00123
%RSD	46.180	79.482	575.07	309.31	779.66	46.472
#1	.00734	.00005	-.00253	.00079	-.00302	-.00280
#2	.00394	.00067	.00009	.00041	.00205	-.00378
#3	.01070	.00049	.00140	-.00352	-.00001	-.00134
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 10/10/2018 11:39:30 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00032	F 8.2387	-.00014	.00012	-.00045	.00105
Stddev	.00261	.2410	.00048	.00005	.00034	.00269
%RSD	810.93	2.9247	338.11	38.982	76.972	255.34
#1	-.00152	8.3771	-.00070	.00010	-.00007	.00402
#2	.00267	8.3784	.00014	.00009	-.00054	.00034
#3	-.00212	7.9604	.00013	.00017	-.00074	-.00121
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		.48200				
Low Limit		-.48200				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00013	-.00027
Stddev	.00011	.00008
%RSD	85.408	29.781
#1	.00026	-.00022
#2	.00004	-.00022
#3	.00010	-.00036
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB Acquired: 10/10/2018 11:39:30 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6912.7	225510.	22241.
Stddev	57.0	1757.	66.
%RSD	.82463	.77910	.29520
#1	6874.6	223480.	22316.
#2	6885.4	226420.	22197.
#3	6978.3	226620.	22210.

Sample Name: 140-12832-a-11-a Acquired: 10/10/2018 11:44:33 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.03134	4.2297	1.1498	F 120.91	.13377	.03835
Stddev	.00021	.0024	.0005	.80	.00048	.00025
%RSD	.65411	.05803	.04464	.66124	.35812	.66195
#1	.03157	4.2278	1.1502	120.10	.13421	.03821
#2	.03127	4.2325	1.1493	121.70	.13384	.03864
#3	.03118	4.2289	1.1501	120.93	.13326	.03820
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.0055	.11697	.11036	.12743	3.5837	21.688
Stddev	.0115	.00005	.00031	.00087	.0155	.089
%RSD	.38142	.04701	.28223	.67996	.43366	.41181
#1	3.0156	.11704	.11051	.12740	3.5790	21.735
#2	2.9930	.11694	.11001	.12831	3.5711	21.585
#3	3.0078	.11695	.11058	.12658	3.6011	21.745
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12832-a-11-a Acquired: 10/10/2018 11:44:33 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	53.727	.83117	.70581	.13863	.45253	14.182
Stddev	.155	.00175	.00955	.00067	.00073	.301
%RSD	.28874	.21076	1.3537	.48546	.16107	2.1222
#1	53.751	.83036	.69483	.13824	.45323	14.504
#2	53.869	.83318	.71223	.13940	.45178	13.907
#3	53.562	.82997	.71037	.13823	.45259	14.136
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	17.224	.69712	12.446	6.7596	6.7459	.27731
Stddev	.017	.00112	.032	.0444	.0043	.00153
%RSD	.09973	.16110	.25565	.65684	.06369	.55006
#1	17.228	.69821	12.483	6.7408	6.7456	.27901
#2	17.205	.69596	12.430	6.8103	6.7418	.27608
#3	17.239	.69720	12.426	6.7277	6.7504	.27682
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12832-a-11-a Acquired: 10/10/2018 11:44:33 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.16842	F 1610.9	.27036	.13172	.43050	.43510
Stddev	.00221	17.1	.00086	.00020	.00086	.00302
%RSD	1.3133	1.0603	.31655	.15489	.20034	.69467
#1	.16611	1619.5	.27134	.13180	.42964	.43833
#2	.17052	1591.2	.26997	.13149	.43049	.43234
#3	.16864	1621.9	.26977	.13187	.43137	.43463
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		1000.0				
Low Limit		-1000.0				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.15482	8.9127
Stddev	.00097	.0052
%RSD	.62914	.05780
#1	.15403	8.9179
#2	.15591	8.9124
#3	.15453	8.9076
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12832-a-11-a Acquired: 10/10/2018 11:44:33 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6952.3	229500.	23073.
Stddev	10.2	671.	175.
%RSD	.14681	.29222	.75756
#1	6940.9	229280.	22903.
#2	6960.5	228960.	23252.
#3	6955.6	230250.	23065.

Sample Name: 140-12832-a-16-a Acquired: 10/10/2018 11:49:36 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00001	.85867	.01183	F 125.25	.03086	.00002
Stddev	.00040	.00416	.00111	.60	.00015	.00002
%RSD	3567.0	.48501	9.3551	.47796	.48653	82.217
#1	.00046	.85827	.01215	125.90	.03069	.00000
#2	-.00027	.86302	.01060	124.73	.03091	.00002
#3	-.00016	.85471	.01274	125.12	.03098	.00004
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.42070	-.00186	-.00480	.01416	.00187	.13151
Stddev	.00202	.00010	.00023	.00009	.00035	.00204
%RSD	.47981	5.1337	4.6967	.64296	18.764	1.5494
#1	.41953	-.00197	-.00501	.01423	.00180	.12959
#2	.42303	-.00178	-.00456	.01420	.00225	.13365
#3	.41954	-.00183	-.00482	.01406	.00156	.13129
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12832-a-16-a Acquired: 10/10/2018 11:49:36 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.20916	.00055	.13272	.00488	.11671	-.09994
Stddev	.01404	.00033	.00502	.00003	.00027	.23571
%RSD	6.7103	60.842	3.7811	.55466	.23274	235.86
#1	.21619	.00026	.13111	.00486	.11673	.11735
#2	.21829	.00046	.13834	.00491	.11697	-.06663
#3	.19300	.00091	.12870	.00488	.11643	-.35054
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.38183	.01459	-.01366	.00241	.00627	.01168
Stddev	.00341	.00034	.00070	.00272	.00296	.00151
%RSD	.89430	2.2986	5.1490	112.87	47.129	12.892
#1	.38298	.01420	-.01381	.00395	.00684	.01330
#2	.37799	.01482	-.01290	.00400	.00307	.01033
#3	.38452	.01474	-.01428	-.00073	.00891	.01141
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12832-a-16-a Acquired: 10/10/2018 11:49:36 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00294	F 1648.3	-.00366	.00369	.01102	-.00301
Stddev	.00134	24.6	.00039	.00012	.00039	.00153
%RSD	45.504	1.4896	10.643	3.2964	3.5453	50.825
#1	.00427	1640.6	-.00385	.00382	.01147	-.00285
#2	.00159	1675.8	-.00321	.00368	.01087	-.00157
#3	.00296	1628.5	-.00392	.00357	.01073	-.00461
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		1000.0				
Low Limit		-1000.0				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00071	.02305
Stddev	.00014	.00017
%RSD	19.648	.75046
#1	.00059	.02324
#2	.00086	.02300
#3	.00068	.02290
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12832-a-16-a Acquired: 10/10/2018 11:49:36 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6820.4	223840.	22577.
Stddev	33.5	634.	164.
%RSD	.49046	.28328	.72673
#1	6781.9	223400.	22683.
#2	6842.1	223550.	22388.
#3	6837.2	224570.	22661.

Sample Name: 140-12855-a-1-a Acquired: 10/10/2018 11:54:53 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.02048	.90327	.01273	F 125.38	.05754	.00003
Stddev	.00014	.03329	.00032	1.09	.00006	.00002
%RSD	.66714	3.6855	2.5478	.86652	.11114	61.116
#1	.02047	.94087	.01289	124.13	.05753	.00001
#2	.02062	.87754	.01294	125.85	.05760	.00004
#3	.02035	.89142	.01235	126.14	.05748	.00003
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.9522	-.00155	-.00346	.03098	.01010	.87617
Stddev	.0080	.00010	.00032	.00026	.00012	.00319
%RSD	.40766	6.7627	9.2292	.83870	1.2276	.36431
#1	1.9430	-.00154	-.00309	.03076	.01002	.87420
#2	1.9570	-.00145	-.00364	.03126	.01004	.87985
#3	1.9565	-.00166	-.00365	.03092	.01024	.87446
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-1-a Acquired: 10/10/2018 11:54:53 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.37707	.00134	.20233	.01616	.11397	1.2015
Stddev	.01130	.00131	.01036	.00009	.00032	.6332
%RSD	2.9974	98.279	5.1212	.56224	.27714	52.707
#1	.37794	.00167	.19988	.01621	.11377	.47147
#2	.36536	-.00011	.19341	.01622	.11381	1.6030
#3	.38791	.00245	.21370	.01606	.11434	1.5300
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.0949	.03337	-.00998	.00113	.00754	.01116
Stddev	.0095	.00025	.00345	.00281	.00172	.00140
%RSD	.86472	.75791	34.535	248.01	22.783	12.561
#1	1.0907	.03366	-.01256	-.00203	.00823	.01206
#2	1.1057	.03320	-.01131	.00335	.00880	.00954
#3	1.0882	.03325	-.00607	.00208	.00558	.01186
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-1-a Acquired: 10/10/2018 11:54:53 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00246	F 1634.6	.05745	.00685	.01585	.00094
Stddev	.00367	21.8	.00079	.00005	.00043	.00199
%RSD	149.04	1.3355	1.3687	.75676	2.7445	212.59
#1	.00044	1648.7	.05732	.00687	.01576	.00206
#2	.00670	1609.4	.05673	.00690	.01632	-.00136
#3	.00025	1645.6	.05829	.00680	.01546	.00212
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		1000.0				
Low Limit		-1000.0				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00113	.08029
Stddev	.00019	.00008
%RSD	16.414	.09342
#1	.00091	.08022
#2	.00123	.08029
#3	.00124	.08037
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12855-a-1-a Acquired: 10/10/2018 11:54:53 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6829.2	224310.	22491.
Stddev	8.1	175.	60.
%RSD	.11899	.07814	.26587
#1	6837.4	224170.	22559.
#2	6829.2	224250.	22465.
#3	6821.1	224500.	22448.

Sample Name: 140-12855-a-3-a Acquired: 10/10/2018 12:00:08 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.38423	.93247	.01221	F 124.10	.05850	.00004
Stddev	.00116	.00495	.00164	.39	.00050	.00001
%RSD	.30254	.53036	13.436	.31144	.85237	17.878
#1	.38304	.92691	.01177	124.47	.05793	.00003
#2	.38430	.93636	.01402	124.12	.05870	.00004
#3	.38536	.93415	.01083	123.70	.05886	.00004
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.3598	-.00125	-.00340	.03242	.01279	1.0337
Stddev	.0386	.00010	.00057	.00063	.00005	.0117
%RSD	1.6380	8.0948	16.781	1.9302	.42424	1.1343
#1	2.3156	-.00137	-.00393	.03176	.01280	1.0206
#2	2.3872	-.00118	-.00280	.03250	.01284	1.0375
#3	2.3767	-.00121	-.00347	.03301	.01274	1.0431
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-3-a Acquired: 10/10/2018 12:00:08 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.51349	.00176	.22501	.01964	.11234	.69233
Stddev	.00547	.00066	.00842	.00014	.00017	.28344
%RSD	1.0648	37.376	3.7405	.72184	.14933	40.940
#1	.51674	.00205	.21588	.01947	.11252	1.0177
#2	.51655	.00223	.23246	.01973	.11219	.55996
#3	.50718	.00101	.22668	.01971	.11232	.49930
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.1148	.04153	-.00164	.00867	.02179	.00981
Stddev	.0132	.00144	.00200	.00350	.00172	.00159
%RSD	1.1857	3.4620	121.82	40.414	7.9056	16.206
#1	1.1009	.04031	.00002	.00825	.02196	.01164
#2	1.1272	.04312	-.00108	.01237	.01999	.00893
#3	1.1162	.04117	-.00385	.00540	.02342	.00885
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-3-a Acquired: 10/10/2018 12:00:08 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00371	F 1610.1	.05439	.00819	.01960	-.00240
Stddev	.00084	31.7	.00066	.00004	.00075	.00060
%RSD	22.746	1.9685	1.2121	.42908	3.8483	24.988
#1	.00354	1594.9	.05370	.00820	.01898	-.00269
#2	.00462	1646.5	.05502	.00823	.01939	-.00281
#3	.00296	1588.8	.05444	.00816	.02044	-.00171
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		1000.0				
Low Limit		-1000.0				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00130	.10903
Stddev	.00011	.00011
%RSD	8.3482	.09715
#1	.00138	.10899
#2	.00118	.10916
#3	.00136	.10896
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12855-a-3-a Acquired: 10/10/2018 12:00:08 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6820.0	225210.	22835.
Stddev	3.6	44.	294.
%RSD	.05300	.01971	1.2879
#1	6815.8	225220.	23094.
#2	6821.7	225160.	22516.
#3	6822.4	225250.	22896.

Sample Name: 140-12855-a-5-a Acquired: 10/10/2018 12:05:21 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.36388	1.2255	.01107	F 123.12	.05765	.00002
Stddev	.00196	.0158	.00093	.40	.00003	.00000
%RSD	.53930	1.2867	8.3675	.32148	.05111	25.979
#1	.36213	1.2198	.01155	123.57	.05768	.00002
#2	.36600	1.2133	.01001	122.96	.05766	.00002
#3	.36350	1.2433	.01167	122.83	.05762	.00001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.7851	-.00092	-.00323	.03338	.01501	1.1762
Stddev	.0112	.00002	.00026	.00020	.00026	.0055
%RSD	.40316	2.1515	8.1501	.61393	1.7437	.46721
#1	2.7814	-.00095	-.00316	.03343	.01471	1.1802
#2	2.7762	-.00092	-.00352	.03315	.01519	1.1699
#3	2.7977	-.00091	-.00300	.03356	.01514	1.1784
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-5-a Acquired: 10/10/2018 12:05:21 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.54408	.00148	.24433	.02145	.11281	1.5576
Stddev	.00592	.00022	.00567	.00010	.00040	.2845
%RSD	1.0877	15.187	2.3225	.47653	.35538	18.264
#1	.53831	.00140	.24702	.02151	.11327	1.7602
#2	.55013	.00173	.24815	.02150	.11254	1.2324
#3	.54381	.00131	.23781	.02133	.11263	1.6802
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.2486	.07457	.00059	.00213	.00909	.01113
Stddev	.0016	.00050	.00122	.00488	.00178	.00190
%RSD	.12755	.67035	204.87	229.52	19.630	17.025
#1	1.2468	.07469	-.00058	.00677	.00844	.00930
#2	1.2493	.07402	.00051	-.00296	.01111	.01308
#3	1.2498	.07500	.00185	.00257	.00772	.01102
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-5-a Acquired: 10/10/2018 12:05:21 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00421	F 1607.6	.06033	.00766	.01849	-.00338
Stddev	.00203	22.3	.00059	.00009	.00078	.00151
%RSD	48.304	1.3896	.97432	1.1825	4.1968	44.764
#1	.00633	1601.2	.06076	.00774	.01858	-.00212
#2	.00228	1589.2	.06057	.00768	.01767	-.00297
#3	.00402	1632.4	.05966	.00756	.01922	-.00506
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		1000.0				
Low Limit		-1000.0				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00200	.15052
Stddev	.00020	.00022
%RSD	9.8182	.14582
#1	.00193	.15077
#2	.00184	.15045
#3	.00222	.15034
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12855-a-5-a Acquired: 10/10/2018 12:05:21 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6830.7	225260.	22636.
Stddev	7.8	922.	224.
%RSD	.11390	.40946	.99067
#1	6831.7	224190.	22577.
#2	6822.4	225780.	22884.
#3	6837.9	225800.	22447.

Sample Name: 140-12855-a-5-a PDS Acquired: 10/10/2018 12:10:32 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.40665	3.1217	.11208	F 121.53	.16022	.05179
Stddev	.00028	.0522	.00318	1.24	.00147	.00058
%RSD	.06850	1.6712	2.8365	1.0207	.91810	1.1271
#1	.40638	3.0657	.10976	120.98	.15853	.05118
#2	.40663	3.1302	.11077	122.95	.16096	.05235
#3	.40694	3.1690	.11570	120.66	.16118	.05185
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	51.805	.05050	.09838	.24399	.27765	2.1902
Stddev	1.932	.00061	.00158	.00215	.00312	.0289
%RSD	3.7299	1.2161	1.6040	.88209	1.1225	1.3195
#1	53.776	.04981	.09656	.24163	.27447	2.1596
#2	51.726	.05074	.09917	.24583	.27779	2.2169
#3	49.914	.05096	.09940	.24451	.28070	2.1942
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-5-a PDS Acquired: 10/10/2018 12:10:32 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.587	.10147	9.6165	.12444	.64462	50.096
Stddev	1.813	.00170	.3654	.00125	.00571	1.303
%RSD	3.7309	1.6780	3.7996	1.0077	.88510	2.6000
#1	50.548	.09956	9.9635	.12311	.63812	51.557
#2	48.241	.10202	9.6507	.12560	.64693	49.057
#3	46.972	.10283	9.2352	.12460	.64881	49.673
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.142	.56512	5.0540	.09984	.10231	.51227
Stddev	2.212	.00528	.0611	.00154	.00099	.00502
%RSD	4.4114	.93497	1.2081	1.5388	.96560	.97977
#1	52.463	.55924	4.9843	.09964	.10343	.50648
#2	49.906	.56665	5.0796	.10146	.10197	.51528
#3	48.058	.56947	5.0980	.09841	.10154	.51506
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-5-a PDS Acquired: 10/10/2018 12:10:32 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.14920	F 1592.8	.55235	.52919	.12343	.38544
Stddev	.00205	32.6	.00620	.00665	.00270	.00370
%RSD	1.3709	2.0484	1.1216	1.2558	2.1900	.96053
#1	.14843	1559.2	.54528	.52152	.12059	.38126
#2	.14765	1624.3	.55495	.53294	.12374	.38831
#3	.15152	1594.9	.55682	.53311	.12597	.38675
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		1000.0				
Low Limit		-1000.0				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.21211	.65957
Stddev	.00185	.00442
%RSD	.87378	.66994
#1	.21007	.65460
#2	.21257	.66110
#3	.21369	.66303
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12855-a-5-a PDS Acquired: 10/10/2018 12:10:32 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6716.1	222140.	22445.
Stddev	9.2	1019.	316.
%RSD	.13624	.45883	1.4058
#1	6705.6	221780.	22712.
#2	6721.1	221350.	22097.
#3	6721.7	223290.	22527.

Sample Name: 140-12855-a-5-a PDSD Acquired: 10/10/2018 12:15:34 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.40697	3.0905	.11144	F 122.38	.16031	.05179
Stddev	.00237	.0346	.00020	1.14	.00325	.00152
%RSD	.58131	1.1188	.17635	.93006	2.0262	2.9367
#1	.40424	3.0516	.11126	121.10	.15674	.05008
#2	.40825	3.1025	.11141	122.75	.16110	.05229
#3	.40841	3.1176	.11165	123.28	.16309	.05299
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.830	.05067	.09941	.24339	.27796	2.1909
Stddev	2.542	.00122	.00266	.00567	.00720	.0412
%RSD	5.0018	2.4084	2.6802	2.3289	2.5906	1.8787
#1	53.215	.04935	.09639	.23754	.27021	2.1442
#2	51.120	.05090	.10046	.24378	.27924	2.2071
#3	48.155	.05175	.10140	.24886	.28444	2.2216
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-5-a PDSD Acquired: 10/10/2018 12:15:34 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	47.718	.10251	9.4750	.12456	.64598	48.701
Stddev	2.405	.00319	.4465	.00316	.01321	2.870
%RSD	5.0407	3.1078	4.7129	2.5345	2.0451	5.8931
#1	49.986	.09885	9.8809	.12103	.63133	51.519
#2	47.972	.10410	9.5474	.12552	.64962	48.802
#3	45.196	.10459	8.9967	.12713	.65699	45.782
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.299	.56714	5.0542	.10293	.10404	.50968
Stddev	2.245	.01155	.1147	.00620	.00060	.00650
%RSD	4.5543	2.0364	2.2702	6.0265	.57279	1.2762
#1	51.221	.55407	4.9231	.09631	.10339	.50266
#2	49.844	.57139	5.1034	.10386	.10456	.51087
#3	46.831	.57597	5.1361	.10862	.10417	.51550
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-5-a PDSD Acquired: 10/10/2018 12:15:34 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.14629	F 1588.3	.55422	.52989	.12280	.38742
Stddev	.00513	6.0	.01300	.01578	.00232	.00745
%RSD	3.5050	.37653	2.3458	2.9771	1.8921	1.9225
#1	.14247	1584.0	.53948	.51267	.12017	.37910
#2	.14429	1585.6	.55916	.53336	.12365	.38967
#3	.15212	1595.1	.56403	.54365	.12458	.39348
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		1000.0				
Low Limit		-1000.0				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.21155	.66004
Stddev	.00536	.01195
%RSD	2.5336	1.8108
#1	.20605	.64646
#2	.21185	.66469
#3	.21676	.66896
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12855-a-5-a PDSD Acquired: 10/10/2018 12:15:34 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6714.3	220900.	22371.
Stddev	23.5	633.	84.
%RSD	.35048	.28637	.37684
#1	6707.0	221560.	22408.
#2	6695.2	220850.	22274.
#3	6740.6	220300.	22430.

Sample Name: 140-12855-a-7-a Acquired: 10/10/2018 12:20:36 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.41711	1.3981	.01228	F 122.99	.06238	.00003
Stddev	.00097	.0065	.00102	.18	.00008	.00000
%RSD	.23276	.46474	8.3140	.14963	.12992	15.566
#1	.41608	1.3929	.01345	123.20	.06247	.00002
#2	.41726	1.4054	.01159	122.86	.06231	.00003
#3	.41800	1.3960	.01179	122.92	.06235	.00003
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	6.0164	-.00097	.00651	.31987	.04713	6.3386
Stddev	.0073	.00002	.00034	.00188	.00016	.0195
%RSD	.12045	2.0166	5.2550	.58654	.33173	.30832
#1	6.0236	-.00098	.00635	.32133	.04712	6.3162
#2	6.0165	-.00099	.00691	.32053	.04698	6.3473
#3	6.0091	-.00095	.00628	.31776	.04730	6.3523
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-7-a Acquired: 10/10/2018 12:20:36 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.65042	.00217	.28770	.12895	.12647	1.2339
Stddev	.00988	.00078	.01616	.00072	.00063	.0240
%RSD	1.5188	36.003	5.6155	.55466	.49821	1.9477
#1	.64581	.00134	.27060	.12942	.12593	1.2617
#2	.66176	.00226	.28981	.12931	.12716	1.2201
#3	.64369	.00289	.30270	.12813	.12632	1.2200
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.4025	.50852	.02901	.00493	.00976	.00878
Stddev	.0060	.00049	.00478	.00219	.00176	.00275
%RSD	.42567	.09581	16.468	44.436	18.003	31.254
#1	1.3956	.50827	.03342	.00644	.00779	.00729
#2	1.4061	.50909	.02393	.00593	.01035	.00711
#3	1.4059	.50822	.02969	.00242	.01115	.01195
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-7-a Acquired: 10/10/2018 12:20:36 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00373	F 1637.1	.04607	.02487	.02492	-.00033
Stddev	.00272	2.4	.00062	.00019	.00036	.00237
%RSD	72.864	.14544	1.3505	.76600	1.4325	719.12
#1	.00197	1635.6	.04558	.02478	.02457	.00059
#2	.00686	1639.9	.04586	.02475	.02491	-.00303
#3	.00236	1635.8	.04677	.02509	.02529	.00145
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		1000.0				
Low Limit		-1000.0				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00209	.22930
Stddev	.00026	.00041
%RSD	12.469	.18019
#1	.00215	.22930
#2	.00180	.22971
#3	.00231	.22888
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12855-a-7-a Acquired: 10/10/2018 12:20:36 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6817.7	224500.	22437.
Stddev	20.6	1179.	75.
%RSD	.30267	.52508	.33592
#1	6813.1	223480.	22385.
#2	6799.7	224230.	22402.
#3	6840.2	225790.	22523.

Sample Name: 140-12855-a-9-a Acquired: 10/10/2018 12:25:47 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.35826	1.0625	.01050	F 124.56	.05665	-.00000
Stddev	.00189	.0881	.00187	.77	.00391	.00001
%RSD	.52841	8.2894	17.812	.61913	6.9027	432.39
#1	.35678	1.1125	.01237	124.89	.05885	-.00000
#2	.35761	.96077	.00863	123.68	.05213	.00000
#3	.36040	1.1141	.01050	125.11	.05896	-.00001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.7732	-.00136	-.00308	.05127	.01876	6.0068
Stddev	.1788	.00006	.00049	.00025	.00028	.3855
%RSD	6.4463	4.4965	15.969	.49242	1.5055	6.4172
#1	2.8799	-.00143	-.00271	.05102	.01845	6.2115
#2	2.5668	-.00134	-.00364	.05152	.01882	5.5621
#3	2.8729	-.00131	-.00289	.05128	.01901	6.2467
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-9-a Acquired: 10/10/2018 12:25:47 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.51008	.00131	.21446	.06410	.11353	1.3350
Stddev	.03672	.00038	.02623	.00018	.00027	.4494
%RSD	7.1993	28.884	12.232	.28354	.23707	33.659
#1	.53011	.00089	.23033	.06424	.11372	.81705
#2	.46770	.00142	.18418	.06389	.11322	1.5676
#3	.53243	.00162	.22888	.06416	.11364	1.6204
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.0216	.05581	-.00368	.00704	.00979	.01059
Stddev	.0644	.00075	.00238	.00102	.00450	.00252
%RSD	6.3083	1.3415	64.614	14.551	45.984	23.821
#1	1.0492	.05650	-.00521	.00754	.00739	.01039
#2	.94790	.05501	-.00094	.00772	.01498	.00817
#3	1.0675	.05592	-.00490	.00586	.00699	.01320
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-9-a Acquired: 10/10/2018 12:25:47 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00461	F 1576.7	.03646	.01492	.01707	-.00107
Stddev	.00223	82.8	.00044	.00091	.00129	.00297
%RSD	48.424	5.2513	1.2167	6.0996	7.5336	277.07
#1	.00207	1626.5	.03602	.01540	.01726	.00183
#2	.00551	1481.1	.03646	.01387	.01570	-.00093
#3	.00625	1622.4	.03691	.01550	.01825	-.00411
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		1000.0				
Low Limit		-1000.0				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00134	.11666
Stddev	.00018	.00034
%RSD	13.814	.28869
#1	.00121	.11634
#2	.00126	.11664
#3	.00155	.11701
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12855-a-9-a Acquired: 10/10/2018 12:25:47 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6836.1	223480.	23255.
Stddev	21.2	1265.	1196.
%RSD	.31056	.56584	5.1413
#1	6826.2	222310.	22526.
#2	6860.4	224820.	24635.
#3	6821.6	223320.	22604.

Sample Name: 140-12855-a-5-a SD@5 Acquired: 10/10/2018 12:31:00 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.07267	.24964	.00330	27.892	.01179	-.00004
Stddev	.00036	.01061	.00020	.076	.00020	.00000
%RSD	.49472	4.2512	6.1307	.27082	1.7018	10.563
#1	.07233	.25009	.00307	27.805	.01199	-.00003
#2	.07304	.26003	.00344	27.943	.01158	-.00004
#3	.07264	.23882	.00340	27.927	.01180	-.00004
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.57399	-.00002	-.00035	.00650	.00346	.24534
Stddev	.00323	.00012	.00010	.00030	.00030	.00114
%RSD	.56226	774.80	27.768	4.6684	8.6938	.46372
#1	.57616	.00012	-.00024	.00622	.00317	.24618
#2	.57028	-.00007	-.00044	.00682	.00345	.24580
#3	.57552	-.00010	-.00037	.00646	.00377	.24405
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-5-a SD@5 Acquired: 10/10/2018 12:31:00 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.14001	.00170	.06021	.00436	.02282	.15440
Stddev	.01541	.00063	.00639	.00005	.00021	.40813
%RSD	11.009	37.041	10.620	1.2410	.90590	264.33
#1	.15279	.00153	.06164	.00431	.02303	-.18301
#2	.14434	.00117	.06576	.00441	.02262	.03819
#3	.12289	.00239	.05322	.00435	.02281	.60803
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.26020	.01692	-.00120	-.00027	-.00241	-.00208
Stddev	.00525	.00010	.00088	.00119	.00018	.00086
%RSD	2.0195	.59614	73.081	433.87	7.5914	41.043
#1	.25457	.01690	-.00165	.00058	-.00256	-.00281
#2	.26497	.01703	-.00019	.00023	-.00245	-.00230
#3	.26107	.01683	-.00177	-.00164	-.00220	-.00114
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-5-a SD@5 Acquired: 10/10/2018 12:31:00 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00022	341.56	.01302	.00156	.00370	.00124
Stddev	.00054	1.32	.00063	.00012	.00031	.00120
%RSD	247.20	.38578	4.8185	7.4099	8.2643	96.710
#1	.00018	341.71	.01364	.00144	.00363	.00221
#2	-.00030	340.18	.01302	.00157	.00344	-.00010
#3	.00078	342.80	.01239	.00167	.00404	.00160
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00037	.03250
Stddev	.00006	.00012
%RSD	16.855	.37324
#1	.00034	.03242
#2	.00033	.03245
#3	.00044	.03264
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12855-a-5-a SD@5 Acquired: 10/10/2018 12:31:00 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6877.4	225060.	22477.
Stddev	14.4	1090.	381.
%RSD	.20970	.48440	1.6946
#1	6874.4	224330.	22056.
#2	6864.8	224540.	22798.
#3	6893.1	226310.	22577.

Sample Name: CCV Acquired: 10/10/2018 12:36:00 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.98071	24.636	.48573	2.0551	2.0731	2.1174
Stddev	.04524	.070	.00135	.1022	.0073	.1027
%RSD	4.6125	.28375	.27822	4.9741	.35416	4.8512
#1	1.0329	24.681	.48569	2.1731	2.0810	2.2358
#2	.95343	24.555	.48439	1.9925	2.0666	2.0529
#3	.95577	24.671	.48710	1.9997	2.0716	2.0634
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.157	.50824	2.0511	2.0955	2.0825	25.977
Stddev	.040	.00023	.0017	.0978	.0895	.041
%RSD	.08091	.04558	.08429	4.6678	4.2965	.15899
#1	49.151	.50844	2.0497	2.2083	2.1856	26.023
#2	49.121	.50799	2.0506	2.0339	2.0257	25.943
#3	49.200	.50831	2.0530	2.0443	2.0361	25.965
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 10/10/2018 12:36:00 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.746	1.9246	49.313	2.0507	2.0611	48.624
Stddev	.126	.0093	.094	.1022	.0034	.437
%RSD	.25939	.48383	.19036	4.9849	.16654	.89791
#1	48.852	1.9351	49.297	2.1686	2.0585	49.020
#2	48.606	1.9174	49.228	1.9878	2.0599	48.156
#3	48.781	1.9212	49.414	1.9956	2.0650	48.695
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.430	1.9874	1.9435	.51165	.50204	.47809
Stddev	.186	.0016	.0016	.02712	.00149	.00117
%RSD	.37684	.07982	.08269	5.3011	.29630	.24405
#1	49.639	1.9858	1.9449	.54244	.50032	.47865
#2	49.281	1.9873	1.9438	.49129	.50300	.47675
#3	49.370	1.9890	1.9417	.50122	.50279	.47887
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 10/10/2018 12:36:00 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.50482	F 13.655	2.0270	2.0846	2.0500	.96870
Stddev	.00337	.234	.0010	.0085	.0062	.00375
%RSD	.66835	1.7122	.05041	.40647	.30126	.38717
#1	.50115	13.815	2.0262	2.0942	2.0550	.96472
#2	.50552	13.763	2.0268	2.0781	2.0431	.96922
#3	.50778	13.387	2.0282	2.0814	2.0519	.97216
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value		2.0000				
Range		10.500%				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	2.1136	2.0446
Stddev	.0963	.0014
%RSD	4.5566	.06695
#1	2.2246	2.0435
#2	2.0521	2.0443
#3	2.0641	2.0461
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV Acquired: 10/10/2018 12:36:00 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6721.2	218570.	22166.
Stddev	18.0	8491.	3.
%RSD	.26847	3.8847	.01528
#1	6702.8	208770.	22170.
#2	6738.9	223630.	22164.
#3	6721.7	223320.	22165.

Sample Name: CCB Acquired: 10/10/2018 12:40:54 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00057	.00614	-.00064	.04704	.00002	-.00003
Stddev	.00018	.00459	.00072	.00125	.00017	.00002
%RSD	31.434	74.676	112.86	2.6503	686.55	55.958
#1	.00069	.01119	.00019	.04657	.00021	-.00001
#2	.00065	.00224	-.00103	.04846	-.00004	-.00003
#3	.00036	.00499	-.00109	.04610	-.00010	-.00004
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00244	.00011	.00003	-.00012	.00043	.00014
Stddev	.00324	.00003	.00014	.00026	.00011	.00014
%RSD	132.49	26.526	408.48	225.79	26.588	97.064
#1	.00575	.00013	-.00010	.00018	.00039	-.00000
#2	.00230	.00008	.00017	-.00029	.00056	.00027
#3	-.00072	.00013	.00003	-.00024	.00035	.00015
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 10/10/2018 12:40:54 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04498	.00121	-.00941	-.00000	-.00020	.27936
Stddev	.00920	.00095	.00544	.00002	.00006	.25615
%RSD	20.451	78.529	57.782	2902.7	27.448	91.692
#1	.04676	.00185	-.01513	.00000	-.00017	-.01358
#2	.05316	.00012	-.00880	-.00002	-.00026	.39046
#3	.03502	.00167	-.00431	.00002	-.00016	.46122
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00715	.00082	-.00041	-.00255	-.00046	-.00172
Stddev	.00155	.00014	.00163	.00136	.00132	.00050
%RSD	21.621	17.119	401.27	53.498	286.61	28.752
#1	.00874	.00067	.00107	-.00103	-.00178	-.00202
#2	.00565	.00094	-.00013	-.00366	-.00047	-.00115
#3	.00706	.00084	-.00216	-.00296	.00087	-.00200
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 10/10/2018 12:40:54 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00177	F 9.2007	-.00043	.00004	-.00054	.00258
Stddev	.00043	.1999	.00042	.00003	.00079	.00321
%RSD	24.002	2.1722	99.911	73.498	146.11	124.58
#1	.00135	9.2805	-.00001	.00001	-.00132	.00104
#2	.00220	9.3483	-.00040	.00004	.00026	.00043
#3	.00177	8.9733	-.00086	.00007	-.00055	.00626
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		.48200				
Low Limit		-.48200				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	-.00007	-.00029
Stddev	.00011	.00006
%RSD	165.59	21.750
#1	.00006	-.00024
#2	-.00014	-.00036
#3	-.00013	-.00027
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB Acquired: 10/10/2018 12:40:54 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6884.8	224820.	22446.
Stddev	16.5	639.	130.
%RSD	.24017	.28419	.57787
#1	6866.8	224640.	22397.
#2	6899.3	224300.	22348.
#3	6888.3	225530.	22593.

Sample Name: 140-12855-a-11-a Acquired: 10/10/2018 12:45:56 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.37443	1.3255	.01121	F 124.87	.06103	.00001
Stddev	.00378	.0086	.00097	1.18	.00041	.00001
%RSD	1.0085	.64996	8.6718	.94743	.66923	37.909
#1	.37007	1.3245	.01101	123.89	.06149	.00002
#2	.37648	1.3174	.01034	126.19	.06090	.00001
#3	.37673	1.3346	.01226	124.55	.06071	.00001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.6192	-.00122	-.00295	.05024	.02538	6.7784
Stddev	.0146	.00008	.00018	.00034	.00025	.0240
%RSD	.31634	6.5936	6.0303	.67663	.99431	.35418
#1	4.6173	-.00119	-.00306	.04986	.02519	6.8054
#2	4.6056	-.00131	-.00306	.05052	.02529	6.7705
#3	4.6346	-.00116	-.00275	.05033	.02567	6.7594
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-11-a Acquired: 10/10/2018 12:45:56 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.75490	.00228	.25970	.06228	.11732	1.3866
Stddev	.01616	.00028	.01096	.00068	.00039	.2474
%RSD	2.1401	12.219	4.2188	1.0926	.32919	17.845
#1	.77350	.00243	.26535	.06151	.11688	1.1009
#2	.74441	.00245	.24707	.06258	.11762	1.5298
#3	.74678	.00196	.26667	.06277	.11746	1.5291
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.4241	.07722	.00408	.00235	.01148	.01153
Stddev	.0171	.00025	.00154	.00534	.00176	.00104
%RSD	1.1994	.32531	37.776	227.53	15.325	9.0609
#1	1.4438	.07704	.00291	.00846	.00955	.01115
#2	1.4158	.07750	.00350	-.00142	.01188	.01271
#3	1.4127	.07711	.00583	-.00000	.01300	.01073
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-11-a Acquired: 10/10/2018 12:45:56 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00431	F 1657.6	.05703	.01747	.02513	-.00062
Stddev	.00331	29.2	.00059	.00012	.00072	.00150
%RSD	76.775	1.7600	1.0428	.66348	2.8585	242.89
#1	.00741	1668.4	.05665	.01760	.02517	-.00008
#2	.00468	1624.6	.05771	.01737	.02583	.00054
#3	.00083	1679.8	.05672	.01744	.02439	-.00230
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		1000.0				
Low Limit		-1000.0				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00189	.17451
Stddev	.00011	.00012
%RSD	5.5856	.07082
#1	.00200	.17437
#2	.00180	.17461
#3	.00186	.17453
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12855-a-11-a Acquired: 10/10/2018 12:45:56 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6728.6	222830.	22268.
Stddev	12.6	786.	218.
%RSD	.18759	.35281	.97810
#1	6726.3	223300.	22244.
#2	6717.2	221920.	22497.
#3	6742.1	223260.	22064.

Sample Name: 140-12855-a-13-a Acquired: 10/10/2018 12:51:10 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.40514	1.9782	.01127	F 125.33	.06174	.00001
Stddev	.00042	.0203	.00158	1.10	.00018	.00001
%RSD	.10427	1.0257	14.050	.88080	.29552	52.239
#1	.40471	1.9548	.01267	124.13	.06164	.00001
#2	.40514	1.9887	.01158	125.56	.06195	.00002
#3	.40556	1.9911	.00955	126.30	.06164	.00001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.7206	-.00112	-.00370	.03687	.02070	1.9648
Stddev	.0508	.00019	.00026	.00016	.00012	.0188
%RSD	1.0769	17.066	7.0317	.42935	.56311	.95771
#1	4.6628	-.00109	-.00400	.03694	.02072	1.9439
#2	4.7408	-.00094	-.00355	.03699	.02057	1.9698
#3	4.7582	-.00132	-.00354	.03669	.02080	1.9805
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-13-a Acquired: 10/10/2018 12:51:10 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.68643	.00180	.36626	.02701	.11504	1.4780
Stddev	.02489	.00107	.00875	.00006	.00008	.8176
%RSD	3.6253	59.644	2.3884	.23341	.07216	55.318
#1	.71161	.00116	.37008	.02703	.11503	1.5666
#2	.68584	.00303	.35625	.02706	.11513	.61970
#3	.66185	.00119	.37244	.02694	.11496	2.2477
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.6069	.05393	.00198	.00407	.01113	.01791
Stddev	.0109	.00072	.00280	.00280	.00236	.00245
%RSD	.67547	1.3307	141.53	68.808	21.193	13.689
#1	1.5944	.05311	-.00104	.00260	.01123	.01736
#2	1.6140	.05443	.00249	.00730	.01343	.02059
#3	1.6122	.05425	.00448	.00231	.00872	.01578
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-13-a Acquired: 10/10/2018 12:51:10 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00893	F 1597.9	.05962	.01909	.01946	-.00045
Stddev	.00105	13.2	.00070	.00009	.00065	.00009
%RSD	11.809	.82521	1.1714	.47392	3.3275	20.546
#1	.00963	1588.2	.05963	.01901	.01872	-.00055
#2	.00944	1592.6	.05892	.01907	.01973	-.00041
#3	.00771	1612.9	.06031	.01919	.01993	-.00037
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		1000.0				
Low Limit		-1000.0				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00153	.15101
Stddev	.00025	.00015
%RSD	16.470	.09679
#1	.00125	.15116
#2	.00172	.15087
#3	.00162	.15099
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12855-a-13-a Acquired: 10/10/2018 12:51:10 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6776.4	222810.	22715.
Stddev	.7	247.	139.
%RSD	.00959	.11096	.61093
#1	6776.4	222580.	22872.
#2	6777.0	222790.	22664.
#3	6775.7	223070.	22610.

Sample Name: 140-12855-a-15-a Acquired: 10/10/2018 12:56:24 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.35298	1.2951	.01202	F 123.73	.05757	.00002
Stddev	.00186	.0174	.00092	.87	.00014	.00001
%RSD	.52768	1.3469	7.6704	.70035	.24010	41.094
#1	.35281	1.3084	.01282	123.27	.05766	.00001
#2	.35492	1.2753	.01223	124.73	.05742	.00003
#3	.35120	1.3014	.01101	123.20	.05765	.00003
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	6.1205	-.00107	-.00340	.03052	.01505	1.9215
Stddev	.0259	.00014	.00035	.00021	.00006	.0134
%RSD	.42242	13.487	10.279	.67746	.40069	.69948
#1	6.1133	-.00123	-.00351	.03047	.01512	1.9291
#2	6.0989	-.00103	-.00369	.03034	.01503	1.9060
#3	6.1491	-.00095	-.00301	.03075	.01501	1.9294
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-15-a Acquired: 10/10/2018 12:56:24 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.65895	.00151	.26584	.02511	.11262	.78321
Stddev	.00573	.00092	.00753	.00018	.00019	.42688
%RSD	.86995	60.905	2.8311	.72543	.17031	54.505
#1	.66556	.00130	.27326	.02512	.11277	.99062
#2	.65525	.00252	.26605	.02529	.11240	1.0667
#3	.65606	.00072	.25822	.02493	.11268	.29225
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.0774	.04591	.00075	.00486	.01111	.01056
Stddev	.0075	.00093	.00084	.00232	.00236	.00130
%RSD	.69552	2.0322	111.59	47.759	21.233	12.335
#1	1.0846	.04602	.00162	.00224	.01283	.01196
#2	1.0696	.04493	.00067	.00571	.01207	.01037
#3	1.0778	.04678	-.00005	.00665	.00842	.00937
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-15-a Acquired: 10/10/2018 12:56:24 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00614	F 1610.1	.04773	.02492	.02253	-.00122
Stddev	.00139	15.6	.00035	.00008	.00021	.00103
%RSD	22.668	.96628	.73764	.31733	.95128	84.443
#1	.00538	1612.2	.04814	.02491	.02271	-.00043
#2	.00775	1593.7	.04752	.02484	.02230	-.00238
#3	.00530	1624.6	.04754	.02500	.02260	-.00084
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		1000.0				
Low Limit		-1000.0				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00140	.12146
Stddev	.00023	.00030
%RSD	16.724	.24521
#1	.00120	.12142
#2	.00134	.12118
#3	.00166	.12177
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12855-a-15-a Acquired: 10/10/2018 12:56:24 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6794.6	224710.	22588.
Stddev	4.9	398.	127.
%RSD	.07248	.17707	.56177
#1	6789.0	224460.	22468.
#2	6798.3	224500.	22721.
#3	6796.6	225170.	22576.

Sample Name: 140-12855-a-17-a Acquired: 10/10/2018 13:01:39 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.29753	1.2703	.01091	F 125.51	.06028	.00001
Stddev	.00009	.0023	.00096	.77	.00005	.00001
%RSD	.03167	.18419	8.7813	.61617	.07894	74.543
#1	.29761	1.2676	.00999	125.23	.06022	.00001
#2	.29743	1.2717	.01084	124.92	.06030	.00000
#3	.29757	1.2715	.01190	126.39	.06031	.00001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.1722	-.00103	.00101	.20404	.03849	5.2238
Stddev	.0221	.00009	.00029	.00149	.00013	.0200
%RSD	.42666	8.4275	28.566	.73135	.34144	.38258
#1	5.1972	-.00112	.00134	.20271	.03842	5.2468
#2	5.1642	-.00096	.00087	.20374	.03864	5.2105
#3	5.1553	-.00100	.00082	.20565	.03840	5.2141
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-17-a Acquired: 10/10/2018 13:01:39 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.71381	.00176	.28565	.08421	.11841	1.1340
Stddev	.00885	.00082	.00867	.00038	.00121	.7895
%RSD	1.2405	46.871	3.0358	.44555	1.0246	69.619
#1	.70359	.00095	.29554	.08382	.11918	2.0383
#2	.71889	.00174	.28206	.08423	.11904	.78230
#3	.71897	.00260	.27934	.08457	.11701	.58154
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.2846	.28664	.01356	.00205	.01140	.01005
Stddev	.0037	.00251	.00327	.00254	.00123	.00138
%RSD	.28797	.87441	24.123	123.68	10.784	13.695
#1	1.2831	.28833	.01443	-.00088	.00999	.00877
#2	1.2819	.28784	.00994	.00345	.01198	.01150
#3	1.2888	.28376	.01631	.00358	.01223	.00988
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-17-a Acquired: 10/10/2018 13:01:39 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00881	F 1597.2	.03079	.02089	.02037	-.00299
Stddev	.00191	15.3	.00021	.00011	.00018	.00223
%RSD	21.677	.95940	.68368	.50500	.87962	74.354
#1	.01041	1614.9	.03104	.02095	.02047	-.00554
#2	.00670	1588.4	.03068	.02076	.02048	-.00140
#3	.00933	1588.2	.03066	.02095	.02017	-.00205
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		1000.0				
Low Limit		-1000.0				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00167	.17399
Stddev	.00010	.00103
%RSD	6.2195	.59136
#1	.00179	.17443
#2	.00163	.17474
#3	.00160	.17282
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12855-a-17-a Acquired: 10/10/2018 13:01:39 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6774.8	222270.	22581.
Stddev	36.2	621.	285.
%RSD	.53456	.27956	1.2620
#1	6747.8	221570.	22260.
#2	6760.6	222740.	22680.
#3	6815.9	222500.	22803.

Sample Name: 140-12855-a-19-a Acquired: 10/10/2018 13:06:52 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.38035	1.0850	.01208	F 124.43	.06471	.00001
Stddev	.00079	.0049	.00101	.21	.00010	.00001
%RSD	.20742	.45181	8.3820	.16589	.15156	88.010
#1	.37983	1.0820	.01134	124.44	.06475	.00000
#2	.37996	1.0823	.01323	124.22	.06459	.00000
#3	.38126	1.0906	.01165	124.63	.06477	.00001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.1361	-.00150	-.00352	.02669	.00755	.39028
Stddev	.0036	.00002	.00072	.00011	.00011	.00520
%RSD	.31207	1.6187	20.557	.42746	1.4877	1.3332
#1	1.1324	-.00153	-.00435	.02659	.00753	.38823
#2	1.1394	-.00148	-.00307	.02682	.00745	.38642
#3	1.1366	-.00150	-.00313	.02667	.00767	.39620
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-19-a Acquired: 10/10/2018 13:06:52 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.14800	.00153	.21742	.00951	.11159	.54054
Stddev	.01896	.00001	.01106	.00011	.00066	.53903
%RSD	12.812	.68181	5.0855	1.1870	.58920	99.722
#1	.12611	.00152	.21354	.00938	.11084	-.06253
#2	.15934	.00154	.20883	.00958	.11181	.97546
#3	.15856	.00152	.22990	.00958	.11210	.70868
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.40663	.02463	-.01764	-.00044	.00824	.00902
Stddev	.00837	.00108	.00203	.00116	.00483	.00075
%RSD	2.0574	4.3805	11.494	261.98	58.588	8.3249
#1	.39842	.02339	-.01998	-.00170	.01332	.00910
#2	.41515	.02536	-.01647	.00059	.00766	.00823
#3	.40632	.02513	-.01647	-.00022	.00372	.00973
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-19-a Acquired: 10/10/2018 13:06:52 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00393	F 1588.2	-.00262	.00630	.01171	-.00309
Stddev	.00256	23.3	.00017	.00015	.00051	.00133
%RSD	65.214	1.4645	6.4886	2.4249	4.3544	42.903
#1	.00590	1562.2	-.00275	.00635	.01170	-.00363
#2	.00486	1595.4	-.00243	.00613	.01222	-.00407
#3	.00103	1607.0	-.00267	.00642	.01120	-.00158
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		1000.0				
Low Limit		-1000.0				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00119	.05077
Stddev	.00004	.00032
%RSD	3.1401	.63616
#1	.00119	.05069
#2	.00115	.05049
#3	.00123	.05112
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12855-a-19-a Acquired: 10/10/2018 13:06:52 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6777.7	223080.	22741.
Stddev	3.6	594.	156.
%RSD	.05378	.26648	.68473
#1	6773.6	223260.	22899.
#2	6779.4	223560.	22587.
#3	6780.3	222410.	22738.

Sample Name: CRI Acquired: 10/10/2018 13:12:05 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01044	.17569	.00991	.23464	.01049	.00550
Stddev	.00042	.00945	.00004	.00235	.00002	.00002
%RSD	3.9762	5.3816	.35324	1.0014	.22681	.39949
#1	.01092	.18621	.00987	.23256	.01046	.00550
#2	.01021	.16792	.00994	.23417	.01050	.00552
#3	.01019	.17293	.00993	.23719	.01050	.00547
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.8687	.00557	.05128	.01023	.02530	.10560
Stddev	.0114	.00009	.00009	.00037	.00035	.00109
%RSD	.23421	1.6848	.17505	3.6612	1.3980	1.0276
#1	4.8782	.00567	.05125	.01009	.02558	.10672
#2	4.8718	.00548	.05121	.01066	.02541	.10455
#3	4.8560	.00558	.05138	.00995	.02490	.10551
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CRI Acquired: 10/10/2018 13:12:05 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.0130	.04813	4.7333	.01538	.04103	4.7632
Stddev	.0169	.00104	.0429	.00012	.00007	.8622
%RSD	.33640	2.1558	.90557	.74830	.18026	18.101
#1	5.0156	.04711	4.7737	.01550	.04104	4.7630
#2	4.9951	.04808	4.7379	.01527	.04095	5.6255
#3	5.0285	.04919	4.6884	.01539	.04109	3.9011
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.7758	.04050	.29092	.00989	.00881	.05459
Stddev	.0150	.00008	.00282	.00193	.00074	.00129
%RSD	.31348	.19347	.96870	19.509	8.4084	2.3643
#1	4.7864	.04054	.29353	.01067	.00904	.05573
#2	4.7824	.04041	.29131	.00770	.00940	.05486
#3	4.7587	.04056	.28793	.01131	.00798	.05319
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CRI Acquired: 10/10/2018 13:12:05 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00963	F 11.922	.10385	.05148	.05179	F .01516
Stddev	.00198	.238	.00006	.00017	.00036	.00363
%RSD	20.568	1.9930	.05617	.33831	.69106	23.978
#1	.00987	12.196	.10379	.05138	.05179	.01932
#2	.01147	11.788	.10390	.05168	.05215	.01264
#3	.00754	11.781	.10387	.05137	.05144	.01351
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Fail
Value		.50000				.01000
Range		50.000%				50.000%

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.02581	.02074
Stddev	.00012	.00009
%RSD	.46798	.44907
#1	.02579	.02082
#2	.02594	.02064
#3	.02570	.02076
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CRI Acquired: 10/10/2018 13:12:05 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6853.2	224730.	22418.
Stddev	12.1	866.	165.
%RSD	.17588	.38520	.73727
#1	6841.1	223730.	22242.
#2	6865.2	225330.	22442.
#3	6853.2	225110.	22570.

Sample Name: CCV Acquired: 10/10/2018 13:17:02 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.95901	24.810	.48863	2.0164	2.0923	2.0714
Stddev	.00147	.059	.00084	.0040	.0072	.0101
%RSD	.15355	.23952	.17257	.20043	.34511	.48766
#1	.95926	24.865	.48896	2.0123	2.0976	2.0598
#2	.96035	24.819	.48768	2.0204	2.0953	2.0759
#3	.95743	24.747	.48927	2.0164	2.0841	2.0785
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.210	.51275	2.0678	2.0579	2.0408	26.045
Stddev	.225	.00098	.0038	.0074	.0057	.165
%RSD	.45823	.19132	.18375	.35862	.27756	.63423
#1	49.470	.51388	2.0721	2.0660	2.0419	26.232
#2	49.083	.51231	2.0663	2.0561	2.0458	25.983
#3	49.076	.51207	2.0649	2.0516	2.0347	25.920
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 10/10/2018 13:17:02 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.900	1.9256	49.220	2.0112	2.0787	48.506
Stddev	.136	.0063	.281	.0034	.0053	.398
%RSD	.27761	.32698	.57144	.16656	.25409	.82054
#1	48.993	1.9305	49.542	2.0143	2.0847	48.857
#2	48.962	1.9277	49.019	2.0115	2.0767	48.587
#3	48.744	1.9185	49.099	2.0077	2.0747	48.073
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.474	2.0020	1.9529	.49785	.50362	.48404
Stddev	.164	.0049	.0086	.00036	.00396	.00281
%RSD	.33092	.24335	.44074	.07172	.78570	.58060
#1	49.637	2.0074	1.9610	.49776	.50776	.48629
#2	49.476	1.9980	1.9438	.49755	.49988	.48089
#3	49.310	2.0006	1.9540	.49825	.50321	.48494
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 10/10/2018 13:17:02 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.50923	F 12.087	2.0475	2.0991	2.0641	.98028
Stddev	.00618	.158	.0043	.0068	.0038	.00382
%RSD	1.2128	1.3047	.21093	.32547	.18482	.38961
#1	.50767	12.269	2.0520	2.1056	2.0680	.97940
#2	.50399	11.999	2.0469	2.0995	2.0639	.97697
#3	.51604	11.993	2.0435	2.0920	2.0604	.98446
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value		2.0000				
Range		10.500%				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	2.0786	2.0657
Stddev	.0055	.0046
%RSD	.26609	.22466
#1	2.0831	2.0710
#2	2.0803	2.0623
#3	2.0724	2.0640
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV Acquired: 10/10/2018 13:17:02 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6670.8	221730.	22089.
Stddev	38.8	1074.	209.
%RSD	.58109	.48417	.94440
#1	6626.4	220970.	21857.
#2	6688.1	221260.	22261.
#3	6697.9	222960.	22149.

Sample Name: CCB Acquired: 10/10/2018 13:21:54 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00063	.00480	.00030	.04728	.00001	-.00002
Stddev	.00014	.00361	.00068	.00193	.00004	.00002
%RSD	22.106	75.307	227.06	4.0903	295.88	92.407
#1	.00074	.00889	-.00007	.04511	.00003	-.00000
#2	.00047	.00205	.00108	.04790	-.00003	-.00002
#3	.00067	.00345	-.00011	.04883	.00005	-.00004
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00423	.00016	.00008	-.00021	.00067	-.00050
Stddev	.00100	.00006	.00024	.00008	.00006	.00131
%RSD	23.562	37.460	312.99	37.363	9.4610	262.36
#1	.00321	.00015	.00032	-.00015	.00073	.00024
#2	.00429	.00023	.00007	-.00018	.00060	-.00202
#3	.00520	.00011	-.00016	-.00030	.00067	.00028
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 10/10/2018 13:21:54 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04439	.00096	.00419	-.00001	-.00017	.26370
Stddev	.02261	.00031	.01317	.00002	.00014	.77163
%RSD	50.933	32.139	314.73	264.32	84.845	292.61
#1	.06973	.00062	.01589	-.00000	-.00005	1.1451
#2	.03719	.00104	.00674	.00001	-.00032	-.28987
#3	.02626	.00121	-.01008	-.00003	-.00012	-.06414
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00521	.00053	.00113	-.00130	-.00171	-.00321
Stddev	.00317	.00013	.00213	.00229	.00120	.00130
%RSD	60.834	24.159	188.48	175.93	70.167	40.510
#1	.00619	.00068	.00075	-.00380	-.00300	-.00315
#2	.00167	.00043	-.00078	.00069	-.00154	-.00194
#3	.00778	.00049	.00343	-.00079	-.00061	-.00454
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 10/10/2018 13:21:54 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00101	F 8.7123	.00017	.00008	-.00036	.00363
Stddev	.00138	.1014	.00051	.00009	.00023	.00129
%RSD	136.13	1.1636	296.66	110.13	65.034	35.432
#1	-.00058	8.8017	.00063	.00013	-.00012	.00335
#2	.00189	8.7329	.00027	-.00002	-.00037	.00504
#3	.00173	8.6021	-.00038	.00014	-.00058	.00251
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		.48200				
Low Limit		-.48200				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00024	-.00039
Stddev	.00014	.00016
%RSD	58.551	41.423
#1	.00015	-.00022
#2	.00017	-.00043
#3	.00041	-.00054
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB Acquired: 10/10/2018 13:21:54 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6840.3	225220.	22426.
Stddev	25.0	805.	208.
%RSD	.36494	.35741	.92932
#1	6845.0	225090.	22291.
#2	6813.3	226080.	22666.
#3	6862.5	224480.	22322.

Sample Name: 140-12876-a-5-a @2 Acquired: 10/10/2018 13:35:19 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00050	.24990	.00406	F 65.652	.00600	-.00003
Stddev	.00025	.01683	.00064	.543	.00016	.00001
%RSD	49.811	6.7328	15.734	.82711	2.5998	36.556
#1	.00073	.25848	.00336	65.376	.00586	-.00005
#2	.00053	.26071	.00461	66.278	.00599	-.00003
#3	.00023	.23052	.00421	65.303	.00617	-.00002
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.19997	-.00044	-.00130	.00378	.00366	.05601
Stddev	.00428	.00005	.00012	.00005	.00019	.00274
%RSD	2.1413	11.336	9.3413	1.3769	5.2588	4.8988
#1	.19561	-.00041	-.00124	.00379	.00384	.05350
#2	.20013	-.00041	-.00145	.00373	.00345	.05558
#3	.20417	-.00050	-.00123	.00383	.00369	.05894
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12876-a-5-a @2 Acquired: 10/10/2018 13:35:19 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.12790	.00050	.04028	.00167	.02257	.35024
Stddev	.00147	.00028	.00261	.00003	.00034	.34128
%RSD	1.1479	56.304	6.4845	1.5022	1.5224	97.441
#1	.12928	.00066	.04179	.00167	.02218	.55212
#2	.12635	.00066	.04179	.00164	.02283	-.04379
#3	.12807	.00017	.03726	.00169	.02270	.54240
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04141	.00040	-.00678	-.00323	-.00416	.00036
Stddev	.00545	.00013	.00149	.00141	.00106	.00042
%RSD	13.167	33.788	21.947	43.764	25.566	114.17
#1	.04649	.00033	-.00528	-.00162	-.00309	.00044
#2	.03565	.00055	-.00826	-.00424	-.00417	-.00008
#3	.04209	.00031	-.00681	-.00383	-.00522	.00074
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12876-a-5-a @2 Acquired: 10/10/2018 13:35:19 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00024	614.23	-.00151	.00112	.00374	.00161
Stddev	.00292	10.57	.00063	.00006	.00066	.00205
%RSD	1234.3	1.7215	41.658	5.1402	17.717	127.31
#1	-.00361	607.05	-.00169	.00110	.00448	.00148
#2	.00134	609.27	-.00204	.00119	.00320	-.00037
#3	.00156	626.37	-.00081	.00108	.00355	.00373
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00016	.01376
Stddev	.00026	.00005
%RSD	157.25	.34040
#1	.00045	.01375
#2	.00007	.01372
#3	-.00004	.01381
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12876-a-5-a @2 Acquired: 10/10/2018 13:35:19 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6784.5	224460.	22361.
Stddev	8.5	307.	169.
%RSD	.12555	.13686	.75587
#1	6788.1	224580.	22541.
#2	6790.7	224120.	22335.
#3	6774.8	224700.	22206.

Sample Name: 12876-a-1-a mdlv @2 Acquired: 10/10/2018 13:40:30 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00512	.35591	.00871	F 65.786	.01238	.00046
Stddev	.00013	.01010	.00174	.185	.00008	.00001
%RSD	2.5834	2.8384	20.012	.28133	.61257	1.6386
#1	.00497	.35327	.00846	65.594	.01238	.00045
#2	.00519	.36707	.00710	65.964	.01245	.00047
#3	.00520	.34739	.01056	65.801	.01230	.00047
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.78699	.00212	.00857	.00902	.00936	.10345
Stddev	.00492	.00006	.00014	.00006	.00035	.00209
%RSD	.62453	2.8246	1.6728	.61861	3.7148	2.0215
#1	.78150	.00211	.00870	.00900	.00972	.10216
#2	.78852	.00206	.00859	.00898	.00902	.10233
#3	.79096	.00218	.00842	.00908	.00934	.10586
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 12876-a-1-a mdlv @2 Acquired: 10/10/2018 13:40:30 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.0925	.00859	.29306	.00920	.04422	2.9060
Stddev	.0069	.00035	.01196	.00003	.00020	.4921
%RSD	.63388	4.0873	4.0806	.30897	.46132	16.934
#1	1.0861	.00900	.28478	.00918	.04440	2.6214
#2	1.0998	.00842	.30677	.00919	.04426	2.6223
#3	1.0917	.00837	.28762	.00923	.04400	3.4742
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.4317	.01931	.06022	.00258	.00351	.01619
Stddev	.0096	.00027	.00184	.00099	.00148	.00047
%RSD	.39312	1.3885	3.0594	38.548	42.152	2.9337
#1	2.4369	.01900	.06153	.00369	.00514	.01663
#2	2.4207	.01947	.06101	.00229	.00226	.01569
#3	2.4376	.01947	.05811	.00176	.00313	.01625
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 12876-a-1-a mdlv @2 Acquired: 10/10/2018 13:40:30 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00470	656.40	.04676	.01436	.02931	.00638
Stddev	.00190	4.27	.00079	.00003	.00071	.00320
%RSD	40.451	.65117	1.6987	.20022	2.4389	50.116
#1	.00616	652.88	.04739	.01438	.02979	.00327
#2	.00255	655.17	.04702	.01433	.02965	.00622
#3	.00540	661.16	.04587	.01436	.02849	.00966
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00566	.01715
Stddev	.00002	.00014
%RSD	.28981	.83608
#1	.00567	.01712
#2	.00567	.01731
#3	.00564	.01702
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 12876-a-1-a mdlv @2 Acquired: 10/10/2018 13:40:30 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6818.9	224210.	22769.
Stddev	65.1	924.	126.
%RSD	.95532	.41189	.55216
#1	6755.7	223450.	22908.
#2	6815.3	223960.	22735.
#3	6885.8	225240.	22663.

Sample Name: 140-12832-a-1-a @2 Acquired: 10/10/2018 13:45:37 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01985	2.0353	.48564	F 64.073	.05263	.01922
Stddev	.00015	.0148	.00429	.439	.00010	.00010
%RSD	.77147	.72907	.88321	.68545	.18576	.50008
#1	.01972	2.0235	.48625	64.408	.05259	.01933
#2	.02002	2.0305	.48958	63.576	.05274	.01916
#3	.01981	2.0519	.48107	64.234	.05256	.01917
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.5609	.08586	.09704	.07320	2.4645	13.018
Stddev	.0099	.00017	.00011	.00049	.0078	.065
%RSD	.63302	.19512	.10960	.67068	.31513	.50063
#1	1.5561	.08568	.09696	.07352	2.4566	12.974
#2	1.5723	.08601	.09716	.07345	2.4721	13.093
#3	1.5544	.08590	.09700	.07264	2.4649	12.988
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12832-a-1-a @2 Acquired: 10/10/2018 13:45:37 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	33.565	.72310	.36693	.06166	.23443	6.4531
Stddev	.071	.00126	.01441	.00016	.00061	.4887
%RSD	.21139	.17447	3.9269	.25561	.25928	7.5729
#1	33.532	.72314	.38060	.06184	.23498	6.8201
#2	33.646	.72434	.36831	.06159	.23453	5.8984
#3	33.515	.72182	.35188	.06154	.23378	6.6408
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.5453	.58920	11.190	5.9650	6.0396	.32539
Stddev	.0214	.00088	.032	.0488	.0023	.00396
%RSD	.22367	.14976	.28279	.81802	.03872	1.2179
#1	9.5210	.58884	11.213	6.0214	6.0405	.32395
#2	9.5535	.59020	11.204	5.9374	6.0414	.32987
#3	9.5613	.58854	11.154	5.9363	6.0370	.32234
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12832-a-1-a @2 Acquired: 10/10/2018 13:45:37 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.03681	826.41	.29036	.04199	.18267	.25193
Stddev	.00263	4.49	.00070	.00006	.00017	.00018
%RSD	7.1364	.54330	.24003	.13160	.09409	.07006
#1	.03961	821.79	.28962	.04196	.18248	.25185
#2	.03440	830.76	.29047	.04206	.18281	.25180
#3	.03641	826.68	.29100	.04196	.18272	.25213
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.10053	F 10.473
Stddev	.00063	.017
%RSD	.62256	.15868
#1	.10116	10.480
#2	.09991	10.486
#3	.10053	10.454
Check ?	Chk Pass	Chk Fail
High Limit		10.000
Low Limit		-10.000

Sample Name: 140-12832-a-1-a @2 Acquired: 10/10/2018 13:45:37 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6836.9	225640.	22691.
Stddev	27.0	1686.	209.
%RSD	.39562	.74696	.91968
#1	6818.7	223730.	22631.
#2	6824.0	226900.	22519.
#3	6868.0	226300.	22923.

Sample Name: 140-12832-a-6-a @2 Acquired: 10/10/2018 13:50:34 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01588	2.3866	.42439	F 63.496	.05981	.01464
Stddev	.00034	.0054	.00058	.208	.00026	.00014
%RSD	2.1669	.22655	.13575	.32739	.43828	.97391
#1	.01611	2.3862	.42377	63.474	.06011	.01449
#2	.01548	2.3922	.42491	63.300	.05972	.01478
#3	.01604	2.3814	.42449	63.714	.05961	.01464
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.9312	.05509	.05555	.07201	1.7032	10.026
Stddev	.0053	.00013	.00029	.00081	.0086	.020
%RSD	.27563	.23434	.52703	1.1275	.50234	.19888
#1	1.9286	.05496	.05559	.07109	1.6948	10.018
#2	1.9373	.05509	.05583	.07233	1.7028	10.049
#3	1.9276	.05521	.05525	.07261	1.7119	10.012
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12832-a-6-a @2 Acquired: 10/10/2018 13:50:34 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	28.222	.38898	.40670	.05304	.22452	7.0967
Stddev	.175	.00246	.00623	.00053	.00034	.2143
%RSD	.61951	.63354	1.5313	1.0040	.15154	3.0198
#1	28.418	.39154	.39998	.05244	.22453	6.9329
#2	28.168	.38876	.40785	.05346	.22417	7.3393
#3	28.081	.38663	.41228	.05321	.22485	7.0181
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	8.0138	.38717	6.3193	2.7788	2.8278	.14394
Stddev	.0430	.00062	.0103	.0377	.0026	.00154
%RSD	.53703	.16121	.16215	1.3556	.09201	1.0714
#1	8.0465	.38724	6.3311	2.7368	2.8286	.14558
#2	8.0300	.38775	6.3125	2.8096	2.8298	.14252
#3	7.9651	.38651	6.3142	2.7899	2.8248	.14371
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12832-a-6-a @2 Acquired: 10/10/2018 13:50:34 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04825	823.28	.11005	.05707	.20562	.20580
Stddev	.00618	3.87	.00074	.00036	.00143	.00162
%RSD	12.801	.46975	.67625	.62260	.69618	.78897
#1	.05245	820.83	.11045	.05746	.20726	.20576
#2	.04115	827.74	.11050	.05698	.20463	.20420
#3	.05113	821.27	.10919	.05677	.20497	.20744
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.06918	4.0923
Stddev	.00032	.0036
%RSD	.45918	.08850
#1	.06881	4.0960
#2	.06941	4.0920
#3	.06931	4.0888
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12832-a-6-a @2 Acquired: 10/10/2018 13:50:34 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6917.5	228740.	22691.
Stddev	22.4	1666.	228.
%RSD	.32446	.72840	1.0030
#1	6892.6	230590.	22724.
#2	6923.8	227380.	22448.
#3	6936.2	228240.	22900.

Sample Name: 12832-a-6-a PDS@2 Acquired: 10/10/2018 13:55:31 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML 5PPM PB

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01474	2.1700	.38729	F 58.084	.05447	.01340
Stddev	.00018	.0111	.00133	.089	.00027	.00011
%RSD	1.2204	.51029	.34367	.15248	.48853	.78641
#1	.01475	2.1827	.38841	58.120	.05417	.01337
#2	.01455	2.1654	.38582	57.983	.05468	.01351
#3	.01491	2.1620	.38765	58.149	.05456	.01331
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.7473	.05029	.05105	.06617	1.5603	9.1096
Stddev	.0088	.00021	.00005	.00039	.0054	.0204
%RSD	.50330	.41220	.09649	.59590	.34443	.22433
#1	1.7450	.05039	.05101	.06637	1.5565	9.1174
#2	1.7399	.05042	.05110	.06643	1.5581	9.0864
#3	1.7570	.05005	.05103	.06572	1.5665	9.1249
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 12832-a-6-a PDS@2 Acquired: 10/10/2018 13:55:31 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML 5PPM PB

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	25.586	.35375	.36163	.04860	.20442	5.8257
Stddev	.097	.00178	.01776	.00029	.00069	.4135
%RSD	.37869	.50188	4.9124	.60278	.33939	7.0974
#1	25.478	.35452	.34247	.04847	.20471	5.5208
#2	25.666	.35501	.37756	.04894	.20493	6.2963
#3	25.615	.35172	.36485	.04840	.20363	5.6600
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	7.2754	.35372	5.7516	7.3163	7.4192	.13169
Stddev	.0167	.00055	.0115	.0798	.0073	.00054
%RSD	.22904	.15528	.20021	1.0904	.09771	.40629
#1	7.2630	.35331	5.7648	7.3123	7.4142	.13161
#2	7.2943	.35434	5.7465	7.3980	7.4158	.13226
#3	7.2688	.35350	5.7435	7.2386	7.4275	.13120
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 12832-a-6-a PDS@2 Acquired: 10/10/2018 13:55:31 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML 5PPM PB

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04416	748.45	.10028	.05175	.18755	.18798
Stddev	.00185	2.56	.00059	.00018	.00045	.00161
%RSD	4.1812	.34251	.58908	.35719	.24054	.85666
#1	.04308	746.45	.10055	.05158	.18716	.18882
#2	.04629	747.55	.09960	.05195	.18745	.18612
#3	.04311	751.34	.10069	.05171	.18805	.18899
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.06347	3.7392
Stddev	.00044	.0027
%RSD	.69188	.07234
#1	.06339	3.7417
#2	.06394	3.7396
#3	.06307	3.7363
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 12832-a-6-a PDS@2 Acquired: 10/10/2018 13:55:31 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML 5PPM PB

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6885.4	225900.	22652.
Stddev	30.6	1061.	155.
%RSD	.44507	.46977	.68601
#1	6852.4	225040.	22553.
#2	6890.6	225560.	22831.
#3	6913.1	227090.	22572.

Sample Name: 12832-a-6-a PDSD@2 Acquired: 10/10/2018 14:00:30 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML 5PPM PB

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01466	2.1754	.38715	F 57.876	.05440	.01337
Stddev	.00054	.0234	.00189	.279	.00002	.00007
%RSD	3.6742	1.0740	.48868	.48286	.04439	.53381
#1	.01508	2.2023	.38579	57.703	.05442	.01331
#2	.01405	2.1598	.38635	57.727	.05438	.01335
#3	.01485	2.1641	.38931	58.198	.05439	.01345
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.7566	.05005	.05046	.06570	1.5597	9.1203
Stddev	.0129	.00008	.00028	.00020	.0024	.0577
%RSD	.73531	.16308	.55212	.29698	.15345	.63271
#1	1.7639	.04998	.05042	.06548	1.5593	9.1327
#2	1.7642	.05014	.05076	.06579	1.5623	9.1707
#3	1.7417	.05003	.05020	.06584	1.5575	9.0573
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 12832-a-6-a PDSD@2 Acquired: 10/10/2018 14:00:30 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML 5PPM PB

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	25.672	.35198	.36687	.04840	.20396	6.5702
Stddev	.063	.00103	.00886	.00018	.00037	.3787
%RSD	.24683	.29167	2.4141	.37081	.18165	5.7639
#1	25.715	.35182	.35845	.04820	.20438	6.2376
#2	25.702	.35104	.36605	.04845	.20368	6.9823
#3	25.599	.35308	.37610	.04855	.20382	6.4906
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	7.2567	.35252	5.7436	7.3148	7.4110	.13276
Stddev	.0237	.00020	.0149	.0412	.0133	.00065
%RSD	.32636	.05710	.26008	.56332	.17916	.49185
#1	7.2792	.35262	5.7287	7.2672	7.4254	.13201
#2	7.2590	.35265	5.7435	7.3374	7.3992	.13313
#3	7.2320	.35229	5.7586	7.3397	7.4085	.13315
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 12832-a-6-a PDSD@2 Acquired: 10/10/2018 14:00:30 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML 5PPM PB

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04453	748.89	.09972	.05163	.18784	.18588
Stddev	.00032	3.57	.00085	.00008	.00172	.00116
%RSD	.71398	.47612	.84988	.15117	.91376	.62266
#1	.04441	748.51	.10033	.05164	.18956	.18515
#2	.04489	752.64	.10009	.05170	.18785	.18721
#3	.04428	745.54	.09875	.05155	.18612	.18527
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.06319	3.7305
Stddev	.00016	.0007
%RSD	.25719	.01985
#1	.06301	3.7302
#2	.06323	3.7299
#3	.06332	3.7313
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 12832-a-6-a PDSD@2 Acquired: 10/10/2018 14:00:30 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML 5PPM PB

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6864.3	225600.	22445.
Stddev	12.9	278.	261.
%RSD	.18845	.12320	1.1613
#1	6868.7	225570.	22255.
#2	6849.7	225900.	22337.
#3	6874.4	225350.	22742.

Sample Name: 140-12832-a-11-a @2 Acquired: 10/10/2018 14:05:27 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01574	2.1072	.58073	F 64.374	.06841	.01940
Stddev	.00031	.0073	.00339	.322	.00018	.00014
%RSD	1.9834	.34718	.58459	.50013	.25947	.73115
#1	.01605	2.0990	.57888	64.746	.06822	.01956
#2	.01575	2.1130	.57867	64.204	.06857	.01929
#3	.01543	2.1097	.58465	64.173	.06844	.01935
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.4911	.06107	.05829	.06393	1.7991	11.190
Stddev	.0080	.00017	.00018	.00030	.0059	.024
%RSD	.53667	.27950	.30426	.46990	.32621	.21232
#1	1.4838	.06099	.05823	.06418	1.7923	11.165
#2	1.4899	.06096	.05849	.06360	1.8031	11.212
#3	1.4997	.06127	.05815	.06400	1.8018	11.193
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12832-a-11-a @2 Acquired: 10/10/2018 14:05:27 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	27.223	.41471	.35501	.06911	.23279	6.7070
Stddev	.045	.00115	.00406	.00050	.00090	.8455
%RSD	.16615	.27790	1.1427	.72009	.38710	12.606
#1	27.174	.41525	.35055	.06967	.23195	7.0386
#2	27.263	.41550	.35602	.06897	.23266	5.7460
#3	27.233	.41339	.35847	.06871	.23374	7.3365
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	8.6919	.35869	6.3307	3.4740	3.5147	.13528
Stddev	.0226	.00108	.0366	.0398	.0150	.00216
%RSD	.25966	.30093	.57842	1.1450	.42574	1.5948
#1	8.6804	.35800	6.3032	3.5193	3.5064	.13527
#2	8.7179	.35814	6.3166	3.4448	3.5058	.13745
#3	8.6774	.35993	6.3722	3.4580	3.5320	.13313
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12832-a-11-a @2 Acquired: 10/10/2018 14:05:27 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.08518	838.10	.14152	.06724	.21822	.22295
Stddev	.00117	4.36	.00105	.00013	.00118	.00112
%RSD	1.3740	.52016	.74207	.19039	.54081	.50238
#1	.08493	833.07	.14031	.06720	.21686	.22167
#2	.08645	840.62	.14223	.06714	.21895	.22340
#3	.08415	840.61	.14201	.06739	.21885	.22376
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.07939	4.8314
Stddev	.00047	.0181
%RSD	.59436	.37463
#1	.07992	4.8163
#2	.07902	4.8265
#3	.07923	4.8514
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12832-a-11-a @2 Acquired: 10/10/2018 14:05:27 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6871.4	226020.	22797.
Stddev	12.6	1061.	89.
%RSD	.18407	.46935	.39152
#1	6878.4	224920.	22790.
#2	6879.1	226110.	22712.
#3	6856.8	227040.	22890.

Sample Name: 140-12832-a-16-a @2 Acquired: 10/10/2018 14:10:25 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00052	.42457	.00581	F 66.162	.01551	-.00003
Stddev	.00019	.01823	.00115	1.012	.00011	.00002
%RSD	37.275	4.2940	19.728	1.5299	.68767	58.683
#1	.00034	.43184	.00545	67.322	.01543	-.00001
#2	.00072	.40382	.00709	65.702	.01563	-.00003
#3	.00050	.43804	.00489	65.460	.01548	-.00004
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.21280	-.00061	-.00154	.00709	.00160	.06807
Stddev	.00261	.00008	.00012	.00017	.00018	.00278
%RSD	1.2243	12.972	7.6560	2.4010	11.421	4.0824
#1	.20980	-.00069	-.00159	.00727	.00178	.06828
#2	.21421	-.00053	-.00140	.00693	.00160	.06520
#3	.21441	-.00062	-.00161	.00707	.00142	.07074
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12832-a-16-a @2 Acquired: 10/10/2018 14:10:25 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.10319	.00132	.06084	.00241	.05874	.29836
Stddev	.00476	.00055	.00619	.00007	.00041	.27994
%RSD	4.6132	42.110	10.173	2.9347	.69731	93.824
#1	.10728	.00071	.06688	.00248	.05914	.11880
#2	.09797	.00181	.06114	.00233	.05832	.15537
#3	.10433	.00143	.05451	.00242	.05877	.62091
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.18263	.00912	-.00902	.00207	-.00194	.00232
Stddev	.00496	.00016	.00114	.00031	.00142	.00050
%RSD	2.7185	1.7221	12.583	14.802	73.228	21.688
#1	.18003	.00894	-.00985	.00184	-.00243	.00195
#2	.17951	.00924	-.00949	.00241	-.00305	.00211
#3	.18835	.00917	-.00773	.00195	-.00034	.00289
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12832-a-16-a @2 Acquired: 10/10/2018 14:10:25 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00048	849.69	-.00229	.00181	.00518	-.00077
Stddev	.00299	3.85	.00079	.00007	.00050	.00280
%RSD	616.90	.45269	34.381	3.9974	9.5826	362.20
#1	-.00224	845.26	-.00266	.00188	.00461	-.00391
#2	-.00217	851.59	-.00283	.00181	.00538	.00144
#3	.00296	852.22	-.00139	.00174	.00554	.00015
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00038	.01243
Stddev	.00014	.00008
%RSD	36.136	.67313
#1	.00044	.01244
#2	.00022	.01234
#3	.00047	.01251
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12832-a-16-a @2 Acquired: 10/10/2018 14:10:25 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6806.7	221270.	22476.
Stddev	16.8	3873.	94.
%RSD	.24642	1.7501	.41785
#1	6793.7	216820.	22534.
#2	6825.7	223140.	22528.
#3	6800.7	223860.	22368.

Sample Name: 140-12855-a-1-a @2 Acquired: 10/10/2018 14:15:35 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01045	.45071	.00609	F 66.011	.02913	-.00002
Stddev	.00038	.00986	.00137	.237	.00025	.00001
%RSD	3.6607	2.1865	22.438	.35874	.86398	45.357
#1	.01078	.44149	.00745	66.060	.02913	-.00003
#2	.01054	.44956	.00611	66.219	.02939	-.00001
#3	.01003	.46109	.00471	65.753	.02888	-.00003
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.96963	-.00045	-.00075	.01550	.00551	.44577
Stddev	.00236	.00013	.00012	.00010	.00011	.00378
%RSD	.24291	29.556	15.900	.61711	2.0509	.84735
#1	.96947	-.00040	-.00084	.01540	.00563	.44372
#2	.96735	-.00061	-.00080	.01559	.00548	.44346
#3	.97206	-.00036	-.00062	.01550	.00542	.45013
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-1-a @2 Acquired: 10/10/2018 14:15:35 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.18492	.00142	.09712	.00800	.05767	.57342
Stddev	.01510	.00017	.00431	.00009	.00020	.73585
%RSD	8.1659	11.637	4.4394	1.0963	.34408	128.33
#1	.20235	.00147	.09677	.00795	.05760	-.23966
#2	.17589	.00156	.10159	.00810	.05752	.76631
#3	.17650	.00124	.09299	.00795	.05789	1.1936
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.54386	.01911	-.00554	.00154	-.00078	.00207
Stddev	.00071	.00010	.00206	.00379	.00124	.00116
%RSD	.13119	.52273	37.153	246.08	158.34	56.093
#1	.54418	.01920	-.00537	.00462	-.00120	.00261
#2	.54435	.01912	-.00357	.00268	.00061	.00287
#3	.54304	.01900	-.00768	-.00269	-.00177	.00074
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-1-a @2 Acquired: 10/10/2018 14:15:35 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00048	844.86	.02983	.00354	.00752	.00286
Stddev	.00212	1.24	.00018	.00008	.00079	.00039
%RSD	438.75	.14653	.59261	2.2805	10.572	13.808
#1	.00286	846.00	.02994	.00356	.00672	.00284
#2	-.00021	843.54	.02963	.00361	.00831	.00248
#3	-.00121	845.03	.02993	.00345	.00751	.00327
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00047	.04182
Stddev	.00011	.00031
%RSD	23.833	.73390
#1	.00060	.04207
#2	.00039	.04190
#3	.00043	.04148
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12855-a-1-a @2 Acquired: 10/10/2018 14:15:35 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6805.4	223180.	22256.
Stddev	39.5	1323.	144.
%RSD	.57972	.59256	.64571
#1	6761.4	222010.	22125.
#2	6817.2	222930.	22410.
#3	6837.6	224610.	22234.

Sample Name: 140-12855-a-3-a @2 Acquired: 10/10/2018 14:20:42 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.18800	.48145	.00617	F 65.487	.02959	-.00001
Stddev	.00062	.01295	.00085	.813	.00031	.00001
%RSD	.33012	2.6898	13.702	1.2411	1.0344	126.71
#1	.18781	.46989	.00543	64.654	.02930	-.00002
#2	.18870	.47902	.00600	66.277	.02957	-.00001
#3	.18750	.49545	.00709	65.531	.02991	.00000
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.1763	-.00028	-.00124	.01497	.00680	.52988
Stddev	.0097	.00006	.00007	.00022	.00014	.00498
%RSD	.82357	22.215	5.7526	1.4977	2.0978	.93960
#1	1.1665	-.00035	-.00131	.01516	.00691	.53166
#2	1.1765	-.00028	-.00124	.01503	.00664	.52425
#3	1.1859	-.00022	-.00116	.01472	.00686	.53372
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-3-a @2 Acquired: 10/10/2018 14:20:42 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.25015	.00136	.11766	.00982	.05680	.82273
Stddev	.01003	.00014	.00851	.00010	.00049	.61155
%RSD	4.0076	10.009	7.2355	1.0607	.85389	74.332
#1	.23858	.00126	.10881	.00970	.05724	.92140
#2	.25621	.00151	.11839	.00988	.05628	.16784
#3	.25566	.00130	.12579	.00989	.05688	1.3789
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.55600	.02282	-.00031	.00138	.00039	.00259
Stddev	.00775	.00028	.00203	.00067	.00124	.00149
%RSD	1.3931	1.2138	654.21	48.462	322.71	57.350
#1	.55003	.02256	.00203	.00083	.00128	.00372
#2	.56475	.02277	-.00142	.00117	.00091	.00314
#3	.55321	.02311	-.00154	.00212	-.00104	.00091
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-3-a @2 Acquired: 10/10/2018 14:20:42 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00051	826.74	.02790	.00423	.00968	.00196
Stddev	.00036	6.46	.00075	.00006	.00037	.00255
%RSD	71.565	.78144	2.7001	1.3169	3.8603	129.82
#1	.00029	821.46	.02817	.00420	.00932	-.00087
#2	.00031	824.82	.02705	.00421	.01007	.00269
#3	.00093	833.95	.02849	.00430	.00964	.00407
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00075	.05711
Stddev	.00021	.00003
%RSD	28.551	.05635
#1	.00051	.05713
#2	.00093	.05707
#3	.00080	.05713
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12855-a-3-a @2 Acquired: 10/10/2018 14:20:42 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6784.4	222690.	22539.
Stddev	24.7	505.	78.
%RSD	.36442	.22698	.34457
#1	6760.7	223280.	22536.
#2	6782.3	222400.	22618.
#3	6810.0	222400.	22463.

Sample Name: CCV Acquired: 10/10/2018 14:25:49 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.93951	24.230	.47911	1.9726	2.0566	2.0495
Stddev	.00302	.192	.00268	.0027	.0021	.0136
%RSD	.32153	.79193	.55923	.13724	.10234	.66203
#1	.93982	24.063	.47924	1.9721	2.0543	2.0578
#2	.94237	24.186	.48172	1.9755	2.0585	2.0568
#3	.93635	24.440	.47636	1.9702	2.0569	2.0338
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.145	.50495	2.0337	2.0024	2.0035	25.804
Stddev	.480	.00127	.0017	.0078	.0011	.072
%RSD	.99608	.25172	.08541	.39106	.05504	.27731
#1	47.767	.50440	2.0329	1.9943	2.0036	25.752
#2	47.982	.50405	2.0325	2.0100	2.0023	25.775
#3	48.684	.50641	2.0357	2.0028	2.0045	25.886
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 10/10/2018 14:25:49 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	47.759	1.8980	48.509	1.9670	2.0397	47.322
Stddev	.190	.0085	.459	.0038	.0021	.408
%RSD	.39712	.44882	.94542	.19426	.10195	.86200
#1	47.603	1.9062	48.153	1.9664	2.0376	46.996
#2	47.703	1.8986	48.349	1.9711	2.0397	47.779
#3	47.970	1.8892	49.027	1.9635	2.0417	47.189
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.978	1.9649	1.9253	.48508	.49489	.47158
Stddev	.118	.0021	.0056	.00311	.00301	.00202
%RSD	.24129	.10860	.29170	.64014	.60899	.42808
#1	49.076	1.9625	1.9202	.48162	.49160	.47323
#2	49.012	1.9659	1.9313	.48598	.49752	.47219
#3	48.847	1.9664	1.9243	.48764	.49555	.46933
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 10/10/2018 14:25:49 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.50001	F 12.716	2.0078	2.0751	2.0198	.95454
Stddev	.00254	.105	.0032	.0022	.0141	.00195
%RSD	.50717	.82583	.16198	.10622	.69790	.20395
#1	.50100	12.724	2.0067	2.0753	2.0046	.95352
#2	.49713	12.607	2.0053	2.0771	2.0224	.95331
#3	.50190	12.816	2.0115	2.0727	2.0325	.95678
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value		2.0000				
Range		10.500%				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	2.0325	2.0338
Stddev	.0042	.0011
%RSD	.20521	.05330
#1	2.0283	2.0349
#2	2.0367	2.0337
#3	2.0326	2.0327
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV Acquired: 10/10/2018 14:25:49 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6670.3	221850.	22164.
Stddev	28.3	897.	202.
%RSD	.42437	.40434	.91226
#1	6647.3	221000.	22212.
#2	6661.6	221780.	22338.
#3	6701.9	222790.	21942.

Sample Name: CCB Acquired: 10/10/2018 14:30:42 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00064	.00593	.00002	.04309	-.00007	-.00003
Stddev	.00023	.00816	.00041	.00047	.00009	.00001
%RSD	35.615	137.59	1876.0	1.0869	127.85	57.166
#1	.00086	-.00342	.00047	.04261	.00002	-.00001
#2	.00041	.00958	-.00008	.04313	-.00015	-.00003
#3	.00065	.01164	-.00032	.04354	-.00007	-.00004
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00424	.00013	.00017	-.00031	.00057	-.00095
Stddev	.00132	.00005	.00015	.00014	.00011	.00082
%RSD	31.120	41.054	88.897	43.377	20.040	86.945
#1	.00330	.00009	.00007	-.00044	.00052	-.00113
#2	.00366	.00012	.00009	-.00017	.00070	-.00166
#3	.00575	.00019	.00034	-.00032	.00048	-.00005
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 10/10/2018 14:30:42 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04572	.00153	-.00171	.00002	-.00020	.44677
Stddev	.01451	.00077	.00505	.00007	.00008	.31728
%RSD	31.741	50.814	295.72	370.11	39.339	71.016
#1	.02936	.00064	-.00645	.00006	-.00021	.14673
#2	.05074	.00207	-.00227	.00006	-.00012	.77886
#3	.05705	.00187	.00360	-.00006	-.00028	.41474
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00367	.00074	.00021	-.00173	-.00094	-.00297
Stddev	.00880	.00009	.00045	.00181	.00047	.00165
%RSD	239.86	12.815	210.93	104.62	50.525	55.576
#1	.00030	.00076	-.00008	-.00311	-.00149	-.00119
#2	.00244	.00064	.00073	-.00240	-.00066	-.00326
#3	-.01375	.00082	-.00001	.00032	-.00067	-.00445
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 10/10/2018 14:30:42 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00063	F 8.8647	-.00035	.00001	.00031	.00309
Stddev	.00070	.2550	.00044	.00003	.00096	.00209
%RSD	112.19	2.8762	123.50	419.88	312.25	67.702
#1	-.00048	9.1554	.00015	-.00003	.00111	.00524
#2	-.00139	8.7598	-.00060	.00004	.00058	.00296
#3	-.00000	8.6789	-.00061	.00001	-.00076	.00106
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		.48200				
Low Limit		-.48200				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	-.00002	-.00041
Stddev	.00015	.00009
%RSD	694.84	21.311
#1	.00006	-.00031
#2	-.00020	-.00047
#3	.00007	-.00044
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB Acquired: 10/10/2018 14:30:42 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6851.7	224320.	22510.
Stddev	14.5	1474.	253.
%RSD	.21141	.65719	1.1253
#1	6839.6	222720.	22257.
#2	6867.8	224610.	22510.
#3	6847.8	225620.	22764.

Sample Name: 140-12855-a-5-a @2 Acquired: 10/10/2018 14:35:43 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML (A)

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.17865	.65797	.00670	F 65.209	.03031	-.00002
Stddev	.00165	.06555	.00136	.562	.00209	.00000
%RSD	.92260	9.9632	20.326	.86125	6.9128	23.348
#1	.17978	.61130	.00543	65.011	.02900	-.00002
#2	.17676	.73292	.00813	64.774	.03272	-.00002
#3	.17941	.62968	.00653	65.843	.02919	-.00001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.4486	-.00022	-.00070	.01617	.00783	.63418
Stddev	.1043	.00007	.00027	.00005	.00014	.03996
%RSD	7.1986	31.902	38.772	.32811	1.8358	6.3007
#1	1.3809	-.00014	-.00090	.01617	.00775	.60870
#2	1.5687	-.00023	-.00039	.01623	.00775	.68023
#3	1.3964	-.00028	-.00082	.01612	.00800	.61361
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-5-a @2 Acquired: 10/10/2018 14:35:43 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML (A)

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.28929	.00077	.13619	.01072	.05679	1.1814
Stddev	.01452	.00031	.00967	.00005	.00024	.1828
%RSD	5.0198	40.375	7.1014	.44982	.42151	15.472
#1	.27305	.00108	.13329	.01077	.05654	.97124
#2	.30102	.00076	.14699	.01067	.05702	1.3034
#3	.29380	.00046	.12831	.01071	.05682	1.2696
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.64914	.04022	-.00114	.00171	-.00250	.00251
Stddev	.04342	.00055	.00081	.00209	.00361	.00140
%RSD	6.6894	1.3793	71.335	122.13	144.54	55.785
#1	.62612	.03966	-.00133	.00205	.00034	.00092
#2	.69922	.04076	-.00025	.00361	-.00656	.00356
#3	.62207	.04024	-.00183	-.00053	-.00128	.00304
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-5-a @2 Acquired: 10/10/2018 14:35:43 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML (A)

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00283	855.29	.03269	.00395	.00942	.00015
Stddev	.00065	58.45	.00013	.00026	.00073	.00153
%RSD	22.823	6.8334	.40860	6.4728	7.7312	1016.9
#1	.00320	818.44	.03256	.00395	.00879	-.00161
#2	.00321	922.68	.03283	.00420	.01022	.00091
#3	.00209	824.75	.03269	.00369	.00924	.00114
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00119	.07885
Stddev	.00032	.00006
%RSD	26.572	.07561
#1	.00140	.07881
#2	.00082	.07882
#3	.00134	.07892
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12855-a-5-a @2 Acquired: 10/10/2018 14:35:43 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML (A)

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6775.4	224100.	21742.
Stddev	9.2	926.	1190.
%RSD	.13638	.41324	5.4745
#1	6765.2	223990.	22561.
#2	6783.2	225070.	20377.
#3	6777.8	223230.	22289.

Sample Name: 12855-a-5-a PDS@2 Acquired: 10/10/2018 14:40:49 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.22475	2.5136	.10733	F 64.365	.13360	.05204
Stddev	.00088	.0551	.00224	.253	.00178	.00095
%RSD	.39134	2.1940	2.0877	.39343	1.3337	1.8244
#1	.22421	2.4545	.10480	64.089	.13185	.05117
#2	.22428	2.5228	.10817	64.422	.13354	.05190
#3	.22577	2.5636	.10904	64.585	.13541	.05305
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.222	.05257	.10317	.22530	.27007	1.6394
Stddev	2.856	.00120	.00205	.00397	.00392	.0089
%RSD	5.6870	2.2894	1.9872	1.7623	1.4502	.54537
#1	52.828	.05137	.10097	.22168	.26596	1.6307
#2	50.669	.05256	.10352	.22469	.27048	1.6389
#3	47.168	.05377	.10503	.22955	.27377	1.6486
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 12855-a-5-a PDS@2 Acquired: 10/10/2018 14:40:49 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.023	.10060	9.6084	.11215	.59463	49.583
Stddev	2.355	.00162	.5895	.00191	.00748	3.751
%RSD	4.9036	1.6095	6.1350	1.7055	1.2583	7.5652
#1	50.325	.09950	10.156	.11029	.58735	53.181
#2	48.124	.09984	9.6850	.11206	.59423	49.871
#3	45.619	.10246	8.9844	.11411	.60230	45.696
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.844	.53850	5.0937	.09965	.10034	.50700
Stddev	2.757	.01097	.0709	.00306	.00400	.00679
%RSD	5.5308	2.0376	1.3925	3.0721	3.9882	1.3389
#1	52.579	.52728	5.0280	.09612	.09594	.49979
#2	49.887	.53903	5.0841	.10118	.10135	.50794
#3	47.066	.54920	5.1689	.10164	.10375	.51326
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 12855-a-5-a PDS@2 Acquired: 10/10/2018 14:40:49 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.15352	808.83	.54046	.52956	.11443	.39664
Stddev	.00546	.76	.00762	.00856	.00110	.00711
%RSD	3.5575	.09417	1.4105	1.6156	.96130	1.7923
#1	.14840	808.66	.53331	.52141	.11403	.39361
#2	.15288	809.66	.53960	.52882	.11359	.39154
#3	.15927	808.17	.54848	.53847	.11567	.40476
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.21098	.60279
Stddev	.00421	.01141
%RSD	1.9955	1.8922
#1	.20725	.59151
#2	.21015	.60254
#3	.21555	.61432
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 12855-a-5-a PDS@2 Acquired: 10/10/2018 14:40:49 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6684.4	222730.	22501.
Stddev	15.4	819.	97.
%RSD	.22975	.36776	.43209
#1	6681.5	221790.	22525.
#2	6701.0	223240.	22395.
#3	6670.7	223170.	22585.

Sample Name: 12855-a-5-a PDSD@2 Acquired: 10/10/2018 14:45:45 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.22559	2.5001	.10713	F 65.137	.13332	.05203
Stddev	.00046	.0140	.00166	.285	.00076	.00037
%RSD	.20457	.55984	1.5492	.43723	.56828	.71501
#1	.22531	2.5067	.10521	65.053	.13249	.05163
#2	.22534	2.4841	.10800	65.455	.13347	.05210
#3	.22612	2.5096	.10817	64.905	.13398	.05236
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.292	.05191	.10186	.22444	.26819	1.6738
Stddev	.387	.00050	.00052	.00188	.00257	.0152
%RSD	.78574	.95973	.51301	.83932	.95715	.90865
#1	49.716	.05141	.10126	.22231	.26597	1.6592
#2	48.956	.05192	.10209	.22511	.26760	1.6726
#3	49.206	.05241	.10223	.22589	.27100	1.6896
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 12855-a-5-a PDSD@2 Acquired: 10/10/2018 14:45:45 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	46.995	.10071	9.4566	.11232	.59190	48.102
Stddev	.329	.00106	.0757	.00062	.00348	.742
%RSD	.70052	1.0549	.80066	.55433	.58835	1.5433
#1	47.300	.09950	9.5312	.11184	.58833	48.663
#2	47.041	.10115	9.3798	.11210	.59207	48.381
#3	46.646	.10149	9.4586	.11303	.59529	47.260
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.790	.53293	5.0715	.09984	.09852	.50347
Stddev	.330	.00376	.0390	.00125	.00208	.00405
%RSD	.67735	.70585	.76817	1.2515	2.1108	.80489
#1	49.096	.52906	5.0363	.09915	.09612	.49951
#2	48.833	.53313	5.0647	.10128	.09977	.50331
#3	48.440	.53658	5.1134	.09908	.09968	.50761
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 12855-a-5-a PDSD@2 Acquired: 10/10/2018 14:45:45 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.15409	817.67	.53488	.52824	.11521	.39098
Stddev	.00292	3.76	.00224	.00454	.00030	.00116
%RSD	1.8970	.45944	.41856	.85920	.26099	.29740
#1	.15088	814.92	.53287	.52312	.11488	.38978
#2	.15478	816.14	.53448	.52980	.11547	.39210
#3	.15660	821.95	.53729	.53178	.11529	.39107
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.21013	.59714
Stddev	.00176	.00461
%RSD	.83986	.77122
#1	.20855	.59279
#2	.20982	.59667
#3	.21203	.60197
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 12855-a-5-a PDSD@2 Acquired: 10/10/2018 14:45:45 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6669.1	221410.	22203.
Stddev	13.2	1274.	181.
%RSD	.19857	.57529	.81373
#1	6653.8	219940.	22133.
#2	6676.5	222230.	22408.
#3	6676.9	222040.	22067.

Sample Name: 140-12855-a-7-a @2 Acquired: 10/10/2018 14:50:40 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.20500	.69896	.00523	F 64.936	.03136	-.00003
Stddev	.00035	.00677	.00106	.386	.00034	.00001
%RSD	.17245	.96796	20.228	.59372	1.0994	19.339
#1	.20490	.69410	.00626	64.875	.03173	-.00003
#2	.20539	.70668	.00415	65.349	.03105	-.00004
#3	.20471	.69609	.00526	64.585	.03129	-.00003
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.9543	-.00024	.00374	.15859	.02363	3.2128
Stddev	.0052	.00005	.00035	.00020	.00019	.0203
%RSD	.17506	20.071	9.4887	.12603	.78587	.63273
#1	2.9496	-.00029	.00409	.15881	.02374	3.2338
#2	2.9598	-.00023	.00375	.15853	.02374	3.1932
#3	2.9536	-.00019	.00338	.15843	.02342	3.2114
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-7-a @2 Acquired: 10/10/2018 14:50:40 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.34290	.00138	.14298	.06423	.06317	1.2140
Stddev	.00472	.00058	.01640	.00023	.00033	.7417
%RSD	1.3771	42.102	11.473	.36007	.51739	61.093
#1	.33798	.00189	.15994	.06447	.06295	2.0503
#2	.34739	.00150	.12719	.06421	.06301	.95535
#3	.34333	.00075	.14181	.06401	.06354	.63624
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.70676	.25989	.01262	.00254	.00042	.00380
Stddev	.00648	.00030	.00147	.00051	.00289	.00032
%RSD	.91705	.11676	11.626	20.181	692.12	8.3011
#1	.71191	.26024	.01420	.00218	.00317	.00416
#2	.69948	.25970	.01130	.00312	.00066	.00361
#3	.70888	.25973	.01236	.00230	-.00258	.00362
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-7-a @2 Acquired: 10/10/2018 14:50:40 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00295	832.54	.02371	.01274	.01246	.00408
Stddev	.00114	2.07	.00071	.00018	.00029	.00262
%RSD	38.540	.24863	2.9806	1.4098	2.3060	64.220
#1	.00313	834.11	.02346	.01294	.01270	.00178
#2	.00399	830.19	.02451	.01259	.01214	.00693
#3	.00174	833.31	.02316	.01270	.01253	.00353
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00084	.11897
Stddev	.00018	.00037
%RSD	21.046	.30816
#1	.00074	.11939
#2	.00104	.11877
#3	.00074	.11875
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12855-a-7-a @2 Acquired: 10/10/2018 14:50:40 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6792.8	223700.	22651.
Stddev	8.5	1018.	58.
%RSD	.12544	.45522	.25793
#1	6784.5	223090.	22587.
#2	6792.3	223140.	22701.
#3	6801.5	224880.	22666.

Sample Name: 140-12855-a-9-a @2 Acquired: 10/10/2018 14:55:45 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.17569	.56237	.00572	F 65.625	.02973	-.00003
Stddev	.00128	.01178	.00165	.490	.00014	.00000
%RSD	.73069	2.0953	28.804	.74600	.48077	6.8975
#1	.17668	.54953	.00754	65.154	.02958	-.00003
#2	.17614	.56489	.00434	66.132	.02986	-.00003
#3	.17424	.57269	.00528	65.589	.02976	-.00003
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.4617	-.00047	-.00099	.02629	.01034	3.1742
Stddev	.0058	.00006	.00025	.00028	.00007	.0152
%RSD	.39704	13.135	25.446	1.0620	.72213	.47852
#1	1.4550	-.00053	-.00128	.02601	.01028	3.1599
#2	1.4652	-.00041	-.00088	.02657	.01042	3.1902
#3	1.4649	-.00047	-.00082	.02629	.01032	3.1726
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-9-a @2 Acquired: 10/10/2018 14:55:45 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.27437	.00136	.11345	.03206	.05694	.38663
Stddev	.01147	.00047	.01497	.00015	.00023	.60120
%RSD	4.1805	34.493	13.194	.47787	.41038	155.50
#1	.28457	.00131	.09691	.03194	.05719	.03808
#2	.26196	.00093	.11736	.03223	.05692	.04098
#3	.27660	.00186	.12608	.03202	.05673	1.0808
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.53096	.02996	-.00229	.00245	-.00178	.00405
Stddev	.00266	.00011	.00387	.00081	.00177	.00177
%RSD	.50163	.36782	168.90	33.175	99.507	43.634
#1	.52789	.02994	-.00551	.00258	.00021	.00529
#2	.53261	.02986	-.00337	.00158	-.00319	.00202
#3	.53238	.03008	.00200	.00319	-.00236	.00483
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-9-a @2 Acquired: 10/10/2018 14:55:45 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00337	827.05	.01833	.00788	.00943	.00163
Stddev	.00145	4.02	.00024	.00011	.00089	.00124
%RSD	43.112	.48572	1.3194	1.3960	9.4540	75.884
#1	.00377	823.54	.01815	.00780	.00874	.00047
#2	.00458	831.43	.01860	.00801	.00913	.00293
#3	.00176	826.18	.01824	.00784	.01044	.00149
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00072	.06220
Stddev	.00025	.00008
%RSD	35.228	.12953
#1	.00043	.06229
#2	.00081	.06216
#3	.00092	.06214
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12855-a-9-a @2 Acquired: 10/10/2018 14:55:45 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6790.1	223480.	22484.
Stddev	23.2	490.	233.
%RSD	.34238	.21907	1.0371
#1	6764.3	223330.	22442.
#2	6796.8	223080.	22275.
#3	6809.3	224020.	22736.

Sample Name: 140-12855-a-11-a @2 Acquired: 10/10/2018 15:00:50 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.18130	.65591	.00600	F 65.202	.03010	-.00002
Stddev	.00061	.00238	.00054	.343	.00014	.00001
%RSD	.33662	.36339	8.9201	.52553	.47247	61.712
#1	.18190	.65748	.00629	64.862	.03020	-.00002
#2	.18131	.65316	.00632	65.197	.03015	-.00001
#3	.18068	.65708	.00538	65.548	.02993	-.00003
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.3142	-.00040	-.00095	.02475	.01415	3.3555
Stddev	.0093	.00006	.00022	.00011	.00033	.0140
%RSD	.40049	16.029	23.568	.42999	2.3564	.41608
#1	2.3177	-.00042	-.00116	.02469	.01449	3.3685
#2	2.3036	-.00033	-.00072	.02487	.01414	3.3407
#3	2.3211	-.00046	-.00096	.02468	.01382	3.3572
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-11-a @2 Acquired: 10/10/2018 15:00:50 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.38107	.00085	.14764	.03111	.05789	.90666
Stddev	.01484	.00093	.00786	.00013	.00030	.32495
%RSD	3.8954	109.99	5.3263	.42459	.52239	35.841
#1	.39041	-.00008	.15509	.03098	.05821	.61536
#2	.36395	.00083	.14840	.03112	.05761	1.2571
#3	.38884	.00179	.13942	.03124	.05786	.84750
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.70258	.04056	.00175	.00177	.00066	.00502
Stddev	.00329	.00011	.00043	.00345	.00109	.00086
%RSD	.46759	.27821	24.636	195.51	165.93	17.197
#1	.70547	.04048	.00207	-.00190	.00132	.00487
#2	.69901	.04051	.00193	.00496	-.00060	.00425
#3	.70328	.04069	.00126	.00224	.00125	.00595
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-11-a @2 Acquired: 10/10/2018 15:00:50 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00283	826.23	.02902	.00879	.01258	.00140
Stddev	.00262	1.79	.00148	.00006	.00052	.00143
%RSD	92.786	.21623	5.1028	.63570	4.1160	102.31
#1	.00054	825.42	.03037	.00872	.01210	-.00025
#2	.00225	824.99	.02744	.00883	.01251	.00236
#3	.00569	828.28	.02926	.00880	.01313	.00208
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00064	.09292
Stddev	.00017	.00030
%RSD	26.644	.31965
#1	.00075	.09259
#2	.00045	.09300
#3	.00073	.09316
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12855-a-11-a @2 Acquired: 10/10/2018 15:00:50 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6772.0	223390.	22596.
Stddev	22.3	942.	91.
%RSD	.32897	.42154	.40427
#1	6747.7	222390.	22506.
#2	6776.5	223500.	22689.
#3	6791.6	224270.	22593.

Sample Name: 140-12855-a-13-a @2 Acquired: 10/10/2018 15:05:55 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.20002	1.0151	.00623	F 66.236	.03125	-.00001
Stddev	.00119	.0044	.00160	.035	.00013	.00001
%RSD	.59552	.43635	25.672	.05316	.43048	189.30
#1	.20126	1.0175	.00601	66.261	.03139	-.00002
#2	.19991	1.0100	.00792	66.196	.03124	.00001
#3	.19888	1.0179	.00475	66.251	.03113	-.00001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.3748	-.00033	-.00105	.01863	.01078	1.0045
Stddev	.0123	.00016	.00013	.00025	.00017	.0063
%RSD	.51676	46.493	12.139	1.3319	1.6089	.62858
#1	2.3774	-.00017	-.00118	.01857	.01062	1.0026
#2	2.3855	-.00048	-.00102	.01890	.01074	1.0115
#3	2.3614	-.00035	-.00094	.01842	.01097	.99932
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-13-a @2 Acquired: 10/10/2018 15:05:55 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.35602	.00071	.19602	.01358	.05758	1.1824
Stddev	.01828	.00014	.00274	.00007	.00025	.3481
%RSD	5.1340	19.071	1.3998	.53193	.42564	29.442
#1	.36752	.00056	.19441	.01366	.05761	.82165
#2	.33495	.00076	.19447	.01352	.05781	1.5164
#3	.36561	.00082	.19919	.01357	.05732	1.2093
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.80589	.02977	.00123	.00009	-.00030	.00651
Stddev	.00437	.00048	.00213	.00194	.00117	.00038
%RSD	.54196	1.5968	172.75	2134.7	387.06	5.8575
#1	.80096	.02946	.00346	.00088	-.00157	.00608
#2	.80743	.03032	.00100	-.00212	-.00008	.00662
#3	.80928	.02954	-.00077	.00152	.00074	.00682
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-13-a @2 Acquired: 10/10/2018 15:05:55 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00356	834.61	.03124	.00976	.00954	.00166
Stddev	.00177	3.99	.00120	.00009	.00020	.00300
%RSD	49.541	.47803	3.8379	.94299	2.1326	180.81
#1	.00303	832.42	.03063	.00978	.00976	-.00161
#2	.00213	839.21	.03262	.00966	.00936	.00428
#3	.00553	832.19	.03046	.00984	.00950	.00231
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00066	.07792
Stddev	.00023	.00036
%RSD	35.006	.46698
#1	.00092	.07751
#2	.00051	.07809
#3	.00055	.07817
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12855-a-13-a @2 Acquired: 10/10/2018 15:05:55 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6778.9	223040.	22690.
Stddev	19.5	1022.	193.
%RSD	.28703	.45814	.84971
#1	6784.6	221890.	22707.
#2	6757.2	223370.	22489.
#3	6794.9	223850.	22874.

Sample Name: 140-12855-a-15-a @2 Acquired: 10/10/2018 15:11:01 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.17406	.65337	.00575	F 65.144	.02875	-.00003
Stddev	.00057	.00725	.00129	.810	.00015	.00001
%RSD	.32464	1.1092	22.371	1.2434	.53212	44.500
#1	.17345	.65915	.00485	64.969	.02873	-.00002
#2	.17416	.64524	.00722	64.436	.02891	-.00004
#3	.17456	.65573	.00517	66.028	.02860	-.00002
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.0596	-.00032	-.00122	.01502	.00764	.96314
Stddev	.0188	.00008	.00010	.00027	.00009	.00531
%RSD	.61461	24.956	7.9669	1.7734	1.2051	.55125
#1	3.0379	-.00030	-.00128	.01475	.00762	.96048
#2	3.0706	-.00041	-.00111	.01529	.00774	.96926
#3	3.0702	-.00025	-.00128	.01501	.00756	.95969
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-15-a @2 Acquired: 10/10/2018 15:11:01 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.31647	.00142	.14184	.01261	.05642	.88221
Stddev	.01579	.00116	.01246	.00007	.00002	.21004
%RSD	4.9908	81.433	8.7872	.52303	.04013	23.808
#1	.32030	.00222	.13101	.01253	.05643	1.0856
#2	.32999	.00009	.13905	.01265	.05640	.89491
#3	.29911	.00195	.15547	.01264	.05644	.66612
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.53424	.02460	-.00053	.00316	.00109	.00440
Stddev	.00346	.00012	.00198	.00516	.00111	.00114
%RSD	.64699	.48081	374.77	163.49	102.65	25.879
#1	.53084	.02455	.00163	-.00280	.00101	.00329
#2	.53413	.02451	-.00226	.00617	.00223	.00557
#3	.53775	.02473	-.00097	.00611	.00001	.00435
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-15-a @2 Acquired: 10/10/2018 15:11:01 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00374	816.96	.02484	.01246	.01127	.00111
Stddev	.00187	5.85	.00058	.00012	.00042	.00155
%RSD	50.097	.71553	2.3467	.94034	3.7164	140.33
#1	.00532	810.26	.02454	.01235	.01175	.00091
#2	.00167	819.60	.02552	.01258	.01102	.00275
#3	.00423	821.02	.02447	.01245	.01104	-.00034
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00070	.06303
Stddev	.00022	.00031
%RSD	31.194	.48683
#1	.00052	.06271
#2	.00064	.06306
#3	.00095	.06333
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12855-a-15-a @2 Acquired: 10/10/2018 15:11:01 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6768.0	223680.	22546.
Stddev	13.5	439.	58.
%RSD	.19913	.19629	.25773
#1	6761.1	223490.	22613.
#2	6783.5	224180.	22507.
#3	6759.3	223370.	22518.

Sample Name: 140-12855-a-17-a @2 Acquired: 10/10/2018 15:16:07 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.14744	.63023	.00684	F 66.465	.03040	-.00004
Stddev	.00067	.01331	.00039	.241	.00017	.00001
%RSD	.45724	2.1114	5.7213	.36308	.57063	25.932
#1	.14666	.64355	.00709	66.440	.03057	-.00005
#2	.14780	.61694	.00639	66.237	.03042	-.00004
#3	.14785	.63021	.00703	66.718	.03022	-.00003
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.6200	-.00034	.00138	.10132	.01930	2.6623
Stddev	.0186	.00007	.00021	.00032	.00003	.0183
%RSD	.71065	19.464	15.464	.31667	.13054	.68794
#1	2.6415	-.00031	.00163	.10163	.01929	2.6825
#2	2.6088	-.00029	.00123	.10134	.01933	2.6576
#3	2.6097	-.00041	.00130	.10099	.01928	2.6468
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-17-a @2 Acquired: 10/10/2018 15:16:07 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.35604	.00116	.15451	.04237	.05933	.92488
Stddev	.00914	.00052	.00943	.00021	.00040	.82956
%RSD	2.5676	44.460	6.1016	.48702	.67564	89.693
#1	.35541	.00174	.16505	.04257	.05913	1.6396
#2	.36548	.00076	.14689	.04238	.05907	.01520
#3	.34723	.00097	.15160	.04215	.05979	1.1199
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.64847	.14941	.00663	.00285	-.00077	.00372
Stddev	.00217	.00070	.00064	.00244	.00189	.00070
%RSD	.33445	.47100	9.6852	85.538	244.18	18.840
#1	.64621	.15013	.00734	.00004	.00092	.00373
#2	.65053	.14873	.00643	.00438	-.00280	.00301
#3	.64867	.14938	.00611	.00413	-.00044	.00441
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-17-a @2 Acquired: 10/10/2018 15:16:07 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00112	835.75	.01563	.01061	.01013	.00047
Stddev	.00146	4.54	.00028	.00008	.00091	.00129
%RSD	130.02	.54327	1.8095	.71962	8.9778	274.24
#1	-.00056	840.96	.01547	.01069	.00923	.00125
#2	.00207	833.59	.01546	.01056	.01105	-.00102
#3	.00184	832.69	.01595	.01057	.01011	.00118
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00073	.09007
Stddev	.00008	.00018
%RSD	10.364	.20121
#1	.00080	.09002
#2	.00073	.09027
#3	.00065	.08992
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12855-a-17-a @2 Acquired: 10/10/2018 15:16:07 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6731.1	221250.	22153.
Stddev	27.4	964.	308.
%RSD	.40729	.43586	1.3905
#1	6706.2	220230.	21798.
#2	6726.6	221350.	22324.
#3	6760.5	222150.	22338.

Sample Name: 12855-a-5-a SD@10 Acquired: 10/10/2018 15:21:11 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML (A) TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.03556	.12462	.00134	13.692	.00568	-.00004
Stddev	.00017	.00840	.00104	.067	.00003	.00002
%RSD	.48324	6.7379	78.079	.48796	.46348	44.256
#1	.03557	.12952	.00217	13.763	.00570	-.00005
#2	.03572	.11493	.00168	13.685	.00565	-.00004
#3	.03538	.12943	.00017	13.630	.00570	-.00002
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.27891	.00013	-.00015	.00302	.00213	.12199
Stddev	.00287	.00008	.00009	.00004	.00027	.00167
%RSD	1.0275	61.302	60.340	1.2860	12.502	1.3664
#1	.28126	.00021	-.00025	.00305	.00197	.12381
#2	.27572	.00005	-.00009	.00304	.00199	.12054
#3	.27976	.00012	-.00011	.00298	.00244	.12162
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 12855-a-5-a SD@10 Acquired: 10/10/2018 15:21:11 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML (A) TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.06550	.00063	.02732	.00215	.01073	.34465
Stddev	.00399	.00053	.01710	.00003	.00035	.57601
%RSD	6.0900	84.852	62.594	1.5006	3.2162	167.13
#1	.06974	.00020	.01130	.00217	.01066	-.22191
#2	.06496	.00122	.02533	.00217	.01042	.32617
#3	.06181	.00046	.04533	.00211	.01110	.92967
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.12286	.00887	.00023	-.00212	-.00168	-.00234
Stddev	.00265	.00009	.00152	.00022	.00063	.00068
%RSD	2.1548	1.0586	670.72	10.503	37.288	29.137
#1	.12231	.00880	.00196	-.00216	-.00102	-.00162
#2	.12574	.00883	-.00088	-.00188	-.00227	-.00297
#3	.12053	.00898	-.00040	-.00232	-.00174	-.00243
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 12855-a-5-a SD@10 Acquired: 10/10/2018 15:21:11 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML (A) TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00019	168.39	.00671	.00079	.00179	.00165
Stddev	.00203	.23	.00067	.00010	.00054	.00134
%RSD	1090.4	.13613	9.9325	12.879	30.051	81.402
#1	.00214	168.24	.00690	.00088	.00162	.00038
#2	-.00106	168.66	.00726	.00081	.00239	.00305
#3	-.00163	168.29	.00597	.00068	.00136	.00150
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00023	.01664
Stddev	.00030	.00017
%RSD	131.48	1.0036
#1	.00005	.01646
#2	.00057	.01679
#3	.00006	.01665
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 12855-a-5-a SD@10 Acquired: 10/10/2018 15:21:11 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML (A) TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6854.0	224050.	22447.
Stddev	20.2	452.	32.
%RSD	.29496	.20177	.14389
#1	6857.4	223670.	22451.
#2	6832.3	223930.	22476.
#3	6872.3	224550.	22412.

Sample Name: CCV Acquired: 10/10/2018 15:26:11 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.95685	24.563	.48743	2.0156	2.0862	2.0878
Stddev	.00606	.214	.00191	.0176	.0105	.0248
%RSD	.63355	.86969	.39220	.87289	.50273	1.1900
#1	.94997	24.320	.48596	1.9957	2.0741	2.0597
#2	.95916	24.722	.48674	2.0221	2.0929	2.1070
#3	.96142	24.648	.48959	2.0290	2.0916	2.0965
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.699	.51205	2.0646	2.0333	2.0334	26.183
Stddev	.384	.00320	.0100	.0111	.0140	.190
%RSD	.78773	.62534	.48501	.54658	.68754	.72475
#1	48.270	.50839	2.0532	2.0205	2.0173	25.964
#2	49.010	.51430	2.0720	2.0399	2.0398	26.305
#3	48.816	.51348	2.0685	2.0395	2.0430	26.280
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 10/10/2018 15:26:11 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.242	1.9235	49.208	2.0025	2.0722	48.970
Stddev	.252	.0103	.454	.0145	.0090	.980
%RSD	.52152	.53356	.92217	.72328	.43434	2.0016
#1	47.952	1.9124	48.691	1.9858	2.0621	49.209
#2	48.379	1.9254	49.539	2.0099	2.0793	49.809
#3	48.397	1.9326	49.394	2.0118	2.0751	47.892
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.702	1.9964	1.9613	.49286	.50150	.48274
Stddev	.283	.0128	.0093	.00450	.00509	.00345
%RSD	.56980	.64063	.47195	.91367	1.0140	.71552
#1	49.393	1.9820	1.9521	.49204	.49564	.47956
#2	49.765	2.0065	1.9612	.48882	.50472	.48225
#3	49.949	2.0007	1.9706	.49772	.50414	.48642
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 10/10/2018 15:26:11 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.50837	F 12.299	2.0373	2.1073	2.0521	.97498
Stddev	.00204	.335	.0103	.0123	.0167	.00451
%RSD	.40188	2.7222	.50411	.58174	.81392	.46240
#1	.50710	12.497	2.0258	2.0931	2.0331	.96987
#2	.50728	12.487	2.0455	2.1148	2.0641	.97838
#3	.51072	11.913	2.0407	2.1139	2.0593	.97670
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value		2.0000				
Range		10.500%				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	2.0627	2.0663
Stddev	.0110	.0088
%RSD	.53545	.42502
#1	2.0500	2.0562
#2	2.0681	2.0711
#3	2.0699	2.0717
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV Acquired: 10/10/2018 15:26:11 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6606.9	219690.	22053.
Stddev	10.3	565.	142.
%RSD	.15559	.25705	.64464
#1	6618.4	220120.	22137.
#2	6598.8	219050.	21889.
#3	6603.4	219910.	22132.

Sample Name: CCB Acquired: 10/10/2018 15:31:04 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00049	-.01033	-.00041	.04556	-.00008	-.00002
Stddev	.00016	.01006	.00110	.00062	.00012	.00002
%RSD	32.707	97.333	266.11	1.3642	152.57	85.455
#1	.00065	.00091	-.00078	.04543	-.00018	-.00000
#2	.00033	-.01847	.00082	.04623	-.00011	-.00003
#3	.00050	-.01343	-.00128	.04501	.00005	-.00003
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00454	.00022	.00017	-.00011	.00051	-.00056
Stddev	.00177	.00002	.00005	.00014	.00007	.00153
%RSD	38.976	9.9689	29.552	131.53	13.361	271.57
#1	.00541	.00019	.00022	-.00017	.00059	.00099
#2	.00570	.00022	.00018	.00006	.00049	-.00062
#3	.00250	.00023	.00012	-.00021	.00045	-.00207
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 10/10/2018 15:31:04 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04712	.00089	-.00642	.00003	-.00015	.08304
Stddev	.01201	.00047	.00468	.00001	.00024	.69138
%RSD	25.490	52.727	72.982	41.827	155.56	832.57
#1	.05830	.00087	-.00448	.00002	.00010	.13057
#2	.04864	.00136	-.01176	.00004	-.00037	-.63088
#3	.03442	.00043	-.00302	.00004	-.00019	.74943
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00044	.00062	.00056	-.00252	-.00145	F -.00418
Stddev	.00164	.00011	.00162	.00101	.00097	.00141
%RSD	370.24	18.493	289.13	40.231	67.225	33.763
#1	.00187	.00060	.00120	-.00300	-.00235	-.00562
#2	.00081	.00075	.00176	-.00320	-.00041	-.00414
#3	-.00135	.00052	-.00128	-.00135	-.00159	-.00279
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit						.00380
Low Limit						-.00380

Sample Name: CCB Acquired: 10/10/2018 15:31:04 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00010	F 8.2022	.00002	.00009	.00057	.00224
Stddev	.00272	.2349	.00023	.00005	.00052	.00102
%RSD	2663.8	2.8640	1297.0	57.932	91.292	45.302
#1	.00062	8.4604	.00017	.00015	.00006	.00294
#2	.00219	8.1450	-.00025	.00005	.00054	.00108
#3	-.00312	8.0011	.00013	.00007	.00109	.00271
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		.48200				
Low Limit		-.48200				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	-.00007	-.00043
Stddev	.00023	.00003
%RSD	329.79	7.4089
#1	-.00033	-.00042
#2	.00007	-.00039
#3	.00005	-.00046
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB Acquired: 10/10/2018 15:31:04 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6819.0	223930.	22189.
Stddev	49.6	1529.	152.
%RSD	.72688	.68263	.68595
#1	6761.8	222290.	22015.
#2	6849.9	225320.	22251.
#3	6845.2	224180.	22300.

Sample Name: 140-12855-a-19-a @2 Acquired: 10/10/2018 15:36:06 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.18619	.53533	.00456	F 64.977	.03221	-.00003
Stddev	.00041	.00878	.00163	.268	.00011	.00000
%RSD	.21806	1.6406	35.692	.41223	.33515	12.748
#1	.18654	.54131	.00497	65.148	.03215	-.00003
#2	.18575	.52524	.00595	64.669	.03215	-.00003
#3	.18628	.53943	.00277	65.115	.03234	-.00003
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.57344	-.00057	-.00120	.01317	.00412	.19773
Stddev	.00252	.00008	.00012	.00050	.00014	.00163
%RSD	.43954	13.390	10.112	3.7946	3.4239	.82512
#1	.57082	-.00051	-.00134	.01292	.00413	.19788
#2	.57366	-.00056	-.00110	.01374	.00397	.19603
#3	.57585	-.00066	-.00117	.01284	.00425	.19928
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-19-a @2 Acquired: 10/10/2018 15:36:06 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.10070	.00170	.11824	.00478	.05549	.21051
Stddev	.02442	.00085	.01487	.00008	.00010	.52222
%RSD	24.247	49.890	12.575	1.6280	.17413	248.07
#1	.07807	.00096	.13540	.00469	.05559	.70475
#2	.12658	.00150	.10919	.00483	.05549	-.33578
#3	.09744	.00262	.11013	.00483	.05540	.26255
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.20128	.01451	-.00853	-.00007	-.00034	.00358
Stddev	.00724	.00010	.00149	.00197	.00142	.00040
%RSD	3.5950	.68234	17.479	2817.9	415.84	11.278
#1	.19348	.01449	-.00954	.00218	-.00198	.00321
#2	.20777	.01462	-.00923	-.00151	.00041	.00351
#3	.20258	.01442	-.00682	-.00087	.00054	.00401
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-12855-a-19-a @2 Acquired: 10/10/2018 15:36:06 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00178	806.83	-.00184	.00317	.00627	.00100
Stddev	.00152	3.14	.00038	.00016	.00055	.00117
%RSD	85.480	.38952	20.467	5.1794	8.7165	117.58
#1	.00349	806.62	-.00223	.00298	.00642	.00104
#2	.00058	803.80	-.00181	.00330	.00566	-.00020
#3	.00127	810.08	-.00148	.00321	.00672	.00215
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00071	.02679
Stddev	.00015	.00015
%RSD	20.369	.55389
#1	.00058	.02679
#2	.00087	.02663
#3	.00070	.02693
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-12855-a-19-a @2 Acquired: 10/10/2018 15:36:06 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6787.6	223340.	22562.
Stddev	15.1	236.	113.
%RSD	.22239	.10576	.50138
#1	6770.2	223560.	22432.
#2	6795.7	223090.	22633.
#3	6797.0	223380.	22622.

Sample Name: CRI Acquired: 10/10/2018 15:41:13 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01021	.18122	.00941	.23377	.01050	.00553
Stddev	.00022	.00688	.00096	.00418	.00006	.00003
%RSD	2.1561	3.7940	10.185	1.7899	.56086	.61616
#1	.01017	.17555	.00867	.22920	.01057	.00551
#2	.01045	.17924	.00907	.23470	.01046	.00552
#3	.01001	.18887	.01050	.23742	.01047	.00557
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.8949	.00558	.05198	.01042	.02582	.10679
Stddev	.0052	.00012	.00006	.00010	.00013	.00206
%RSD	.10685	2.1157	.10943	.99770	.51246	1.9297
#1	4.8937	.00547	.05193	.01054	.02568	.10606
#2	4.9006	.00570	.05204	.01038	.02584	.10912
#3	4.8904	.00558	.05197	.01034	.02594	.10520
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CRI Acquired: 10/10/2018 15:41:13 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.0025	.04918	4.7975	.01550	.04147	5.0038
Stddev	.0329	.00069	.0264	.00001	.00012	.3154
%RSD	.65850	1.3940	.55041	.03343	.28964	6.3028
#1	5.0384	.04965	4.8241	.01551	.04143	5.2054
#2	4.9956	.04950	4.7971	.01550	.04161	5.1657
#3	4.9736	.04839	4.7713	.01550	.04138	4.6404
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.8176	.04102	.29362	.00807	.00792	.05396
Stddev	.0172	.00032	.00148	.00132	.00121	.00030
%RSD	.35732	.76869	.50364	16.300	15.312	.56135
#1	4.8093	.04066	.29518	.00707	.00932	.05382
#2	4.8060	.04116	.29346	.00956	.00723	.05375
#3	4.8374	.04123	.29223	.00759	.00722	.05430
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CRI Acquired: 10/10/2018 15:41:13 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00985	F 9.4772	.10396	.05214	.05211	.01220
Stddev	.00155	.6790	.00064	.00006	.00100	.00176
%RSD	15.695	7.1641	.61521	.12274	1.9159	14.397
#1	.00813	10.206	.10325	.05220	.05239	.01169
#2	.01111	9.3638	.10449	.05208	.05100	.01416
#3	.01033	8.8621	.10414	.05214	.05294	.01076
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value		.50000				
Range		50.000%				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.02618	.02135
Stddev	.00032	.00008
%RSD	1.2259	.37020
#1	.02654	.02128
#2	.02596	.02133
#3	.02603	.02143
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CRI Acquired: 10/10/2018 15:41:13 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6807.8	223340.	22352.
Stddev	14.6	324.	97.
%RSD	.21508	.14499	.43437
#1	6798.4	223010.	22240.
#2	6800.3	223360.	22406.
#3	6824.7	223650.	22410.

Sample Name: CCV Acquired: 10/10/2018 15:46:12 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.94970	24.529	.48452	2.0054	2.0815	2.0771
Stddev	.00067	.063	.00086	.0035	.0029	.0146
%RSD	.07014	.25556	.17711	.17341	.14132	.70331
#1	.95036	24.600	.48547	2.0038	2.0832	2.0606
#2	.94970	24.503	.48381	2.0031	2.0831	2.0824
#3	.94903	24.483	.48429	2.0094	2.0781	2.0883
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.378	.50984	2.0560	2.0271	2.0179	25.997
Stddev	.217	.00143	.0035	.0176	.0121	.043
%RSD	.44821	.28125	.17029	.86783	.59705	.16511
#1	48.545	.50922	2.0531	2.0089	2.0310	25.979
#2	48.133	.50882	2.0550	2.0285	2.0157	25.966
#3	48.457	.51148	2.0599	2.0440	2.0072	26.046
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 10/10/2018 15:46:12 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.070	1.9132	48.644	1.9964	2.0636	48.036
Stddev	.060	.0048	.251	.0154	.0024	.599
%RSD	.12432	.25189	.51695	.77251	.11464	1.2463
#1	48.046	1.9079	48.555	1.9802	2.0611	48.264
#2	48.025	1.9174	48.449	1.9979	2.0658	47.356
#3	48.138	1.9142	48.928	2.0110	2.0639	48.486
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.415	1.9866	1.9477	.49029	.49886	.47644
Stddev	.144	.0050	.0018	.01115	.00220	.00179
%RSD	.29120	.25078	.09149	2.2735	.44010	.37553
#1	49.258	1.9823	1.9464	.47972	.49676	.47574
#2	49.540	1.9855	1.9468	.48922	.49867	.47847
#3	49.447	1.9921	1.9497	.50194	.50114	.47511
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 10/10/2018 15:46:12 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.50508	F 9.2236	2.0276	2.0966	2.0452	.96461
Stddev	.00118	.1290	.0055	.0036	.0034	.00710
%RSD	.23384	1.3982	.27252	.17273	.16481	.73641
#1	.50495	9.3726	2.0239	2.0935	2.0491	.96052
#2	.50632	9.1489	2.0249	2.1006	2.0435	.96051
#3	.50396	9.1495	2.0339	2.0957	2.0431	.97282
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value		2.0000				
Range		10.500%				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	2.0534	2.0571
Stddev	.0112	.0031
%RSD	.54457	.15248
#1	2.0421	2.0536
#2	2.0537	2.0579
#3	2.0644	2.0598
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV Acquired: 10/10/2018 15:46:12 Type: QC
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6617.8	220250.	22181.
Stddev	31.3	564.	196.
%RSD	.47257	.25625	.88209
#1	6604.7	220790.	22036.
#2	6595.2	219670.	22403.
#3	6653.5	220290.	22103.

Sample Name: CCB Acquired: 10/10/2018 15:51:06 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00073	.00052	-.00020	.05051	.00007	-.00003
Stddev	.00013	.01324	.00019	.00197	.00002	.00001
%RSD	17.508	2529.7	97.772	3.9065	26.514	18.020
#1	.00069	.01548	-.00000	.04830	.00008	-.00003
#2	.00087	-.00418	-.00020	.05112	.00005	-.00002
#3	.00062	-.00973	-.00039	.05210	.00008	-.00004
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00324	.00022	.00013	-.00037	.00052	.00067
Stddev	.00057	.00007	.00010	.00028	.00030	.00194
%RSD	17.531	30.905	79.079	75.679	57.456	289.60
#1	.00337	.00015	.00005	-.00005	.00074	.00013
#2	.00262	.00028	.00025	-.00049	.00018	-.00095
#3	.00374	.00024	.00009	-.00056	.00062	.00283
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 10/10/2018 15:51:06 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.03666	.00042	-.00112	.00002	-.00018	-.22162
Stddev	.00316	.00068	.00541	.00005	.00010	.22449
%RSD	8.6180	161.93	485.22	248.59	55.593	101.29
#1	.03781	.00058	-.00127	.00006	-.00026	-.03505
#2	.03309	.00101	-.00645	-.00004	-.00007	-.47075
#3	.03908	-.00033	.00437	.00004	-.00022	-.15907
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00070	.00069	.00014	-.00120	-.00100	-.00297
Stddev	.00261	.00007	.00087	.00141	.00126	.00027
%RSD	374.06	9.7454	606.86	117.39	126.21	9.1394
#1	-.00070	.00067	-.00084	.00012	-.00235	-.00328
#2	-.00091	.00076	.00080	-.00103	-.00080	-.00287
#3	.00371	.00063	.00048	-.00269	.00015	-.00276
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 10/10/2018 15:51:06 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00145	F 6.5319	-.00002	.00002	-.00000	.00338
Stddev	.00424	.1191	.00035	.00008	.00054	.00127
%RSD	291.61	1.8231	1923.0	504.66	19171.	37.702
#1	.00381	6.4735	.00008	.00005	.00049	.00191
#2	.00398	6.6690	-.00040	.00007	-.00058	.00420
#3	-.00344	6.4534	.00027	-.00008	.00007	.00402
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		.48200				
Low Limit		-.48200				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	-.00001	-.00042
Stddev	.00015	.00008
%RSD	1305.3	19.576
#1	-.00010	-.00033
#2	.00016	-.00050
#3	-.00009	-.00044
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB Acquired: 10/10/2018 15:51:06 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6808.0	223620.	22400.
Stddev	11.6	1426.	115.
%RSD	.17035	.63745	.51541
#1	6794.6	224870.	22533.
#2	6815.3	222070.	22333.
#3	6814.1	223930.	22333.

Sample Name: Sample-61 Acquired: 10/10/2018 15:56:09 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00063	489.73	.00600	.06286	.01076	-.00040
Stddev	.00065	.58	.00030	.00089	.00012	.00001
%RSD	102.58	.11742	4.9254	1.4183	1.0845	2.9110
#1	-.00072	489.25	.00567	.06339	.01086	-.00040
#2	.00006	490.37	.00610	.06183	.01078	-.00039
#3	-.00123	489.58	.00623	.06335	.01063	-.00042
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	449.67	-.00104	-.00241	.00466	-.00045	191.89
Stddev	5.65	.00026	.00038	.00040	.00011	1.97
%RSD	1.2561	24.880	15.653	8.6545	24.058	1.0250
#1	446.75	-.00110	-.00202	.00425	-.00035	193.41
#2	456.18	-.00127	-.00244	.00466	-.00042	192.58
#3	446.09	-.00076	-.00277	.00506	-.00056	189.67
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: Sample-61 Acquired: 10/10/2018 15:56:09 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.03317	.01242	500.42	-.00714	-.00196	-.23609
Stddev	.01969	.00076	2.95	.00005	.00064	.13545
%RSD	59.369	6.0831	.58852	.74445	32.635	57.371
#1	.05426	.01171	501.58	-.00720	-.00220	-.33978
#2	.01527	.01322	502.61	-.00710	-.00245	-.28565
#3	.02996	.01232	497.07	-.00712	-.00124	-.08284
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	Pb2203A	bP	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.02318	-.00208	-.01610	.00962	.00207	.00698
Stddev	.00083	.00044	.00065	.00359	.00206	.00251
%RSD	3.5909	21.209	4.0357	37.319	99.474	35.913
#1	.02230	-.00157	-.01683	.00639	.00365	.00600
#2	.02396	-.00234	-.01587	.00899	-.00026	.00982
#3	.02326	-.00233	-.01559	.01348	.00281	.00511
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: Sample-61 Acquired: 10/10/2018 15:56:09 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00073	963.90	-.00314	.00498	-.01042	-.00502
Stddev	.00340	5.58	.00098	.00010	.00078	.00193
%RSD	465.23	.57914	31.179	2.1028	7.4940	38.506
#1	.00012	966.36	-.00366	.00487	-.01131	-.00649
#2	-.00232	967.83	-.00375	.00508	-.00986	-.00572
#3	.00439	957.51	-.00201	.00500	-.01008	-.00283
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00450	.00829
Stddev	.00025	.00021
%RSD	5.5045	2.5149
#1	.00458	.00807
#2	.00470	.00833
#3	.00422	.00848
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: Sample-61 Acquired: 10/10/2018 15:56:09 Type: Unk
Method: MT0007(v23) AIR HF 083118(v5) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	5967.1	203100.	20995.
Stddev	3.6	750.	182.
%RSD	.05996	.36925	.86907
#1	5965.7	202260.	20902.
#2	5964.4	203350.	20877.
#3	5971.1	203690.	21205.

TestAmerica Knoxville ICP Batch Review Checklist – SOPs: KNOX-MT-0007r15, KNOX-MT-0008r7

Chart Name:	FID1018	Analysis Batch #:	24349	Analyst:	KNC	Instrument:	DUO

A. Calibration/Instrument Run QC	1st	2nd	Why is data reportable?
1. Instrument calibrated per SOP?	Y	Y	
2. Was CCVL within limits? (90-110%R)	Y	Y	
3. ICV analyzed within limits? (90-110%R and <5.0% RSD)	Y	Y	
4. CCV analyzed at required frequency & within limits? (90 - 110%R and <5.0% RSD)	Y	Y	☐ CCV reanalyzed one time; reanalysis within limits ☐ CCV - %D, High, Sample ND (NCM#_____)
5. ICB/CCB analyzed at required frequency & within limits? (Water/Soil/Waste ≤MDL; Air/SEP/PM10/JN Waste ≤RL)	Y	Y	☐ CCB reanalyzed one time; reanalysis within limits ☐ CCB-Out, Samples ND or 10x (NCM#_____)
6. ICSA/ICSAB run before samples?	Y	Y	
7. ICSAB interferents and analytes within limits? (80 - 120%R)	Y	Y	
8. ICSA criteria for non-interfering elements met? (Water/Soil/Waste ±1x RL) (Air/SEP/PM10/JN ±2x RL if RL ≤10 µg/L; ±1x RL if RL >10 µg/L)	Y	Y	☐ ICSA->2X MDL; Stock Impurities (NCM#_____) ICSA 1010 Adjust Cal Reanalyzed 1018
9. Reporting Limit Check Standard (CRI) within limits? (Water/Soil/Waste=70-130%R; Air/SEP/PM10/JN Waste=50-150%)	Y	Y	
10. 6010C samples bracketed by RL Check Standards?	Y	Y	
B. Client Sample and QC Sample Results			
1. Were samples with target element concentrations > the linear range (LR) diluted and reanalyzed?	NA	NA	Comments: High Si (IEC) 1:1 Dilutions analyzed
2. Were all hits reported from a run with interfering elements < LR?	Y	Y	
3. Elements with F, k or ^ flags reported from a dilution if necessary?	Y	Y	
4. Were sample results reported as ND with elevated RLs?	Y	Y	☐ RL-Dilution, Matrix (NCM# _____) ☒ RL-Dilution, Interferents (NCM# 14667, 14669 ☐ RL-Dilution, Matrix, Neg. Analyte (NCM# _____)
5. Internal standard (IS) response ±30% of ICB IS? *If no, list details:*	Y	Y	☐ ISTD – Matrix, DL Required (NCM#_____) ☐ Low IS response. Reanalyzed.
6. Report flag turned to No for Mg-SEP Step1 and Na-Steps 2 & 5?	NA	NA	
7. Calculations checked for error? (Document manual calc in comments.)	Y	Y	
C. Preparation/Matrix QC			
1. Method blank done per prep batch and within limits? (Waters/Soils/Waste < ½ RL; Zn <RL; Air/SEP/PM10/JN Waste <RL)	Y	Y	☐ Method Blank–Report, ND (NCM#_____) ☐ Method Blank – Report, 10X (NCM#_____) ☐ Method Blank–Insufficient Sample (NCM#_____) ☐ See narrative-common analyte in SEP leachate.
2. LCS done per prep batch & within QC limits?	Y	Y	☐ LCS/LCSD –Insufficient Sample (NCM#_____) ☐ LCS/LCSD - %R High (NCM#_____) ☐ See narrative-SEP LCS within historical limits.
3. MS/MSD or MS/DUP run at required frequency?	NA	NA	☐ MS/MSD/DUP-Insufficient Volume (NCM#_____)
4. MS/MSD %R and RPD within QC limits?	NA		☐ LCS acceptable-matrix effects ☐ Native analyte > 4x spike level
5. DUP RPD within limits?	NA		☐ MS/MSD/DUP - %RPD (NCM#_____)
6. PDS/PDSD run at required frequency & within QC limits? (75-125%R)	Y	Y	☐ Post Digestion Spike - %R (NCM#_____) ☐ MS/MSD; High Bias; PDS Acceptable (NCM#_____)
7. Serial dilution per prep batch & ≤ 10% D for analytes >50X MDL?	Y	Y	☐ Serial Dilution - %D (NCM#_____)

D. TALS Review		1st
TALS Run Log Tab	Date and time match raw data *(to verify TALS import worked properly)*	Y
	Dilutions are correct *(instrument sample ID vs. Dilution column)*	Y
TALS Worksheet Tab	Complete and correct *(Final amount and notes populated where needed)*	Y
TALS Reagents Tab	Complete and correct	Y
TALS QC Links Tab	All samples, standards and QC linked correctly	Y
TALS Sample Results Tab	All unused data are marked Rejected or Accepted	Y
	All reported analytes are marked Primary or Secondary	Y
TALS Batch Information Screen	Documentation is complete	Y
TALS Sample List Tab	TALS Status set to appropriate review level	Y

1st Level Review by: KNC 10-12-18	2nd Level Review by: DKW 10/12/18
Calculation: Pb at 1345	
5.9650 mg/L x 0.100 L x 1000 µg/mg x 10 ml / 5 ml = 1193 µg	

cup	sample ID	extended ID	weight	volume	? A D F P S U SC UI US C1..7
1	ICB	ICB	1.0000	1.0000	C2 cp
2	CRA		1.0000	1.0000	C3 C1
3	140-186128	MB	1.0000	1.0000	
4	140-186129	RGT BLK	1.0000	1.0000	
5	140-186127	MDLV	1.0000	1.0000	
6	140-186124	MB	1.0000	1.0000	
7	140-186125	RGT BLK	1.0000	1.0000	
8	140-186126	MDLV	1.0000	1.0000	
9	140-186066	MB	1.0000	1.0000	
10	140-186067	LCS	1.0000	1.0000	
11	140-186068	LCSD	1.0000	1.0000	
12	140-186061	MDLV	1.0000	1.0000	C3 C1
13	140-186062		1.0000	1.0000	
14	140-186063		1.0000	1.0000	
15	186063 PDS	PDS	1.0000	1.0000	
16	186063 PDS	PDSD	1.0000	1.0000	
17	140-186064		1.0000	1.0000	
18	140-186065		1.0000	1.0000	
19	140-186039	MB	1.0000	1.0000	
20	140-186040	LCS	1.0000	1.0000	
21	140-186038	MDLV	1.0000	1.0000	
22	140-186032	X2	1.0000	1.0000	C3 C1
23			1.0000	1.0000	
24			1.0000	1.0000	
25			1.0000	1.0000	
26			1.0000	1.0000	
27			1.0000	1.0000	
28			1.0000	1.0000	
29			1.0000	1.0000	
30			1.0000	1.0000	
31			1.0000	1.0000	
32			1.0000	1.0000	
33			1.0000	1.0000	
34			1.0000	1.0000	
35			1.0000	1.0000	
36			1.0000	1.0000	
37			1.0000	1.0000	
38			1.0000	1.0000	
39			1.0000	1.0000	
40			1.0000	1.0000	
41			1.0000	1.0000	
42			1.0000	1.0000	
43			1.0000	1.0000	
44			1.0000	1.0000	

cup	sample ID	extended ID	weight	volume	? A D F P S U SC UI US C1..7
1	140-186033	x2	1.0000	1.0000	
2	140-186034	MS x2	1.0000	1.0000	
3	140-186035	MSD x2	1.0000	1.0000	
4	140-186036	x5	1.0000	1.0000	
5	140-186037		1.0000	1.0000	C3 C1
6	140-186053	MB	1.0000	1.0000	
7	140-186054	LCS	1.0000	1.0000	
8	140-186048		1.0000	1.0000	
9	140-186049		1.0000	1.0000	
10	140-186050	MS	1.0000	1.0000	
11	140-186051	MSD	1.0000	1.0000	
12	140-186052		1.0000	1.0000	C3 C1
13			1.0000	1.0000	
14			1.0000	1.0000	
15			1.0000	1.0000	
16			1.0000	1.0000	
17			1.0000	1.0000	
18			1.0000	1.0000	
19			1.0000	1.0000	
20			1.0000	1.0000	C3 C1
21			1.0000	1.0000	
22			1.0000	1.0000	
23			1.0000	1.0000	
24			1.0000	1.0000	
25			1.0000	1.0000	
26			1.0000	1.0000	
27			1.0000	1.0000	
28			1.0000	1.0000	
29			1.0000	1.0000	
30			1.0000	1.0000	
31			1.0000	1.0000	
32			1.0000	1.0000	
33			1.0000	1.0000	
34			1.0000	1.0000	
35			1.0000	1.0000	
36			1.0000	1.0000	
37			1.0000	1.0000	
38			1.0000	1.0000	C3 C1
39			1.0000	1.0000	
40			1.0000	1.0000	
41			1.0000	1.0000	
42			1.0000	1.0000	
43			1.0000	1.0000	
44			1.0000	1.0000	

cup	sample ID	extended ID	weight	volume	? A D F P S U SC UI US C1..7
1	140-186033		1.0000	1.0000	
2	140-186034	MS	1.0000	1.0000	
3	140-186035	MSD	1.0000	1.0000	
4	140-186036		1.0000	1.0000	
5	140-186037		1.0000	1.0000	C3 C1
6	140-186053	MB	1.0000	1.0000	
7	140-186054	LCS	1.0000	1.0000	
8	140-186048		1.0000	1.0000	
9	140-186049		1.0000	1.0000	
10	140-186050	MS	1.0000	1.0000	
11	140-186051	MSD	1.0000	1.0000	
12	140-186052		1.0000	1.0000	C3 C1
13	186032@2		1.0000	1.0000	
14	186033@2		1.0000	1.0000	
15	186034@2	MS	1.0000	1.0000	
16	186035@2	MSD	1.0000	1.0000	
17	186036@5		1.0000	1.0000	C3 C1
18			1.0000	1.0000	
19			1.0000	1.0000	
20			1.0000	1.0000	
21			1.0000	1.0000	
22			1.0000	1.0000	
23			1.0000	1.0000	
24			1.0000	1.0000	
25			1.0000	1.0000	
26			1.0000	1.0000	
27			1.0000	1.0000	
28			1.0000	1.0000	
29			1.0000	1.0000	
30			1.0000	1.0000	
31			1.0000	1.0000	
32			1.0000	1.0000	
33			1.0000	1.0000	
34			1.0000	1.0000	
35			1.0000	1.0000	
36			1.0000	1.0000	
37			1.0000	1.0000	
38			1.0000	1.0000	C3 C1
39			1.0000	1.0000	
40			1.0000	1.0000	
41			1.0000	1.0000	
42			1.0000	1.0000	
43			1.0000	1.0000	
44			1.0000	1.0000	

7470A_Prep Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 140-24280

Analyst: Wilburn, Donna K

Batch Open: 10/8/2018 12:18:00PM

Batch End: 10/8/2018 3:00:00PM

Preparation, Mercury

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	Matrix	Initial Amount	Final Amount	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1	140-12881-A-1-A~MDLV (7470A)	Q4 - Metals Ambient Air (140-12881-1) IO_3.1_PrP MDLVs	Filter Extrac	5.0 mL	50.0 mL	12/27/18	61_Days	N/A		140-186127
2	MB~140-24228/2-A N/A	N/A		5.0 mL	50.0 mL	N/A	N/A	N/A		140-186128
3	140-0/0-A N/A	N/A		5.0 mL	50.0 mL	N/A	N/A	N/A		140-186129

37mm

7470A_Prep Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 140-24279

Analyst: Wilburn, Donna K

Batch Open: 10/8/2018 12:16:00PM

Batch End: 10/8/2018 3:00:00PM

Preparation, Mercury

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	Matrix	Initial Amount	Final Amount	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB~140-24227/18-A N/A	N/A		5.0 mL	50.0 mL	N/A	N/A	N/A		140-186124
2	140-0/0-I~~rgt~blk N/A	N/A		5.0 mL	50.0 mL	N/A	N/A	N/A		140-186125
3	140-12875-A-1-A~MDLV (7470A)	Q4 - PM10 Metals MDLV (140-12875-1)	Other Extrac	5.0 mL	50.0 mL	12/27/18	61_Days	N/A		140-186126

10/17/2018

PM 10

29_FH_HG_P Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 140-24272

Analyst: Wilburn, Donna K

Batch Open: 10/8/2018 11:07:00AM

Batch End: 10/8/2018 5:00:00PM

Preparation, Mercury (Stationary Source) FH

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	Matrix	Initial Amount	Final Amount	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1	140-12876-A-1-A~MDLV (29_7470A)	Q4 - Metals Source Air LODVs (140-12876-1)	Digestate	5.0 mL	50.0 mL	12/27/18	61_Days	N/A		140-186061
2	140-12832-A-1-A (29_7470A)	N/A (140-12832-1)	Digestate	5.0 mL	50.0 mL	10/12/18	13_Days	4		140-186062
3	140-12832-A-6-A (29_7470A)	N/A (140-12832-1)	Digestate	5.0 mL	50.0 mL	10/12/18	13_Days	4		140-186063
4	140-12832-A-11-A (29_7470A)	N/A (140-12832-1)	Digestate	5.0 mL	50.0 mL	10/12/18	13_Days	4		140-186064
5	140-12832-A-16-A (29_7470A)	N/A (140-12832-1)	Digestate	5.0 mL	50.0 mL	10/12/18	13_Days	4		140-186065
6	MB~140-24136/18-A N/A	N/A		5.0 mL	50.0 mL	N/A	N/A	N/A		140-186066
7	LCS~140-24136/19-A N/A	N/A		5.0 mL	50.0 mL	N/A	N/A	N/A		140-186067
8	LCSD~140-24136/20-A N/A	N/A		5.0 mL	50.0 mL	N/A	N/A	N/A		140-186068
9	STD0~140-24272/9 N/A	N/A		50.0 mL	50.0 mL	N/A	N/A	N/A		140-186069
10	STD1~140-24272/10 N/A	N/A		50.0 mL	50.0 mL	N/A	N/A	N/A		140-186070
11	STD2~140-24272/11 N/A	N/A		50.0 mL	50.0 mL	N/A	N/A	N/A		140-186071
12	STD3~140-24272/12 N/A	N/A		50.0 mL	50.0 mL	N/A	N/A	N/A		140-186072
13	STD4~140-24272/13 N/A	N/A		50.0 mL	50.0 mL	N/A	N/A	N/A		140-186073
14	STD5~140-24272/14 N/A	N/A		50.0 mL	50.0 mL	N/A	N/A	N/A		140-186074

29_FH_HG_P Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 140-24272

Analyst: Wilburn, Donna K

Batch Open: 10/8/2018 11:07:00AM

Batch End: 10/8/2018 5:00:00PM

15	STD6~140-24272/15 N/A	N/A		50.0 mL	50.0 mL	N/A	N/A	N/A	140-186075
16	ICV~140-24272/16 N/A	N/A		50.0 mL	50.0 mL	N/A	N/A	N/A	140-186076
17	ICB~140-24272/17 N/A	N/A		50.0 mL	50.0 mL	N/A	N/A	N/A	140-186077
18	CRA~140-24272/18 N/A	N/A		50.0 mL	50.0 mL	N/A	N/A	N/A	140-186078
19	CCV~140-24272/19 N/A	N/A		50.0 mL	50.0 mL	N/A	N/A	N/A	140-186079
20	CCB~140-24272/20 N/A	N/A		50.0 mL	50.0 mL	N/A	N/A	N/A	140-186080

HG_AT_BH_P Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 140-24266

Analyst: Wilburn, Donna K

Batch Open: 10/8/2018 10:25:00AM

Batch End: 10/8/2018 5:00:00PM

Preparation, Mercury (Stationary Source)

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	Matrix	Initial Amount	Final Amount	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1	140-12832-A-2-B (29_7470A)	N/A (140-12832-1)	AT_Volume	2.5 mL	50.0 mL	10/12/18	13_Days	4	Aded an additioal 7.5mL of potassium permanganate	140-186032
2	140-12832-A-7-B (29_7470A)	N/A (140-12832-1)	AT_Volume	2.5 mL	50.0 mL	10/12/18	13_Days	4	Aded an additioal 7.5mL of potassium permanganate	140-186033
3	140-12832-A-7-C~MS (29_7470A)	N/A (140-12832-1)	AT_Volume	2.5 mL	50.0 mL	10/12/18	13_Days	4	Aded an additioal 7.5mL of potassium permanganate	140-186034
4	140-12832-A-7-D~MSD (29_7470A)	N/A (140-12832-1)	AT_Volume	2.5 mL	50.0 mL	10/12/18	13_Days	4	Aded an additioal 7.5mL of potassium permanganate	140-186035
5	140-12832-A-12-B (29_7470A)	N/A (140-12832-1)	AT_Volume	2.5 mL	50.0 mL	10/12/18	13_Days	4	Aded an additioal 7.5mL of potassium permanganate	140-186036
6	140-12832-A-17-B (29_7470A)	N/A (140-12832-1)	AT_Volume	2.5 mL	50.0 mL	10/12/18	13_Days	4	Aded an additioal 7.5mL of potassium permanganate	140-186037
7	140-12876-A-9-A~MDLV (29_7470A)	Q4 - Metals Source Air LODVs (140-12876-1)	AT_Volume	2.5 mL	50.0 mL	12/27/18	61_Days	N/A	Aded an additioal 7.5mL of potassium permanganate	140-186038
8	MB~140-24265/8-A N/A	N/A		2.5 mL	50.0 mL	N/A	N/A	N/A	Aded an additioal 7.5mL of potassium permanganate	140-186039
9	LCS~140-24265/9-A N/A	N/A		2.5 mL	50.0 mL	N/A	N/A	N/A	Aded an additioal 7.5mL of potassium permanganate	140-186040

HG_Empty_P Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 140-24268

Analyst: Wilburn, Donna K

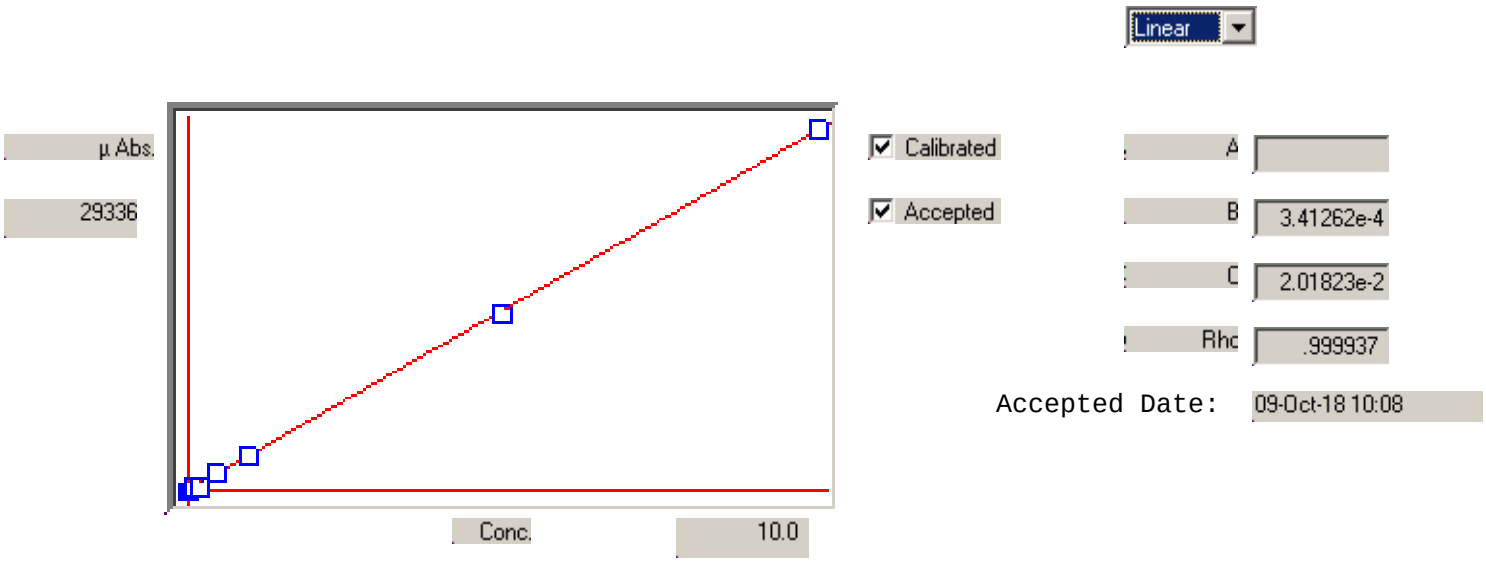
Batch Open: 10/8/2018 10:34:00AM

Batch End: 10/8/2018 5:00:00PM

Preparation, Mercury (Stationary Source)

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	Matrix	Initial Amount	Final Amount	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	140-12832-A-3-A (29_7470A)	N/A (140-12832-1)	AT_Volume	2.5 mL	50.0 mL	10/12/18	13_Days	4		140-186048
2	140-12832-A-8-A (29_7470A)	N/A (140-12832-1)	AT_Volume	2.5 mL	50.0 mL	10/12/18	13_Days	4		140-186049
3	140-12832-A-8-B~MS (29_7470A)	N/A (140-12832-1)	AT_Volume	2.5 mL	50.0 mL	10/12/18	13_Days	4		140-186050
4	140-12832-A-8-C~MSD (29_7470A)	N/A (140-12832-1)	AT_Volume	2.5 mL	50.0 mL	10/12/18	13_Days	4		140-186051
5	140-12832-A-13-A (29_7470A)	N/A (140-12832-1)	AT_Volume	2.5 mL	50.0 mL	10/12/18	13_Days	4		140-186052
6	MB~140-24267/6-A N/A	N/A		2.5 mL	50.0 mL	N/A	N/A	N/A		140-186053
7	LCS~140-24267/7-A N/A	N/A		2.5 mL	50.0 mL	N/A	N/A	N/A		140-186054

Protocol: 7ptcurve



S	Conc.	Calc.	Dev.	Mean	SD or %RSD	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
01	.00000	.050	.050	88	1	88				
02	.10000	.102	.002	241	0%	240				
03	.20000	.153	-.047	390	0%	389				
04	.50000	.520	.020	1466	0%	1465				
05	1.0000	1.01	.011	2902	0%	2902				
06	5.0000	4.93	-.067	14395	0%	14395				
07	10.000	10.0	.031	29336	0%	29336				
08										
09										
10										

```
Line   Conc.  Units     SD/RSD      1       2       3       4       5
-------------------------------------------------------------------------------

*** Standard: 1 Rep: 1              Seq:  0       09:51:41 09 Oct 18   HG

Hg    .000    ppb      88

*** Standard: 2 Rep: 1              Seq:  1       09:54:23 09 Oct 18   HG

Hg    .100    ppb      240

*** Standard: 3 Rep: 1              Seq:  2       09:56:44 09 Oct 18   HG

Hg    .200    ppb      389

*** Standard: 4 Rep: 1              Seq:  3       10:00:04 09 Oct 18   HG

Hg    .500    ppb      1465

*** Standard: 5 Rep: 1              Seq:  4       10:02:34 09 Oct 18   HG

Hg    1.00    ppb      2902

*** Standard: 6 Rep: 1              Seq:  5       10:05:07 09 Oct 18   HG

Hg    5.00    ppb      14395

*** Standard: 7 Rep: 1              Seq:  6       10:08:01 09 Oct 18   HG

Hg    10.0    ppb      29336

*** Check Standard: 2  Ck2icv       Seq:  7       10:10:21 09 Oct 18   HG
Line  Flag  %Rcv.   Found    True  Units      SD/RSD
Hg          102.     2.54    2.50   ppb        .000  %

*** Sample ID: ICB                   Seq:  8      10:12:59 09 Oct 18   HG
                            ICB
Hg    .022    ppb       .000  %   .022

*** Sample ID: CRA                   Seq:  9      10:15:40 09 Oct 18   HG

Hg    .214    ppb       .000  %   .214

*** Check Standard: 3  Ck3ccv       Seq:  10      10:18:03 09 Oct 18   HG
Line  Flag  %Rcv.   Found    True  Units      SD/RSD
Hg          99.0     4.95    5.00   ppb        .000  %

*** Check Standard: 1  Ck1ccb       Seq:  11      10:20:42 09 Oct 18   HG
Line  Flag  Found Range(+/-) Units      SD/RSD
Hg          .019     .200     ppb        .000  %

*** Sample ID: 140-186128            Seq:  12     10:24:01 09 Oct 18   HG
                            MB
Hg    .031    ppb       .000  %   .031

*** Sample ID: 140-186129            Seq:  13     10:26:35 09 Oct 18   HG
                            RGT BLK
Hg    .021    ppb       .000  %   .021

*** Sample ID: 140-186127            Seq:  14     10:28:54 09 Oct 18   HG
                            MDLV
Hg    .139    ppb       .000  %   .139

*** Sample ID: 140-186124            Seq:  15     10:31:15 09 Oct 18   HG
                            MB
Hg    .028    ppb       .000  %   .028
```

```
Line   Conc.  Units     SD/RSD      1       2       3       4       5
--------------------------------------------------------------------------------

*** Sample ID: 140-186125            Seq:  16     10:33:46 09 Oct 18   HG
                            RGT BLK
Hg    .027    ppb       .000  %   .027

*** Sample ID: 140-186126            Seq:  17     10:36:36 09 Oct 18   HG
                            MDLV
Hg    .109    ppb       .000  %   .109

*** Sample ID: 140-186066            Seq:  18     10:39:15 09 Oct 18   HG
                            MB
Hg    .026    ppb       .000  %   .026

*** Sample ID: 140-186067            Seq:  19     10:41:36 09 Oct 18   HG
                            LCS
Hg    5.09    ppb       .000  %   5.09

*** Sample ID: 140-186068            Seq:  20     10:45:15 09 Oct 18   HG
                            LCSD
Hg    5.12    ppb       .000  %   5.12

*** Sample ID: 140-186061            Seq:  21     10:47:59 09 Oct 18   HG
                            MDLV
Hg    .228    ppb       .000  %   .228

*** Check Standard: 3  Ck3ccv       Seq:  22     10:50:29 09 Oct 18   HG
Line  Flag  %Rcv.   Found    True  Units      SD/RSD
Hg          98.5     4.93    5.00   ppb        .000  %

*** Check Standard: 1  Ck1ccb       Seq:  23     10:53:23 09 Oct 18   HG
Line  Flag  Found Range(+/-) Units      SD/RSD
Hg          .015     .200     ppb        .000  %

*** Sample ID: 140-186062            Seq:  24     10:56:01 09 Oct 18   HG

Hg    .049    ppb       .000  %   .049

*** Sample ID: 140-186063            Seq:  25     10:58:32 09 Oct 18   HG

Hg    .029    ppb       .000  %   .029

*** Sample ID: 186063 PDS            Seq:  26     11:00:54 09 Oct 18   HG
                            PDS
Hg    1.05    ppb       .000  %   1.05

*** Sample ID: 186063 PDS            Seq:  27     11:03:13 09 Oct 18   HG
                            PDSD
Hg    1.06    ppb       .000  %   1.06

*** Sample ID: 140-186064            Seq:  28     11:06:23 09 Oct 18   HG

Hg    .035    ppb       .000  %   .035

*** Sample ID: 140-186065            Seq:  29     11:08:42 09 Oct 18   HG

Hg    .038    ppb       .000  %   .038

*** Sample ID: 140-186039            Seq:  30     11:11:10 09 Oct 18   HG
                            MB
Hg    .023    ppb       .000  %   .023

*** Sample ID: 140-186040            Seq:  31     11:13:39 09 Oct 18   HG
                            LCS
Hg    4.92    ppb       .000  %   4.92
```

```
Line   Conc.  Units     SD/RSD      1       2       3       4       5
-------------------------------------------------------------------------------

*** Sample ID: 140-186038           Seq:  32     11:16:01 09 Oct 18   HG
                            MDLV
Hg    .127    ppb       .000  %   .127

*** Sample ID: 140-186032           Seq:  33     11:18:26 09 Oct 18   HG

Hg    13.8    ppb       .000  %   13.8

*** Check Standard: 3  Ck3ccv       Seq:  34     11:20:45 09 Oct 18   HG
Line  Flag  %Rcv.   Found    True  Units      SD/RSD
Hg          97.8     4.89    5.00   ppb        .000  %

*** Check Standard: 1  Ck1ccb       Seq:  35     11:23:26 09 Oct 18   HG
Line  Flag  Found Range(+/-) Units      SD/RSD
Hg          .019     .200     ppb        .000  %

*** Sample ID: 140-186033           Seq:  36     11:25:46 09 Oct 18   HG

Hg    13.6    ppb       .000  %   13.6

*** Sample ID: 140-186034           Seq:  37     11:28:07 09 Oct 18   HG
                            MS
Hg    14.6    ppb       .000  %   14.6

*** Sample ID: 140-186035           Seq:  38     11:31:30 09 Oct 18   HG
                            MSD
Hg    14.6    ppb       .000  %   14.6

*** Sample ID: 140-186036           Seq:  39     11:33:48 09 Oct 18   HG

Hg    16.0    ppb       .000  %   16.0

*** Sample ID: 140-186037           Seq:  40     11:36:30 09 Oct 18   HG

Hg    .040    ppb       .000  %   .040

*** Check Standard: 3  Ck3ccv       Seq:  41     11:38:48 09 Oct 18   HG
Line  Flag  %Rcv.   Found    True  Units      SD/RSD
Hg          97.8     4.89    5.00   ppb        .000  %

*** Check Standard: 1  Ck1ccb       Seq:  42     11:41:36 09 Oct 18   HG
Line  Flag  Found Range(+/-) Units      SD/RSD
Hg          .029     .200     ppb        .000  %

*** Sample ID: 140-186053           Seq:  43     11:44:19 09 Oct 18   HG
                            MB
Hg    .030    ppb       .000  %   .030

*** Sample ID: 140-186054           Seq:  44     11:46:41 09 Oct 18   HG
                            LCS
Hg    5.00    ppb       .000  %   5.00

*** Sample ID: 140-186048           Seq:  45     11:49:03 09 Oct 18   HG

Hg    1.63    ppb       .000  %   1.63

*** Sample ID: 140-186049           Seq:  46     11:51:45 09 Oct 18   HG

Hg    1.72    ppb       .000  %   1.72

*** Sample ID: 140-186050           Seq:  47     11:54:15 09 Oct 18   HG
                            MS
Hg    2.71    ppb       .000  %   2.71
```

```
Line   Conc.  Units     SD/RSD      1       2       3       4       5
-------------------------------------------------------------------------------

*** Sample ID: 140-186051            Seq:  48     11:56:36 09 Oct 18   HG
                            MSD
Hg    2.74    ppb       .000  %   2.74

*** Sample ID: 140-186052            Seq:  49     11:59:35 09 Oct 18   HG

Hg    3.01    ppb       .000  %   3.01

*** Check Standard: 3  Ck3ccv       Seq:  50      12:02:36 09 Oct 18   HG
Line  Flag  %Rcv.   Found    True  Units      SD/RSD
Hg          98.3     4.91    5.00   ppb        .000  %

*** Check Standard: 1  Ck1ccb       Seq:  51      12:04:55 09 Oct 18   HG
Line  Flag  Found Range(+/-) Units      SD/RSD
Hg          .014     .200     ppb        .000  %

*** Sample ID: 186032@2              Seq:  52     12:07:19 09 Oct 18   HG

Hg    7.22    ppb       .000  %   7.22

*** Sample ID: 186033@2              Seq:  53     12:09:39 09 Oct 18   HG

Hg    7.11    ppb       .000  %   7.11

*** Sample ID: 186034@2              Seq:  54     12:12:01 09 Oct 18   HG
                            MS
Hg    7.64    ppb       .000  %   7.64

*** Sample ID: 186035@2              Seq:  55     12:14:24 09 Oct 18   HG
                            MSD
Hg    7.63    ppb       .000  %   7.63

*** Sample ID: 186036@5              Seq:  56     12:16:43 09 Oct 18   HG

Hg    3.47    ppb       .000  %   3.47

*** Check Standard: 3  Ck3ccv       Seq:  57      12:19:12 09 Oct 18   HG
Line  Flag  %Rcv.   Found    True  Units      SD/RSD
Hg          98.8     4.94    5.00   ppb        .000  %

*** Check Standard: 1  Ck1ccb       Seq:  58      12:21:40 09 Oct 18   HG
Line  Flag  Found Range(+/-) Units      SD/RSD
Hg          .021     .200     ppb        .000  %
```

TestAmerica Knoxville Mercury Batch Review Checklist

SOPs: KNOX-MT-0009r13, KNOX-MT-0010r12, KNOX-MT-0008r7, KNOX-MT-0001r2

Chart Name:	M100918	Analysis Batch #:	24315	Analyst:	DKW	Instrument:	HG

A. Calibration/Instrument Run QC	1st	2nd	Why is data reportable?
1. Instrument calibrated with at least 5 standards and a blank?	Y	Y	
2. Linearity and intercept verified? (r≥0.995 and x-intercept <RL)	Y	Y	
3. ICV analyzed at beginning of run & within limits? (90 - 110%R)	Y	Y	
4. CCV analyzed at required frequency & within limits? (80 - 120%R)	Y	Y	☐ CCV reanalyzed one time; reanalysis within limits ☐ **CCV - %D, High, Sample ND** (NCM# _____)
5. ICB/CCB analyzed at required frequency & within limits? (Water/Soil/Waste ≤MDL; Air/SEP/PM10/JN Waste/30B <RL)	Y	Y	☐ CCB reanalyzed one time; reanalysis within limits ☐ **CCB-Out, Samples ND or 10x** (NCM# _____)
6. Reporting Limit Check Standard (CRI) within limits? (±30%; ±50 % for Method 30B)	Y	Y	
B. Client Sample and QC Sample Results			
1. Were samples with results > the linear range (LR) diluted and reanalyzed?	Y	Y	Comments:
2. Were samples with negative results >RL reanalyzed at a dilution?	NA	NA	
3. Were samples analyzed with the holding time?	Y	Y	☐ **Holding Time-Receipt** (NCM# _____) ☐ **Holding Time-Initial Analysis** (NCM# _____) ☐ **Holding Time-Reanalysis** (NCM# _____) ☐ **Holding Time- Insufficient Time** (NCM# _____)
4. Calculations checked for error? (Document manual calc in comments.)	Y	Y	
C. Preparation/Matrix QC			
1. Method blank done per prep batch and within limits? (Waters/Soils/Waste < ½ RL; Air/SEP/PM10/JN Waste/30B <RL)	Y	Y	☐ **Method Blank–Report, ND** (NCM# _____) ☐ **Method Blank – Report, 10X** (NCM# _____) ☐ **Method Blank–Insufficient Sample** (NCM# _____)
2. LCS done per prep batch & within QC limits?	Y	Y	☐ **LCS/LCS –Insufficient Sample** (NCM# _____) ☐ **LCS/LCSD - %R High** (NCM# _____) ☐ See narrative-SEP LCS within historical limits.
3. MS/MSD or MS/DUP run at required frequency?	Y	Y	☐ **MS/MSD/DUP-Insufficient Vol** (NCM# _____)
4. MS/MSD %R and RPD within QC limits?	Y	Y	☐ LCS acceptable-matrix effects ☑ Native analyte > 4x spike level
5. DUP RPD within limits?	NA	NA	☐ **MS/MSD/DUP - %RPD** (NCM# _____)
6. PDS/PDSD run at required frequency & within QC limits? (75-125%R and ≤20 RPD)	Y	Y	☐ **Post Digestion Spike - %R** (NCM# _____) ☐ **MS/MSD; High Bias; PDS Accept.** (NCM# _____)

D. TALS Review		1st
TALS Run Log Tab	Date and time match raw data *(to verify TALS import worked properly)*	Y
	Dilutions are correct *(instrument sample ID vs. Dilution column)*	Y
TALS Worksheet Tab	Complete and correct *(Final amount and notes populated where needed)*	Y
TALS Reagents Tab	Complete and correct	Y
TALS QC Links Tab	All samples, standards and QC linked correctly	Y
TALS Sample Results Tab	All unused data are marked Rejected or Accepted	Y
	All reported analytes are marked Primary or Secondary	Y
TALS Batch Information Screen	Documentation is complete	Y
TALS Sample List Tab	TALS Status set to appropriate review level	Y

1st Level Review by: DKW 10/09/18	2nd Level Review by: CLG 10/9/18
140-186032 @ 12:07	
$7.22\ ug/L \times 0.100L \times \frac{50ml}{2.5ml} \times 2^{D.F.} = 28.88\ ug/sample$ ✓	

MT079R25.doc, 11/15/17

cup	sample ID	extended ID	weight	volume	? A D F P S U SC UI US C1..7
1	ICB	ICB	1.0000	1.0000	C2 cp
2	CRA		1.0000	1.0000	C3 C1
3	140-186408	MB	1.0000	1.0000	
4	140-186407	MDLV	1.0000	1.0000	
5	140-186358	MB	1.0000	1.0000	
6	140-186359	LCS	1.0000	1.0000	
7	140-186357	MDLV	1.0000	1.0000	
8	140-186351		1.0000	1.0000	
9	140-186352		1.0000	1.0000	
10	140-186353		1.0000	1.0000	
11	140-186354		1.0000	1.0000	
12	140-186355		1.0000	1.0000	C3 C1
13	140-186356		1.0000	1.0000	
14	140-186379	MB	1.0000	1.0000	
15	140-186380	LCS	1.0000	1.0000	
16	140-186378	MDLV	1.0000	1.0000	
17	140-186372		1.0000	1.0000	
18	140-186373		1.0000	1.0000	
19	140-186374		1.0000	1.0000	
20	140-186375		1.0000	1.0000	
21	140-186376		1.0000	1.0000	
22	140-186377		1.0000	1.0000	C3 C1
23			1.0000	1.0000	
24			1.0000	1.0000	
25			1.0000	1.0000	
26			1.0000	1.0000	
27			1.0000	1.0000	
28			1.0000	1.0000	
29			1.0000	1.0000	
30			1.0000	1.0000	
31			1.0000	1.0000	
32			1.0000	1.0000	
33			1.0000	1.0000	
34			1.0000	1.0000	
35			1.0000	1.0000	
36			1.0000	1.0000	
37			1.0000	1.0000	
38			1.0000	1.0000	
39			1.0000	1.0000	
40			1.0000	1.0000	
41			1.0000	1.0000	
42			1.0000	1.0000	
43			1.0000	1.0000	
44			1.0000	1.0000	

7470A_Prep Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 140-24332

Analyst: Wilburn, Donna K

Batch Open: 10/10/2018 8:22:00AM

Batch End: 10/10/2018 3:00:00PM

Preparation, Mercury

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	Matrix	Initial Amount	Final Amount	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1	140-12872-A-2~MDLV (7470A)	Q4 - Metals Water (3005A and 7470A) (140-12872-I) MDLVs	Water	50.0 mL	50.0 mL	12/27/18	61_Days	N/A		140-186407
2	MB~140-24332/2 N/A	N/A		50.0 mL	50.0 mL	N/A	N/A	N/A		140-186408

HG_BH_KMNO4_P Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 140-24322

Analyst: Wilburn, Donna K

Batch Open: 10/10/2018 8:30:00AM

Batch End: 10/10/2018 3:00:00PM

Preparation, Mercury (Stationary Source)

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	Matrix	Initial Amount	Final Amount	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1	140-12832-A-4-A (29_7470A)	N/A (140-12832-1)	AT_Volume	25.0 mL	50.0 mL	10/12/18	13_Days	4		140-186351
2	140-12832-A-9-A (29_7470A)	N/A (140-12832-1)	AT_Volume	25.0 mL	50.0 mL	10/12/18	13_Days	4		140-186352
3	140-12832-A-9-B~MS (29_7470A)	N/A (140-12832-1)	AT_Volume	25.0 mL	50.0 mL	10/12/18	13_Days	4		140-186353
4	140-12832-A-9-C~MSD (29_7470A)	N/A (140-12832-1)	AT_Volume	25.0 mL	50.0 mL	10/12/18	13_Days	4		140-186354
5	140-12832-A-14-A (29_7470A)	N/A (140-12832-1)	AT_Volume	25.0 mL	50.0 mL	10/12/18	13_Days	4		140-186355
6	140-12832-A-18-A (29_7470A)	N/A (140-12832-1)	AT_Volume	25.0 mL	50.0 mL	10/12/18	13_Days	4		140-186356
7	140-12876-A-10-A~MDLV (29_7470A)	Q4 - Metals Source Air LCDVs (140-12876-1)	AT_Volume	25.0 mL	50.0 mL	12/27/18	61_Days	N/A		140-186357
8	MB~140-24317/8-A N/A	N/A		25.0 mL	50.0 mL	N/A	N/A	N/A		140-186358
9	LCS~140-24317/9-A N/A	N/A		25.0 mL	50.0 mL	N/A	N/A	N/A		140-186359
10	STD0~140-24322/10 N/A	N/A		50.0 mL	50.0 mL	N/A	N/A	N/A		140-186360
11	STD1~140-24322/11 N/A	N/A		50.0 mL	50.0 mL	N/A	N/A	N/A		140-186361
12	STD2~140-24322/12 N/A	N/A		50.0 mL	50.0 mL	N/A	N/A	N/A		140-186362
13	STD3~140-24322/13 N/A	N/A		50.0 mL	50.0 mL	N/A	N/A	N/A		140-186363
14	STD4~140-24322/14 N/A	N/A		50.0 mL	50.0 mL	N/A	N/A	N/A		140-186364

HG_BH_KMNO4_P Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 140-24322

Analyst: Wilburn, Donna K

Batch Open: 10/10/2018 8:30:00AM

Batch End: 10/10/2018 3:00:00PM

15	STD5~140-24322/15 N/A	N/A		50.0 mL	50.0 mL	N/A	N/A	N/A	140-186365
16	STD6~140-24322/16 N/A	N/A		50.0 mL	50.0 mL	N/A	N/A	N/A	140-186366
17	ICV~140-24322/17 N/A	N/A		50.0 mL	50.0 mL	N/A	N/A	N/A	140-186367
18	ICB~140-24322/18 N/A	N/A		50.0 mL	50.0 mL	N/A	N/A	N/A	140-186368
19	CRA~140-24322/19 N/A	N/A		50.0 mL	50.0 mL	N/A	N/A	N/A	140-186369
20	CCV~140-24322/20 N/A	N/A		50.0 mL	50.0 mL	N/A	N/A	N/A	140-186370
21	CCB~140-24322/21 N/A	N/A		50.0 mL	50.0 mL	N/A	N/A	N/A	140-186371

AT_Volume Prep Worksheet

(Used for Collecting Prep Info)

Batch Number: 140-24317

Analyst: Wilburn, Donna K

Batch Open: 10/9/2018 10:00:00AM

Batch End: 10/9/2018 12:00:00PM

Air Train Volume

	Input Sample Lab ID	Input Sample Lab ID (Analytical Method)	SDG	Matrix	Initial Amount	Final Amount	Due Date	Analytical TAT	Dlv Rank	Comments
1	140-12832-A-4	140-12832-A-4 (29_7470A)	N/A	Air	1 Sample	400 mL	10/12/18	13_Days	N/A	
2	140-12832-A-9	140-12832-A-9 (29_7470A)	N/A	Air	1 Sample	380 mL	10/12/18	13_Days	N/A	
3	140-12832-A-9 MS	140-12832-A-9~MS (29_7470A)	N/A	Air	1 Sample	380 mL	10/12/18	13_Days	N/A	
4	140-12832-A-9 MSD	140-12832-A-9~MSD (29_7470A)	N/A	Air	1 Sample	380 mL	10/12/18	13_Days	N/A	
5	140-12832-A-14	140-12832-A-14 (29_7470A)	N/A	Air	1 Sample	400 mL	10/12/18	13_Days	N/A	
6	140-12832-A-18	140-12832-A-18 (29_7470A)	N/A	Air	1 Sample	100 mL	10/12/18	13_Days	N/A	
7	140-12876-A-10 MDLV	140-12876-A-10~MDLV (29_7470A)	N/A	Air	1 Sample	50 mL	12/27/18	61_Days	N/A	
8	MB 140-24317/8	MB~140-24317/8 N/A	N/A		1 Sample	50 mL	N/A	N/A	N/A	
9	LCS 140-24317/9	LCS~140-24317/9 N/A	N/A		1 Sample	50 mL	N/A	N/A	N/A	

Batch Notes

Batch Comment _____

HG_BH_HCL_P Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 140-24323

Analyst: Wilburn, Donna K

Batch Open: 10/10/2018 8:30:00AM

Batch End: 10/10/2018 3:00:00PM

Preparation, Mercury (Stationary Source)

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	Matrix	Initial Amount	Final Amount	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1	140-12832-A-5-A (29_7470A)	N/A (140-12832-1)	AT_Volume	10.0 mL	50.0 mL	10/12/18	13_Days	4		140-186372
2	140-12832-A-10-A (29_7470A)	N/A (140-12832-1)	AT_Volume	10.0 mL	50.0 mL	10/12/18	13_Days	4		140-186373
3	140-12832-A-10-B~MS (29_7470A)	N/A (140-12832-1)	AT_Volume	10.0 mL	50.0 mL	10/12/18	13_Days	4		140-186374
4	140-12832-A-10-C~MSD (29_7470A)	N/A (140-12832-1)	AT_Volume	10.0 mL	50.0 mL	10/12/18	13_Days	4		140-186375
5	140-12832-A-15-A (29_7470A)	N/A (140-12832-1)	AT_Volume	10.0 mL	50.0 mL	10/12/18	13_Days	4		140-186376
6	140-12832-A-19-A (29_7470A)	N/A (140-12832-1)	AT_Volume	10.0 mL	50.0 mL	10/12/18	13_Days	4		140-186377
7	140-12876-A-11-A~MDLV (29_7470A)	Q4 - Metals Source Air LCDVs (140-12876-1)	AT_Volume	10.0 mL	50.0 mL	12/27/18	61_Days	N/A		140-186378
8	MB~140-24318/8-A N/A	N/A		10.0 mL	50.0 mL	N/A	N/A	N/A		140-186379
9	LCS~140-24318/9-A N/A	N/A		10.0 mL	50.0 mL	N/A	N/A	N/A		140-186380

AT_Volume Prep Worksheet

(Used for Collecting Prep Info)

Batch Number: 140-24318

Analyst: Wilburn, Donna K

Batch Open: 10/9/2018 1:23:00PM

Batch End: 10/9/2018 3:00:00PM

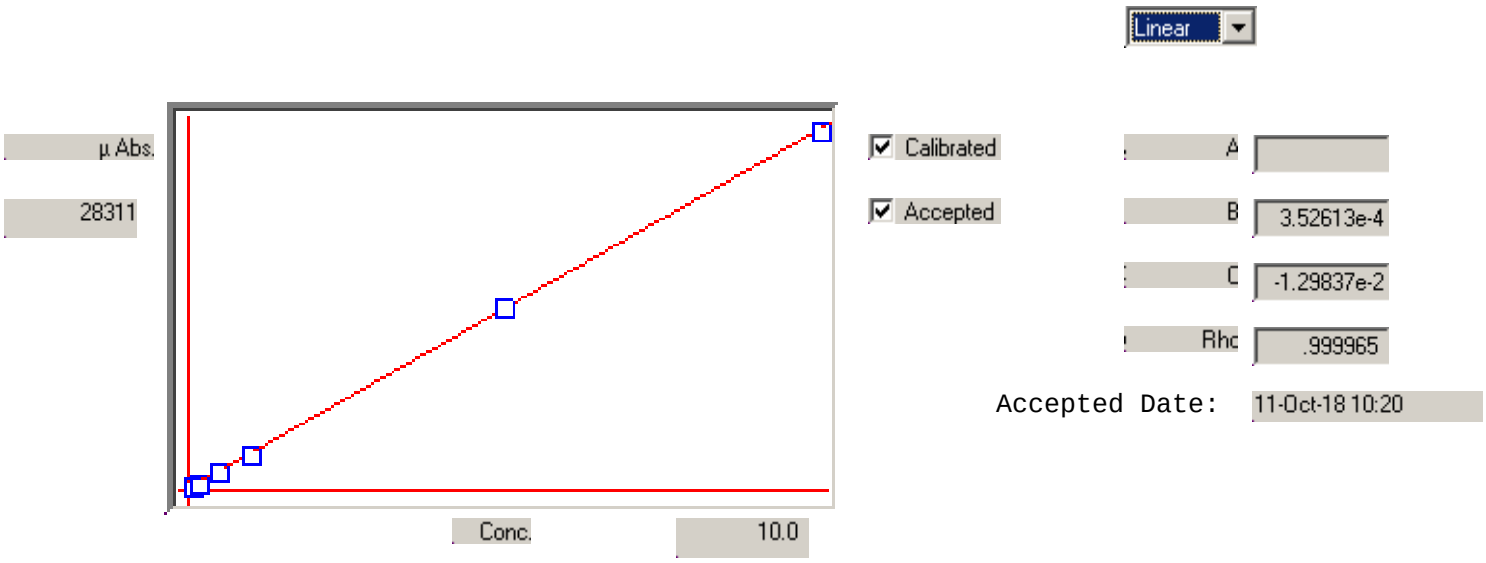
Air Train Volume

	Input Sample Lab ID	Input Sample Lab ID (Analytical Method)	SDG	Matrix	Initial Amount	Final Amount	Due Date	Analytical TAT	Dlv Rank	Comments
1	140-12832-A-5	140-12832-A-5 (29_7470A)	N/A	Air	1 Sample	275 mL	10/12/18	13_Days	N/A	
2	140-12832-A-10	140-12832-A-10 (29_7470A)	N/A	Air	1 Sample	275 mL	10/12/18	13_Days	N/A	
3	140-12832-A-10 MS	140-12832-A-10~MS (29_7470A)	N/A	Air	1 Sample	275 mL	10/12/18	13_Days	N/A	
4	140-12832-A-10 MSD	140-12832-A-10~MSD (29_7470A)	N/A	Air	1 Sample	275 mL	10/12/18	13_Days	N/A	
5	140-12832-A-15	140-12832-A-15 (29_7470A)	N/A	Air	1 Sample	265 mL	10/12/18	13_Days	N/A	
6	140-12832-A-19	140-12832-A-19 (29_7470A)	N/A	Air	1 Sample	150 mL	10/12/18	13_Days	N/A	
7	140-12876-A-11 MDLV	140-12876-A-11~MDLV (29_7470A)	N/A	Air	1 Sample	50 mL	12/27/18	61_Days	N/A	
8	MB 140-24318/8	MB~140-24318/8 N/A	N/A		1 Sample	50 mL	N/A	N/A	N/A	
9	LCS 140-24318/9	LCS~140-24318/9 N/A	N/A		1 Sample	50 mL	N/A	N/A	N/A	

Batch Notes

Batch Comment _____

Protocol: 7ptcurve



Accepted Date: 11-Oct-18 10:20

S	Conc.	Calc.	Dev.	Mean	SD or %RSD	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
01	.00000	-.037	-.037	-69	1	-68				
02	.10000	.094	-.006	302	0%	302				
03	.20000	.215	.015	646	0%	646				
04	.50000	.498	-.002	1448	0%	1448				
05	1.0000	1.00	.003	2881	0%	2881				
06	5.0000	5.06	.058	14383	0%	14382				
07	10.000	9.97	-.030	28312	0%	28311				
08										
09										
10										

```
Line   Conc.  Units     SD/RSD      1       2       3       4       5
--------------------------------------------------------------------------------

*** Standard: 1 Rep: 1              Seq:  0       09:55:29 11 Oct 18   HG

Hg    .000    ppb      -437

*** Standard: 1 Rep: 1              Seq:  1       09:59:51 11 Oct 18   HG

Hg    .000    ppb      -68

*** Standard: 2 Rep: 1              Seq:  2       10:02:13 11 Oct 18   HG

Hg    .100    ppb      302

*** Standard: 3 Rep: 1              Seq:  3       10:04:35 11 Oct 18   HG

Hg    .200    ppb      646

*** Standard: 4 Rep: 1              Seq:  4       10:06:59 11 Oct 18   HG

Hg    .500    ppb      1448

*** Standard: 5 Rep: 1              Seq:  5       10:10:20 11 Oct 18   HG

Hg    1.00    ppb      2881

*** Standard: 6 Rep: 1              Seq:  6       10:13:01 11 Oct 18   HG

Hg    5.00    ppb      14382

*** Standard: 7 Rep: 1              Seq:  7       10:15:33 11 Oct 18   HG

Hg    10.0    ppb      28311

*** Check Standard: 2  Ck2icv       Seq:  8       10:21:46 11 Oct 18   HG
Line  Flag  %Rcv.   Found    True  Units      SD/RSD
Hg          105.     2.63    2.50   ppb        .000  %

*** Sample ID: ICB                   Seq:  9      10:24:03 11 Oct 18   HG
                            ICB
Hg   -.009    ppb       .000  %  -.009

*** Sample ID: CRA                   Seq:  10     10:26:43 11 Oct 18   HG

Hg    .199    ppb       .000  %   .199

*** Check Standard: 3  Ck3ccv       Seq:  11      10:29:43 11 Oct 18   HG
Line  Flag  %Rcv.   Found    True  Units      SD/RSD
Hg          101.     5.06    5.00   ppb        .000  %

*** Check Standard: 1  Ck1ccb       Seq:  12      10:32:24 11 Oct 18   HG
Line  Flag  Found Range(+/-) Units      SD/RSD
Hg         -.013     .200     ppb        .000  %

*** Sample ID: 140-186408            Seq:  13     10:34:44 11 Oct 18   HG
                            MB
Hg   -.011    ppb       .000  %  -.011

*** Sample ID: 140-186407            Seq:  14     10:37:32 11 Oct 18   HG
                            MDLV
Hg    .117    ppb       .000  %   .117

*** Sample ID: 140-186358            Seq:  15     10:40:03 11 Oct 18   HG
                            MB
Hg   -.017    ppb       .000  %  -.017
```

```
Line   Conc.  Units     SD/RSD      1       2       3       4       5
-------------------------------------------------------------------------------

*** Sample ID: 140-186359            Seq:  16     10:42:22 11 Oct 18   HG
                            LCS
Hg    5.08    ppb       .000  %   5.08

*** Sample ID: 140-186357            Seq:  17     10:44:53 11 Oct 18   HG
                            MDLV
Hg    .102    ppb       .000  %   .102

*** Sample ID: 140-186351            Seq:  18     10:47:12 11 Oct 18   HG

Hg    3.32    ppb       .000  %   3.32

*** Sample ID: 140-186352            Seq:  19     10:49:36 11 Oct 18   HG

Hg    2.91    ppb       .000  %   2.91

*** Sample ID: 140-186353            Seq:  20     10:52:04 11 Oct 18   HG

Hg    3.89    ppb       .000  %   3.89

*** Sample ID: 140-186354            Seq:  21     10:54:37 11 Oct 18   HG

Hg    3.82    ppb       .000  %   3.82

*** Sample ID: 140-186355            Seq:  22     10:56:56 11 Oct 18   HG

Hg    4.46    ppb       .000  %   4.46

*** Check Standard: 3  Ck3ccv       Seq:  23     10:59:26 11 Oct 18   HG
Line  Flag  %Rcv.   Found    True  Units      SD/RSD
Hg          98.7     4.94    5.00   ppb        .000  %

*** Check Standard: 1  Ck1ccb       Seq:  24     11:01:54 11 Oct 18   HG
Line  Flag  Found Range(+/-) Units      SD/RSD
Hg         -.015     .200     ppb        .000  %

*** Sample ID: 140-186356            Seq:  25     11:04:13 11 Oct 18   HG

Hg   -.001    ppb       .000  %  -.001

*** Sample ID: 140-186379            Seq:  26     11:06:35 11 Oct 18   HG
                            MB
Hg   -.008    ppb       .000  %  -.008

*** Sample ID: 140-186380            Seq:  27     11:08:53 11 Oct 18   HG
                            LCS
Hg    5.06    ppb       .000  %   5.06

*** Sample ID: 140-186378            Seq:  28     11:11:12 11 Oct 18   HG
                            MDLV
Hg    .098    ppb       .000  %   .098

*** Sample ID: 140-186372            Seq:  29     11:14:02 11 Oct 18   HG

Hg    .741    ppb       .000  %   .741

*** Sample ID: 140-186373            Seq:  30     11:16:36 11 Oct 18   HG

Hg    .309    ppb       .000  %   .309

*** Sample ID: 140-186374            Seq:  31     11:18:55 11 Oct 18   HG

Hg    1.29    ppb       .000  %   1.29
```

```
Line   Conc.  Units     SD/RSD      1       2       3       4       5
-------------------------------------------------------------------------------

*** Sample ID: 140-186375            Seq:  32     11:21:30 11 Oct 18   HG

Hg    1.28    ppb       .000  %   1.28

*** Sample ID: 140-186376            Seq:  33     11:23:53 11 Oct 18   HG

Hg    .211    ppb       .000  %   .211

*** Sample ID: 140-186377            Seq:  34     11:26:25 11 Oct 18   HG

Hg   -.013    ppb       .000  %  -.013

*** Check Standard: 3  Ck3ccv       Seq:  35      11:29:07 11 Oct 18   HG
Line  Flag  %Rcv.   Found    True  Units      SD/RSD
Hg          98.6     4.93    5.00   ppb        .000  %

*** Check Standard: 1  Ck1ccb       Seq:  36      11:31:35 11 Oct 18   HG
Line  Flag  Found Range(+/-) Units      SD/RSD
Hg         -.018     .200     ppb        .000  %
```

TestAmerica Knoxville Mercury Batch Review Checklist

SOPs: KNOX-MT-0009r13, KNOX-MT-0010r12, KNOX-MT-0008r7, KNOX-MT-0001r2

Chart Name:	M101118	Analysis Batch #:	24378	Analyst:	DKW	Instrument:	HG

A. Calibration/Instrument Run QC	1st	2nd	Why is data reportable?
1. Instrument calibrated with at least 5 standards and a blank?	Y	Y	
2. Linearity and intercept verified? (r≥0.995 and x-intercept <RL)	Y	Y	
3. ICV analyzed at beginning of run & within limits? (90 - 110%R)	Y	Y	
4. CCV analyzed at required frequency & within limits? (80 - 120%R)	Y	Y	☐ CCV reanalyzed one time; reanalysis within limits ☐ **CCV - %D, High, Sample ND** (NCM# _____)
5. ICB/CCB analyzed at required frequency & within limits? (Water/Soil/Waste <MDL; Air/SEP/PM10/JN Waste/30B <RL)	Y	Y	☐ CCB reanalyzed one time; reanalysis within limits ☐ **CCB-Out, Samples ND or 10x** (NCM# _____)
6. Reporting Limit Check Standard (CRI) within limits? (±30%; ±50 % for Method 30B)	Y	Y	
B. Client Sample and QC Sample Results			
1. Were samples with results > the linear range (LR) diluted and reanalyzed?	N/A	NA	Comments:
2. Were samples with negative results >RL reanalyzed at a dilution?	⊥	NA	
3. Were samples analyzed with the holding time?	Y	Y	☐ **Holding Time-Receipt** (NCM# _____) ☐ **Holding Time-Initial Analysis** (NCM# _____) ☐ **Holding Time-Reanalysis** (NCM# _____) ☐ **Holding Time- Insufficient Time** (NCM# _____)
4. Calculations checked for error? (Document manual calc in comments.)	Y	Y	
C. Preparation/Matrix QC			
1. Method blank done per prep batch and within limits? (Waters/Soils/Waste < ½ RL; Air/SEP/PM10/JN Waste/30B <RL)	Y	Y	☐ **Method Blank–Report, ND** (NCM# _____) ☐ **Method Blank – Report, 10X** (NCM# _____) ☐ **Method Blank–Insufficient Sample** (NCM# _____)
2. LCS done per prep batch & within QC limits?	Y	Y	☐ **LCS/LCS –Insufficient Sample** (NCM# _____) ☐ **LCS/LCSD - %R High** (NCM# _____) ☐ See narrative-SEP LCS within historical limits.
3. MS/MSD or MS/DUP run at required frequency?	Y	Y	☐ **MS/MSD/DUP-Insufficient Vol** (NCM# _____)
4. MS/MSD %R and RPD within QC limits?	Y	Y	☐ LCS acceptable-matrix effects ☐ Native analyte > 4x spike level
5. DUP RPD within limits?	NA	NA	☐ **MS/MSD/DUP - %RPD** (NCM# _____)
6. PDS/PDSD run at required frequency & within QC limits? (75-125%R and ≤20 RPD)	⊥	NA	☐ **Post Digestion Spike - %R** (NCM# _____) ☐ **MS/MSD; High Bias; PDS Accept.** (NCM# _____)

D. TALS Review		1st
TALS Run Log Tab	Date and time match raw data *(to verify TALS import worked properly)*	✓
	Dilutions are correct *(instrument sample ID vs. Dilution column)*	✓
TALS Worksheet Tab	Complete and correct *(Final amount and notes populated where needed)*	✓
TALS Reagents Tab	Complete and correct	✓
TALS QC Links Tab	All samples, standards and QC linked correctly	✓
TALS Sample Results Tab	All unused data are marked Rejected or Accepted	✓
	All reported analytes are marked Primary or Secondary	✓
TALS Batch Information Screen	Documentation is complete	✓
TALS Sample List Tab	TALS Status set to appropriate review level	✓

1st Level Review by: DKW	2nd Level Review by: CLJ 10/11/18
140-186352 @ 10:49	
2.9 ug/L x 0.380L x 50ml/25ml = 2.21 ug / Sample ✓	

MT079R25.doc, 11/15/17

Shipping and Receiving Documents

AECOM

Chain of Custody Record

Project	Granite City Operations
Site	Bypass Vent Stack No. 6
Purchase Order	60582380.400
Prepared by: John Carson	

Test America
5815 Middlebrook Pike
Knoxville, TN 37921

Sample ID	Sample Matrix	Date/Time	Lead and mercury by EPA Method 29						Comments
M29-filt-1	Quartz filter	9/19/2018	X						
M29-filt-2	Quartz filter	9/20/2018	X						
M29-filt-3	Quartz filter	9/20/2018	X						
M29-filt-blank	Quartz filter	9/20/2018	X						
M29-PNR-1	Probe and nozzle rinse w 0.1 N HNO3	9/19/2018	X						
M29-PNR-2	Probe and nozzle rinse w 0.1 N HNO3	9/20/2018	X						
M29-PNR-3	Probe and nozzle rinse w 0.1 N HNO3	9/20/2018	X						

140-12832 Chain of Custody

Contact: John Carson 865.425.7014; john.r.carson@aecom.com; Courtney Adkins 865.291.3019

Relinquished by:	Date	Time	Received by:	Date	Time	Relinquished by:	Date	Time
John Carson	9/25/18	16:50	[illegible] TA KNX	9-25-18	16:50			
Received by:	Date	Time	Relinquished by:	Date	Time			

Received for Laboratory by:	Date	Time	Air bill No.	Opened by:	Seal #	Date	Time	Temp (C)

Seal #	Condition

Remarks

HAND DELIVERED
NO CUSTODY SEALS
RECEIVED AMBIENT RT 20.6/CT 20.7°C
SID 9-25-18

AECOM

Chain of Custody Record

Project	Granite City Operations
Site	Bypass Vent Stack No. 6
Purchase Order	60582380.400
Prepared by:	

Test America
5815 Middlebrook Pike
Knoxville, TN 37921

Sample ID	Sample Matrix	Date/Time	Lead and mercury by EPA Method 29	Mercury by EPA Method 29					Comments
M29-Imp 1&2-1	Impingers 1-2, 5% HNO3/10% H2O2	9/19/2018	X						
M29-Imp 1&2-2	Impingers 1-2, 5% HNO3/10% H2O2	9/20/2018	X						
M29-Imp 1&2-3	Impingers 1-2, 5% HNO3/10% H2O2	9/20/2018	X						
M29-Imp 3-1	Impinger 3 HNO3 rinse	9/19/2018		X					
M29-Imp 3-2	Impinger 3 HNO3 rinse	9/20/2018		X					
M29-Imp 3-3	Impinger 3 HNO3 rinse	9/20/2018		X					

Contact: John Carson 865.425.7014; john.r.carson@aecom.com; Courtney Adkins 865.291.3019

Relinquished by:	Date	Time	Received by:	Date	Time	Relinquished by:	Date	Time
John Carson	9/25/18	16:30	[illegible]	9-20-18	16:30			
Received by:	Date	Time	Relinquished by:	Date	Time			

Received for Laboratory by:	Date	Time	Air bill No.	Opened by:	Seal #	Date	Time	Temp (C)

Seal #	Condition

Remarks

AECOM

Chain of Custody Record

Project	Granite City Operations
Site	Bypass Vent Stack No. 6
Purchase Order	60582380.400
Prepared by:	

Test America
5815 Middlebrook Pike
Knoxville, TN 37921

Sample ID	Sample Matrix	Date/Time	Mercury by EPA method 29						Comments
M29-Imp 4&5-1	Impingers 4-5, KMnO4 solution	9/19/2018	X						
M29-Imp 4&5-2	Impingers 4-5, KMnO4 solution	9/20/2018	X						
M29-Imp 4&5-3	Impingers 4-5, KMnO4 solution	9/20/2018	X						
M29-HCl-1	Impinger 4-5 HCl rinse	9/19/2018	X						
M29-HCl-2	Impinger 4-5 HCl rinse	9/20/2018	X						
M29-HCl-3	Impinger 4-5 HCl rinse	9/20/2018	X						

Contact: John Carson 865.425.7014; john.r.carson@aecom.com; Courtney Adkins 865.291.3019

Relinquished by:	Date	Time	Received by:	Date	Time	Relinquished by:	Date	Time
John Carson	9/25/18	16:50	[illegible] TA KNX	9-25-18	16:50			
Received by:	Date	Time	Relinquished by:	Date	Time			

Received for Laboratory by:	Date	Time	Air bill No.	Opened by:	Seal #	Date	Time	Temp (C)

Seal #	Condition

Remarks

AECOM

Chain of Custody Record

Project	Granite City Operations
Site	Bypass Vent Stack No. 6
Purchase Order	60582380.400
Prepared by:	

Test America
5815 Middlebrook Pike
Knoxville, TN 37921

Sample ID	Sample Matrix	Date/Time	Lead and mercury by EPA method 29	Mercury by EPA method 29					Comments
M29-0.1N HNO3 blank	0.1N HNO3	9/19/2018	X						
M29-8N HCl blank	8N HCl	9/20/2018		X					
M29-water blank	Water	9/20/2018	X						
M29-HNO3/H2O2 blank	5% HNO3/10% H2O2	9/19/2018	X						
M29-KMnO4 blank	KMnO4 solution	9/20/2018		X					

Contact: John Carson 865.425.7014; john.r.carson@aecom.com; Courtney Adkins 865.291.3019

Relinquished by:	Date	Time	Received by:	Date	Time	Relinquished by:	Date	Time
John Carson	9/25/18	16:50	Amy Johnson TA KNX	9-25-18	16:50			
Received by:	Date	Time	Relinquished by:	Date	Time			

Received for Laboratory by:	Date	Time	Air bill No.	Opened by:	Seal #	Date	Time	Temp (C)

Seal #	Condition

Remarks

Loc: 140
12832

TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Log In Number:

Review Items	Yes	No	NA	If No, what was the problem?
1. Are the shipping containers intact?	✓			☐ **Containers, Broken**
2. Were ambient air containers received intact?			✓	☐ Checked in lab
3. The coolers/containers custody seal if present, is it intact?			✓	☐ Yes ☐ NA
4. Is the cooler temperature within limits? (> freezing temp. of water to 6°C, VOST: 10°C) Thermometer ID :_____ Correction factor: _____			✓	☐ **Cooler Out of Temp, Client Contacted, Proceed/Cancel** ☐ **Cooler Out of Temp, Same Day Receipt**
5. Were all of the sample containers received intact?	✓			☐ **Containers, Broken**
6. Were samples received in appropriate containers?	✓			☐ **Containers, Improper; Client Contacted; Proceed/Cancel**
7. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ **COC & Samples Do Not Match** ☐ **COC Incorrect/Incomplete** ☐ **COC Not Received**
8. Were all of the samples listed on the COC received?	✓			☐ **Sample Received, Not on COC** ☐ **Sample on COC, Not Received**
9. Is the date/time of sample collection noted?	✓			☐ **COC; No Date/Time; Client Contacted**
10. Was the sampler identified on the COC?			✓	☐ **Sampler Not Listed on COC**
11. Is the client and project name/# identified?	✓			☐ **COC Incorrect/Incomplete**
12. Are tests/parameters listed for each sample?	✓			☐ **COC No tests on COC**
13. Is the matrix of the samples noted?	✓			☐ **COC Incorrect/Incomplete**
14. Was COC relinquished? (Signed/Dated/Timed)	✓			☐ **COC Incorrect/Incomplete**
15. Were samples received within holding time?	✓			☐ **Holding Time - Receipt**
16. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ **pH Adjusted, pH Included (See box 16A)** ☐ **Incorrect Preservative**
17. Were VOA samples received without headspace?			✓	☐ **Headspace (VOA only)**
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:_____			✓	☐ **Residual Chlorine**
19. For 1613B water samples is pH<9?			✓	☐ If no, lab will adjust
20. For rad samples was sample activity info. Provided?			✓	☐ Project missing info

Comments/Actions Taken

Labeling Verified by: **Date:**

pH test strip lot number:

Box 16A: pH Preservation	Box 18A: Residual Chlorine
Preservative:	
Lot Number:	
Exp Date:	
Analyst:	
Date:	
Time:	

Project #: _____ PM Instructions: _____

Sample Receiving Associate: Bryn Larson Date: 9-26-18

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AECOM

Chain of Custody Record

Project	Granite City Operations
Site	Bypass Vent Stack No. 6
Purchase Order	60582380.400
Prepared by: John Carson	

Test America
5815 Middlebrook Pike
Knoxville, TN 37921

Sample ID	Sample Matrix	Date/Time	Lead and mercury by EPA Method 29						Comments
M29-filt-1	Quartz filter	9/19/2018	X						
M29-filt-2	Quartz filter	9/20/2018	X						
M29-filt-3	Quartz filter	9/20/2018	X						
M29-filt-blank	Quartz filter	9/20/2018	X						
M29-PNR-1	Probe and nozzle rinse w 0.1 N HNO3	9/19/2018	X						
M29-PNR-2	Probe and nozzle rinse w 0.1 N HNO3	9/20/2018	X						
M29-PNR-3	Probe and nozzle rinse w 0.1 N HNO3	9/20/2018	X						

140-12832 Chain of Custody

Contact: John Carson 865.425.7014; john.r.carson@aecom.com; Courtney Adkins 865.291.3019

Relinquished by:	Date	Time	Received by:	Date	Time	Relinquished by:	Date	Time
John Carson	9/25/18	16:50	[illegible] TA-KNX	9-25-18	16:50			
Received by:	Date	Time	Relinquished by:	Date	Time			

Received for Laboratory by:	Date	Time	Air bill No.	Opened by:	Seal #	Date	Time	Temp (C)

Seal #	Condition

Remarks

HAND DELIVERED
NO CUSTODY SEALS
RECEIVED AMBIENT RT 20.6/CT 20.7°C
JMD 9-25-18

AECOM

Chain of Custody Record

Project	Granite City Operations
Site	Bypass Vent Stack No. 6
Purchase Order	60582380.400
Prepared by:	

Test America
5815 Middlebrook Pike
Knoxville, TN 37921

Sample ID	Sample Matrix	Date/Time	Lead and mercury by EPA Method 29	Mercury by EPA Method 29					Comments
M29-Imp 1&2-1	Impingers 1-2, 5% HNO3/10% H2O2	9/19/2018	X						
M29-Imp 1&2-2	Impingers 1-2, 5% HNO3/10% H2O2	9/20/2018	X						
M29-Imp 1&2-3	Impingers 1-2, 5% HNO3/10% H2O2	9/20/2018	X						
M29-Imp 3-1	Impinger 3 HNO3 rinse	9/19/2018		X					
M29-Imp 3-2	Impinger 3 HNO3 rinse	9/20/2018		X					
M29-Imp 3-3	Impinger 3 HNO3 rinse	9/20/2018		X					

Contact: John Carson 865.425.7014; john.r.carson@aecom.com; Courtney Adkins 865.291.3019

Relinquished by:	Date	Time	Received by:	Date	Time	Relinquished by:	Date	Time
John Carson	9/25/18	16:30	[illegible] TA KNX	9-20-18	16:30			
Received by:	Date	Time	Relinquished by:	Date	Time			

Received for Laboratory by:	Date	Time	Air bill No.	Opened by:	Seal #	Date	Time	Temp (C)

Seal #	Condition

Remarks

AECOM

Chain of Custody Record

Project	Granite City Operations
Site	Bypass Vent Stack No. 6
Purchase Order	60582380.400
Prepared by:	

Test America
5815 Middlebrook Pike
Knoxville, TN 37921

Sample ID	Sample Matrix	Date/Time	Mercury by EPA method 29						Comments
M29-Imp 4&5-1	Impingers 4-5, KMnO4 solution	9/19/2018	X						
M29-Imp 4&5-2	Impingers 4-5, KMnO4 solution	9/20/2018	X						
M29-Imp 4&5-3	Impingers 4-5, KMnO4 solution	9/20/2018	X						
M29-HCl-1	Impinger 4-5 HCl rinse	9/19/2018	X						
M29-HCl-2	Impinger 4-5 HCl rinse	9/20/2018	X						
M29-HCl-3	Impinger 4-5 HCl rinse	9/20/2018	X						

Contact: John Carson 865.425.7014; john.r.carson@aecom.com; Courtney Adkins 865.291.3019

Relinquished by:	Date	Time	Received by:	Date	Time	Relinquished by:	Date	Time
John Carson	9/25/18	16:50	[illegible] TA KNX	9-25-18	16:50			
Received by:	Date	Time	Relinquished by:	Date	Time			

Received for Laboratory by:	Date	Time	Air bill No.	Opened by:	Seal #	Date	Time	Temp (C)

Seal #	Condition

Remarks

AECOM

Chain of Custody Record

Project	Granite City Operations
Site	Bypass Vent Stack No. 6
Purchase Order	60582380.400
Prepared by:	

Test America
5815 Middlebrook Pike
Knoxville, TN 37921

Sample ID	Sample Matrix	Date/Time	Lead and mercury by EPA method 29	Mercury by EPA method 29					Comments
M29-0.1N HNO3 blank	0.1N HNO3	9/19/2018	X						
M29-8N HCl blank	8N HCl	9/20/2018		X					
M29-water blank	Water	9/20/2018	X						
M29-HNO3/H2O2 blank	5% HNO3/10% H2O2	9/19/2018	X						
M29-KMnO4 blank	KMnO4 solution	9/20/2018		X					

Contact: John Carson 865.425.7014; john.r.carson@aecom.com; Courtney Adkins 865.291.3019

Relinquished by:	Date	Time	Received by:	Date	Time	Relinquished by:	Date	Time
John Carson	9/25/18	16:50	[illegible] TA KNX	9-25-18	16:50			
Received by:	Date	Time	Relinquished by:	Date	Time			

Received for Laboratory by:	Date	Time	Air bill No.	Opened by:	Seal #	Date	Time	Temp (C)

Seal #	Condition

Remarks

Loc: 140
12832

TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Log In Number:

Review Items	Yes	No	NA	If No, what was the problem?
1. Are the shipping containers intact?	✓			☐ **Containers, Broken**
2. Were ambient air containers received intact?			✓	☐ Checked in lab
3. The coolers/containers custody seal if present, is it intact?			✓	☐ Yes ☐ NA
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID :_____ Correction factor: _____			✓	☐ **Cooler Out of Temp, Client Contacted, Proceed/Cancel** ☐ **Cooler Out of Temp, Same Day Receipt**
5. Were all of the sample containers received intact?	✓			☐ **Containers, Broken**
6. Were samples received in appropriate containers?	✓			☐ **Containers, Improper; Client Contacted; Proceed/Cancel**
7. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ **COC & Samples Do Not Match** ☐ **COC Incorrect/Incomplete** ☐ **COC Not Received**
8. Were all of the samples listed on the COC received?	✓			☐ **Sample Received, Not on COC** ☐ **Sample on COC, Not Received**
9. Is the date/time of sample collection noted?	✓			☐ **COC; No Date/Time; Client Contacted**
10. Was the sampler identified on the COC?			✓	☐ **Sampler Not Listed on COC**
11. Is the client and project name/# identified?	✓			☐ **COC Incorrect/Incomplete**
12. Are tests/parameters listed for each sample?	✓			☐ **COC No tests on COC**
13. Is the matrix of the samples noted?	✓			☐ **COC Incorrect/Incomplete**
14. Was COC relinquished? (Signed/Dated/Timed)	✓			☐ **COC Incorrect/Incomplete**
15. Were samples received within holding time?	✓			☐ **Holding Time - Receipt**
16. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ **pH Adjusted, pH Included (See box 16A)** ☐ **Incorrect Preservative**
17. Were VOA samples received without headspace?			✓	☐ **Headspace (VOA only)**
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			✓	☐ **Residual Chlorine**
19. For 1613B water samples is pH<9?			✓	☐ If no, lab will adjust
20. For rad samples was sample activity info. Provided?			✓	☐ Project missing info

Comments/Actions Taken

Labeling Verified by: **Date:**

pH test strip lot number:

Box 16A: pH Preservation	Box 18A: Residual Chlorine
Preservative:	
Lot Number:	
Exp Date:	
Analyst:	
Date:	
Time:	

Project #: _____ PM Instructions: _____

Sample Receiving Associate: Bryan Larson Date: 9-26-18

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ANALYTICAL REPORT

Job Number: 140-12815-1

Job Description: Granite City - M26/CTM-13

For:
URS Corporation
105 Mitchell Road, Suite 200
Oak Ridge, TN 37830

Attention: John Carson

Approved for release.
Courtney M Adkins
Project Manager I
10/17/2018 9:38 AM

Courtney M Adkins, Project Manager I
5815 Middlebrook Pike, Knoxville, TN, 37921
(865)291-3000
courtney.adkins@testamericainc.com
10/17/2018

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Table of Contents

Cover Title Page 1

Data Summaries 4

- Definitions 4
- Case Narrative 5
- Client Sample Results 6
- Default Detection Limits 8
- QC Sample Results 9
- QC Association 11
- Chronicle 12
- Certification Summary 16
- Method Summary 17
- Sample Summary 18
- Manual Integration Summary 19

Organic Sample Data 26

- HPLC/IC 26
  - Method 0050_26A 26
    - Method 0050_26A QC Summary 27
    - Method 0050_26A Sample Data 32
    - Standards Data 44
      - Method 0050_26A ICAL Data 44
      - Method 0050_26A CCAL Data 75
    - Raw QC Data 111
      - Method 0050_26A Blank Data 111
      - Method 0050_26A LCS/LCSD Data 128
      - Method 0050_26A MS/MSD Data 134
    - Method 0050_26A Run Logs 140

Table of Contents

Method 0050_26A Prep Data 149

Method 8A 151

Method 8A QC Summary 152

Method 8A Sample Data 156

Standards Data 171

Method 8A ICAL Data 171

Method 8A CCAL Data 191

Raw QC Data 205

Method 8A Blank Data 205

Method 8A LCS/LCSD Data 219

Method 8A MS/MSD Data 222

Method 8A Run Logs 229

Method 8A Prep Data 238

Shipping and Receiving Documents 240

Client Chain of Custody 241

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job Narrative
140-12815-1

Sample Receipt

The samples were received on September 25, 2018 at 4:50 PM in good condition and properly preserved. The temperature of the cooler at receipt was 20.7º C.

Receipt Exceptions

The following samples were received at the laboratory without a sample collection time or date documented on the chain of custody or sample container labels: M26-1 (140-12815-1), M26-2 (140-12815-2), M26-3 (140-12815-3) and M26-REAGENT BLANK (140-12815-4). The samples were logged using a collection date of 9-18-18.

Quality Control and Data Interpretation

Unless otherwise noted, all holding times, and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

General Chemistry

Analysis of Stationary Source Emission Samples by Ion Chromatography
Samples were analyzed for chloride by ion chromatography using SOP number KNOX- WC-005 (based on EPA methods 9056, 9057 and 26A). All sample results were reported as total µg hydrogen chloride. Results were calculated using the following equation:

Hydrogen Chloride, µg = (Chloride, µg/mL) × (Sample Volume, mL) × (Molecular Weight HCl / Molecular Weight Cl) × Bench DF

Note: A sample volume of 100 mL was used to convert the results to total µg for the method blanks, laboratory control samples, and client reagent blanks.

For demonstration of analytical method performance on these samples, TestAmerica Knoxville analyzed matrix spikes (MS) and matrix spike duplicates (MSD). Acceptable recoveries of these spikes demonstrate that quantitation from this particular stack gas matrix is accurate and acceptable. Impinger samples containing 0.1N sulfuric acid and 0.1N sodium hydroxide often display matrix interference effects causing poor method performance and possibly giving unreliable data unless the interference is dealt with. Therefore, the samples were diluted in the lab to reduce the interference for a more accurate anion response. The samples may be analyzed at increasing dilutions along with matrix spikes until matrix spikes display acceptable recoveries.

Analysis of Stationary Source Emission Samples by Ion Chromatography
Samples were analyzed for sulfate by ion chromatography using SOP number KNOX-WC-005 (based on EPA methods 9056, 9057 and 26A). Results were reported as total µg sulfate.

Results were calculated using the following equation:

Sulfate, µg = (Sulfate, µg/mL) × (Sample Volume, mL) × Bench DF

Note: A sample volume of 100 mL was used to convert the results to total µg for the method blanks, laboratory control samples, and client reagent blanks.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: URS Corporation
Project/Site: Granite City - M26/CTM-13

TestAmerica Job ID: 140-12815-1

Client Sample ID: M26-1 — Lab Sample ID: 140-12815-1

Date Collected: 09/18/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 1 liter Wide - unpreserved

Method: 0050/26A - Hydrogen Halide and Halogen Emissions/Stationary Sources (Mod)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen Chloride	374000		76100	32000	ug/Sample		10/09/18 00:00	10/09/18 12:22	2000

Client Sample ID: M26-2 — Lab Sample ID: 140-12815-2

Date Collected: 09/18/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 1 liter Wide - unpreserved

Method: 0050/26A - Hydrogen Halide and Halogen Emissions/Stationary Sources (Mod)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen Chloride	293000		97700	41000	ug/Sample		10/09/18 00:00	10/09/18 12:40	2500

Client Sample ID: M26-3 — Lab Sample ID: 140-12815-3

Date Collected: 09/18/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 1 liter Wide - unpreserved

Method: 0050/26A - Hydrogen Halide and Halogen Emissions/Stationary Sources (Mod)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen Chloride	252000		66800	28100	ug/Sample		10/09/18 00:00	10/09/18 13:32	2000

Client Sample ID: M26-REAGENT BLANK — Lab Sample ID: 140-12815-4

Sample mislabeled. Correct reagent blank and all HCl samples re-anaiyzed.

Date Collected: 09/18/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 250ml - unpreserved

Method: 0050/26A - Hydrogen Halide and Halogen Emissions/Stationary Sources (Mod)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen Chloride	3900000		514000	216000	ug/Sample		10/09/18 00:00	10/09/18 14:36	50000

Client Sample ID: CCM-1 — Lab Sample ID: 140-12815-5

Date Collected: 09/18/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50
Sample Container: Plastic 125mL - unpreserved

Method: 8A - Determination of Sulfuric Acid and Sulfur Dioxide Emissions

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	20700		4400	792	ug/Sample		10/12/18 00:00	10/12/18 13:47	200

Client Sample ID: CCM-2 — Lab Sample ID: 140-12815-6

Date Collected: 09/18/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50
Sample Container: Plastic 125mL - unpreserved

Method: 8A - Determination of Sulfuric Acid and Sulfur Dioxide Emissions

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	26600		5400	972	ug/Sample		10/12/18 00:00	10/12/18 14:07	200

Client Sample Results

Client: URS Corporation
Project/Site: Granite City - M26/CTM-13

TestAmerica Job ID: 140-12815-1

Client Sample ID: CCM-3

Lab Sample ID: 140-12815-7

Date Collected: 09/19/18 00:00
Matrix: Air
Date Received: 09/25/18 16:50
Sample Container: Plastic 125mL - unpreserved

Method: 8A - Determination of Sulfuric Acid and Sulfur Dioxide Emissions

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**19500**		5200	936	ug/Sample		10/12/18 00:00	10/12/18 15:06	200

Client Sample ID: CCM-REAGENT BLANK

Lab Sample ID: 140-12815-8

Date Collected: 09/19/18 00:00
Matrix: Air
Date Received: 09/25/18 16:50
Sample Container: Plastic 125mL - unpreserved

Method: 8A - Determination of Sulfuric Acid and Sulfur Dioxide Emissions

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		2000	360	ug/Sample		10/12/18 00:00	10/12/18 15:26	20

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Hydrogen Chloride	10.3	4.32	ug/Sample	0050/26A

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Sulfate	100	18.0	ug/Sample	8A

Method: 0050/26A - Hydrogen Halide and Halogen Emissions/Stationary Sources (Mod)

Lab Sample ID: MB 140-24313/3-A — **Client Sample ID: Method Blank**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24330 — **Prep Batch: 24313**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen Chloride	ND		10.3	4.32	ug/Sample		10/09/18 00:00	10/09/18 09:08	1

Lab Sample ID: LCS 140-24313/1-A — **Client Sample ID: Lab Control Sample**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24330 — **Prep Batch: 24313**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Hydrogen Chloride	77.1	73.74		ug/Sample		96	90 - 110

Lab Sample ID: LCSD 140-24313/2-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24330 — **Prep Batch: 24313**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Hydrogen Chloride	77.1	73.83		ug/Sample		96	90 - 110	0	20

Lab Sample ID: 140-12815-2 MS — **Client Sample ID: M26-2**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24330 — **Prep Batch: 24313**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Hydrogen Chloride	293000		977000	1246000		ug/Sample		98	75 - 125

Lab Sample ID: 140-12815-2 MSD — **Client Sample ID: M26-2**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24330 — **Prep Batch: 24313**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Hydrogen Chloride	293000		977000	1246000		ug/Sample		98	75 - 125	0	20

Method: 8A - Determination of Sulfuric Acid and Sulfur Dioxide Emissions

Lab Sample ID: MB 140-24428/1-A — **Client Sample ID: Method Blank**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24430 — **Prep Batch: 24428**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		100	18.0	ug/Sample		10/12/18 00:00	10/12/18 12:48	1

Lab Sample ID: LCS 140-24428/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24430 — **Prep Batch: 24428**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	500	507.8		ug/Sample		102	90 - 110

Method: 8A - Determination of Sulfuric Acid and Sulfur Dioxide Emissions (Continued)

Lab Sample ID: 140-12815-6 MS
Matrix: Air
Analysis Batch: 24430

Client Sample ID: CCM-2
Prep Type: Total/NA
Prep Batch: 24428

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Sulfate	26600		27000	54460		ug/Sample		103	75 - 125		

Lab Sample ID: 140-12815-6 MSD
Matrix: Air
Analysis Batch: 24430

Client Sample ID: CCM-2
Prep Type: Total/NA
Prep Batch: 24428

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	26600		27000	53760		ug/Sample		101	75 - 125	1	20

QC Association Summary

Client: URS Corporation
Project/Site: Granite City - M26/CTM-13

TestAmerica Job ID: 140-12815-1

HPLC/IC

Prep Batch: 24313

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-12815-1	M26-1	Total/NA	Air	0050/26A	
140-12815-2	M26-2	Total/NA	Air	0050/26A	
140-12815-3	M26-3	Total/NA	Air	0050/26A	
140-12815-4	M26-REAGENT BLANK	Total/NA	Air	0050/26A	
MB 140-24313/3-A	Method Blank	Total/NA	Air	0050/26A	
LCS 140-24313/1-A	Lab Control Sample	Total/NA	Air	0050/26A	
LCSD 140-24313/2-A	Lab Control Sample Dup	Total/NA	Air	0050/26A	
140-12815-2 MS	M26-2	Total/NA	Air	0050/26A	
140-12815-2 MSD	M26-2	Total/NA	Air	0050/26A	

Analysis Batch: 24330

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-12815-1	M26-1	Total/NA	Air	0050/26A	24313
140-12815-2	M26-2	Total/NA	Air	0050/26A	24313
140-12815-3	M26-3	Total/NA	Air	0050/26A	24313
140-12815-4	M26-REAGENT BLANK	Total/NA	Air	0050/26A	24313
MB 140-24313/3-A	Method Blank	Total/NA	Air	0050/26A	24313
LCS 140-24313/1-A	Lab Control Sample	Total/NA	Air	0050/26A	24313
LCSD 140-24313/2-A	Lab Control Sample Dup	Total/NA	Air	0050/26A	24313
140-12815-2 MS	M26-2	Total/NA	Air	0050/26A	24313
140-12815-2 MSD	M26-2	Total/NA	Air	0050/26A	24313

Prep Batch: 24428

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-12815-5	CCM-1	Total/NA	Air	8A	
140-12815-6	CCM-2	Total/NA	Air	8A	
140-12815-7	CCM-3	Total/NA	Air	8A	
140-12815-8	CCM-REAGENT BLANK	Total/NA	Air	8A	
MB 140-24428/1-A	Method Blank	Total/NA	Air	8A	
LCS 140-24428/2-A	Lab Control Sample	Total/NA	Air	8A	
140-12815-6 MS	CCM-2	Total/NA	Air	8A	
140-12815-6 MSD	CCM-2	Total/NA	Air	8A	

Analysis Batch: 24430

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-12815-5	CCM-1	Total/NA	Air	8A	24428
140-12815-6	CCM-2	Total/NA	Air	8A	24428
140-12815-7	CCM-3	Total/NA	Air	8A	24428
140-12815-8	CCM-REAGENT BLANK	Total/NA	Air	8A	24428
MB 140-24428/1-A	Method Blank	Total/NA	Air	8A	24428
LCS 140-24428/2-A	Lab Control Sample	Total/NA	Air	8A	24428
140-12815-6 MS	CCM-2	Total/NA	Air	8A	24428
140-12815-6 MSD	CCM-2	Total/NA	Air	8A	24428

Lab Chronicle

Client: URS Corporation
Project/Site: Granite City - M26/CTM-13

TestAmerica Job ID: 140-12815-1

Client Sample ID: M26-1 — Lab Sample ID: 140-12815-1

Date Collected: 09/18/18 00:00
Date Received: 09/25/18 16:50
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	0050/26A			1 Sample	370 mL	24313	10/09/18 00:00	JMH	TAL KNX
Total/NA	Analysis	0050/26A		2000	10 mL	10 mL	24330	10/09/18 12:22	JMH	TAL KNX
	Instrument ID: 1500									

Client Sample ID: M26-2 — Lab Sample ID: 140-12815-2

Date Collected: 09/18/18 00:00
Date Received: 09/25/18 16:50
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	0050/26A			1 Sample	380 mL	24313	10/09/18 00:00	JMH	TAL KNX
Total/NA	Analysis	0050/26A		2500	10 mL	10 mL	24330	10/09/18 12:40	JMH	TAL KNX
	Instrument ID: 1500									

Client Sample ID: M26-3 — Lab Sample ID: 140-12815-3

Date Collected: 09/18/18 00:00
Date Received: 09/25/18 16:50
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	0050/26A			1 Sample	325 mL	24313	10/09/18 00:00	JMH	TAL KNX
Total/NA	Analysis	0050/26A		2000	10 mL	10 mL	24330	10/09/18 13:32	JMH	TAL KNX
	Instrument ID: 1500									

Client Sample ID: M26-REAGENT BLANK — Lab Sample ID: 140-12815-4

Date Collected: 09/18/18 00:00
Date Received: 09/25/18 16:50
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	0050/26A			1 Sample	100 mL	24313	10/09/18 00:00	JMH	TAL KNX
Total/NA	Analysis	0050/26A		50000	10 mL	10 mL	24330	10/09/18 14:36	JMH	TAL KNX
	Instrument ID: 1500									

Client Sample ID: CCM-1 — Lab Sample ID: 140-12815-5

Date Collected: 09/18/18 00:00
Date Received: 09/25/18 16:50
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8A			1 Sample	22 mL	24428	10/12/18 00:00	JMH	TAL KNX
Total/NA	Analysis	8A		200	10 mL	10 mL	24430	10/12/18 13:47	JMH	TAL KNX
	Instrument ID: 320									

Lab Chronicle

Client: URS Corporation
Project/Site: Granite City - M26/CTM-13

TestAmerica Job ID: 140-12815-1

Client Sample ID: CCM-2
Lab Sample ID: 140-12815-6
Date Collected: 09/18/18 00:00
Matrix: Air
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8A			1 Sample	27 mL	24428	10/12/18 00:00	JMH	TAL KNX
Total/NA	Analysis	8A		200	10 mL	10 mL	24430	10/12/18 14:07	JMH	TAL KNX
	Instrument ID: 320									

Client Sample ID: CCM-3
Lab Sample ID: 140-12815-7
Date Collected: 09/19/18 00:00
Matrix: Air
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8A			1 Sample	26 mL	24428	10/12/18 00:00	JMH	TAL KNX
Total/NA	Analysis	8A		200	10 mL	10 mL	24430	10/12/18 15:06	JMH	TAL KNX
	Instrument ID: 320									

Client Sample ID: CCM-REAGENT BLANK
Lab Sample ID: 140-12815-8
Date Collected: 09/19/18 00:00
Matrix: Air
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8A			1 Sample	100 mL	24428	10/12/18 00:00	JMH	TAL KNX
Total/NA	Analysis	8A		20	10 mL	10 mL	24430	10/12/18 15:26	JMH	TAL KNX
	Instrument ID: 320									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-24313/3-A
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	0050/26A			1 Sample	100 mL	24313	10/09/18 00:00	JMH	TAL KNX
Total/NA	Analysis	0050/26A		1	10 mL	10 mL	24330	10/09/18 09:08	JMH	TAL KNX
	Instrument ID: 1500									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-24428/1-A
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8A			1 Sample	100 mL	24428	10/12/18 00:00	JMH	TAL KNX
Total/NA	Analysis	8A		1	10 mL	10 mL	24430	10/12/18 12:48	JMH	TAL KNX
	Instrument ID: 320									

Lab Chronicle

Client: URS Corporation
Project/Site: Granite City - M26/CTM-13

TestAmerica Job ID: 140-12815-1

Client Sample ID: Lab Control Sample — Lab Sample ID: LCS 140-24313/1-A

Date Collected: N/A
Date Received: N/A
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	0050/26A			1 Sample	100 mL	24313	10/09/18 00:00	JMH	TAL KNX
Total/NA	Analysis	0050/26A		1	10 mL	10 mL	24330	10/09/18 08:33	JMH	TAL KNX
	Instrument ID: 1500									

Client Sample ID: Lab Control Sample — Lab Sample ID: LCS 140-24428/2-A

Date Collected: N/A
Date Received: N/A
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8A			1 Sample	100 mL	24428	10/12/18 00:00	JMH	TAL KNX
Total/NA	Analysis	8A		1	10 mL	10 mL	24430	10/12/18 13:08	JMH	TAL KNX
	Instrument ID: 320									

Client Sample ID: Lab Control Sample Dup — Lab Sample ID: LCSD 140-24313/2-A

Date Collected: N/A
Date Received: N/A
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	0050/26A			1 Sample	100 mL	24313	10/09/18 00:00	JMH	TAL KNX
Total/NA	Analysis	0050/26A		1	10 mL	10 mL	24330	10/09/18 08:50	JMH	TAL KNX
	Instrument ID: 1500									

Client Sample ID: M26-2 — Lab Sample ID: 140-12815-2 MS

Date Collected: 09/18/18 00:00
Date Received: 09/25/18 16:50
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	0050/26A			1 Sample	380 mL	24313	10/09/18 00:00	JMH	TAL KNX
Total/NA	Analysis	0050/26A		2500	10 mL	10 mL	24330	10/09/18 12:57	JMH	TAL KNX
	Instrument ID: 1500									

Client Sample ID: M26-2 — Lab Sample ID: 140-12815-2 MSD

Date Collected: 09/18/18 00:00
Date Received: 09/25/18 16:50
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	0050/26A			1 Sample	380 mL	24313	10/09/18 00:00	JMH	TAL KNX
Total/NA	Analysis	0050/26A		2500	10 mL	10 mL	24330	10/09/18 13:14	JMH	TAL KNX
	Instrument ID: 1500									

Lab Chronicle

Client: URS Corporation
Project/Site: Granite City - M26/CTM-13

TestAmerica Job ID: 140-12815-1

Client Sample ID: CCM-2
Lab Sample ID: 140-12815-6 MS

Date Collected: 09/18/18 00:00
Matrix: Air
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8A			1 Sample	27 mL	24428	10/12/18 00:00	JMH	TAL KNX
Total/NA	Analysis	8A		200	10 mL	10 mL	24430	10/12/18 14:27	JMH	TAL KNX
	Instrument ID: 320									

Client Sample ID: CCM-2
Lab Sample ID: 140-12815-6 MSD

Date Collected: 09/18/18 00:00
Matrix: Air
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8A			1 Sample	27 mL	24428	10/12/18 00:00	JMH	TAL KNX
Total/NA	Analysis	8A		200	10 mL	10 mL	24430	10/12/18 14:46	JMH	TAL KNX
	Instrument ID: 320									

Laboratory References:

TAL KNX = TestAmerica Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Accreditation/Certification Summary

Client: URS Corporation
Project/Site: Granite City - M26/CTM-13

TestAmerica Job ID: 140-12815-1

Laboratory: TestAmerica Knoxville

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
	AFCEE		N/A	
ANAB	DoD ELAP		L2311	02-13-19
Arkansas DEQ	State Program	6	88-0688	06-16-19
California	State Program	9	2423	06-30-19
Colorado	State Program	8	TN00009	02-28-19
Connecticut	State Program	1	PH-0223	09-30-19
Florida	NELAP	4	E87177	06-30-19
Georgia	State Program	4	906	04-13-20
Hawaii	State Program	9	N/A	04-13-19
Kansas	NELAP	7	E-10349	10-31-18
Kentucky (DW)	State Program	4	90101	12-31-18
Louisiana	NELAP	6	83979	06-30-19
Louisiana (DW)	NELAP	6	LA160005	12-31-18
Maryland	State Program	3	277	03-31-19
Michigan	State Program	5	9933	04-13-20
Nevada	State Program	9	TN00009	07-31-19
New Jersey	NELAP	2	TN001	06-30-19
New York	NELAP	2	10781	03-31-19
North Carolina (DW)	State Program	4	21705	07-31-19
North Carolina (WW/SW)	State Program	4	64	12-31-18
Ohio VAP	State Program	5	CL0059	08-28-20
Oklahoma	State Program	6	9415	08-31-19
Oregon	NELAP	10	TNI0189	01-01-19
Pennsylvania	NELAP	3	68-00576	12-31-18
Tennessee	State Program	4	2014	04-13-20
Texas	NELAP	6	T104704380-16-9	08-31-19
US Fish & Wildlife	Federal		LE-058448-0	07-31-19
USDA	Federal		P330-16-00262	08-20-19
Utah	NELAP	8	TN00009	07-31-18 *
Virginia	NELAP	3	460176	09-14-19
Washington	State Program	10	C593	01-19-19
West Virginia (DW)	State Program	3	9955C	12-31-18
West Virginia DEP	State Program	3	345	04-30-19
Wisconsin	State Program	5	998044300	08-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: URS Corporation
Project/Site: Granite City - M26/CTM-13

TestAmerica Job ID: 140-12815-1

Method	Method Description	Protocol	Laboratory
0050/26A	Hydrogen Halide and Halogen Emissions/Stationary Sources (Mod)	SW846	TAL KNX
8A	Determination of Sulfuric Acid and Sulfur Dioxide Emissions	EPA	TAL KNX
0050/26A	Extraction of Hydrogen Halide and Halogen Emissions	SW846	TAL KNX
8A	Extraction of Sulfuric Acid and Sulfur Dioxide Emissions	EPA	TAL KNX

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL KNX = TestAmerica Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Sample Summary

Client: URS Corporation
Project/Site: Granite City - M26/CTM-13

TestAmerica Job ID: 140-12815-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
140-12815-1	M26-1	Air	09/18/18 00:00	09/25/18 16:50
140-12815-2	M26-2	Air	09/18/18 00:00	09/25/18 16:50
140-12815-3	M26-3	Air	09/18/18 00:00	09/25/18 16:50
140-12815-4	M26-REAGENT BLANK	Air	09/18/18 00:00	09/25/18 16:50
140-12815-5	CCM-1	Air	09/18/18 00:00	09/25/18 16:50
140-12815-6	CCM-2	Air	09/18/18 00:00	09/25/18 16:50
140-12815-7	CCM-3	Air	09/19/18 00:00	09/25/18 16:50
140-12815-8	CCM-REAGENT BLANK	Air	09/19/18 00:00	09/25/18 16:50

HPLC/IC MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1

SDG No.:

Instrument ID: 1500 Analysis Batch Number: 22408

Lab Sample ID: IC 140-22408/2 Client Sample ID:

Date Analyzed: 08/01/18 10:16 Lab File ID: 2140-0008938-002.d GC Column: AS22 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Fluoride	3.36	Split Peak	humphreyj	08/01/18 12:59
Chloride	4.79	Split Peak	humphreyj	08/01/18 12:59
Nitrite as N	5.74	Split Peak	humphreyj	08/01/18 12:59
Bromide	6.84	Split Peak	humphreyj	08/01/18 12:59
Nitrate as N	7.70	Split Peak	humphreyj	08/01/18 12:59

Lab Sample ID: IC 140-22408/3 Client Sample ID:

Date Analyzed: 08/01/18 10:34 Lab File ID: 3140-0008938-003.d GC Column: AS22 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Fluoride	3.35	Split Peak	humphreyj	08/01/18 13:01
Chloride	4.78	Baseline Smoothing	humphreyj	08/01/18 13:00
Nitrite as N	5.74	Baseline Smoothing	humphreyj	08/01/18 13:00
Bromide	6.83	Baseline Smoothing	humphreyj	08/01/18 13:00
Nitrate as N	7.70	Baseline Smoothing	humphreyj	08/01/18 13:00

Lab Sample ID: IC 140-22408/4 Client Sample ID:

Date Analyzed: 08/01/18 10:51 Lab File ID: 4140-0008938-004.d GC Column: AS22 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Fluoride	3.35	Split Peak	humphreyj	08/01/18 13:02
Chloride	4.79	Split Peak	humphreyj	08/01/18 13:02
Nitrate as N	7.70	Split Peak	humphreyj	08/01/18 13:02

HPLC/IC MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1

SDG No.:

Instrument ID: 1500 Analysis Batch Number: 22408

Lab Sample ID: IC 140-22408/5 Client Sample ID:

Date Analyzed: 08/01/18 11:09 Lab File ID: 5140-0008938-005.d GC Column: AS22 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Nitrate as N	7.70	Baseline Smoothing	humphreyj	08/01/18 13:03

Lab Sample ID: ICV 140-22408/8 Client Sample ID:

Date Analyzed: 08/01/18 12:03 Lab File ID: 8140-0008938-008.d GC Column: AS22 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Fluoride	3.36	Split Peak	humphreyj	08/01/18 13:06
Chloride	4.80	Split Peak	humphreyj	08/01/18 13:06
Nitrite as N	5.76	Split Peak	humphreyj	08/01/18 13:06
Bromide	6.86	Split Peak	humphreyj	08/01/18 13:06
Nitrate as N	7.73	Split Peak	humphreyj	08/01/18 13:05

Lab Sample ID: ICB 140-22408/9 Client Sample ID:

Date Analyzed: 08/01/18 12:21 Lab File ID: 9140-0008938-009.d GC Column: AS22 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Chloride	4.80	Baseline Smoothing	humphreyj	08/01/18 13:06

HPLC/IC MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1

SDG No.:

Instrument ID: 1500 Analysis Batch Number: 24330

Lab Sample ID: CCV 140-24330/1 Client Sample ID:

Date Analyzed: 10/09/18 07:58 Lab File ID: 11140-0009606-001.d GC Column: AS22 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Fluoride	3.33	Split Peak	humphreyj	10/10/18 06:54
Chloride	4.73	Split Peak	humphreyj	10/10/18 06:54
Nitrite as N	5.67	Split Peak	humphreyj	10/10/18 06:54
Bromide	6.73	Split Peak	humphreyj	10/10/18 06:54
Nitrate as N	7.57	Split Peak	humphreyj	10/10/18 06:55

Lab Sample ID: CCV 140-24330/13 Client Sample ID:

Date Analyzed: 10/09/18 11:30 Lab File ID: 23140-0009606-013.d GC Column: AS22 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Fluoride	3.33	Split Peak	humphreyj	10/10/18 07:08
Chloride	4.73	Split Peak	humphreyj	10/10/18 07:08
Nitrite as N	5.67	Split Peak	humphreyj	10/10/18 07:08
Bromide	6.73	Split Peak	humphreyj	10/10/18 07:08
Nitrate as N	7.58	Split Peak	humphreyj	10/10/18 07:08

Lab Sample ID: CCV 140-24330/24 Client Sample ID:

Date Analyzed: 10/09/18 14:53 Lab File ID: 34140-0009606-024.d GC Column: AS22 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Fluoride	3.33	Split Peak	humphreyj	10/10/18 07:18
Chloride	4.74	Split Peak	humphreyj	10/10/18 07:18
Nitrite as N	5.68	Split Peak	humphreyj	10/10/18 07:17
Bromide	6.74	Split Peak	humphreyj	10/10/18 07:17
Nitrate as N	7.58	Split Peak	humphreyj	10/10/18 07:17

HPLC/IC MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1

SDG No.:

Instrument ID: 1500 Analysis Batch Number: 24330

Lab Sample ID: CCB 140-24330/25 Client Sample ID:

Date Analyzed: 10/09/18 15:10 Lab File ID: 35140-0009606-025.d GC Column: AS22 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Chloride	4.74	Split Peak	humphreyj	10/10/18 07:28

0050/26A

HPLC/IC MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1

SDG No.:

Instrument ID: 320 Analysis Batch Number: 24062

Lab Sample ID: IC 140-24062/1 Client Sample ID:

Date Analyzed: 09/29/18 09:09 Lab File ID: 1140-0009518-001.d GC Column: AS22 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Sulfate	11.20	Baseline Smoothing	humphreyj	09/29/18 13:34

Lab Sample ID: IC 140-24062/2 Client Sample ID:

Date Analyzed: 09/29/18 09:32 Lab File ID: 2140-0009518-002.d GC Column: AS22 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Sulfate	11.21	Baseline Smoothing	humphreyj	09/29/18 13:37

Lab Sample ID: IC 140-24062/4 Client Sample ID:

Date Analyzed: 09/29/18 10:17 Lab File ID: 4140-0009518-004.d GC Column: AS22 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Sulfate	11.18	Baseline Smoothing	humphreyj	09/29/18 13:43

Lab Sample ID: ICB 140-24062/9 Client Sample ID:

Date Analyzed: 09/29/18 12:48 Lab File ID: 9140-0009518-009.d GC Column: AS22 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Sulfate	11.03	Split Peak	humphreyj	09/29/18 13:57

8A

HPLC/IC MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1

SDG No.:

Instrument ID: 320 Analysis Batch Number: 24430

Lab Sample ID: CCB 140-24430/2 Client Sample ID:

Date Analyzed: 10/12/18 12:28 Lab File ID: 10140-0009644-002.d GC Column: AS22 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Sulfate		Unspecified		

Lab Sample ID: 140-12815-5 Client Sample ID: CCM-1

Date Analyzed: 10/12/18 13:47 Lab File ID: 14140-0009644-006.d GC Column: AS22 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Sulfate	11.08	Baseline Smoothing	humphreyj	10/12/18 14:42

Lab Sample ID: 140-12815-6 Client Sample ID: CCM-2

Date Analyzed: 10/12/18 14:07 Lab File ID: 15140-0009644-007.d GC Column: AS22 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Sulfate	11.09	Baseline Smoothing	humphreyj	10/12/18 14:42

Lab Sample ID: 140-12815-6 MSD Client Sample ID: CCM-2 MSD

Date Analyzed: 10/12/18 14:46 Lab File ID: 17140-0009644-009.d GC Column: AS22 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Sulfate	11.08	Split Peak	humphreyj	10/12/18 15:06

Lab Sample ID: 140-12815-7 Client Sample ID: CCM-3

Date Analyzed: 10/12/18 15:06 Lab File ID: 18140-0009644-010.d GC Column: AS22 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Sulfate	11.12	Baseline Smoothing	humphreyj	10/12/18 15:43

8A

HPLC/IC MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1

SDG No.:

Instrument ID: 320 Analysis Batch Number: 24430

Lab Sample ID: CCV 140-24430/12 Client Sample ID:

Date Analyzed: 10/12/18 15:45 Lab File ID: 20140-0009644-012.d GC Column: AS22 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Sulfate	11.10	Unspecified	humphreyj	10/12/18 16:26

8A

Method 0050_26A

Hydrogen Halide and Halogen Emissions/Stationary Sources (Mod) by Method 0050_26A

FORM III
HPLC/IC LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1

SDG No.:

Matrix: Air Level: Low Lab File ID: 13140-0009606-003.d

Lab ID: LCS 140-24313/1-A Client ID:

COMPOUND	SPIKE ADDED (ug/Sample)	LCS CONCENTRATION (ug/Sample)	LCS % REC	QC LIMITS REC	#
Hydrogen Chloride	77.1	73.74	96	90-110	

Column to be used to flag recovery and RPD values

FORM III 0050/26A

FORM III
HPLC/IC LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1

SDG No.:

Matrix: Air Level: Low Lab File ID: 14140-0009606-004.d

Lab ID: LCSD 140-24313/2-A Client ID:

COMPOUND	SPIKE ADDED (ug/Sample)	LCSD CONCENTRATION (ug/Sample)	LCSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Hydrogen Chloride	77.1	73.83	96	0	20	90-110	

Column to be used to flag recovery and RPD values

FORM III 0050/26A

FORM III
HPLC/IC MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1

SDG No.:

Matrix: Air Level: Low Lab File ID: 28140-0009606-018.d

Lab ID: 140-12815-2 MS Client ID: M26-2 MS

COMPOUND	SPIKE ADDED (ug/Sample)	SAMPLE CONCENTRATION (ug/Sample)	MS CONCENTRATION (ug/Sample)	MS % REC	QC LIMITS REC	#
Hydrogen Chloride	977000	293000	1246000	98	75-125	

Column to be used to flag recovery and RPD values

FORM III 0050/26A

FORM III
HPLC/IC MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1

SDG No.:

Matrix: Air Level: Low Lab File ID: 29140-0009606-019.d

Lab ID: 140-12815-2 MSD Client ID: M26-2 MSD

COMPOUND	SPIKE ADDED (ug/Sample)	MSD CONCENTRATION (ug/Sample)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Hydrogen Chloride	977000	1246000	98	0	20	75-125	

Column to be used to flag recovery and RPD values

FORM III 0050/26A

FORM IV
HPLC/IC METHOD BLANK SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1

SDG No.:

Lab File ID: 15140-0009606-005.d Lab Sample ID: MB 140-24313/3-A

Matrix: Air Date Extracted: 10/09/2018 00:00

Instrument ID: 1500 Date Analyzed: 10/09/2018 09:08

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 140-24313/1-A	13140-00096 06-003.d	10/09/2018 08:33
	LCSD 140-24313/2-A	14140-00096 06-004.d	10/09/2018 08:50
M26-1	140-12815-1	26140-00096 06-016.d	10/09/2018 12:22
M26-2	140-12815-2	27140-00096 06-017.d	10/09/2018 12:40
M26-2 MS	140-12815-2 MS	28140-00096 06-018.d	10/09/2018 12:57
M26-2 MSD	140-12815-2 MSD	29140-00096 06-019.d	10/09/2018 13:14
M26-3	140-12815-3	30140-00096 06-020.d	10/09/2018 13:32
M26-REAGENT BLANK	140-12815-4	33140-00096 06-023.d	10/09/2018 14:36

FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville
Job No.: 140-12815-1
SDG No.:
Client Sample ID: M26-1
Lab Sample ID: 140-12815-1
Matrix: Air
Lab File ID: 26140-0009606-016.d
Analysis Method: 0050/26A
Date Collected: 09/18/2018 00:00
Extraction Method: 0050/26A
Date Extracted: 10/09/2018 00:00
Sample wt/vol: 1(Sample)
Date Analyzed: 10/09/2018 12:22
Con. Extract Vol.: 370(mL)
Dilution Factor: 2000
Injection Volume: 1(uL)
GC Column: AS22 ID:
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 24330
Units: ug/Sample

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
7647-01-0	Hydrogen Chloride	374000		76100	32000

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\26140-0009606-016.d
Lims ID: 140-12815-A-1-A
Client ID: M26-1
Sample Type: Client
Inject. Date: 09-Oct-2018 12:22:00 ALS Bottle#: 0 Worklist Smp#: 16
Injection Vol: 1.0 ul Dil. Factor: 2000.0000
Sample Info: 140-0009606-016
Misc. Info.: 26 140-12815-a-1-a
Operator ID: Instrument ID: 1500

Method: \\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 10-Oct-2018 07:19:45 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK015

First Level Reviewer: humphreyj Date: 10-Oct-2018 07:11:11

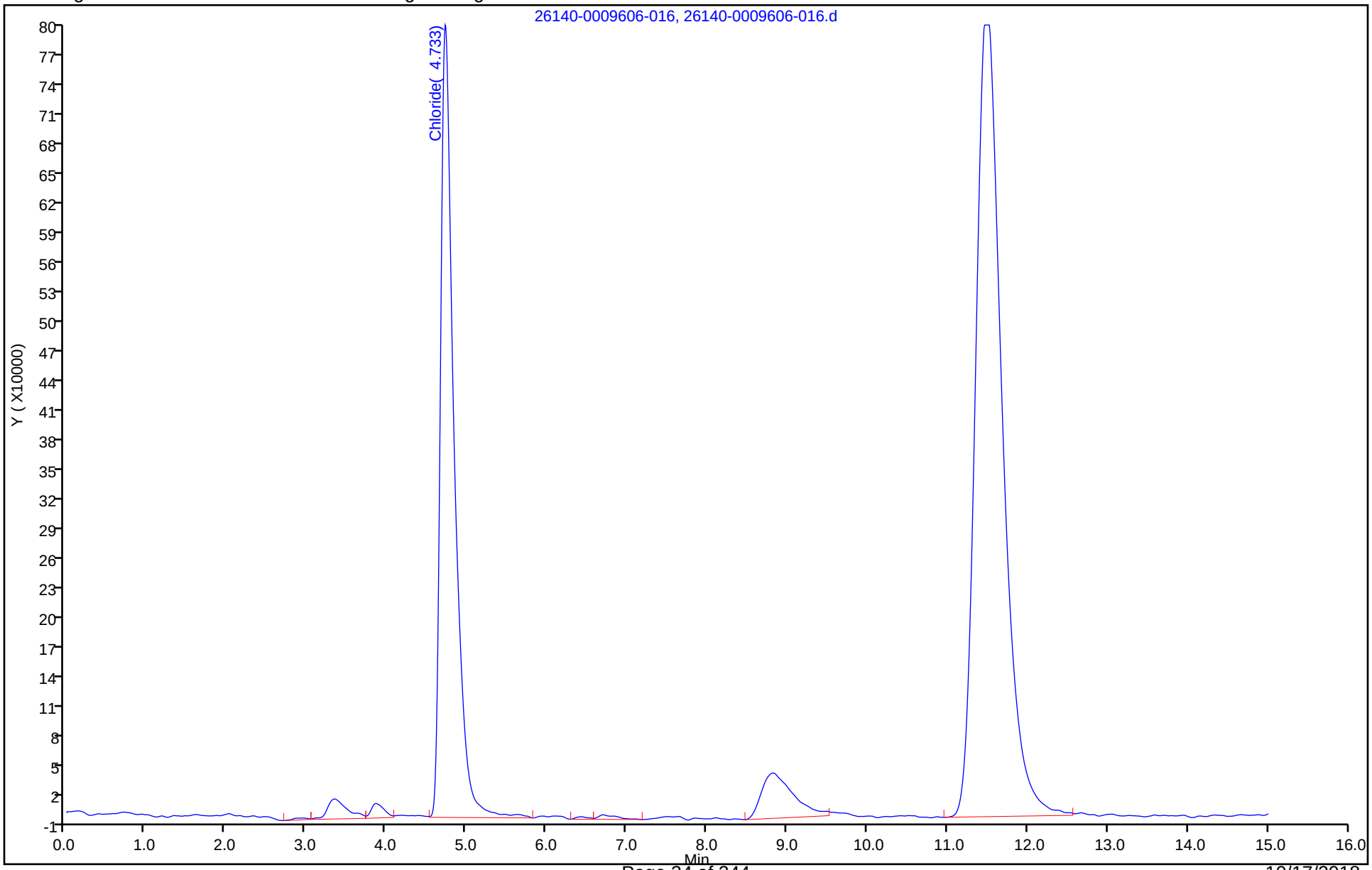
Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	OnCol Amt ug/ml	Flags
2 Chloride	4.733	4.733	0.000	9546426	0.4911	
S 7 Hydrogen Chloride					0.5050	

Report Date: 10-Oct-2018 07:19:47 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\26140-0009606-016.d				
Injection Date:	09-Oct-2018 12:22:00	Instrument ID:	1500	Operator ID:	
Lims ID:	140-12815-A-1-A	Lab Sample ID:	140-12815-1	Worklist Smp#:	16
Client ID:	M26-1				
Injection Vol:	1.0 ul	Dil. Factor:	2000.0000	ALS Bottle#:	0
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville
Job No.: 140-12815-1
SDG No.:
Client Sample ID: M26-2
Lab Sample ID: 140-12815-2
Matrix: Air
Lab File ID: 27140-0009606-017.d
Analysis Method: 0050/26A
Date Collected: 09/18/2018 00:00
Extraction Method: 0050/26A
Date Extracted: 10/09/2018 00:00
Sample wt/vol: 1(Sample)
Date Analyzed: 10/09/2018 12:40
Con. Extract Vol.: 380(mL)
Dilution Factor: 2500
Injection Volume: 1(uL)
GC Column: AS22 ID:
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 24330
Units: ug/Sample

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
7647-01-0	Hydrogen Chloride	293000		97700	41000

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\27140-0009606-017.d
Lims ID: 140-12815-A-2-A
Client ID: M26-2
Sample Type: Client
Inject. Date: 09-Oct-2018 12:40:00 ALS Bottle#: 0 Worklist Smp#: 17
Injection Vol: 1.0 ul Dil. Factor: 2500.0000
Sample Info: 140-0009606-017
Misc. Info.: 27 140-12815-a-2-a
Operator ID: Instrument ID: 1500

Method: \\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 10-Oct-2018 07:19:45 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK015

First Level Reviewer: humphreyj Date: 10-Oct-2018 07:11:57

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	OnCol Amt ug/ml	Flags
	1 Fluoride	3.342	3.333	0.009	228905	0.007822	M
	2 Chloride	4.733	4.733	0.000	5803470	0.2995	
	3 Nitrite as N		5.667			ND	
	4 Bromide		6.733			ND	
	5 Nitrate as N	7.592	7.567	0.025	32407	0.000677	
	6 Iodide		14.800			ND	
S	7 Hydrogen Chloride					0.3080	
S	8 Hydro Fluoric Acid					0.008239	
S	9 Hydrobromic Acid		0.000			ND	
S	10 Nitric acid					0.003047	
S	11 Nitrous Acid		0.000			ND	
S	12 Br		0.000			ND	
S	13 Chlorine					0.2995	

QC Flag Legend

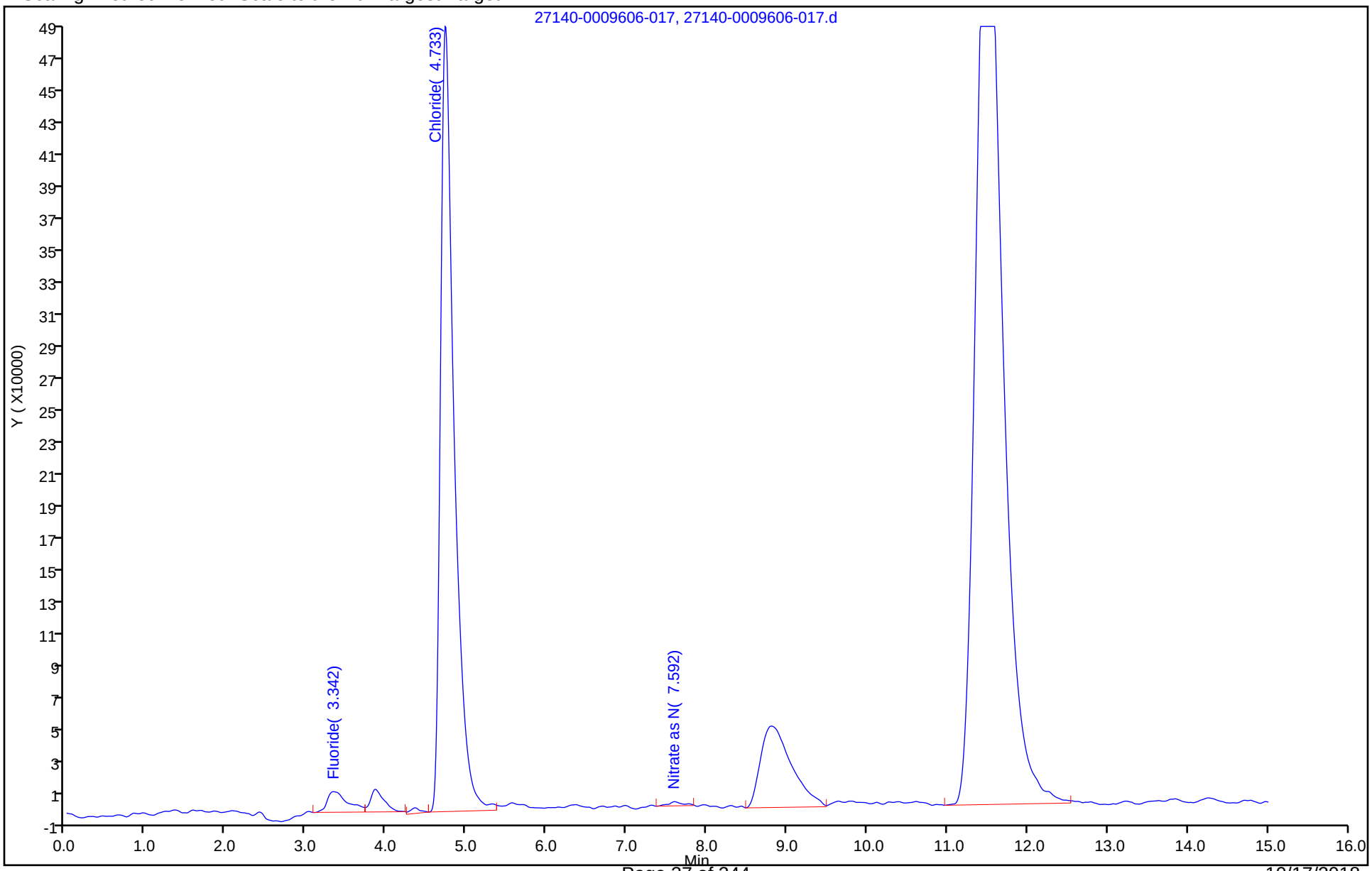
Review Flags
M - Manually Integrated

Report Date: 10-Oct-2018 07:19:47 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\27140-0009606-017.d				
Injection Date:	09-Oct-2018 12:40:00	Instrument ID:	1500	Operator ID:	
Lims ID:	140-12815-A-2-A	Lab Sample ID:	140-12815-2	Worklist Smp#:	17
Client ID:	M26-2				
Injection Vol:	1.0 ul	Dil. Factor:	2500.0000	ALS Bottle#:	0
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville
Job No.: 140-12815-1
SDG No.:
Client Sample ID: M26-3
Lab Sample ID: 140-12815-3
Matrix: Air
Lab File ID: 30140-0009606-020.d
Analysis Method: 0050/26A
Date Collected: 09/18/2018 00:00
Extraction Method: 0050/26A
Date Extracted: 10/09/2018 00:00
Sample wt/vol: 1(Sample)
Date Analyzed: 10/09/2018 13:32
Con. Extract Vol.: 325(mL)
Dilution Factor: 2000
Injection Volume: 1(uL)
GC Column: AS22 ID:
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 24330
Units: ug/Sample

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
7647-01-0	Hydrogen Chloride	252000		66800	28100

TestAmerica Knoxville
Target Compound Quantitation Report

Data File:	\\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\30140-0009606-020.d				
Lims ID:	140-12815-A-3-A				
Client ID:	M26-3				
Sample Type:	Client				
Inject. Date:	09-Oct-2018 13:32:00	ALS Bottle#:	0	Worklist Smp#:	20
Injection Vol:	1.0 ul	Dil. Factor:	2000.0000		
Sample Info:	140-0009606-020				
Misc. Info.:	30 140-12815-a-3-a				
Operator ID:		Instrument ID:	1500		
Method:	\\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\0050_26A_1500.m				
Limit Group:	IC 0050_26A ICAL				
Last Update:	10-Oct-2018 07:19:45	Calib Date:	01-Aug-2018 11:43:00		
Integrator:	Falcon				
Quant Method:	External Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d				
Column 1 :			Det: IC		
Process Host:	XAWRK015				
First Level Reviewer: humphreyj		Date:	10-Oct-2018 07:14:08		

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	OnCol Amt ug/ml	Flags
	2 Chloride	4.733	4.733	0.000	7322346	0.3774	Ma
S	7 Hydrogen Chloride					0.3881	

QC Flag Legend

Review Flags

M - Manually Integrated

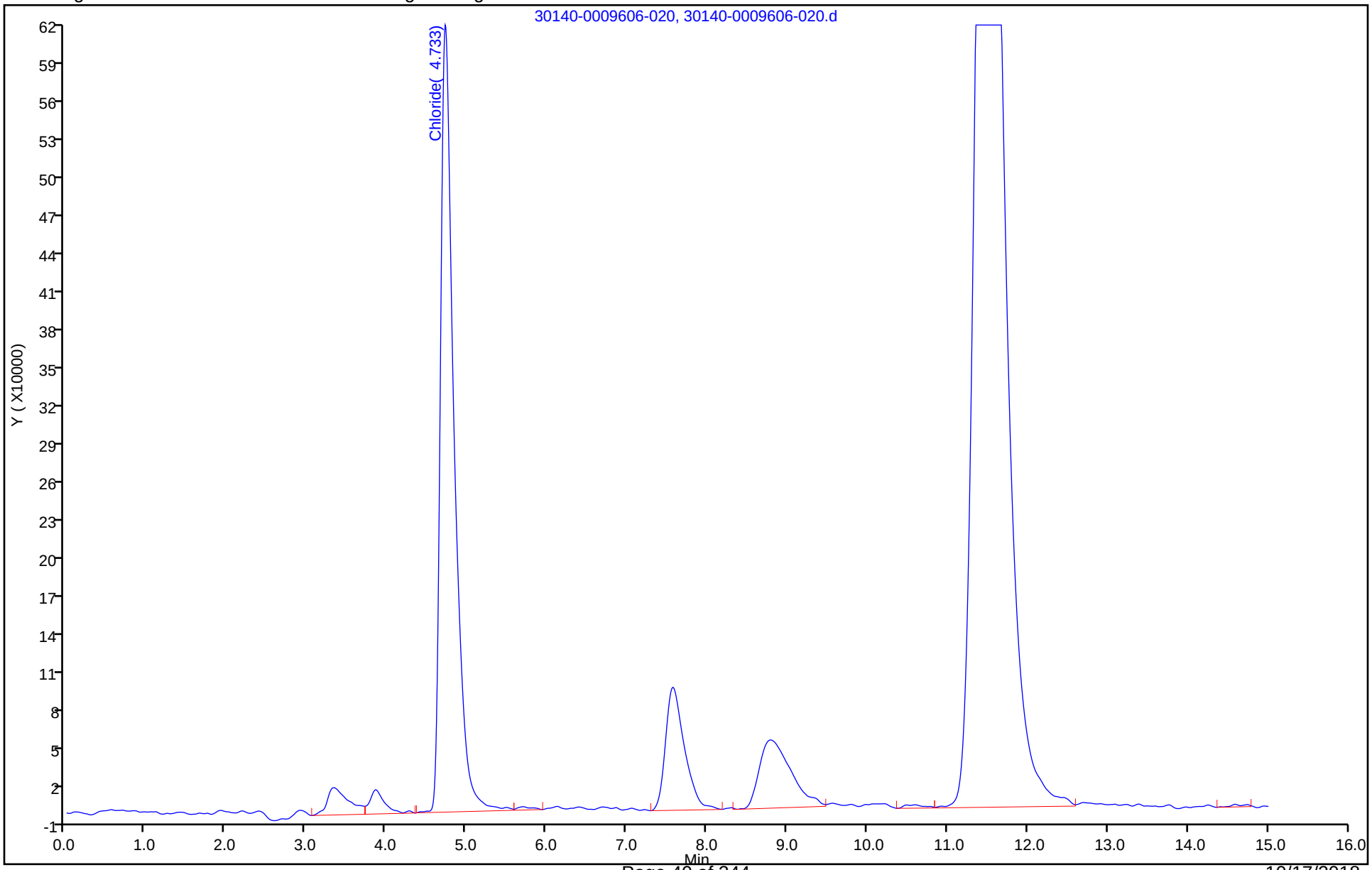
a - User Assigned ID

Report Date: 10-Oct-2018 07:19:48 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\30140-0009606-020.d				
Injection Date:	09-Oct-2018 13:32:00	Instrument ID:	1500	Operator ID:	
Lims ID:	140-12815-A-3-A	Lab Sample ID:	140-12815-3	Worklist Smp#:	20
Client ID:	M26-3				
Injection Vol:	1.0 ul	Dil. Factor:	2000.0000	ALS Bottle#:	0
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville
Job No.: 140-12815-1
SDG No.:
Client Sample ID: M26-REAGENT BLANK
Lab Sample ID: 140-12815-4
Matrix: Air
Lab File ID: 33140-0009606-023.d
Analysis Method: 0050/26A
Date Collected: 09/18/2018 00:00
Extraction Method: 0050/26A
Date Extracted: 10/09/2018 00:00
Sample wt/vol: 1(Sample)
Date Analyzed: 10/09/2018 14:36
Con. Extract Vol.: 100(mL)
Dilution Factor: 50000
Injection Volume: 1(uL)
GC Column: AS22 ID:
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 24330
Units: ug/Sample

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
7647-01-0	Hydrogen Chloride	3900000		514000	216000

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\33140-0009606-023.d
Lims ID: 140-12815-A-4-A
Client ID: M26-REAGENT BLANK
Sample Type: Client
Inject. Date: 09-Oct-2018 14:36:00 ALS Bottle#: 0 Worklist Smp#: 23
Injection Vol: 1.0 ul Dil. Factor: 50000.0000
Sample Info: 140-0009606-023
Misc. Info.: 33 140-12815-a-4-a
Operator ID: Instrument ID: 1500

Method: \\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 10-Oct-2018 07:19:45 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK015

First Level Reviewer: humphreyj Date: 10-Oct-2018 07:15:15

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	OnCol Amt ug/ml	Flags
2 Chloride	4.742	4.733	0.009	14828959	0.7594	M
S 7 Hydrogen Chloride					0.7810	

QC Flag Legend

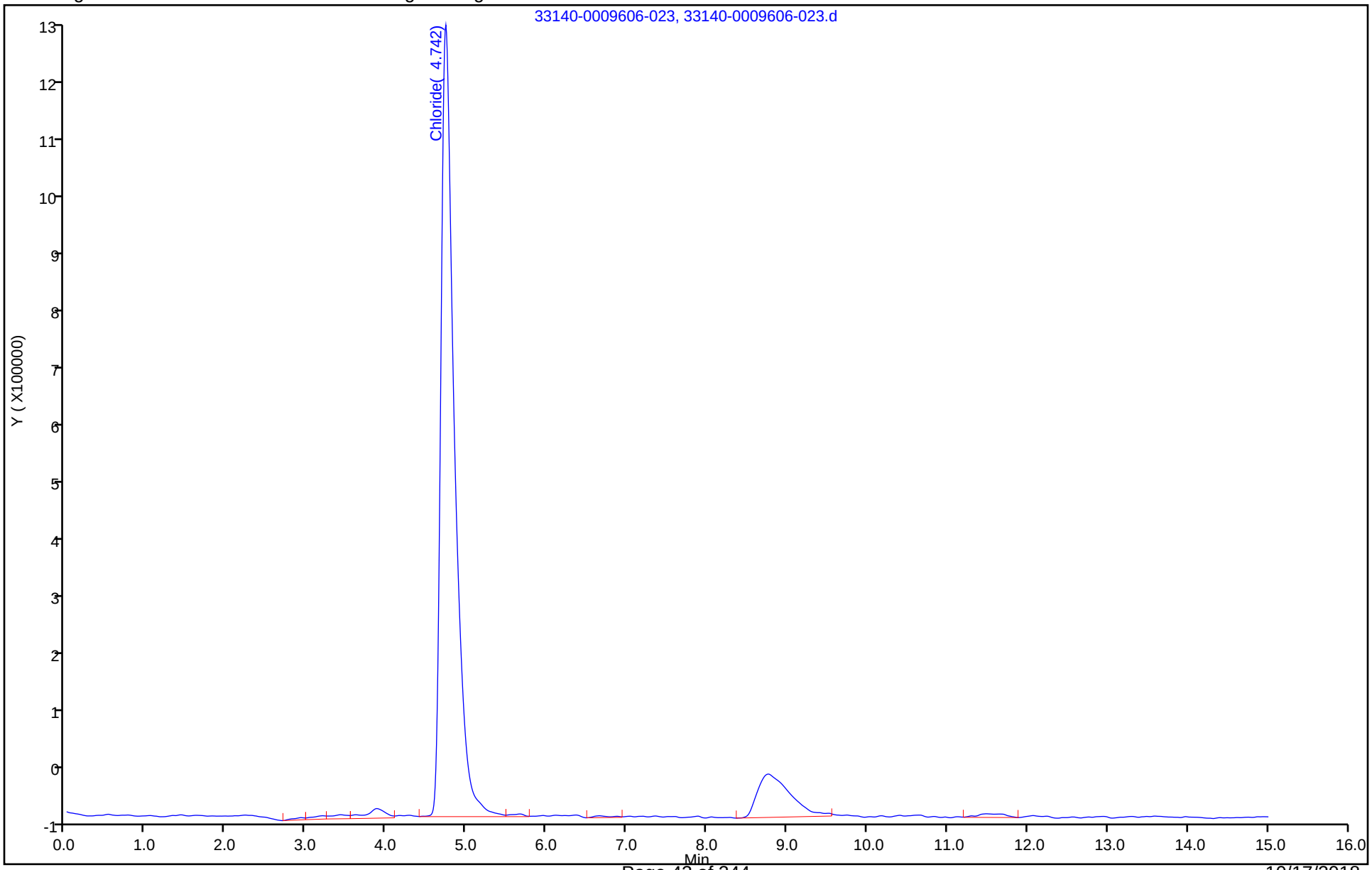
Review Flags
M - Manually Integrated

Report Date: 10-Oct-2018 07:19:50 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\33140-0009606-023.d				
Injection Date:	09-Oct-2018 14:36:00	Instrument ID:	1500	Operator ID:	
Lims ID:	140-12815-A-4-A	Lab Sample ID:	140-12815-4	Worklist Smp#:	23
Client ID:	M26-REAGENT BLANK				
Injection Vol:	1.0 ul	Dil. Factor:	50000.0000	ALS Bottle#:	0
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



FORM VI
HPLC/IC BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RETENTION TIME SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1 Analy Batch No.: 22408

SDG No.:

Instrument ID: 1500 GC Column: AS22 ID: Heated Purge: (Y/N) N

Calibration Start Date: 08/01/2018 09:59 Calibration End Date: 08/01/2018 11:43 Calibration ID: 1574

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 140-22408/1	1140-0008938-001.d
Level 2	IC 140-22408/2	2140-0008938-002.d
Level 3	IC 140-22408/3	3140-0008938-003.d
Level 4	IC 140-22408/4	4140-0008938-004.d
Level 5	IC 140-22408/5	5140-0008938-005.d
Level 6	IC 140-22408/6	6140-0008938-006.d
Level 7	IC 140-22408/7	7140-0008938-007.d

ANALYTE	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7				RT WINDOW	AVG RT
Fluoride	3.350	3.358	3.350	3.350	3.358	3.358	3.358				3.100 - 3.600	3.355
Chloride	4.792	4.792	4.783	4.792	4.792	4.792	4.792				4.542 - 5.042	4.791
Nitrite as N	5.742	5.742	5.742	5.742	5.750	5.750	5.750				5.492 - 5.992	5.745
Bromide	6.842	6.842	6.833	6.833	6.842	6.833	6.833				6.583 - 7.083	6.837
Nitrate as N	7.700	7.700	7.700	7.700	7.700	7.700	7.692				7.450 - 7.950	7.699

FORM VI
HPLC/IC BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1 Analy Batch No.: 22408

SDG No.:

Instrument ID: 1500 GC Column: AS22 ID: Heated Purge: (Y/N) N

Calibration Start Date: 08/01/2018 09:59 Calibration End Date: 08/01/2018 11:43 Calibration ID: 1574

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 140-22408/1	1140-0008938-001.d
Level 2	IC 140-22408/2	2140-0008938-002.d
Level 3	IC 140-22408/3	3140-0008938-003.d
Level 4	IC 140-22408/4	4140-0008938-004.d
Level 5	IC 140-22408/5	5140-0008938-005.d
Level 6	IC 140-22408/6	6140-0008938-006.d
Level 7	IC 140-22408/7	7140-0008938-007.d

ANALYTE	CF				CURVE TYPE	COEFFICIENT			#	MIN CF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 5	LVL 2 LVL 6	LVL 3 LVL 7	LVL 4		B	M1	M2								
Fluoride	28194100 29765896	30583920 30197187	28128890 30922296	28371136	QuaF		29257766.4	838167.186						1.0000		0.9900
Chloride	21952980 19204754	22868907 19568582	19891950 19942220	19950328	QuaF		19278073.5	328565.772						1.0000		0.9900
Nitrite as N	42885420 42385794	41188280 43274191	42565770 44413132	41378168	QuaF		41868360.4	1278616.29						1.0000		0.9900
Bromide	8823960 8467822	8586813 8688407	8435780 8693807	8470672	QuaF		8558463.68	70307.7554						1.0000		0.9900
Nitrate as N	51703920 48511614	49121120 49767455	49069780 51581081	48249644	QuaF		47840529.8	1871724.06						1.0000		0.9900

Note: The M1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI
HPLC/IC BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1 Analy Batch No.: 22408

SDG No.:

Instrument ID: 1500 GC Column: AS22 ID: Heated Purge: (Y/N) N

Calibration Start Date: 08/01/2018 09:59 Calibration End Date: 08/01/2018 11:43 Calibration ID: 1574

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 140-22408/1	1140-0008938-001.d
Level 2	IC 140-22408/2	2140-0008938-002.d
Level 3	IC 140-22408/3	3140-0008938-003.d
Level 4	IC 140-22408/4	4140-0008938-004.d
Level 5	IC 140-22408/5	5140-0008938-005.d
Level 6	IC 140-22408/6	6140-0008938-006.d
Level 7	IC 140-22408/7	7140-0008938-007.d

ANALYTE	CURVE TYPE	RESPONSE					CONCENTRATION (UG/ML)				
		LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Fluoride	QuaF	1409705 30197187	2293794 61844592	2812889	7092784	14882948	0.0500 1.00	0.0750 2.00	0.100	0.250	0.500
Chloride	QuaF	1097649 19568582	1715168 39884440	1989195	4987582	9602377	0.0500 1.00	0.0750 2.00	0.100	0.250	0.500
Nitrite as N	QuaF	2144271 43274191	3089121 88826264	4256577	10344542	21192897	0.0500 1.00	0.0750 2.00	0.100	0.250	0.500
Bromide	QuaF	441198 8688407	644011 17387614	843578	2117668	4233911	0.0500 1.00	0.0750 2.00	0.100	0.250	0.500
Nitrate as N	QuaF	2585196 49767455	3684084 103162161	4906978	12062411	24255807	0.0500 1.00	0.0750 2.00	0.100	0.250	0.500

Curve Type Legend:

QuaF = Quadratic forced zero

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\1140-0008938-001.d
Lims ID: IC 1
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 01-Aug-2018 09:59:00 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0008938-001
Misc. Info.: 1 ic 1
Operator ID: Instrument ID: 1500
Sublist: chrom-0050_26A_1500*sub3

Method: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 20-Aug-2018 14:08:39 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK048

First Level Reviewer: wasmundd Date: 20-Aug-2018 14:02:27

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 Fluoride	3.350	3.350	0.000	1409705	0.0500	0.0481	
2 Chloride	4.792	4.792	0.000	1097649	0.0500	0.0569	
3 Nitrite as N	5.742	5.742	0.000	2144271	0.0500	0.0511	
4 Bromide	6.842	6.833	0.009	441198	0.0500	0.0515	
5 Nitrate as N	7.700	7.700	0.000	2585196	0.0500	0.0539	
S 7 Hydrogen Chloride					0.0514	0.0585	
S 8 Hydro Fluoric Acid					0.0527	0.0507	
S 9 Hydrobromic Acid					0.0506	0.0522	
S 10 Nitric acid					0.2249	0.2426	
S 11 Nitrous Acid					0.1678	0.1716	
S 12 Br					0.0500	0.0515	
S 13 Chlorine					0.0500	0.0569	

Reagents:

85L1M26AP_00020 Amount Added: 10.00 Units: mL

Report Date: 20-Aug-2018 14:08:40 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\1140-0008938-001.d

Injection Date: 01-Aug-2018 09:59:00 Instrument ID: 1500 Operator ID:

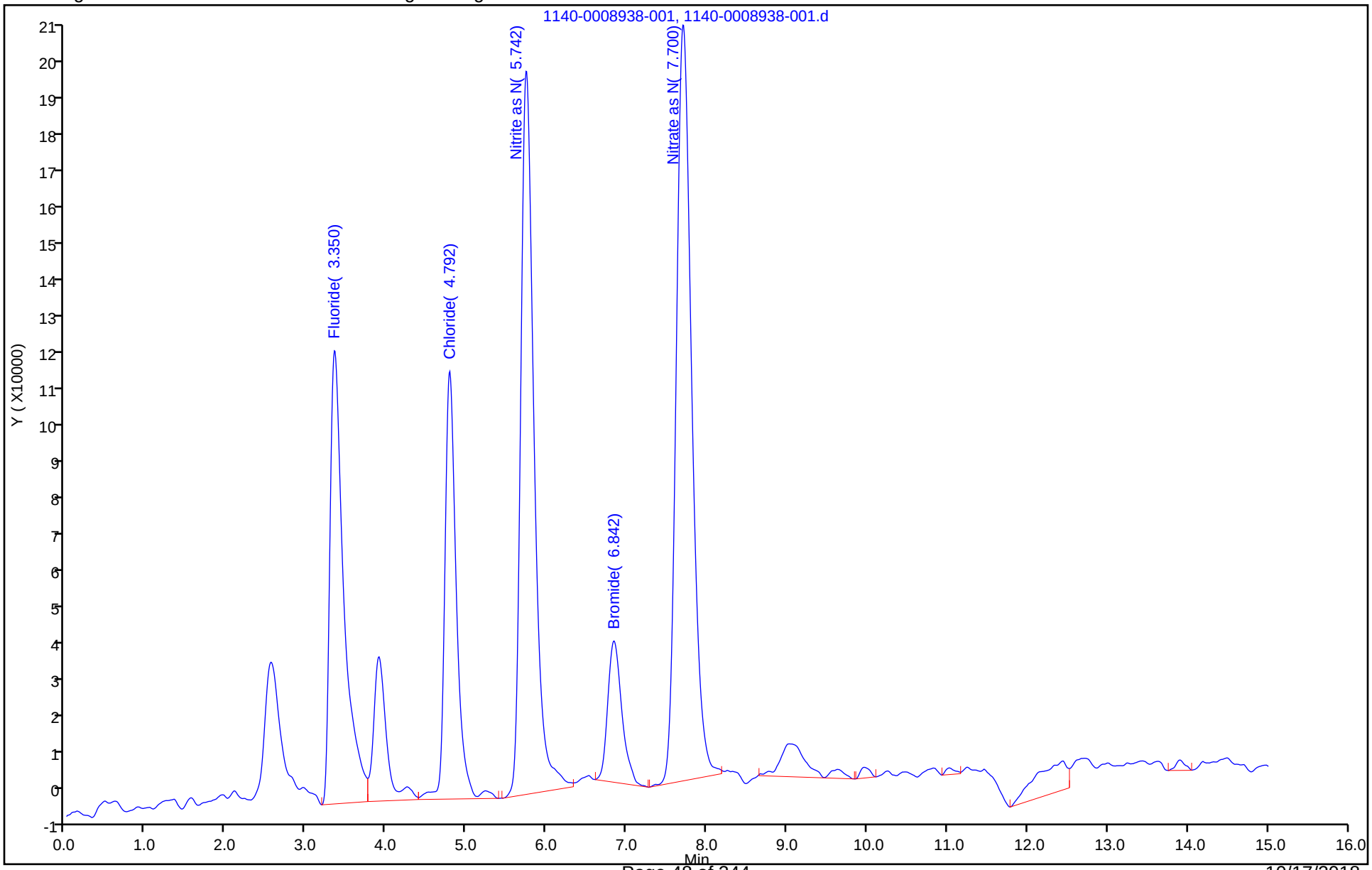
Lims ID: IC 1 Worklist Smp#: 1

Client ID:

Injection Vol: 1.0 ul Dil. Factor: 1.0000 ALS Bottle#: 0

Method: 0050_26A_1500 Limit Group: IC 0050_26A ICAL

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\2140-0008938-002.d
Lims ID: IC 2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 01-Aug-2018 10:16:00 ALS Bottle#: 0 Worklist Smp#: 2
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0008938-002
Misc. Info.: 2 ic 2
Operator ID: Instrument ID: 1500
Sublist: chrom-0050_26A_1500*sub3

Method: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 20-Aug-2018 14:08:40 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK048

First Level Reviewer: humphreyj Date: 01-Aug-2018 12:59:42

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride	3.358	3.350	0.008	2293794	0.0750	0.0782	M
	2 Chloride	4.792	4.792	0.000	1715168	0.0750	0.0888	M
	3 Nitrite as N	5.742	5.742	0.000	3089121	0.0750	0.0736	M
	4 Bromide	6.842	6.833	0.009	644011	0.0750	0.0752	M
	5 Nitrate as N	7.700	7.700	0.000	3684084	0.0750	0.0768	M
S	7 Hydrogen Chloride					0.0771	0.0914	
S	8 Hydro Fluoric Acid					0.0790	0.0824	
S	9 Hydrobromic Acid					0.0759	0.0761	
S	10 Nitric acid					0.3374	0.3454	
S	11 Nitrous Acid					0.2517	0.2471	
S	12 Br					0.0750	0.0752	
S	13 Chlorine					0.0750	0.0888	

QC Flag Legend

Review Flags
M - Manually Integrated

Reagents:

85L2M26AP_00018 Amount Added: 10.00 Units: mL

Report Date: 20-Aug-2018 14:08:41 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\2140-0008938-002.d

Injection Date: 01-Aug-2018 10:16:00 Instrument ID: 1500 Operator ID:

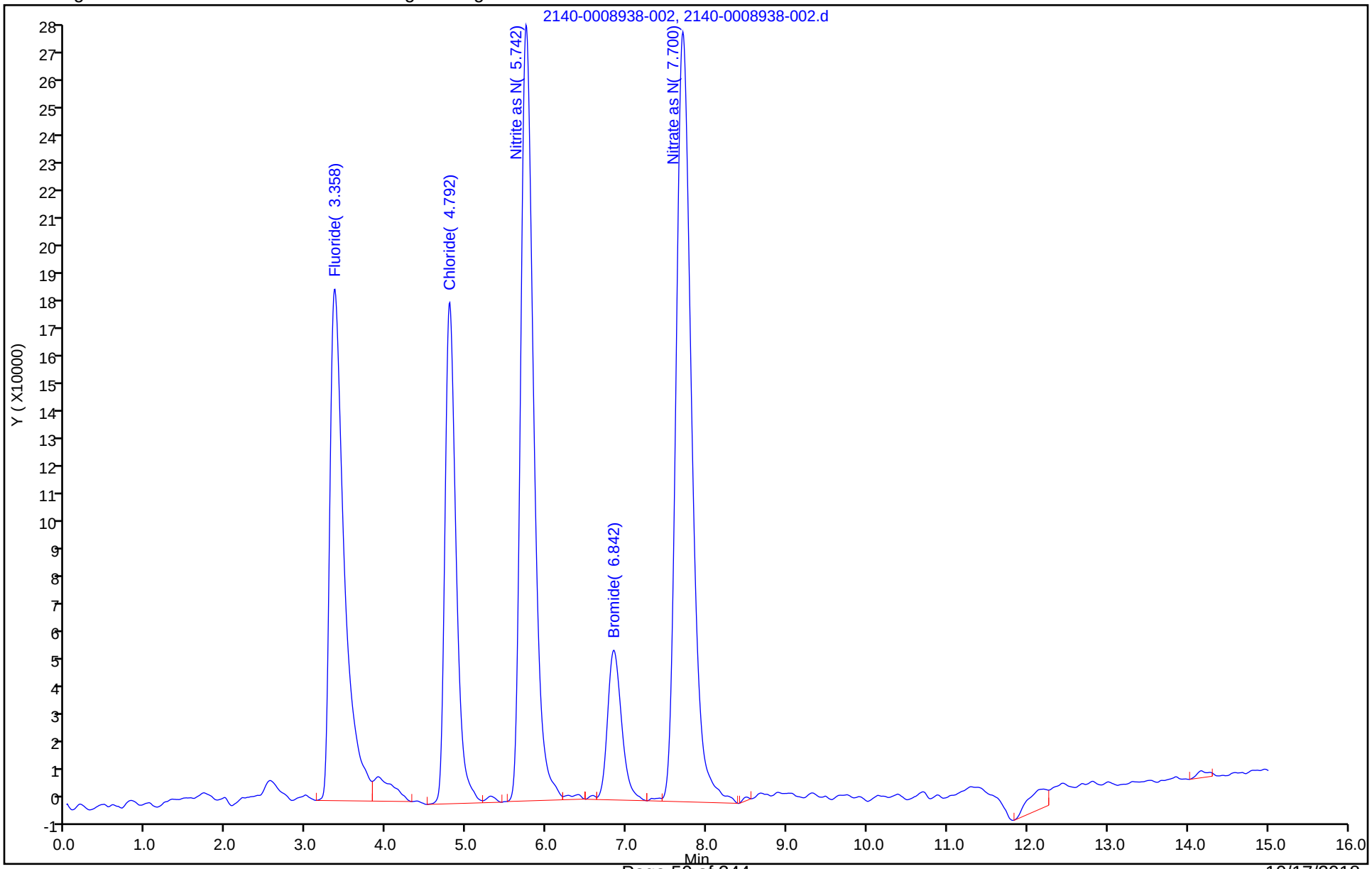
Lims ID: IC 2 Worklist Smp#: 2

Client ID:

Injection Vol: 1.0 ul Dil. Factor: 1.0000 ALS Bottle#: 0

Method: 0050_26A_1500 Limit Group: IC 0050_26A ICAL

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



Manual Integration/User Assign Peak Report

TestAmerica Knoxville

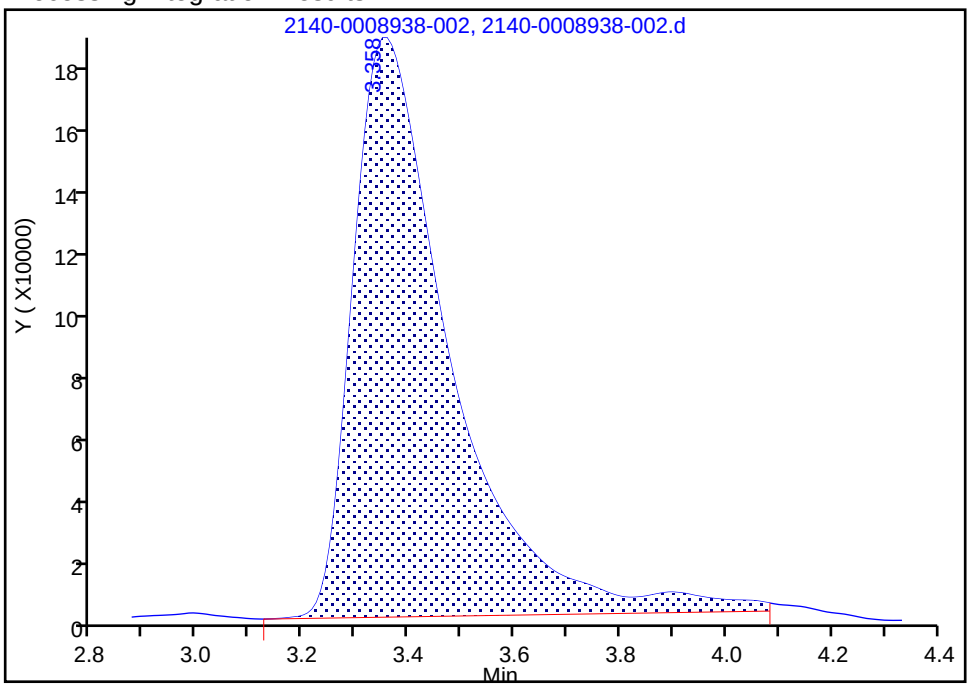
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\2140-0008938-002.d				
Injection Date:	01-Aug-2018 10:16:00	Instrument ID:	1500		
Lims ID:	IC 2				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	2
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

1 Fluoride, CAS: 16984-48-8

Signal: 1

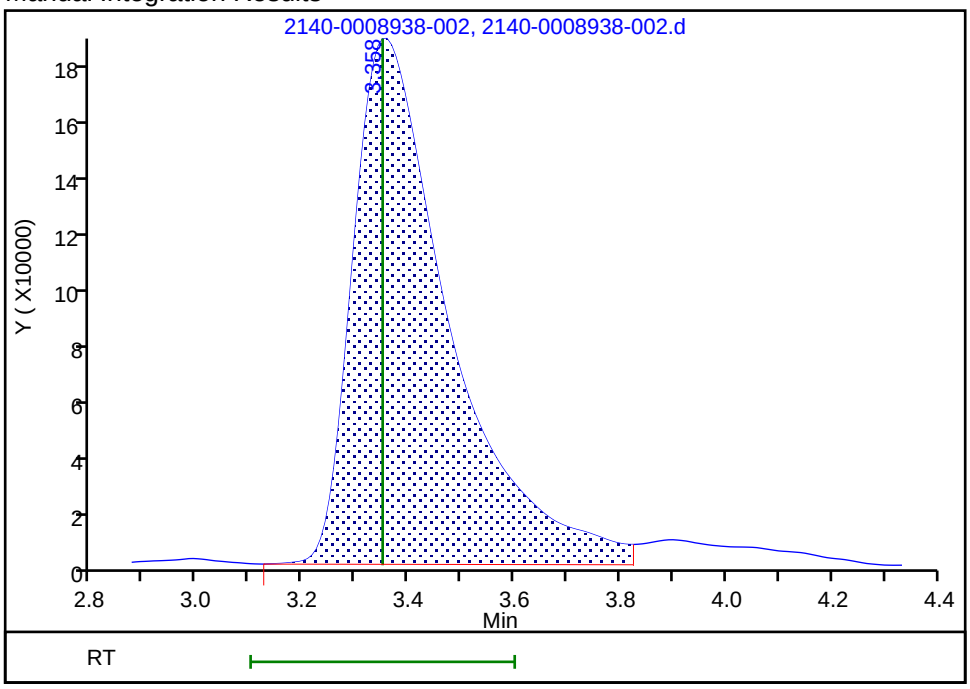
Processing Integration Results

RT: 3.36
Area: 2322695
Amount: 0.078735
Amount Units: ug/ml



Manual Integration Results

RT: 3.36
Area: 2293794
Amount: 0.078224
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 12:59:35

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

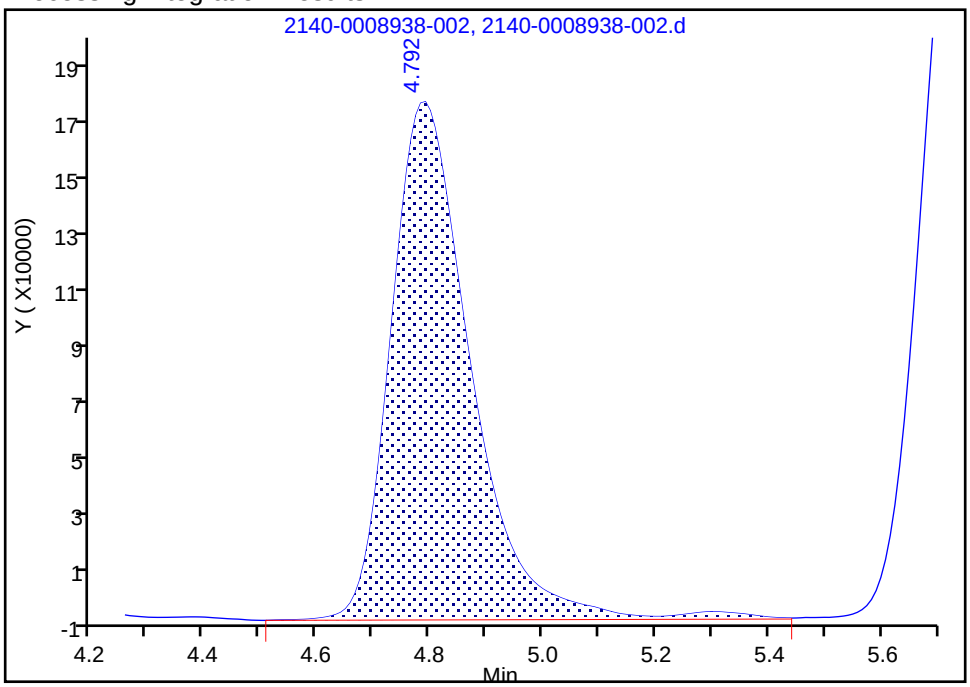
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\2140-0008938-002.d				
Injection Date:	01-Aug-2018 10:16:00	Instrument ID:	1500		
Lims ID:	IC 2				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	2
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

2 Chloride, CAS: 16887-00-6

Signal: 1

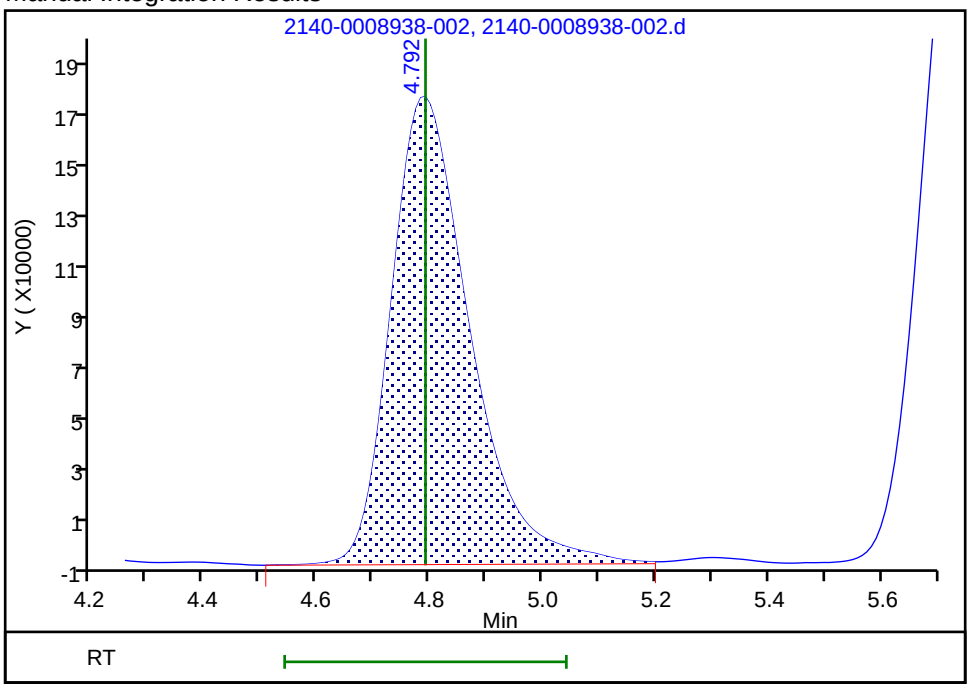
Processing Integration Results

RT: 4.79
Area: 1742088
Amount: 0.090074
Amount Units: ug/ml



Manual Integration Results

RT: 4.79
Area: 1715168
Amount: 0.088835
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 12:59:28

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

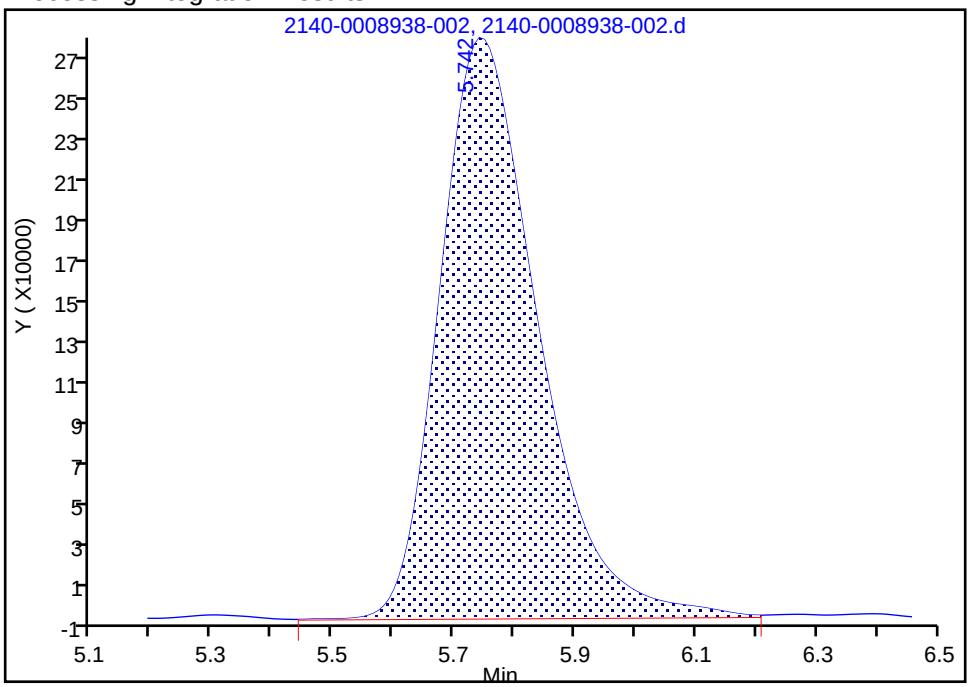
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\2140-0008938-002.d				
Injection Date:	01-Aug-2018 10:16:00	Instrument ID:	1500		
Lims ID:	IC 2				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	2
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

3 Nitrite as N, CAS: 14797-65-0

Signal: 1

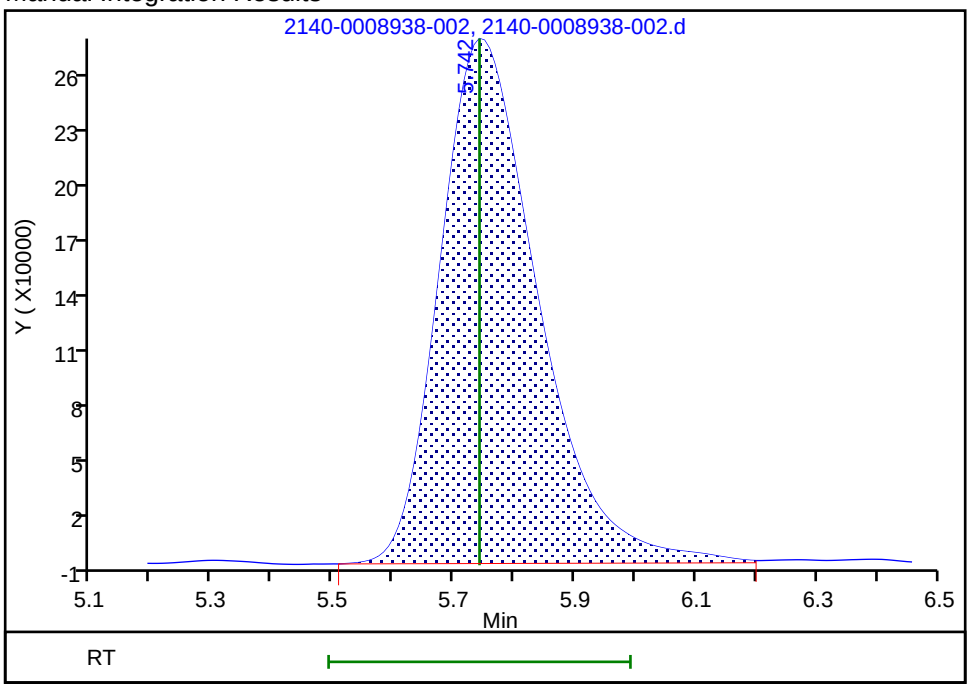
Processing Integration Results

RT: 5.74
Area: 3099703
Amount: 0.073882
Amount Units: ug/ml



Manual Integration Results

RT: 5.74
Area: 3089121
Amount: 0.073616
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 12:59:21
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

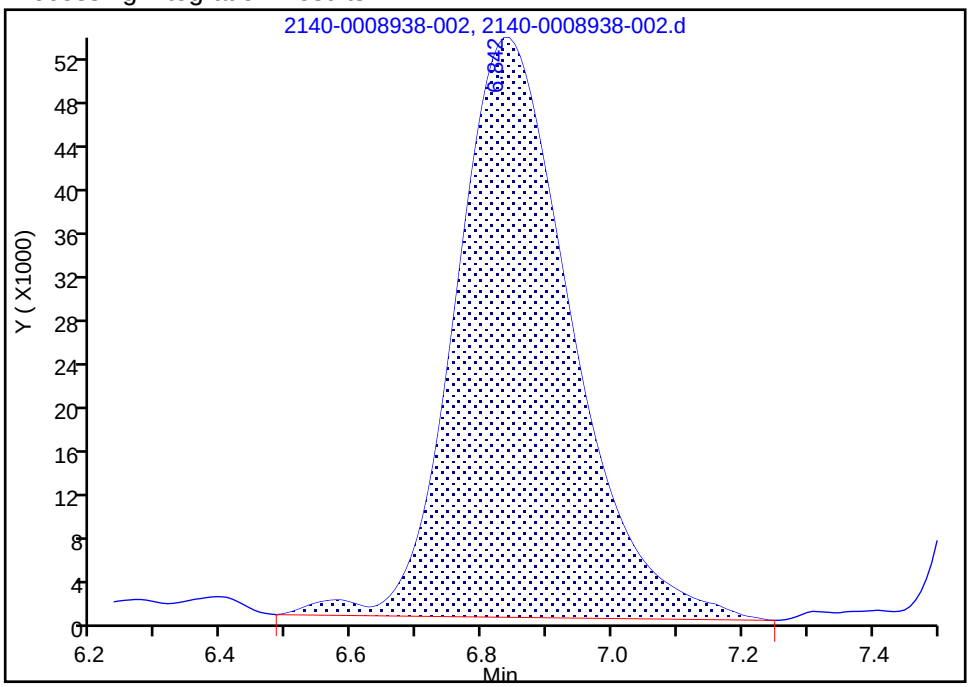
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\2140-0008938-002.d				
Injection Date:	01-Aug-2018 10:16:00	Instrument ID:	1500		
Lims ID:	IC 2				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	2
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

4 Bromide, CAS: 24959-67-9

Signal: 1

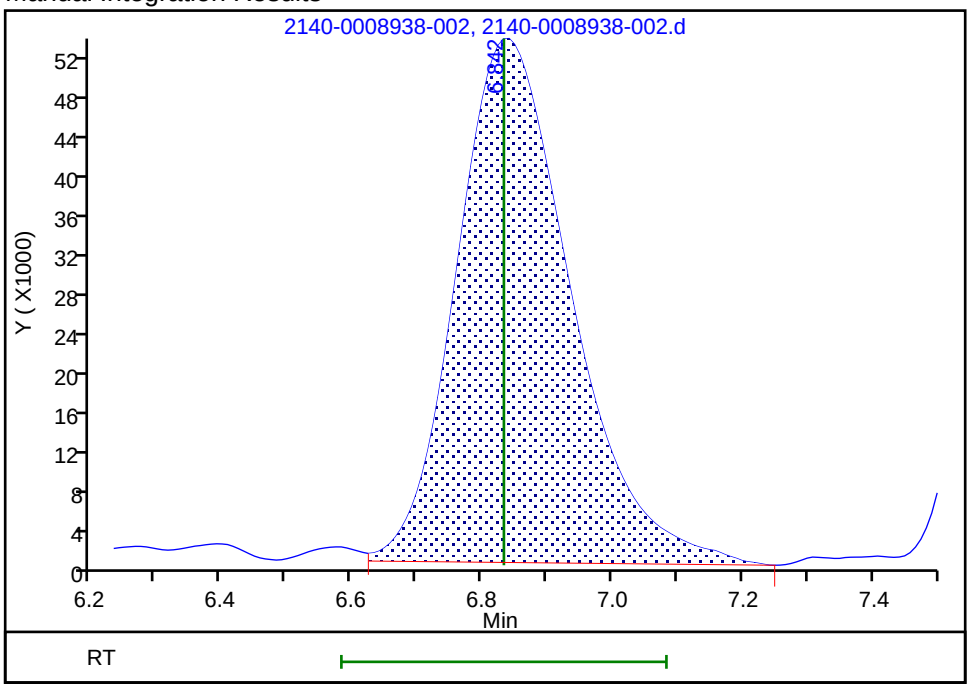
Processing Integration Results

RT: 6.84
Area: 651407
Amount: 0.076017
Amount Units: ug/ml



Manual Integration Results

RT: 6.84
Area: 644011
Amount: 0.075202
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 12:59:14

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

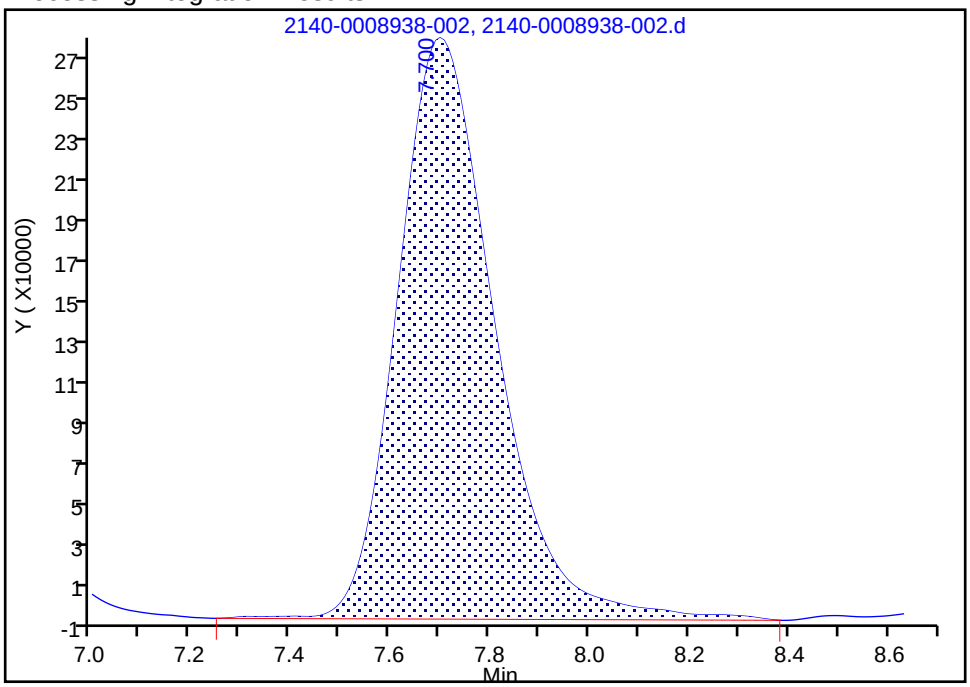
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\2140-0008938-002.d				
Injection Date:	01-Aug-2018 10:16:00	Instrument ID:	1500		
Lims ID:	IC 2				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	2
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

5 Nitrate as N, CAS: 14797-55-8

Signal: 1

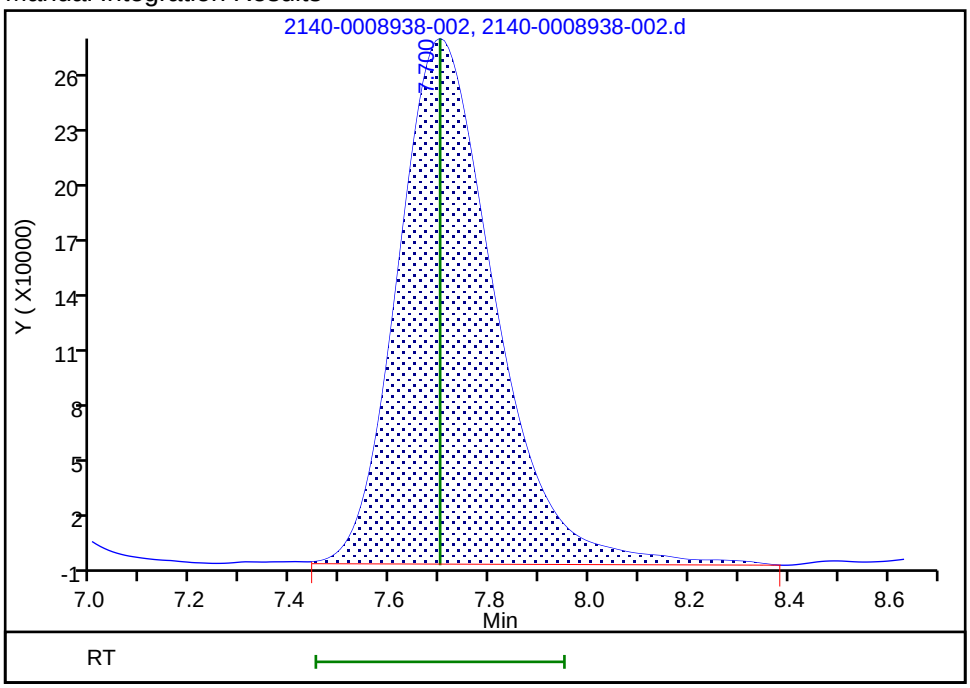
Processing Integration Results

RT: 7.70
Area: 3692558
Amount: 0.099813
Amount Units: ug/ml



Manual Integration Results

RT: 7.70
Area: 3684084
Amount: 0.076777
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 12:59:06

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\3140-0008938-003.d
Lims ID: IC 3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 01-Aug-2018 10:34:00 ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0008938-003
Misc. Info.: 3 ic 3
Operator ID: Instrument ID: 1500
Sublist: chrom-0050_26A_1500*sub3

Method: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 20-Aug-2018 14:08:42 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK048

First Level Reviewer: humphreyj Date: 01-Aug-2018 13:01:16

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride	3.350	3.350	0.000	2812889	0.1000	0.0959	M
	2 Chloride	4.783	4.792	-0.009	1989195	0.1000	0.1030	M
	3 Nitrite as N	5.742	5.742	0.000	4256577	0.1000	0.1014	M
	4 Bromide	6.833	6.833	0.000	843578	0.1000	0.0985	M
	5 Nitrate as N	7.700	7.700	0.000	4906978	0.1000	0.1022	M
S	7 Hydrogen Chloride					0.1028	0.1059	
S	8 Hydro Fluoric Acid					0.1053	0.1010	
S	9 Hydrobromic Acid					0.1013	0.0997	
S	10 Nitric acid					0.4499	0.4596	
S	11 Nitrous Acid					0.3357	0.3402	
S	12 Br					0.1000	0.0985	
S	13 Chlorine					0.1000	0.1030	

QC Flag Legend

Review Flags
M - Manually Integrated

Reagents:

85L3M26AP_00019 Amount Added: 10.00 Units: mL

Report Date: 20-Aug-2018 14:08:43 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\3140-0008938-003.d

Injection Date: 01-Aug-2018 10:34:00 Instrument ID: 1500 Operator ID:

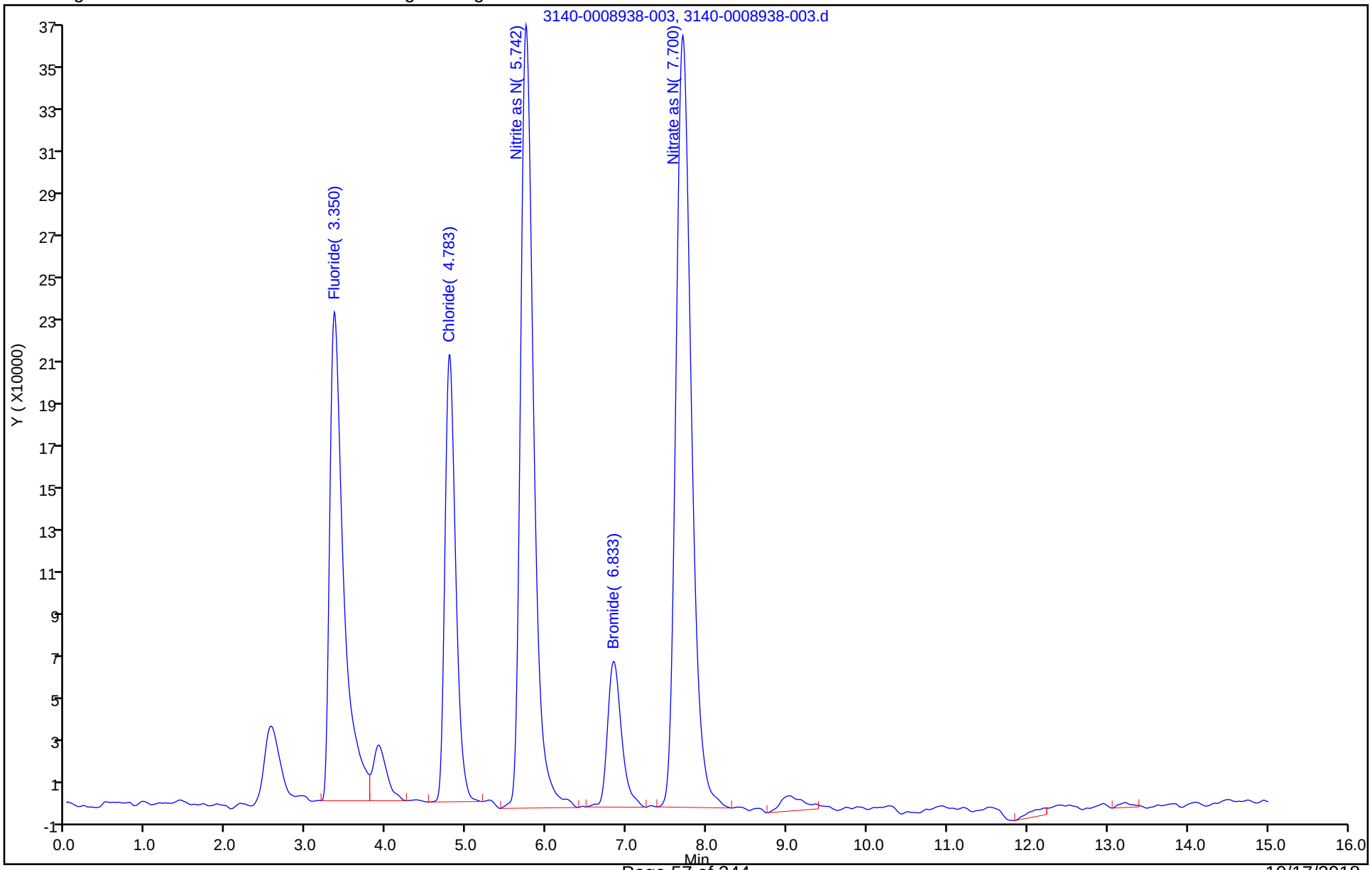
Lims ID: IC 3 Worklist Smp#: 3

Client ID:

Injection Vol: 1.0 ul Dil. Factor: 1.0000 ALS Bottle#: 0

Method: 0050_26A_1500 Limit Group: IC 0050_26A ICAL

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



Manual Integration/User Assign Peak Report

TestAmerica Knoxville

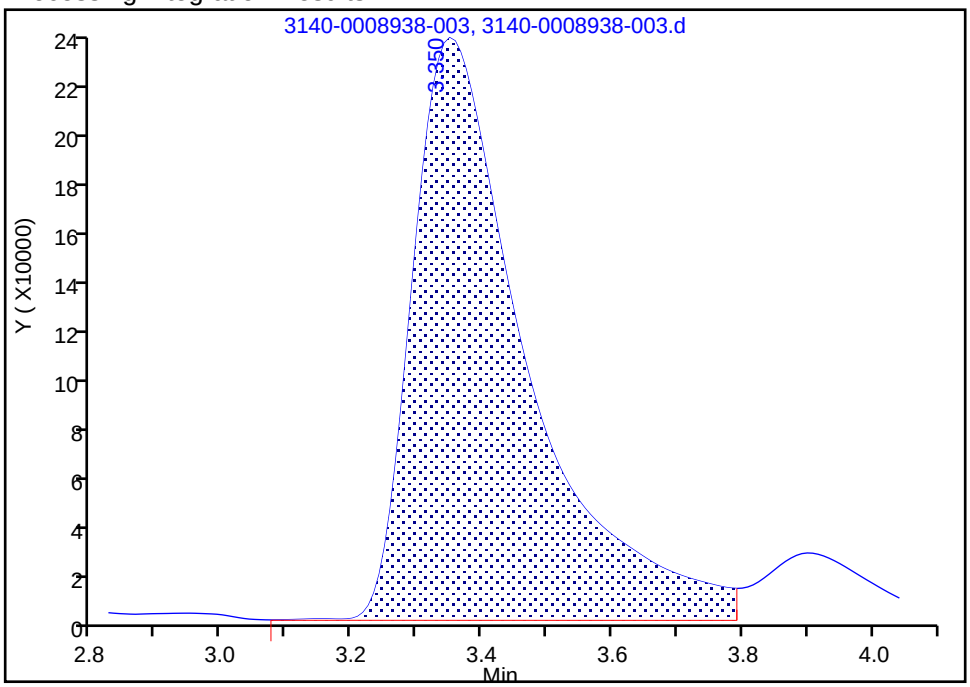
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\3140-0008938-003.d				
Injection Date:	01-Aug-2018 10:34:00	Instrument ID:	1500		
Lims ID:	IC 3				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	3
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

1 Fluoride, CAS: 16984-48-8

Signal: 1

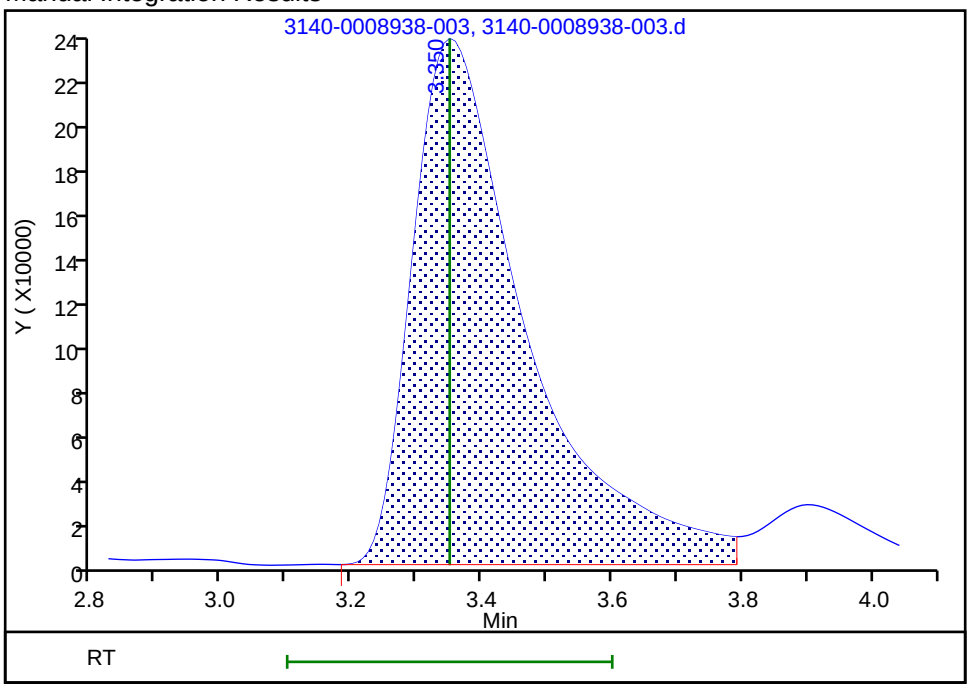
Processing Integration Results

RT: 3.35
Area: 2831252
Amount: 0.095947
Amount Units: ug/ml



Manual Integration Results

RT: 3.35
Area: 2812889
Amount: 0.095878
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 13:01:12
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

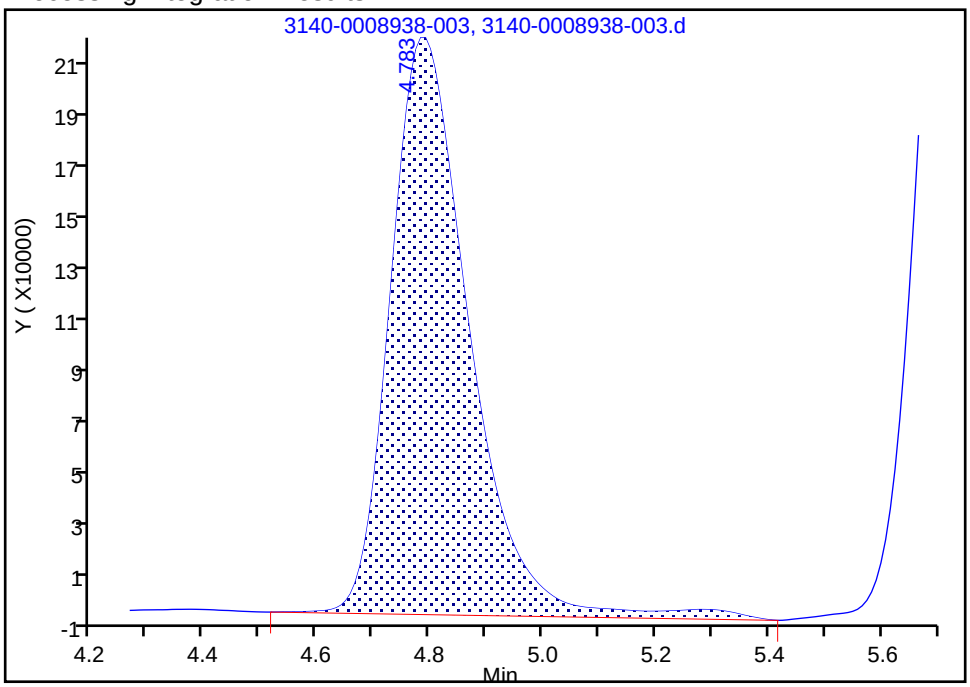
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\3140-0008938-003.d				
Injection Date:	01-Aug-2018 10:34:00	Instrument ID:	1500		
Lims ID:	IC 3				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	3
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

2 Chloride, CAS: 16887-00-6

Signal: 1

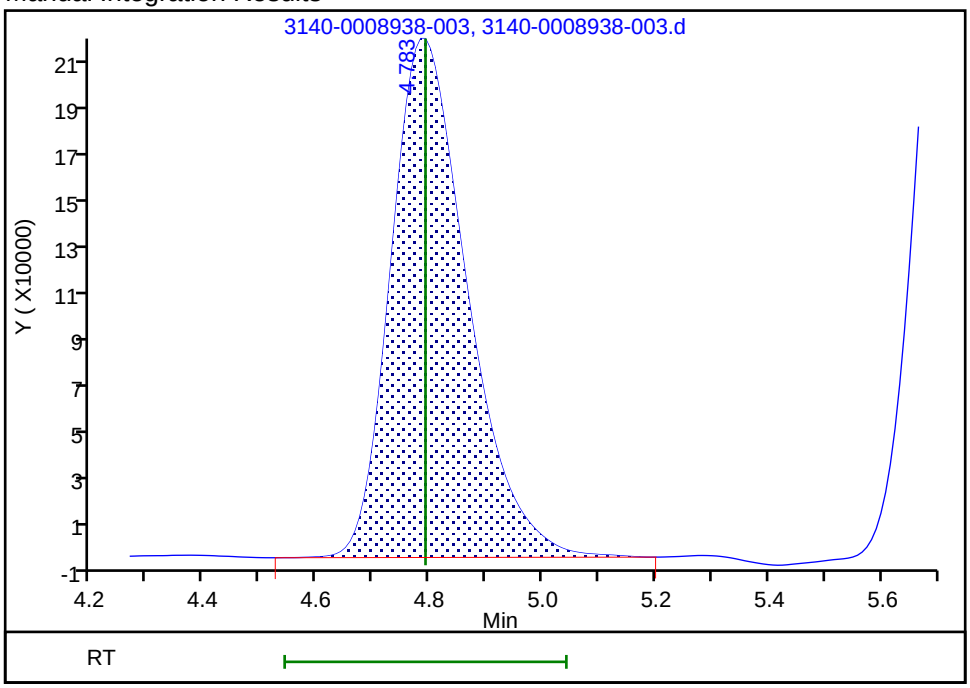
Processing Integration Results

RT: 4.78
Area: 2072417
Amount: 0.107148
Amount Units: ug/ml



Manual Integration Results

RT: 4.78
Area: 1989195
Amount: 0.103003
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 13:00:15
Audit Action: Manually Integrated Audit Reason: Baseline Smoothing

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

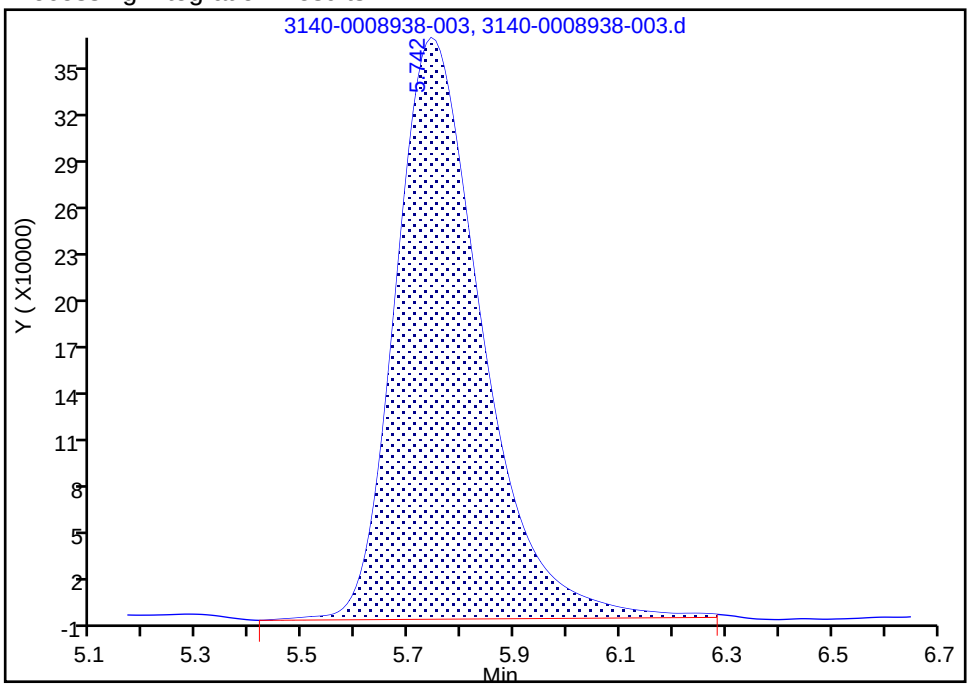
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\3140-0008938-003.d				
Injection Date:	01-Aug-2018 10:34:00	Instrument ID:	1500		
Lims ID:	IC 3				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	3
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

3 Nitrite as N, CAS: 14797-65-0

Signal: 1

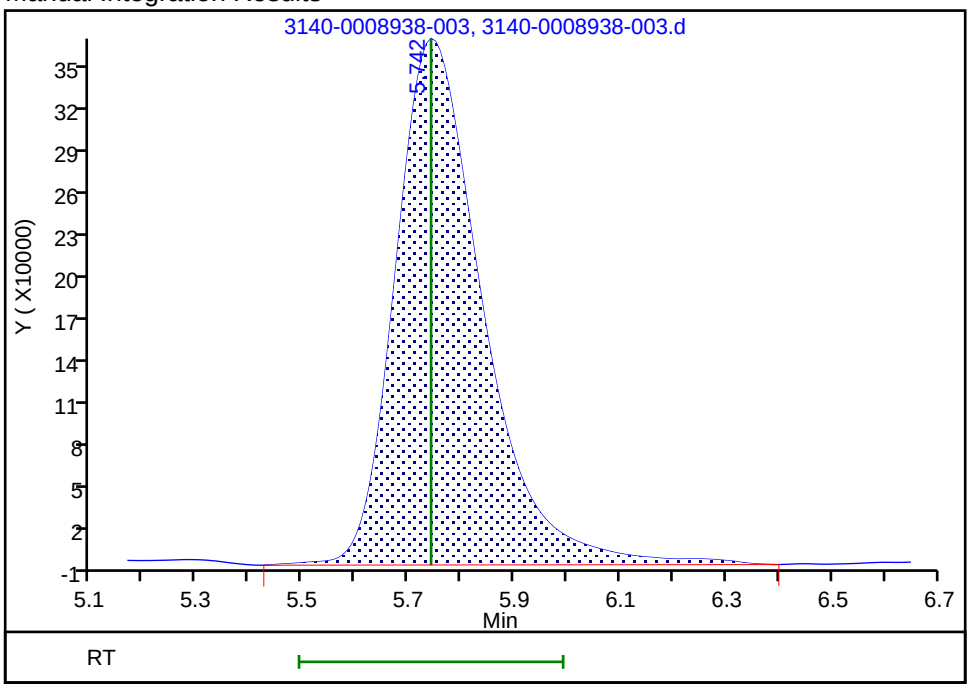
Processing Integration Results

RT: 5.74
Area: 4210345
Amount: 0.100277
Amount Units: ug/ml



Manual Integration Results

RT: 5.74
Area: 4256577
Amount: 0.101352
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 13:00:24

Audit Action: Manually Integrated Audit Reason: Baseline Smoothing

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

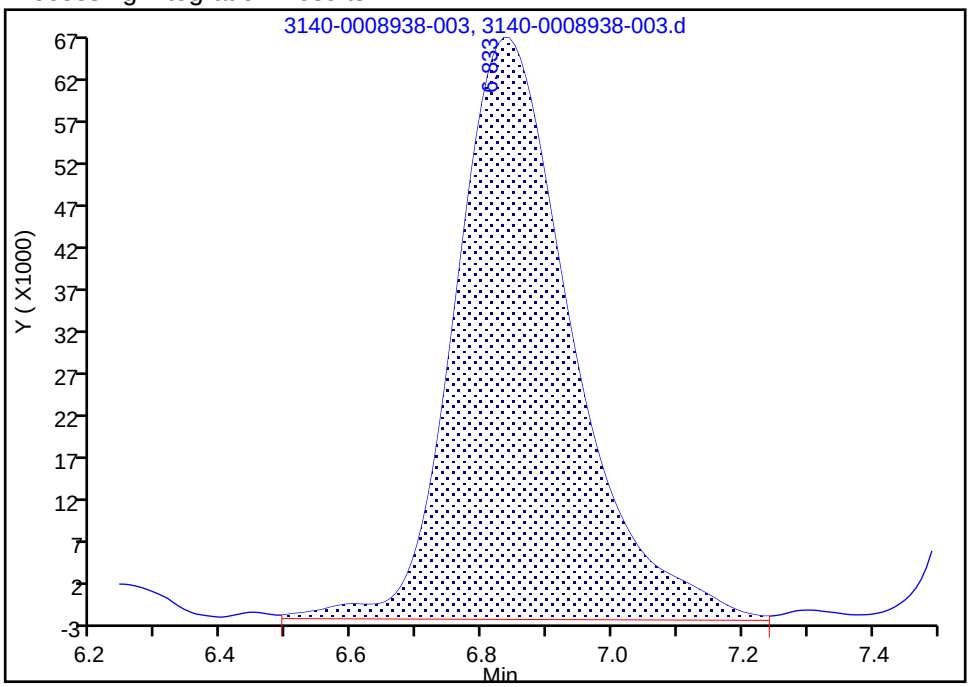
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\3140-0008938-003.d				
Injection Date:	01-Aug-2018 10:34:00	Instrument ID:	1500		
Lims ID:	IC 3				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	3
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

4 Bromide, CAS: 24959-67-9

Signal: 1

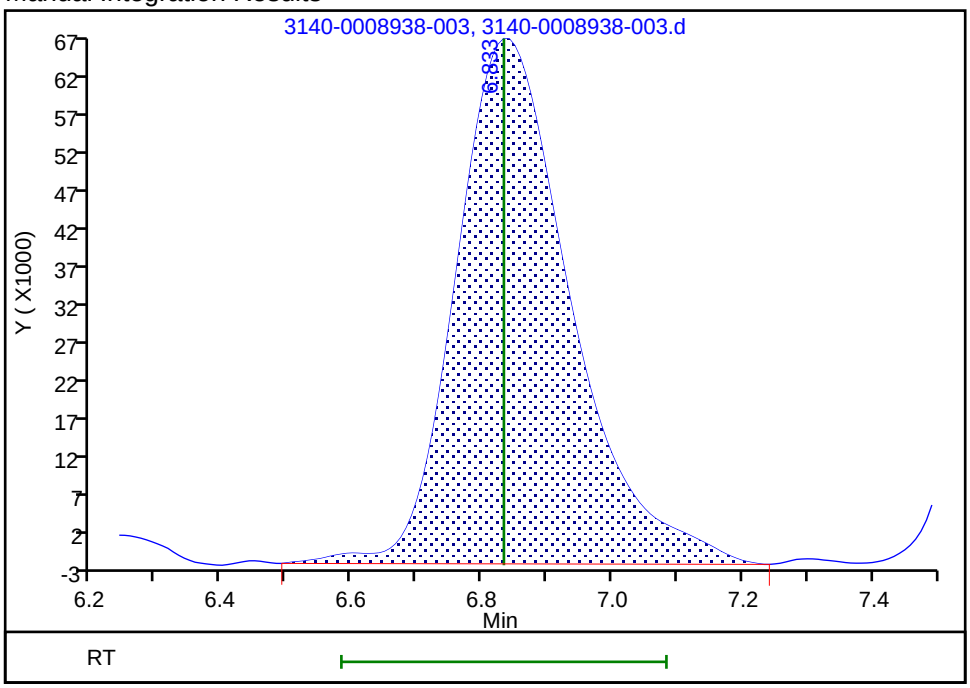
Processing Integration Results

RT: 6.83
Area: 864008
Amount: 0.100820
Amount Units: ug/ml



Manual Integration Results

RT: 6.83
Area: 843578
Amount: 0.098487
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 13:00:36

Audit Action: Manually Integrated Audit Reason: Baseline Smoothing

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

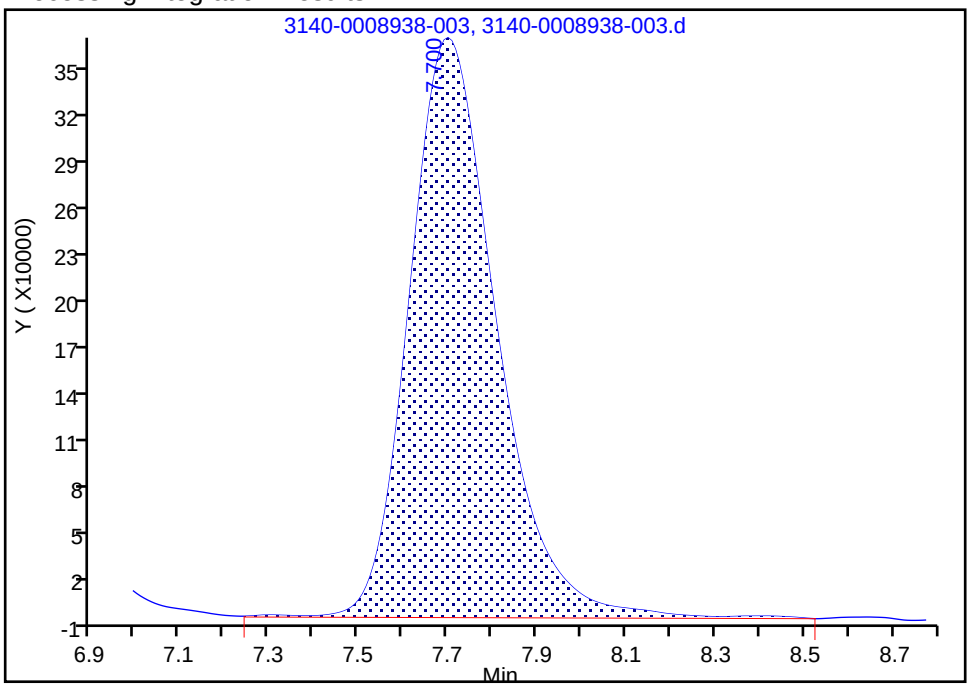
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\3140-0008938-003.d				
Injection Date:	01-Aug-2018 10:34:00	Instrument ID:	1500		
Lims ID:	IC 3				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	3
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

5 Nitrate as N, CAS: 14797-55-8

Signal: 1

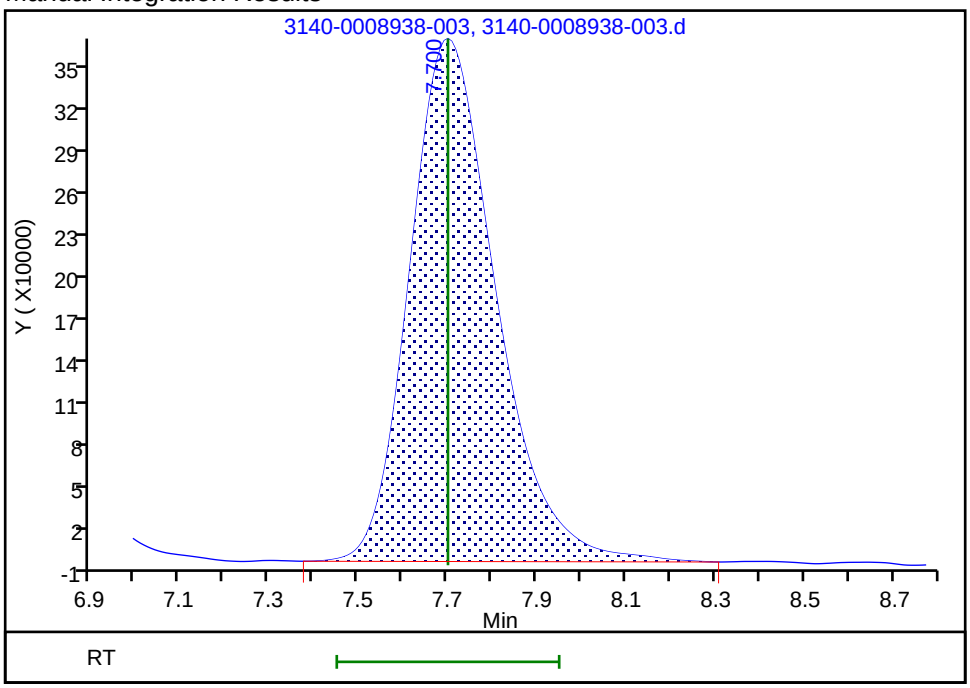
Processing Integration Results

RT: 7.70
Area: 4979328
Amount: 0.133635
Amount Units: ug/ml



Manual Integration Results

RT: 7.70
Area: 4906978
Amount: 0.102161
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 13:00:46

Audit Action: Manually Integrated Audit Reason: Baseline Smoothing

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\4140-0008938-004.d
Lims ID: IC 4
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 01-Aug-2018 10:51:00 ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0008938-004
Misc. Info.: 4 ic 4
Operator ID: Instrument ID: 1500
Sublist: chrom-0050_26A_1500*sub3

Method: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 20-Aug-2018 14:08:38 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK048

First Level Reviewer: wasmundd Date: 20-Aug-2018 14:08:38

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride	3.350	3.350	0.000	7092784	0.2500	0.2408	M
	2 Chloride	4.792	4.792	0.000	4987582	0.2500	0.2576	M
	3 Nitrite as N	5.742	5.742	0.000	10344542	0.2500	0.2452	
	4 Bromide	6.833	6.833	0.000	2117668	0.2500	0.2469	
	5 Nitrate as N	7.700	7.700	0.000	12062411	0.2500	0.2497	M
S	11 Nitrous Acid					0.8391	0.8231	
S	12 Br					0.2500	0.2469	
S	13 Chlorine					0.2500	0.2576	
S	10 Nitric acid					1.12	1.12	
S	7 Hydrogen Chloride					0.2571	0.2649	
S	8 Hydro Fluoric Acid					0.2633	0.2536	
S	9 Hydrobromic Acid					0.2532	0.2500	

QC Flag Legend

Review Flags
M - Manually Integrated

Reagents:

85L4M26AP_00019 Amount Added: 10.00 Units: mL

Report Date: 20-Aug-2018 14:08:38 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\4140-0008938-004.d

Injection Date: 01-Aug-2018 10:51:00 Instrument ID: 1500 Operator ID:

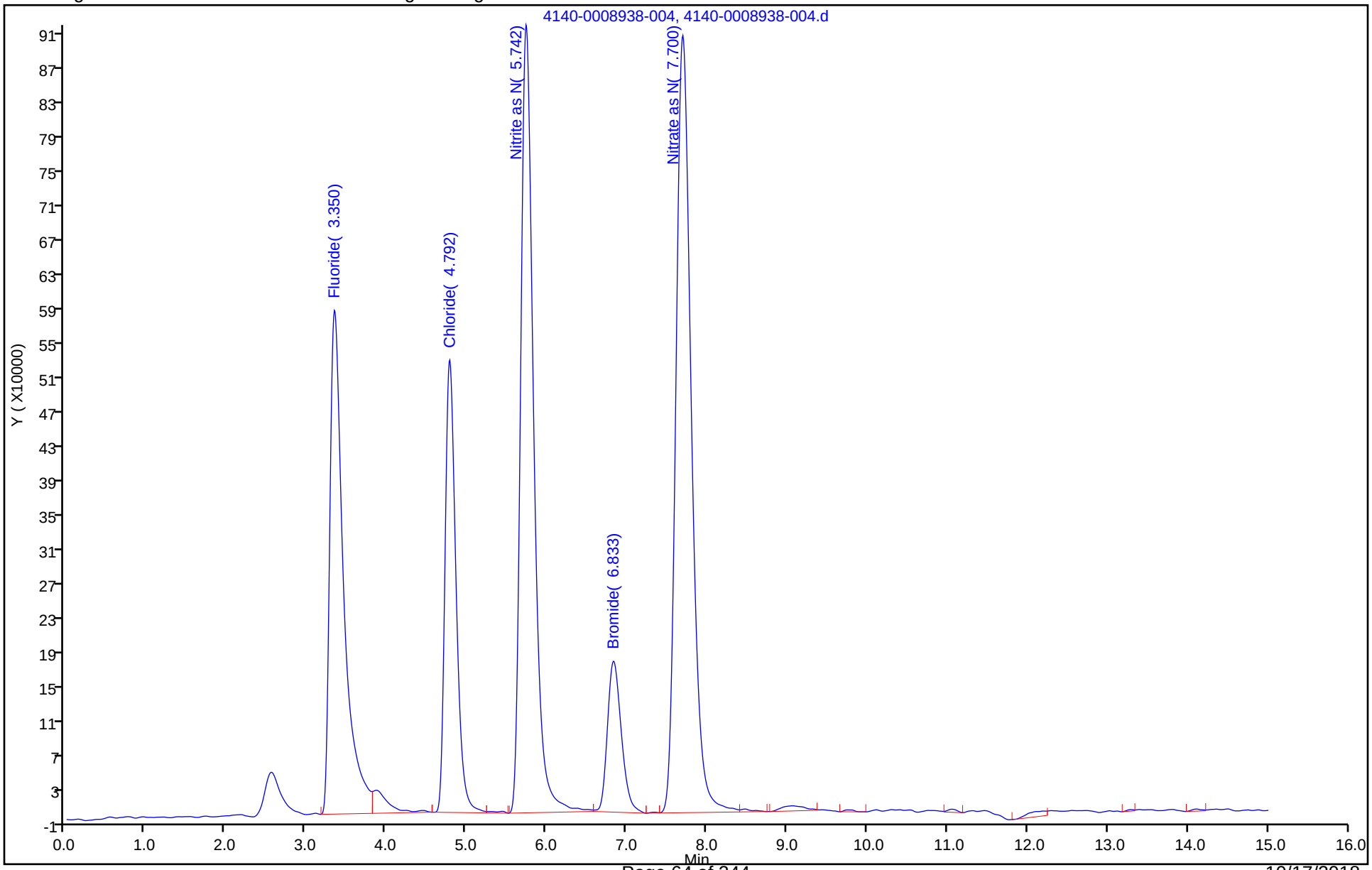
Lims ID: IC 4 Worklist Smp#: 4

Client ID:

Injection Vol: 1.0 ul Dil. Factor: 1.0000 ALS Bottle#: 0

Method: 0050_26A_1500 Limit Group: IC 0050_26A ICAL

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



Manual Integration/User Assign Peak Report

TestAmerica Knoxville

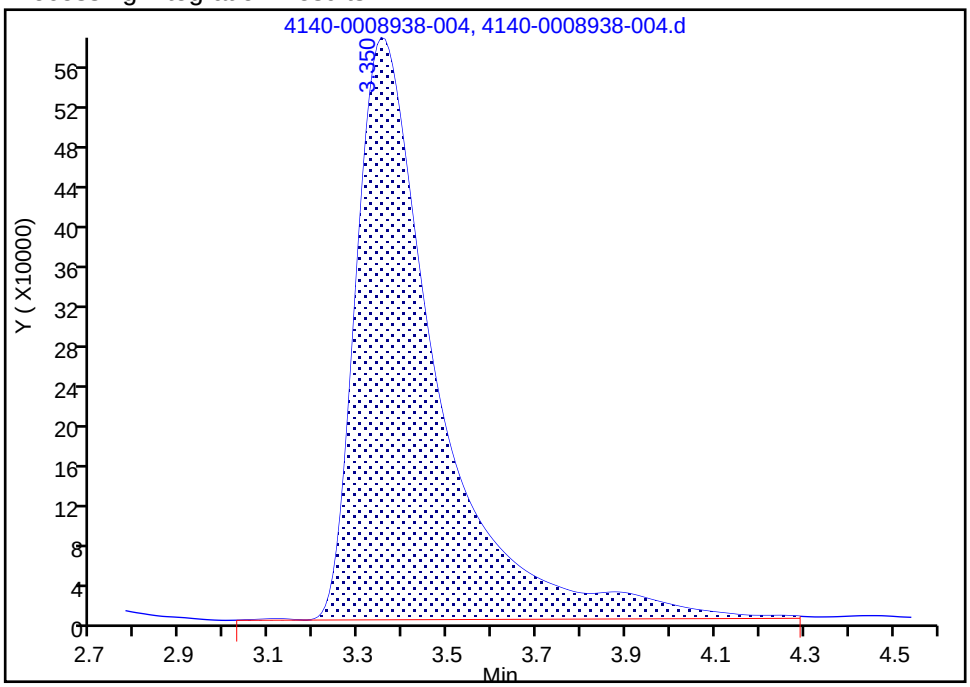
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\4140-0008938-004.d				
Injection Date:	01-Aug-2018 10:51:00	Instrument ID:	1500		
Lims ID:	IC 4				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	4
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

1 Fluoride, CAS: 16984-48-8

Signal: 1

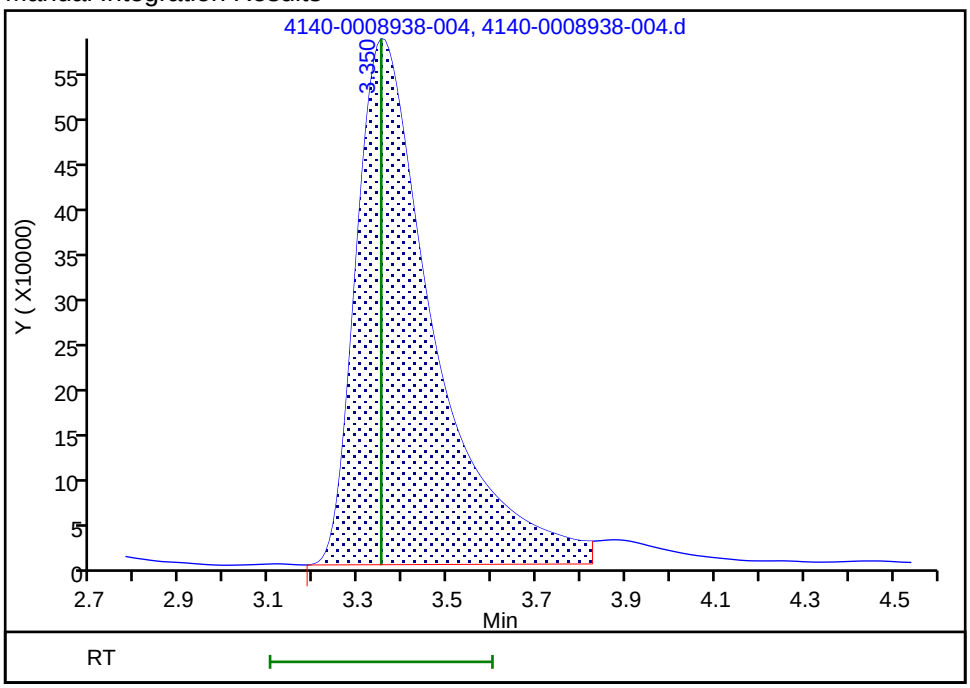
Processing Integration Results

RT: 3.35
Area: 7443582
Amount: 0.251299
Amount Units: ug/ml



Manual Integration Results

RT: 3.35
Area: 7092784
Amount: 0.240763
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 13:02:31

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

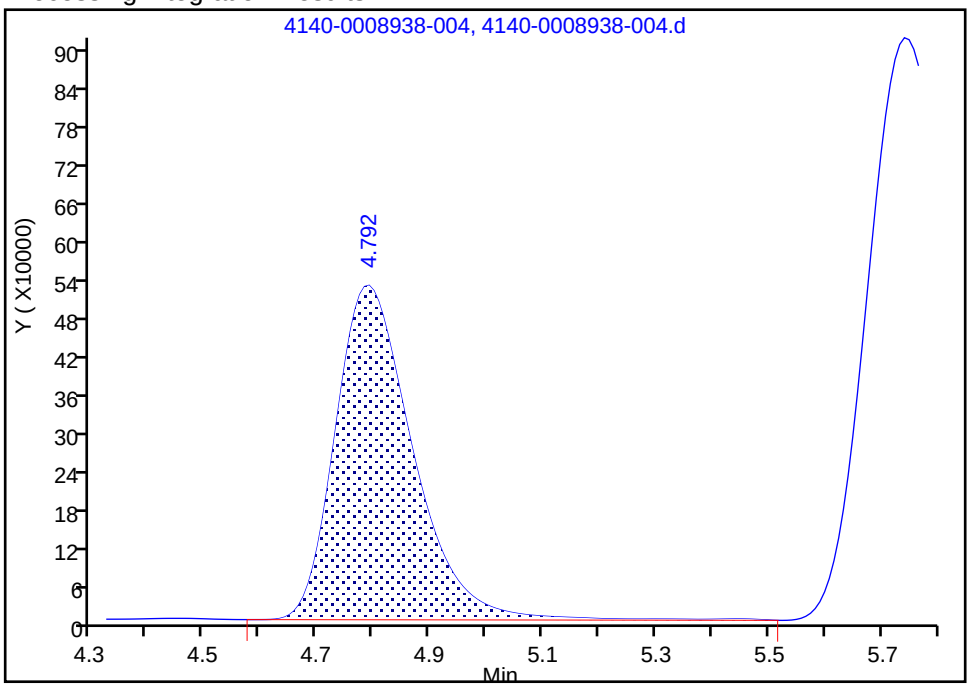
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\4140-0008938-004.d				
Injection Date:	01-Aug-2018 10:51:00	Instrument ID:	1500		
Lims ID:	IC 4				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	4
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

2 Chloride, CAS: 16887-00-6

Signal: 1

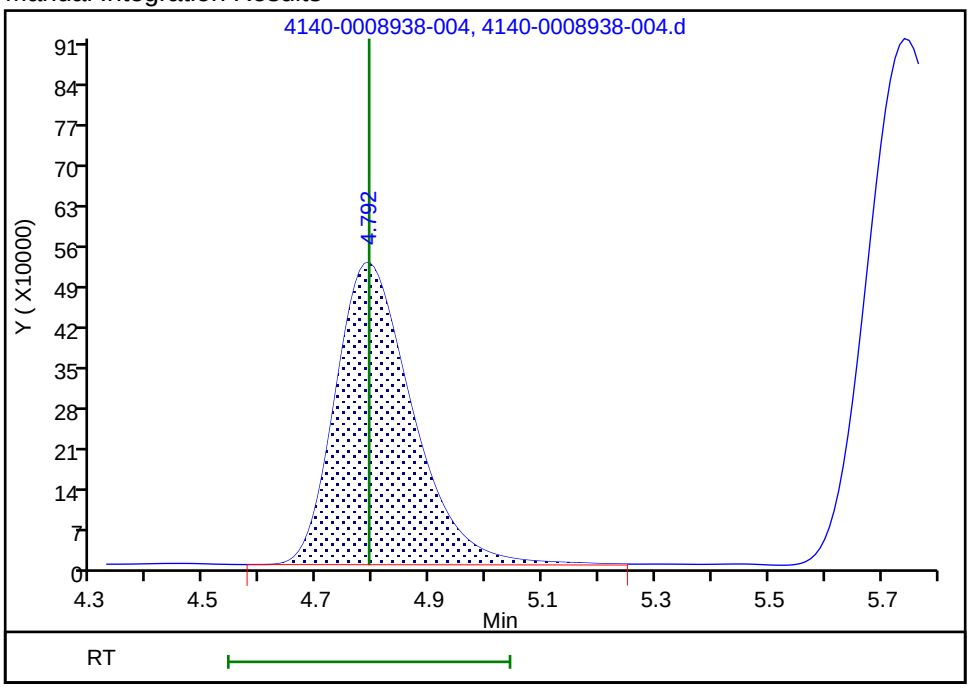
Processing Integration Results

RT: 4.79
Area: 5011323
Amount: 0.258672
Amount Units: ug/ml



Manual Integration Results

RT: 4.79
Area: 4987582
Amount: 0.257587
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 13:02:23
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

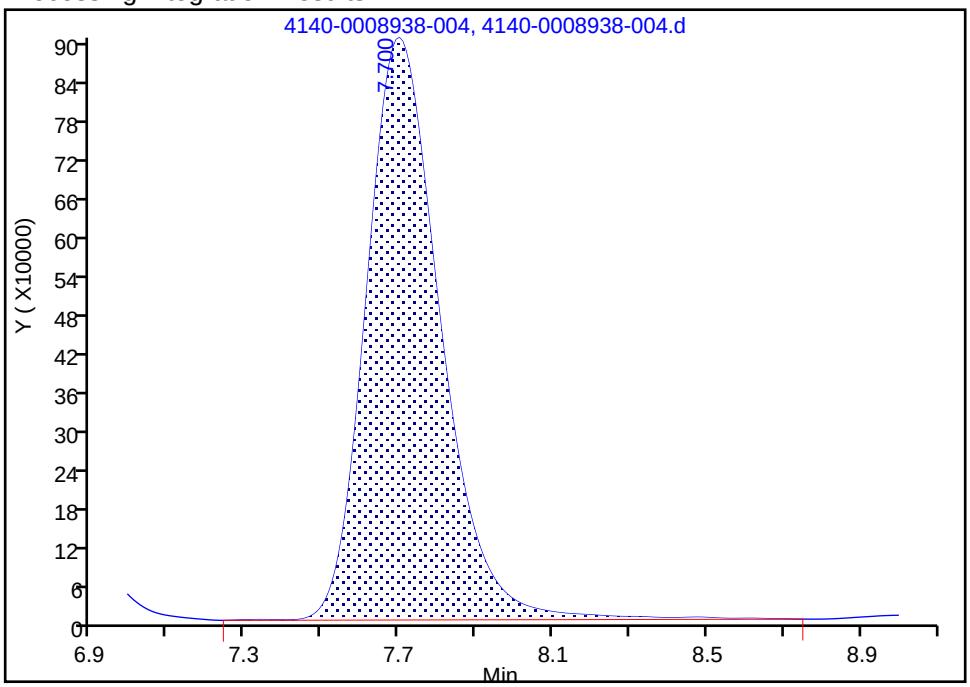
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\4140-0008938-004.d				
Injection Date:	01-Aug-2018 10:51:00	Instrument ID:	1500		
Lims ID:	IC 4				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	4
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

5 Nitrate as N, CAS: 14797-55-8

Signal: 1

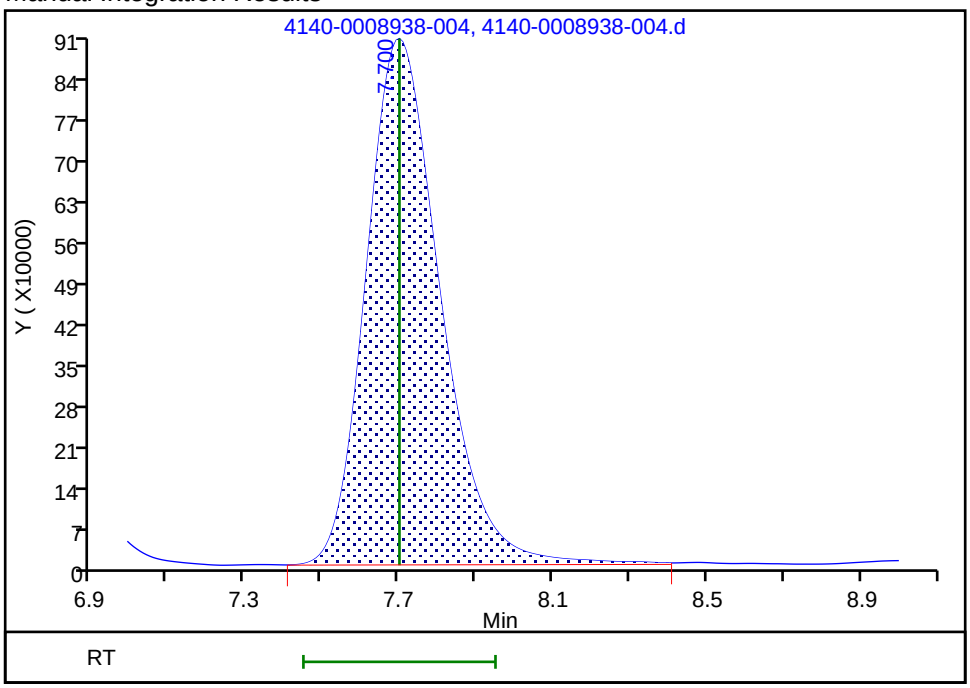
Processing Integration Results

RT: 7.70
Area: 12101453
Amount: 0.312983
Amount Units: ug/ml



Manual Integration Results

RT: 7.70
Area: 12062411
Amount: 0.249699
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 13:02:07

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\5140-0008938-005.d
Lims ID: IC 5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 01-Aug-2018 11:09:00 ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0008938-005
Misc. Info.: 5 ic 5
Operator ID: Instrument ID: 1500
Sublist: chrom-0050_26A_1500*sub3

Method: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 20-Aug-2018 14:08:44 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK048

First Level Reviewer: humphreyj Date: 01-Aug-2018 13:03:16

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride	3.358	3.350	0.008	14882948	0.5000	0.5015	
	2 Chloride	4.792	4.792	0.000	9602377	0.5000	0.4939	
	3 Nitrite as N	5.750	5.742	0.008	21192897	0.5000	0.4986	
	4 Bromide	6.842	6.833	0.009	4233911	0.5000	0.4927	
	5 Nitrate as N	7.700	7.700	0.000	24255807	0.5000	0.4973	M
S	7 Hydrogen Chloride					0.5142	0.5080	
S	8 Hydro Fluoric Acid					0.5266	0.5282	
S	9 Hydrobromic Acid					0.5063	0.4989	
S	10 Nitric acid					2.25	2.24	
S	11 Nitrous Acid					1.68	1.67	
S	12 Br					0.5000	0.4927	
S	13 Chlorine					0.5000	0.4939	

QC Flag Legend

Review Flags
M - Manually Integrated

Reagents:

85L5M26AP_00019 Amount Added: 10.00 Units: mL

Report Date: 20-Aug-2018 14:08:45 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\5140-0008938-005.d

Injection Date: 01-Aug-2018 11:09:00 Instrument ID: 1500 Operator ID:

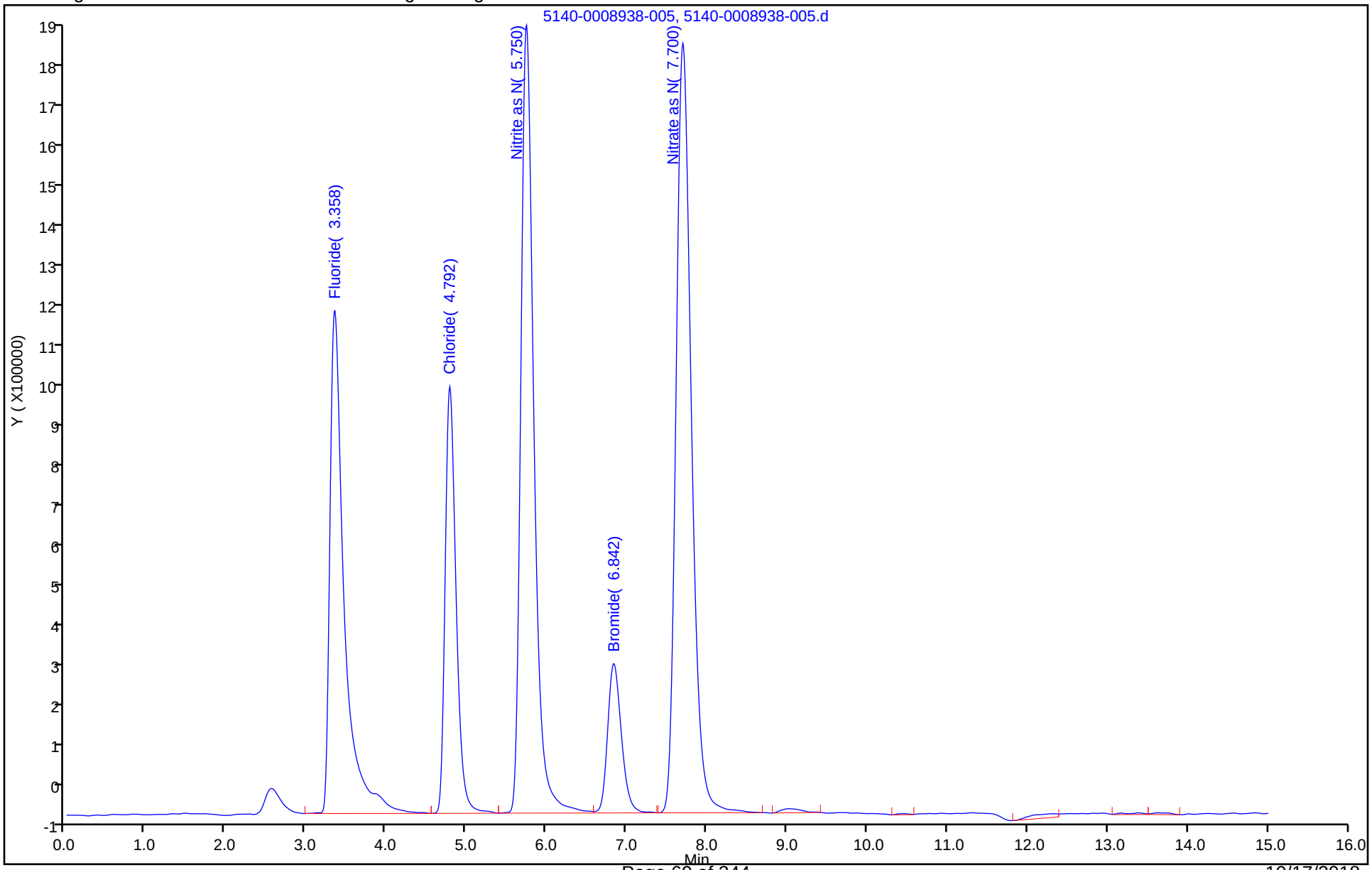
Lims ID: IC 5 Worklist Smp#: 5

Client ID:

Injection Vol: 1.0 ul Dil. Factor: 1.0000 ALS Bottle#: 0

Method: 0050_26A_1500 Limit Group: IC 0050_26A ICAL

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



Manual Integration/User Assign Peak Report

TestAmerica Knoxville

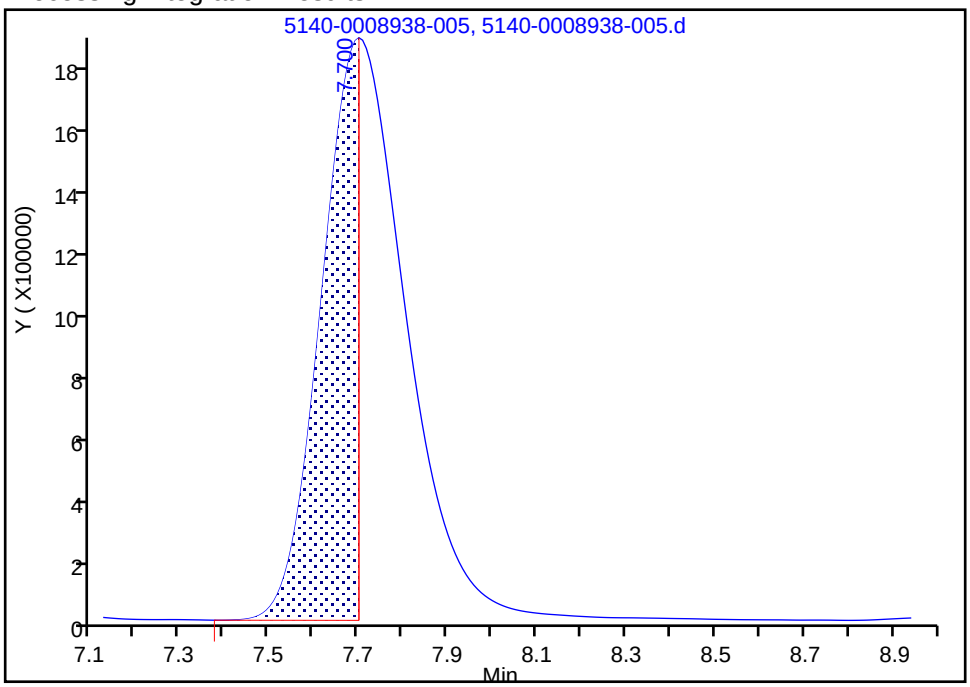
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\5140-0008938-005.d				
Injection Date:	01-Aug-2018 11:09:00	Instrument ID:	1500		
Lims ID:	IC 5				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	5
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

5 Nitrate as N, CAS: 14797-55-8

Signal: 1

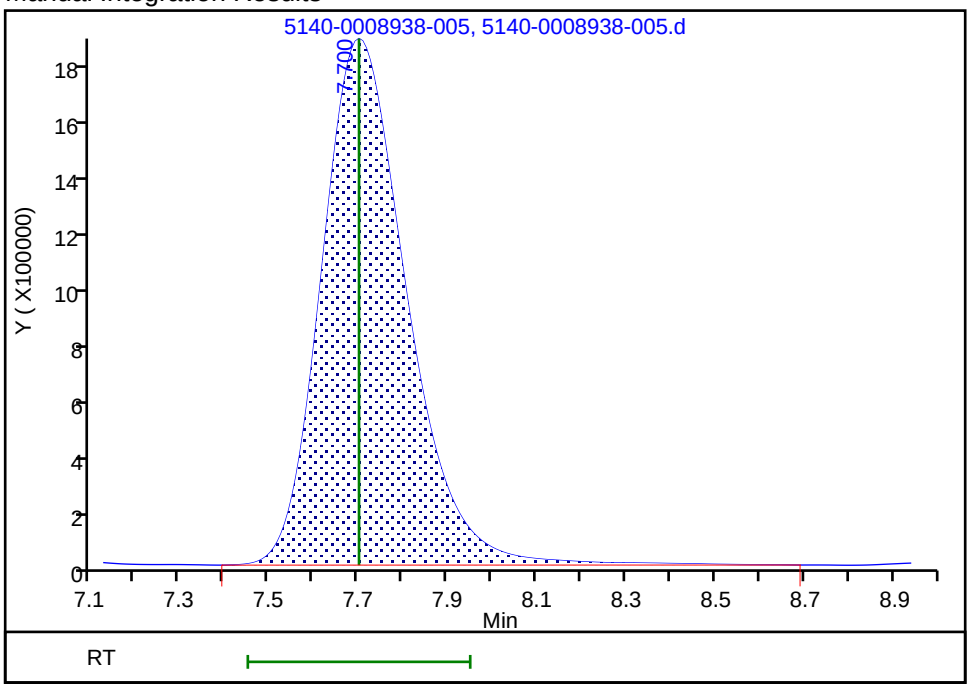
Processing Integration Results

RT: 7.70
Area: 10439500
Amount: 0.272380
Amount Units: ug/ml



Manual Integration Results

RT: 7.70
Area: 24255807
Amount: 0.497337
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 13:03:10

Audit Action: Manually Integrated Audit Reason: Baseline Smoothing

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\6140-0008938-006.d
Lims ID: IC 6
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 01-Aug-2018 11:26:00 ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0008938-006
Misc. Info.: 6 ic 6
Operator ID: Instrument ID: 1500
Sublist: chrom-0050_26A_1500*sub3

Method: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 20-Aug-2018 14:08:46 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK048

First Level Reviewer: humphreyj Date: 01-Aug-2018 13:03:46

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride	3.358	3.350	0.008	30197187	1.00	1.00	
	2 Chloride	4.792	4.792	0.000	19568582	1.00	1.00	
	3 Nitrite as N	5.750	5.742	0.008	43274191	1.00	1.00	
	4 Bromide	6.833	6.833	0.000	8688407	1.00	1.01	
	5 Nitrate as N	7.700	7.700	0.000	49767455	1.00	1.00	
S	7 Hydrogen Chloride					1.03	1.03	
S	8 Hydro Fluoric Acid					1.05	1.06	
S	9 Hydrobromic Acid					1.01	1.02	
S	10 Nitric acid					4.50	4.50	
S	11 Nitrous Acid					3.36	3.37	
S	12 Br					1.00	1.01	
S	13 Chlorine					1.00	1.00	

Reagents:

85L6M26AP_00019 Amount Added: 10.00 Units: mL

Report Date: 20-Aug-2018 14:08:46 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\6140-0008938-006.d

Injection Date: 01-Aug-2018 11:26:00 Instrument ID: 1500 Operator ID:

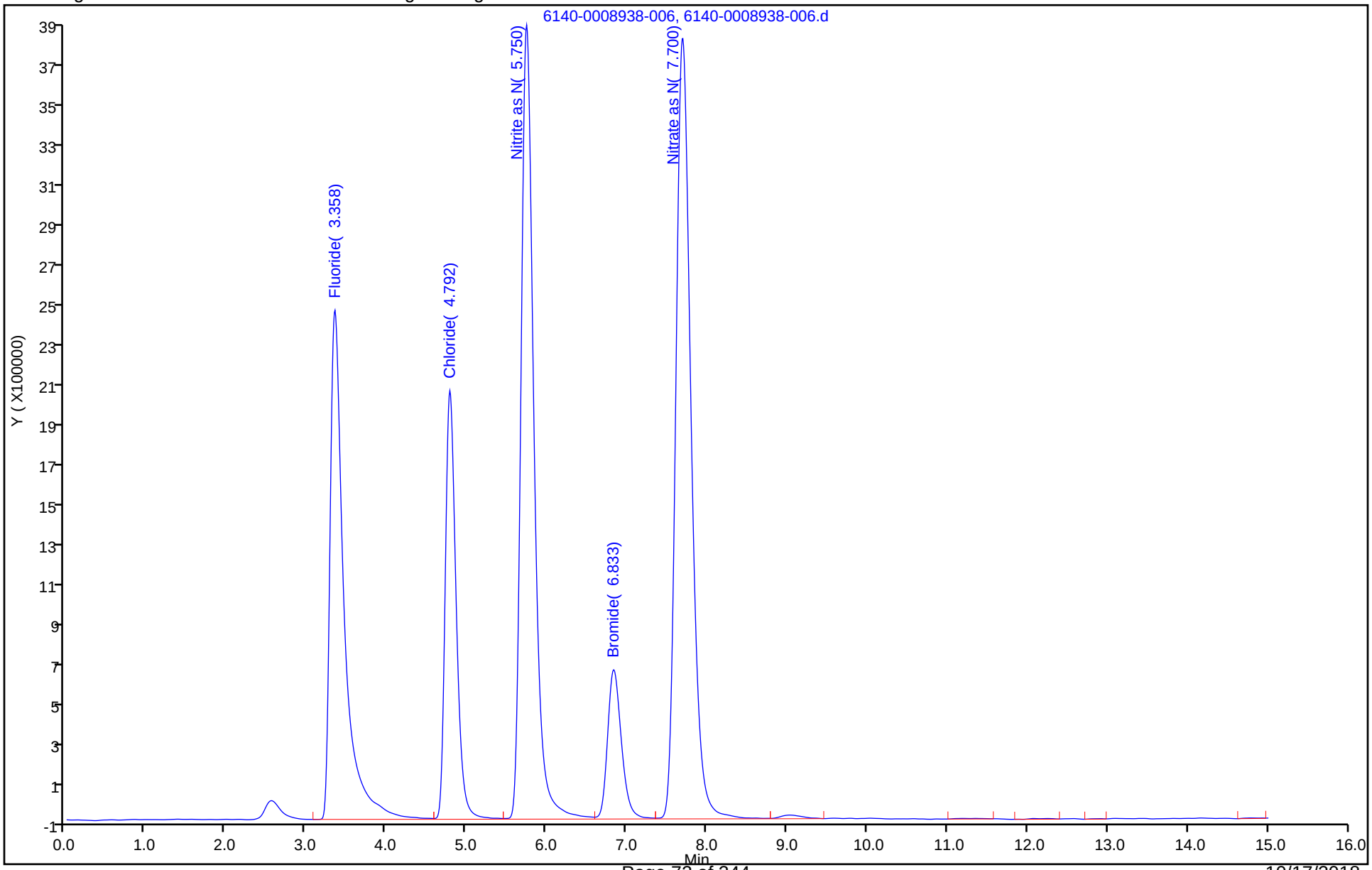
Lims ID: IC 6 Worklist Smp#: 6

Client ID:

Injection Vol: 1.0 ul Dil. Factor: 1.0000 ALS Bottle#: 0

Method: 0050_26A_1500 Limit Group: IC 0050_26A ICAL

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d
Lims ID: IC 7
Client ID:
Sample Type: IC Calib Level: 7
Inject. Date: 01-Aug-2018 11:43:00 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0008938-007
Misc. Info.: 7 ic 7
Operator ID: Instrument ID: 1500
Sublist: chrom-0050_26A_1500*sub3

Method: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 20-Aug-2018 14:08:48 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK048

First Level Reviewer: humphreyj Date: 01-Aug-2018 13:04:16

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 Fluoride	3.358	3.350	0.008	61844592	2.00	2.00	
2 Chloride	4.792	4.792	0.000	39884440	2.00	2.00	
3 Nitrite as N	5.750	5.742	0.008	88826264	2.00	2.00	
4 Bromide	6.833	6.833	0.000	17387614	2.00	2.00	
5 Nitrate as N	7.692	7.700	-0.008	103162161	2.00	2.00	
S 7 Hydrogen Chloride					2.06	2.06	
S 8 Hydro Fluoric Acid					2.11	2.11	
S 9 Hydrobromic Acid					2.03	2.02	
S 10 Nitric acid					9.00	9.00	
S 11 Nitrous Acid					6.71	6.71	
S 12 Br					2.00	2.00	
S 13 Chlorine					2.00	2.00	

Reagents:

85L7M26AP_00020 Amount Added: 10.00 Units: mL

Report Date: 20-Aug-2018 14:08:49 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Injection Date: 01-Aug-2018 11:43:00 Instrument ID: 1500 Operator ID:

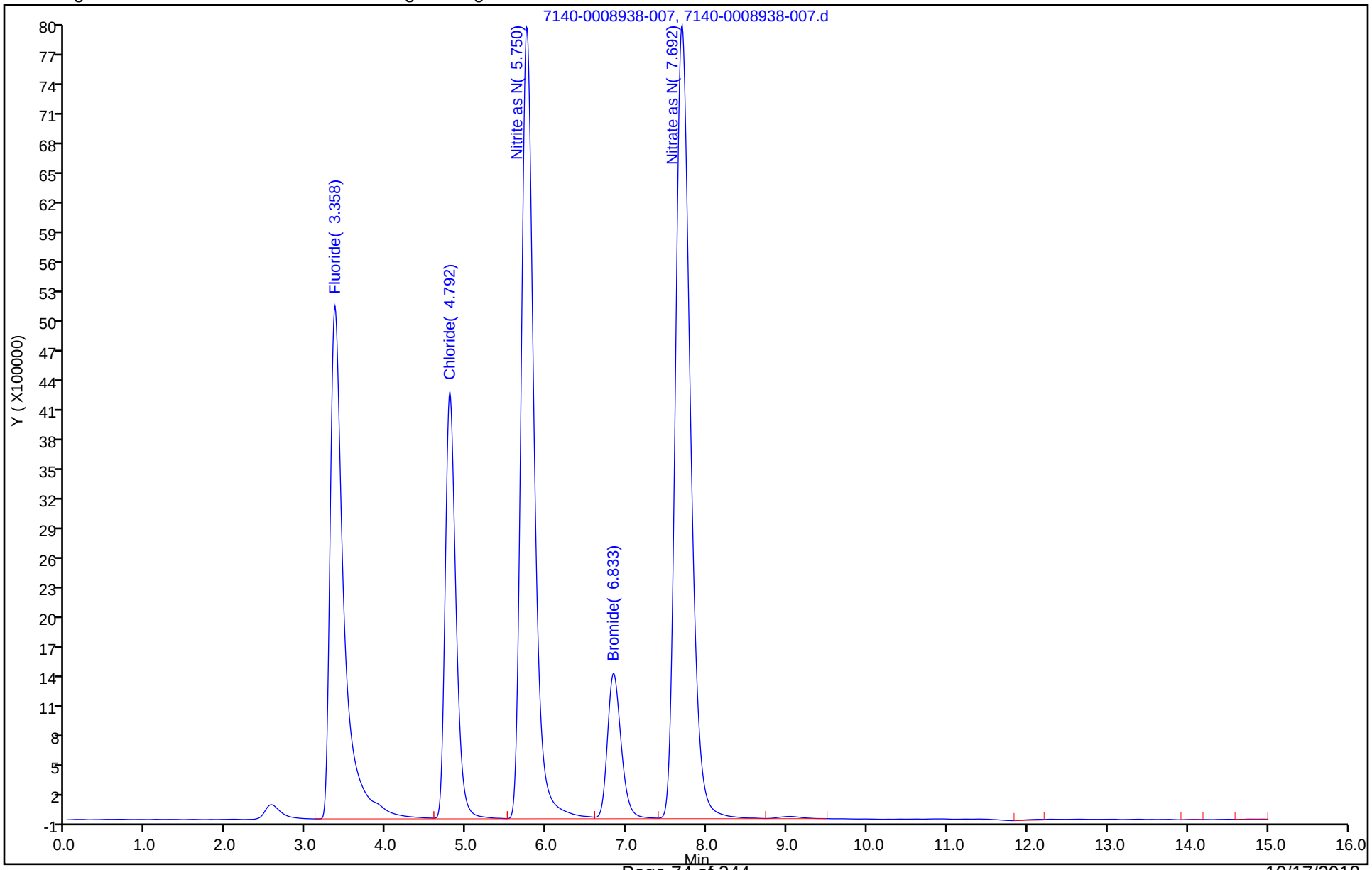
Lims ID: IC 7 Worklist Smp#: 7

Client ID:

Injection Vol: 1.0 ul Dil. Factor: 1.0000 ALS Bottle#: 0

Method: 0050_26A_1500 Limit Group: IC 0050_26A ICAL

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



FORM VII
HPLC/IC CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1

SDG No.:

Lab Sample ID: ICV 140-22408/8 Calibration Date: 08/01/2018 12:03

Instrument ID: 1500 Calib Start Date: 08/01/2018 09:59

GC Column: AS22 ID: Calib End Date: 08/01/2018 11:43

Lab File ID: 8140-0008938-008.d Conc. Units: mg/L

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Fluoride	QuaF		29827308		0.749	0.750	-0.2	10.0
Chloride	QuaF		19614412		0.753	0.750	0.5	10.0
Nitrite as N	QuaF		43234148		0.757	0.750	0.9	10.0
Bromide	QuaF		8703693		0.758	0.750	1.1	10.0
Nitrate as N	QuaF		47230312		0.720	0.750	-4.0	10.0

FORM VII
HPLC/IC CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1

SDG No.:

Lab Sample ID: ICV 140-22408/8 Calibration Date: 08/01/2018 12:03

Instrument ID: 1500 Calib Start Date: 08/01/2018 09:59

GC Column: AS22 ID: Calib End Date: 08/01/2018 11:43

Lab File ID: 8140-0008938-008.d

Analyte	RT	RT WINDOW	
		FROM	TO
Fluoride	3.36	3.10	3.60
Chloride	4.80	4.54	5.04
Nitrite as N	5.76	5.49	5.99
Bromide	6.86	6.58	7.08
Nitrate as N	7.73	7.45	7.95

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\8140-0008938-008.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 01-Aug-2018 12:03:00 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0008938-008
Misc. Info.: 8 icv
Operator ID: Instrument ID: 1500
Sublist:

Method: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 01-Aug-2018 13:07:51 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK022

First Level Reviewer: humphreyj Date: 01-Aug-2018 13:06:26

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride	3.358	3.350	0.008	22370481	0.7500	0.7485	Ma
	2 Chloride	4.800	4.792	0.008	14710809	0.7500	0.7534	Ma
	3 Nitrite as N	5.758	5.742	0.016	32425611	0.7500	0.7570	Ma
	4 Bromide	6.858	6.833	0.025	6527770	0.7500	0.7580	Ma
	5 Nitrate as N	7.725	7.700	0.025	35422734	0.7500	0.7201	Ma
S	7 Hydrogen Chloride					0.7710	0.7748	
S	8 Hydro Fluoric Acid					0.7898	0.7884	
S	9 Hydrobromic Acid					0.7595	0.7676	
S	10 Nitric acid					3.37	3.24	
S	11 Nitrous Acid					2.52	2.54	
S	12 Br					0.7500	0.7580	
S	13 Chlorine					0.7500	0.7534	

QC Flag Legend

Review Flags
M - Manually Integrated
a - User Assigned ID

Reagents:

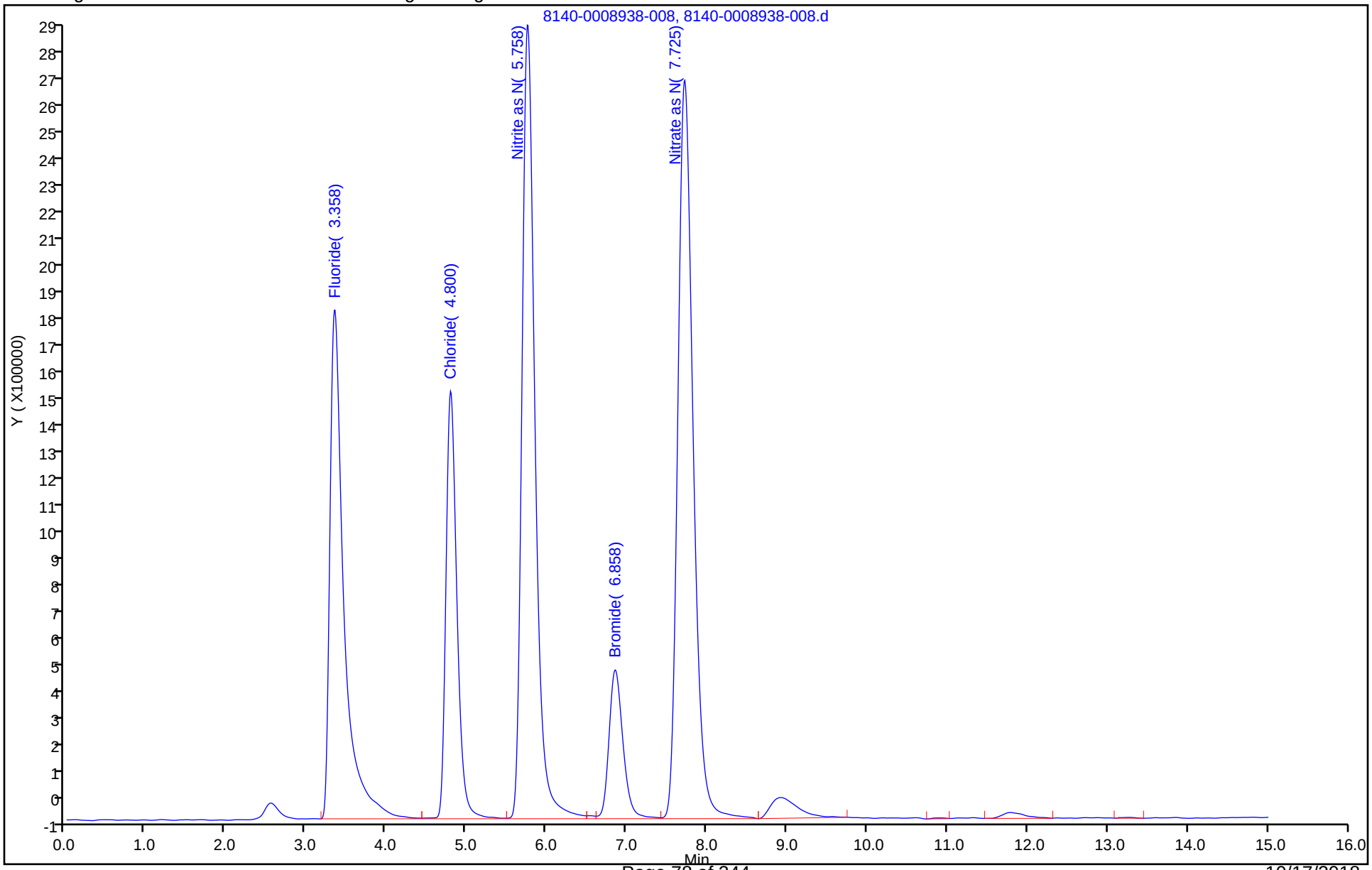
85SPICVLCSS_00071 Amount Added: 10.00 Units: mL

Report Date: 01-Aug-2018 13:07:52 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\8140-0008938-008.d				
Injection Date:	01-Aug-2018 12:03:00	Instrument ID:	1500	Operator ID:	
Lims ID:	ICV			Worklist Smp#:	8
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



Manual Integration/User Assign Peak Report

TestAmerica Knoxville

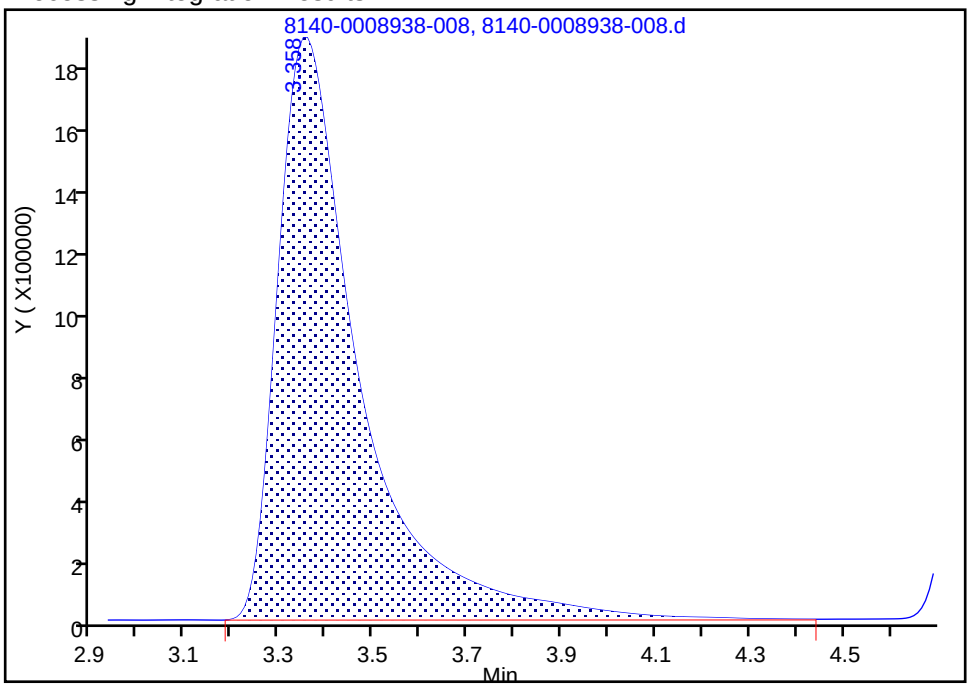
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\8140-0008938-008.d				
Injection Date:	01-Aug-2018 12:03:00	Instrument ID:	1500		
Lims ID:	ICV				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

1 Fluoride, CAS: 16984-48-8

Signal: 1

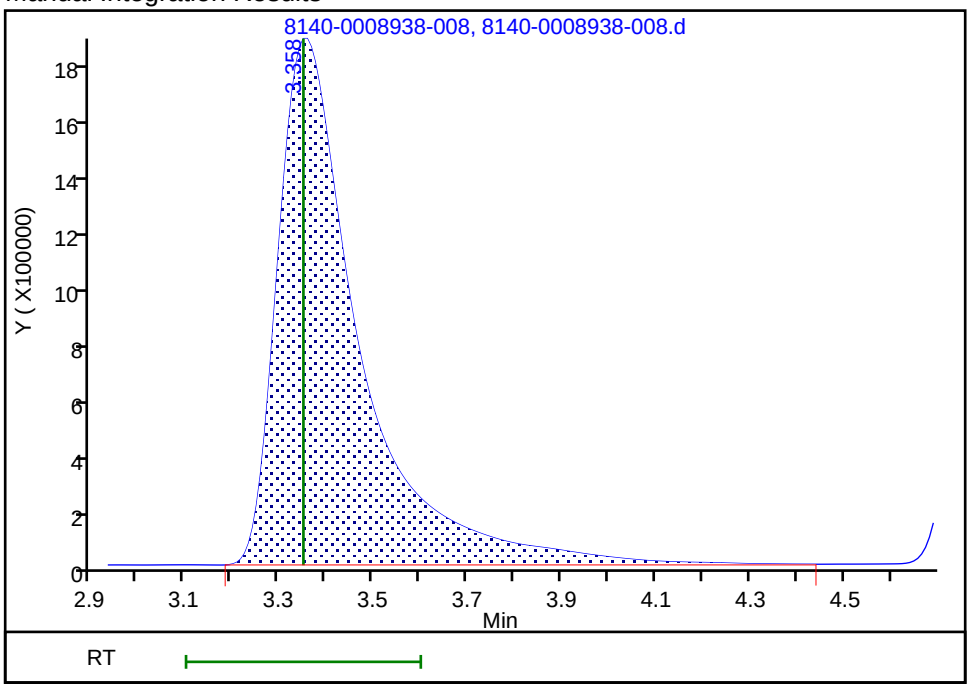
Processing Integration Results

RT: 3.36
Area: 22370481
Amount: 0.748548
Amount Units: ug/ml



Manual Integration Results

RT: 3.36
Area: 22370481
Amount: 0.748548
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 13:06:18
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

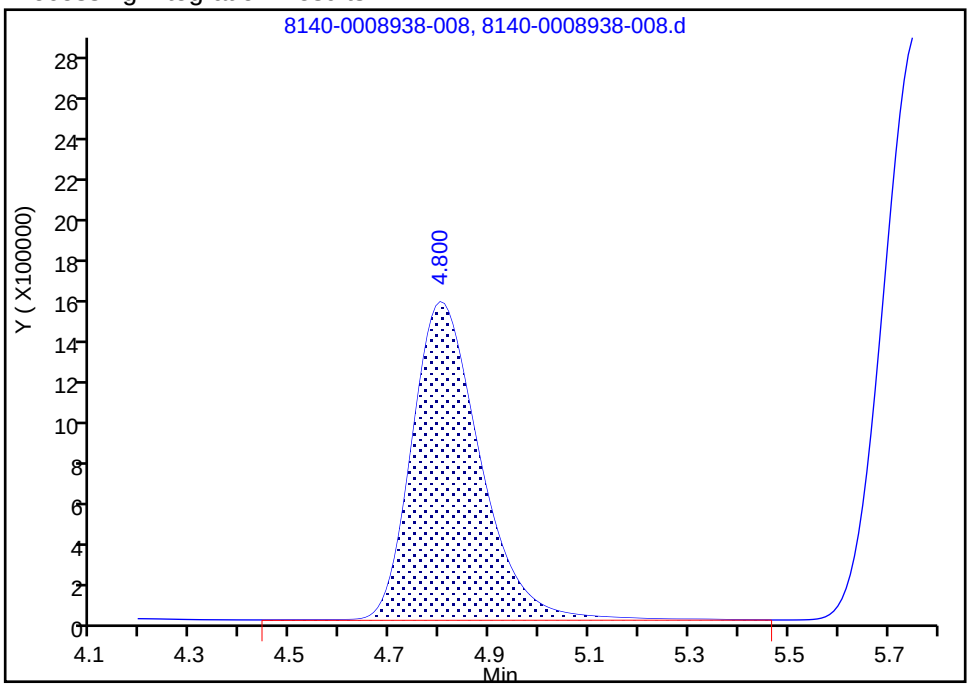
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\8140-0008938-008.d				
Injection Date:	01-Aug-2018 12:03:00	Instrument ID:	1500		
Lims ID:	ICV				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

2 Chloride, CAS: 16887-00-6

Signal: 1

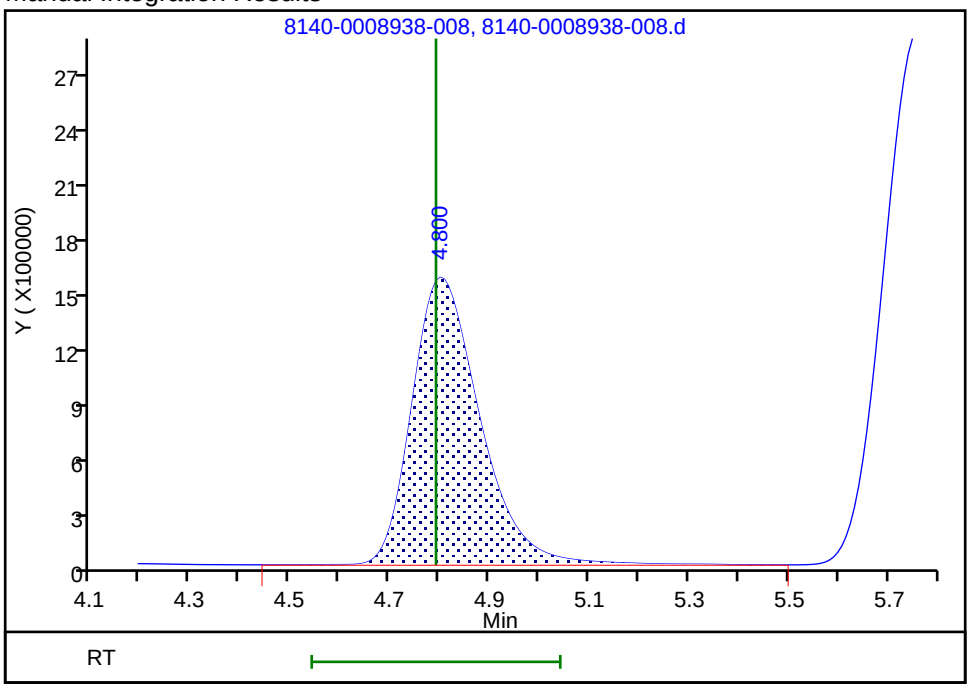
Processing Integration Results

RT: 4.80
Area: 14663354
Amount: 0.751011
Amount Units: ug/ml



Manual Integration Results

RT: 4.80
Area: 14710809
Amount: 0.753411
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 13:06:13
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

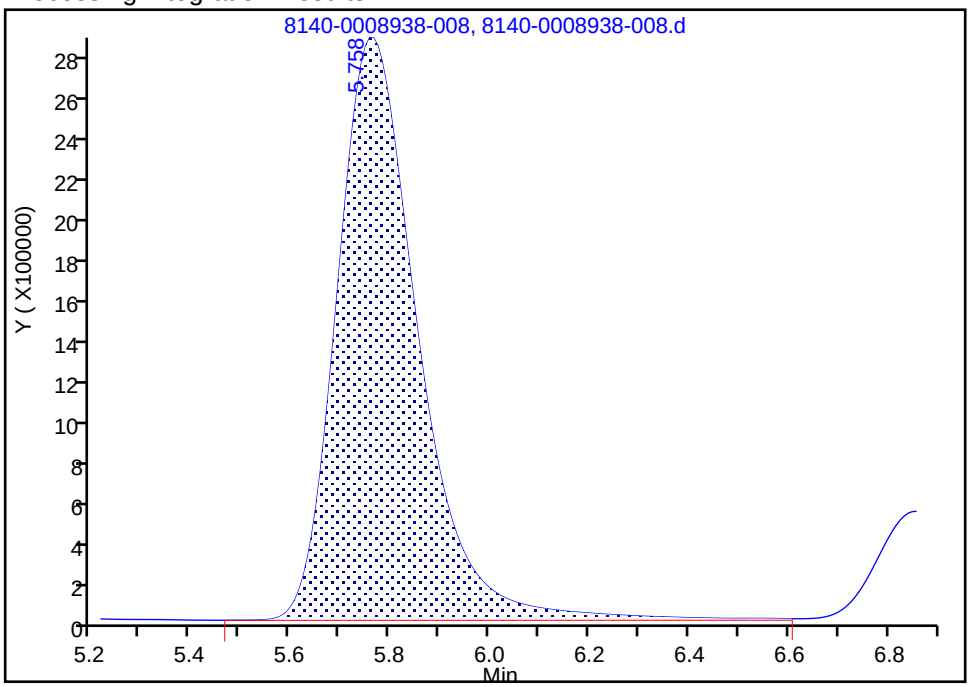
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\8140-0008938-008.d				
Injection Date:	01-Aug-2018 12:03:00	Instrument ID:	1500		
Lims ID:	ICV				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

3 Nitrite as N, CAS: 14797-65-0

Signal: 1

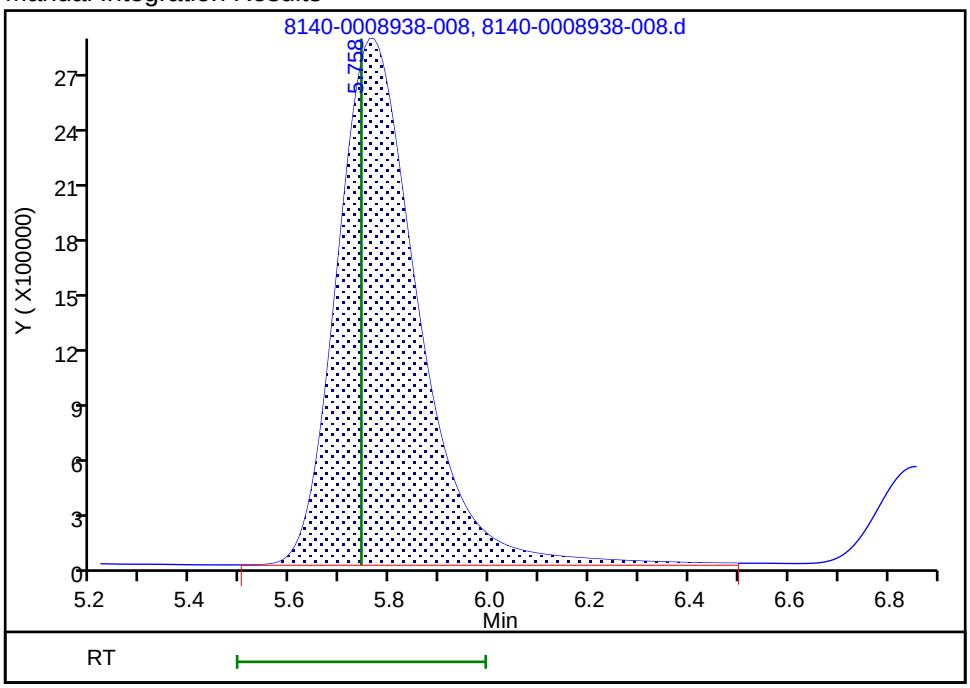
Processing Integration Results

RT: 5.76
Area: 32388396
Amount: 0.756117
Amount Units: ug/ml



Manual Integration Results

RT: 5.76
Area: 32425611
Amount: 0.756967
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 13:06:08

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

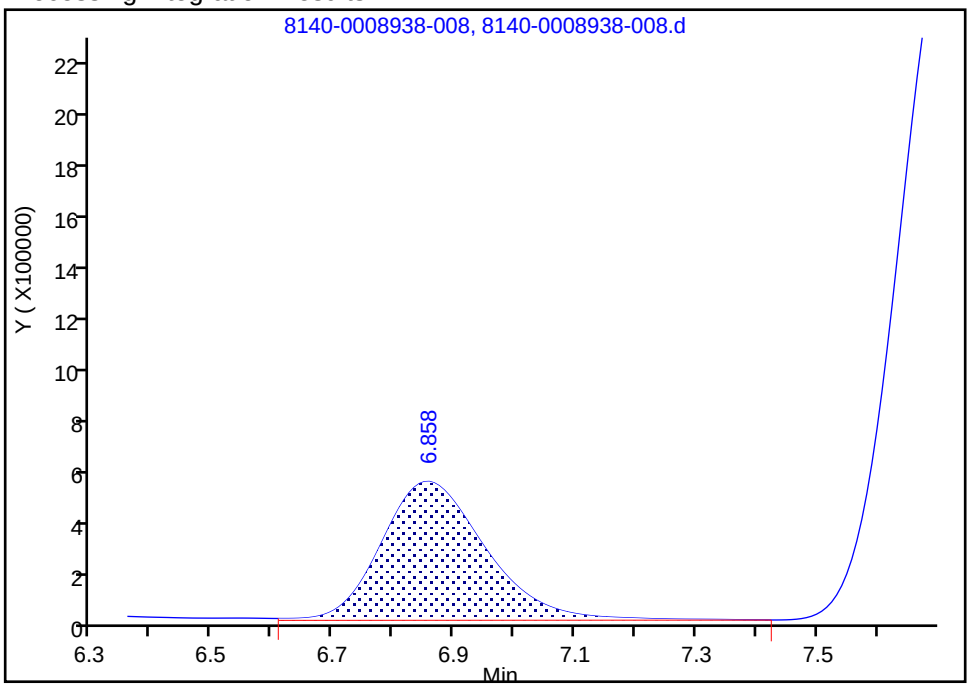
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\8140-0008938-008.d				
Injection Date:	01-Aug-2018 12:03:00	Instrument ID:	1500		
Lims ID:	ICV				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

4 Bromide, CAS: 24959-67-9

Signal: 1

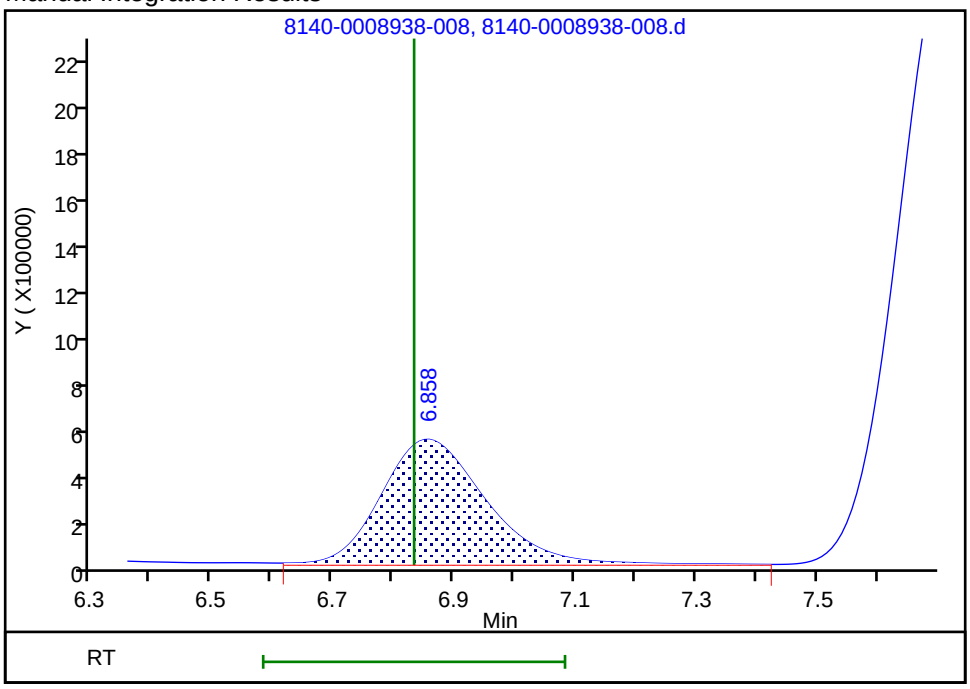
Processing Integration Results

RT: 6.86
Area: 6412040
Amount: 0.744649
Amount Units: ug/ml



Manual Integration Results

RT: 6.86
Area: 6527770
Amount: 0.758007
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 13:06:03
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

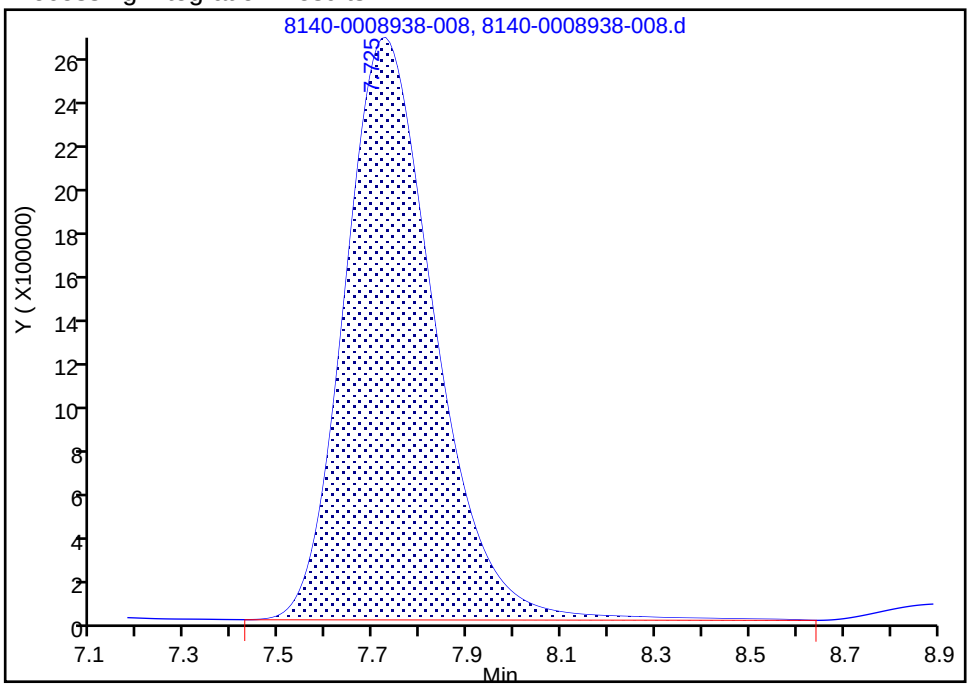
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\8140-0008938-008.d				
Injection Date:	01-Aug-2018 12:03:00	Instrument ID:	1500		
Lims ID:	ICV				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

5 Nitrate as N, CAS: 14797-55-8

Signal: 1

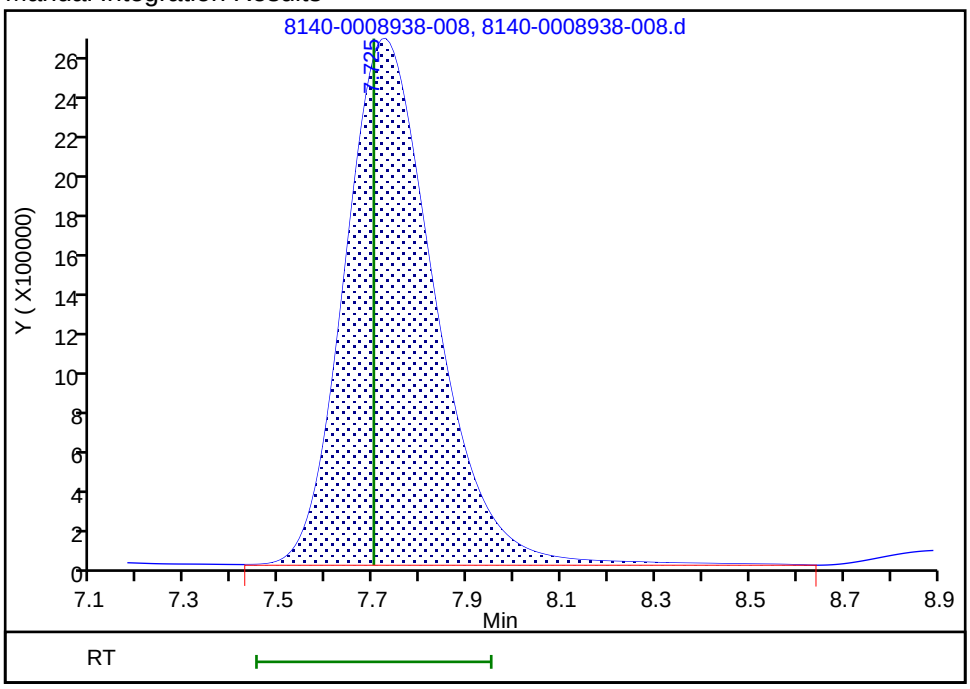
Processing Integration Results

RT: 7.73
Area: 35315205
Amount: 0.718016
Amount Units: ug/ml



Manual Integration Results

RT: 7.73
Area: 35422734
Amount: 0.720143
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 13:05:57
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

FORM VII
HPLC/IC CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1

SDG No.:

Lab Sample ID: CCV 140-24330/1 Calibration Date: 10/09/2018 07:58

Instrument ID: 1500 Calib Start Date: 08/01/2018 09:59

GC Column: AS22 ID: Calib End Date: 08/01/2018 11:43

Lab File ID: 11140-0009606-001.d Conc. Units: mg/L

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Fluoride	QuaF		27781237		0.925	1.00	-7.5	10.0
Chloride	QuaF		18321398		0.936	1.00	-6.5	10.0
Nitrite as N	QuaF		39889630		0.927	1.00	-7.3	10.0
Bromide	QuaF		8079756		0.937	1.00	-6.3	10.0
Nitrate as N	QuaF		45438050		0.917	1.00	-8.3	10.0

FORM VII 0050/26A

FORM VII
HPLC/IC CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1

SDG No.:

Lab Sample ID: CCV 140-24330/1 Calibration Date: 10/09/2018 07:58

Instrument ID: 1500 Calib Start Date: 08/01/2018 09:59

GC Column: AS22 ID: Calib End Date: 08/01/2018 11:43

Lab File ID: 11140-0009606-001.d

Analyte	RT	RT WINDOW	
		FROM	TO
Fluoride	3.33	3.08	3.58
Chloride	4.73	4.48	4.98
Nitrite as N	5.67	5.42	5.92
Bromide	6.73	6.48	6.98
Nitrate as N	7.57	7.32	7.82

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\11140-0009606-001.d
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 09-Oct-2018 07:58:00 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0009606-001
Misc. Info.: 11 ccv
Operator ID: Instrument ID: 1500
Sublist: chrom-0050_26A_1500*sub3

Method: \\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 10-Oct-2018 07:19:37 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK015

First Level Reviewer: humphreyj Date: 10-Oct-2018 06:55:20

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride	3.333	3.333	0.000	27781237	1.00	0.9250	Ma
	2 Chloride	4.733	4.733	0.000	18321398	1.00	0.9355	Ma
	3 Nitrite as N	5.667	5.667	0.000	39889630	1.00	0.9265	Ma
	4 Bromide	6.733	6.733	0.000	8079756	1.00	0.9369	Ma
	5 Nitrate as N	7.567	7.567	0.000	45438050	1.00	0.9169	Ma
S	7 Hydrogen Chloride					1.03	0.9620	
S	8 Hydro Fluoric Acid					1.05	0.9743	
S	9 Hydrobromic Acid					1.01	0.9487	
S	10 Nitric acid					4.50	4.12	
S	11 Nitrous Acid					3.36	3.11	
S	12 Br					1.00	0.9369	
S	13 Chlorine					1.00	0.9355	

QC Flag Legend

Review Flags
M - Manually Integrated
a - User Assigned ID

Reagents:

85CVM26AP_00083 Amount Added: 10.00 Units: mL

Report Date: 10-Oct-2018 07:19:38 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\11140-0009606-001.d

Injection Date: 09-Oct-2018 07:58:00 Instrument ID: 1500 Operator ID:

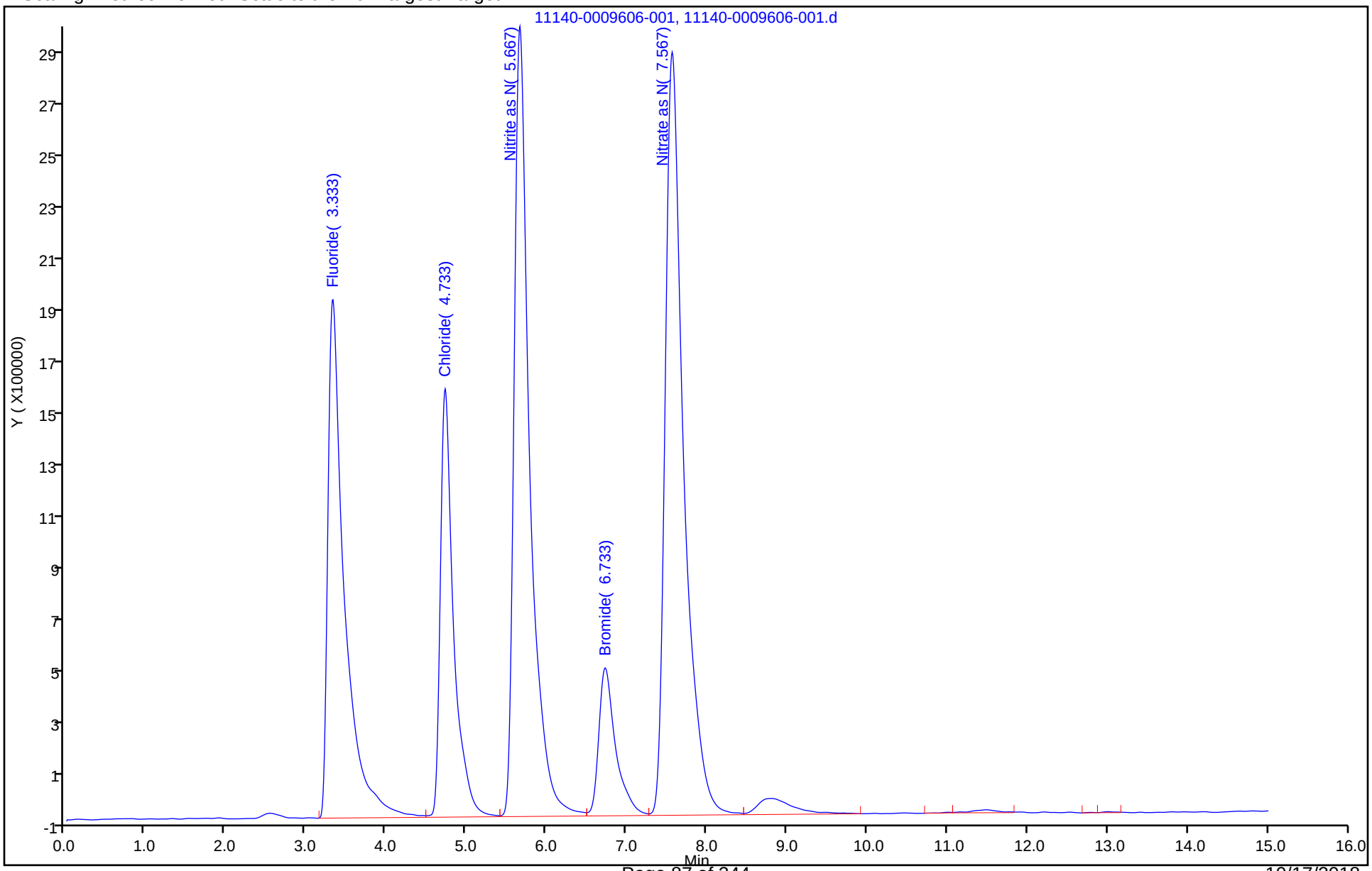
Lims ID: CCV Worklist Smp#: 1

Client ID:

Injection Vol: 1.0 ul Dil. Factor: 1.0000 ALS Bottle#: 0

Method: 0050_26A_1500 Limit Group: IC 0050_26A ICAL

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



Manual Integration/User Assign Peak Report

TestAmerica Knoxville

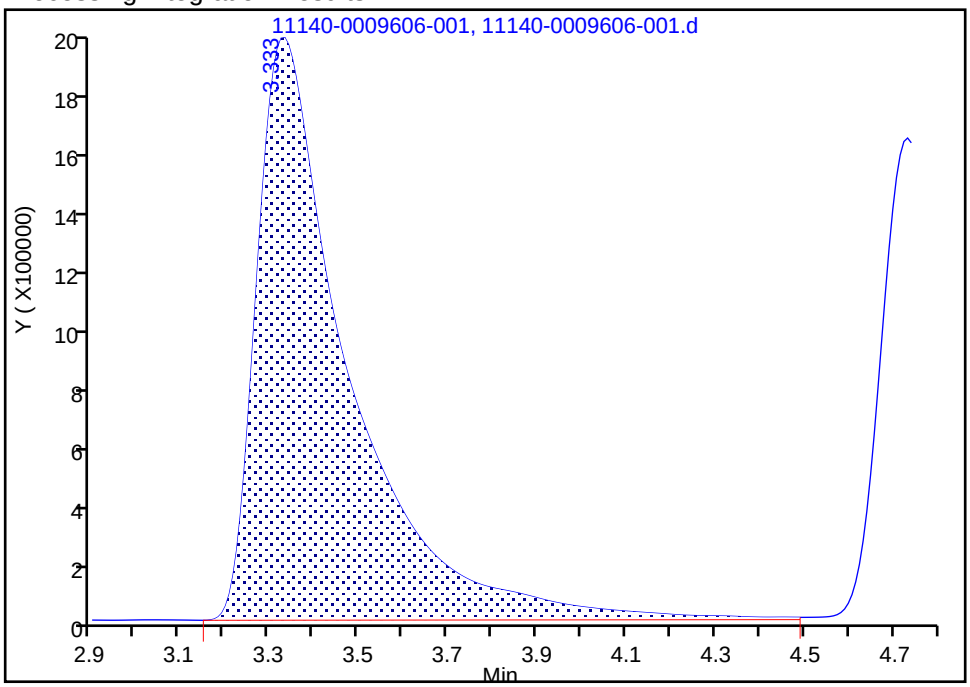
Data File:	\\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\11140-0009606-001.d				
Injection Date:	09-Oct-2018 07:58:00	Instrument ID:	1500		
Lims ID:	CCV				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	1
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

1 Fluoride, CAS: 16984-48-8

Signal: 1

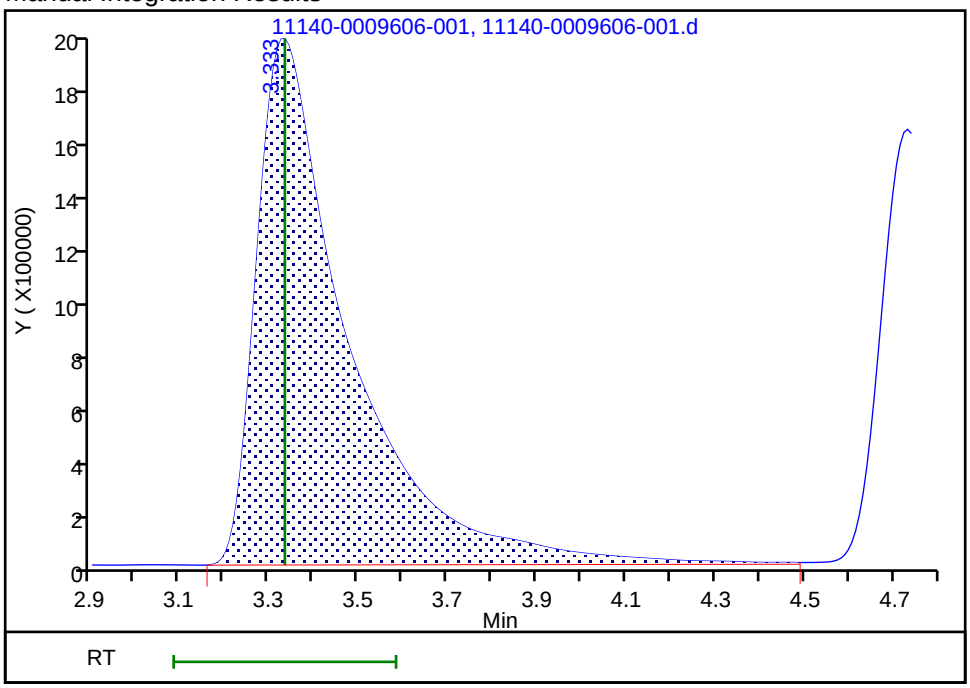
Processing Integration Results

RT: 3.33
Area: 27842546
Amount: 0.927011
Amount Units: ug/ml



Manual Integration Results

RT: 3.33
Area: 27781237
Amount: 0.925021
Amount Units: ug/ml



Reviewer: humphreyj, 10-Oct-2018 06:54:43

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

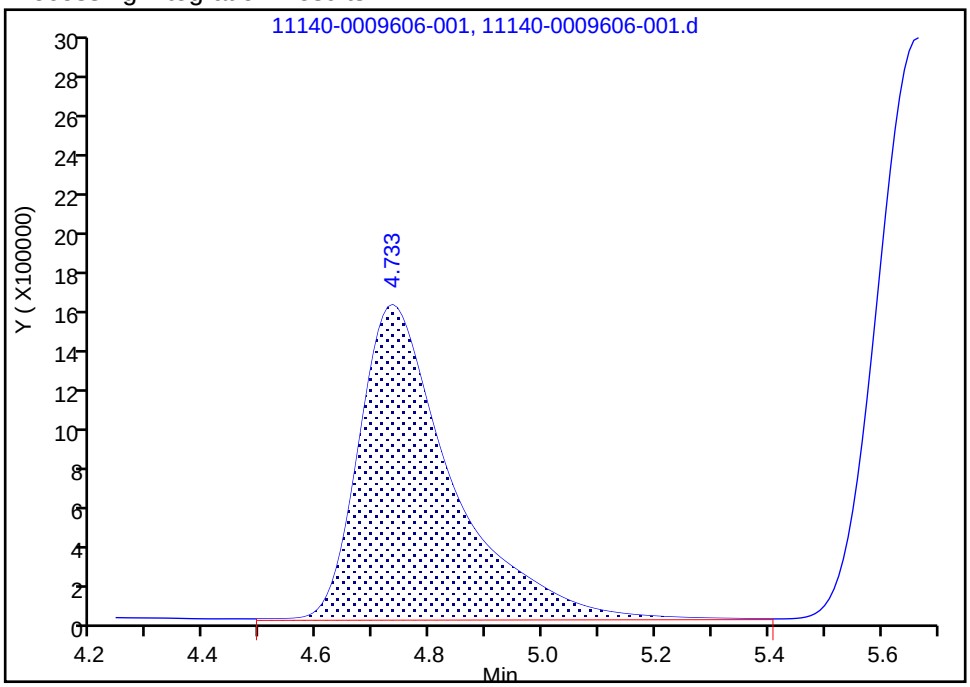
Data File:	\\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\11140-0009606-001.d				
Injection Date:	09-Oct-2018 07:58:00	Instrument ID:	1500		
Lims ID:	CCV				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	1
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

2 Chloride, CAS: 16887-00-6

Signal: 1

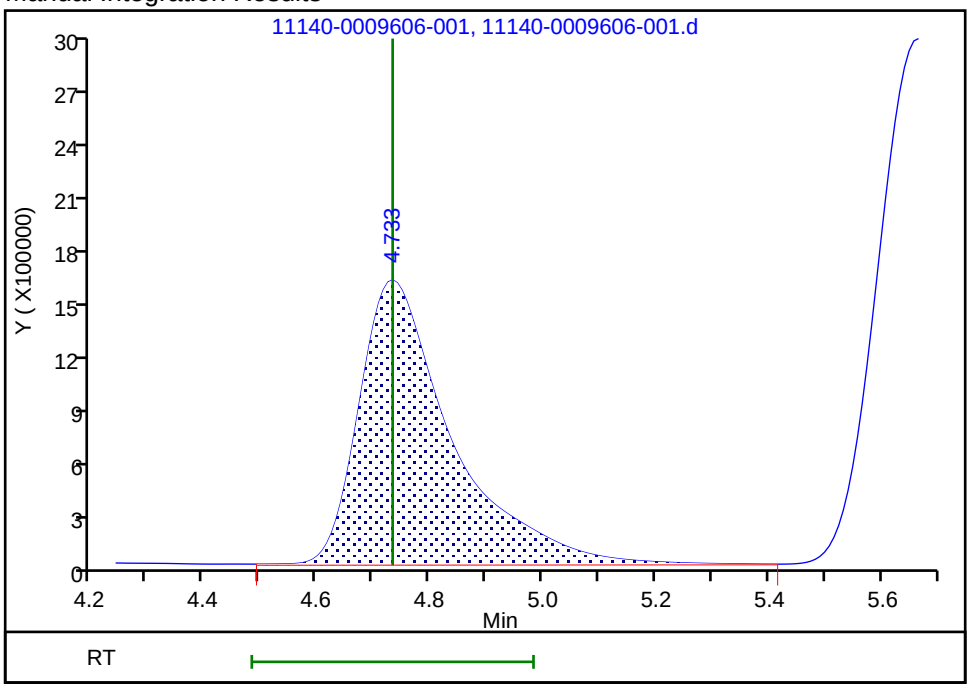
Processing Integration Results

RT: 4.73
Area: 18345181
Amount: 0.936656
Amount Units: ug/ml



Manual Integration Results

RT: 4.73
Area: 18321398
Amount: 0.935460
Amount Units: ug/ml



Reviewer: humphreyj, 10-Oct-2018 06:54:48

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

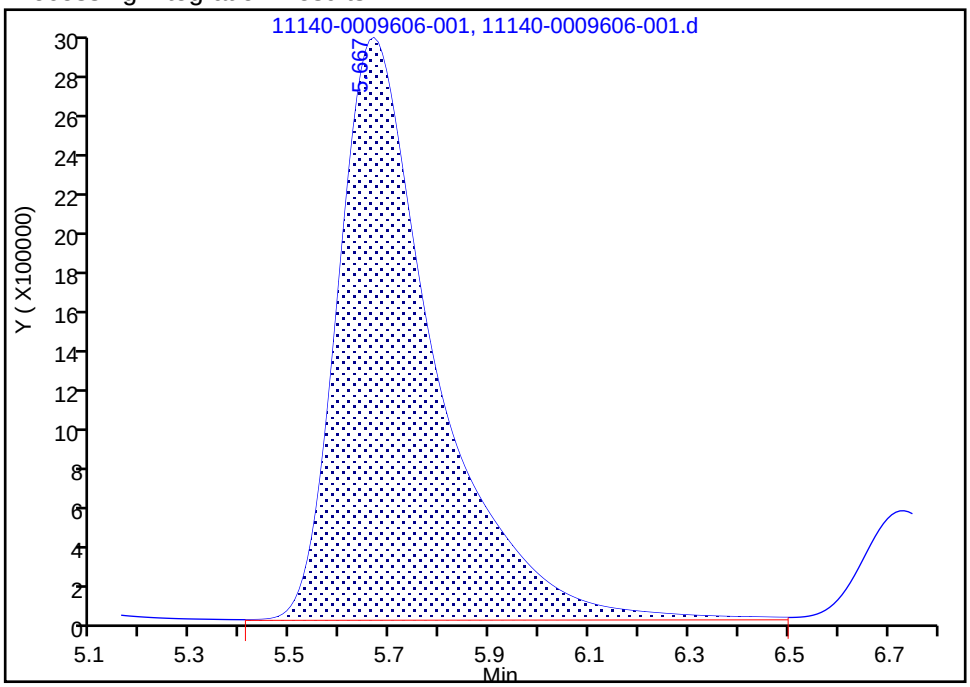
Data File:	\\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\11140-0009606-001.d				
Injection Date:	09-Oct-2018 07:58:00	Instrument ID:	1500		
Lims ID:	CCV				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	1
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

3 Nitrite as N, CAS: 14797-65-0

Signal: 1

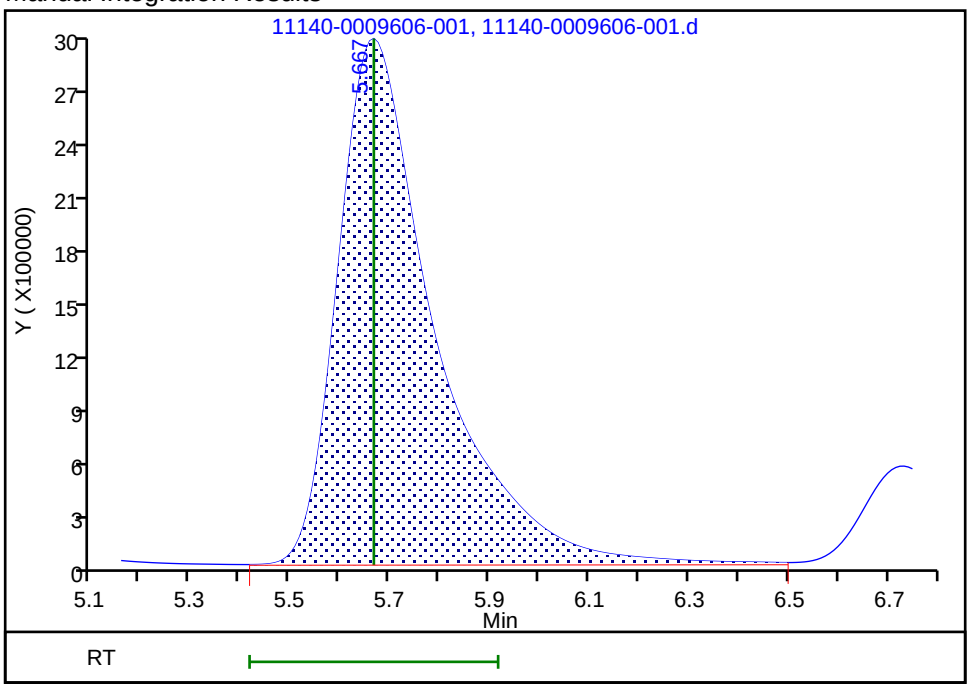
Processing Integration Results

RT: 5.67
Area: 39863575
Amount: 0.925934
Amount Units: ug/ml



Manual Integration Results

RT: 5.67
Area: 39889630
Amount: 0.926523
Amount Units: ug/ml



Reviewer: humphreyj, 10-Oct-2018 06:54:53

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

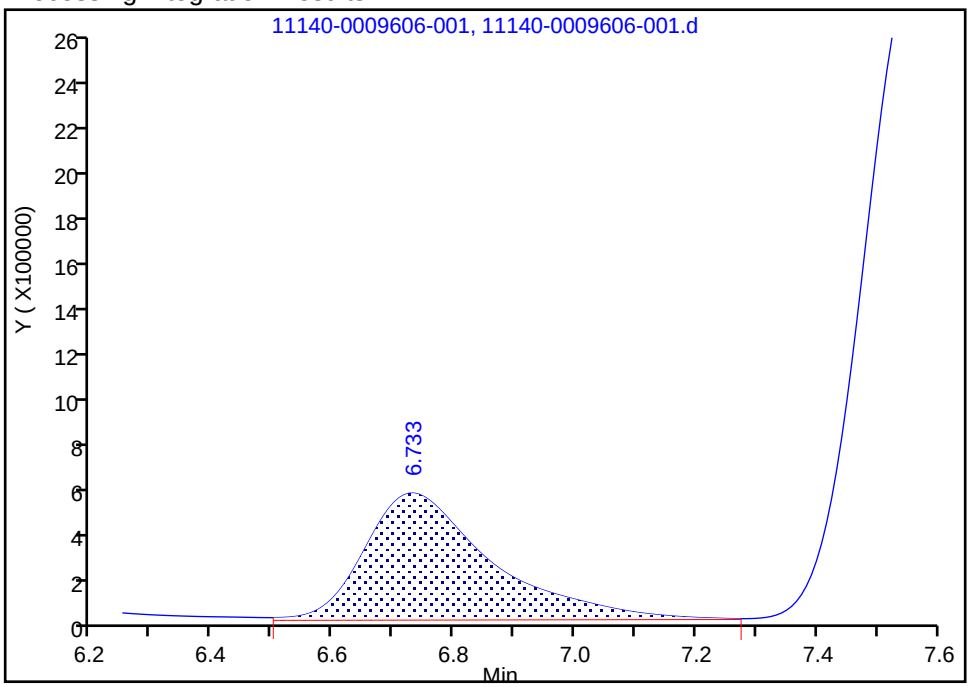
Data File:	\\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\11140-0009606-001.d				
Injection Date:	09-Oct-2018 07:58:00	Instrument ID:	1500		
Lims ID:	CCV				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	1
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

4 Bromide, CAS: 24959-67-9

Signal: 1

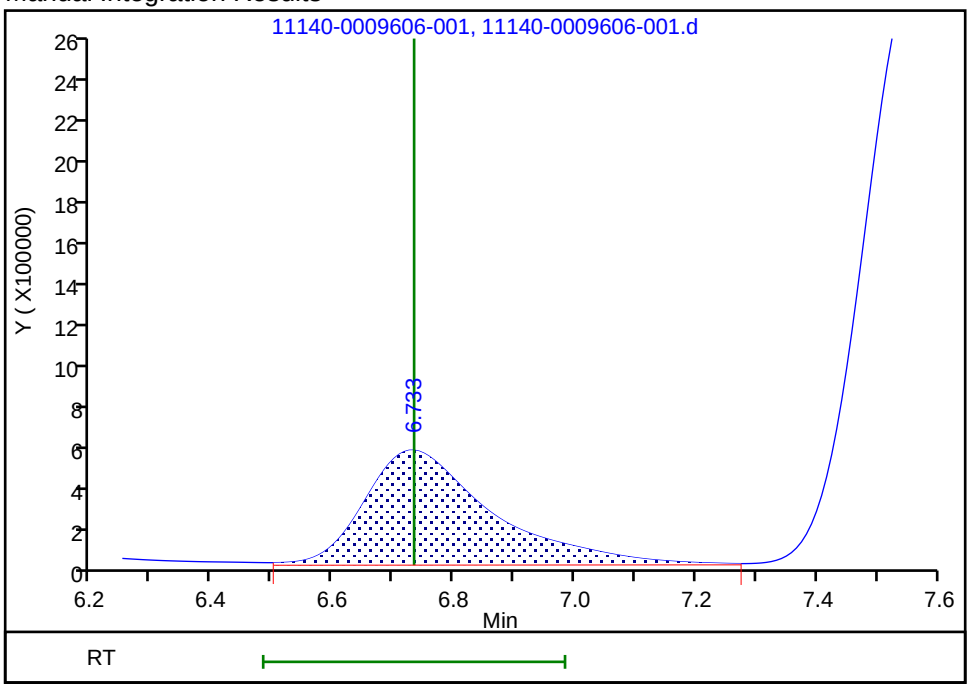
Processing Integration Results

RT: 6.73
Area: 8012191
Amount: 0.929081
Amount Units: ug/ml



Manual Integration Results

RT: 6.73
Area: 8079756
Amount: 0.936856
Amount Units: ug/ml



Reviewer: humphreyj, 10-Oct-2018 06:54:58

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

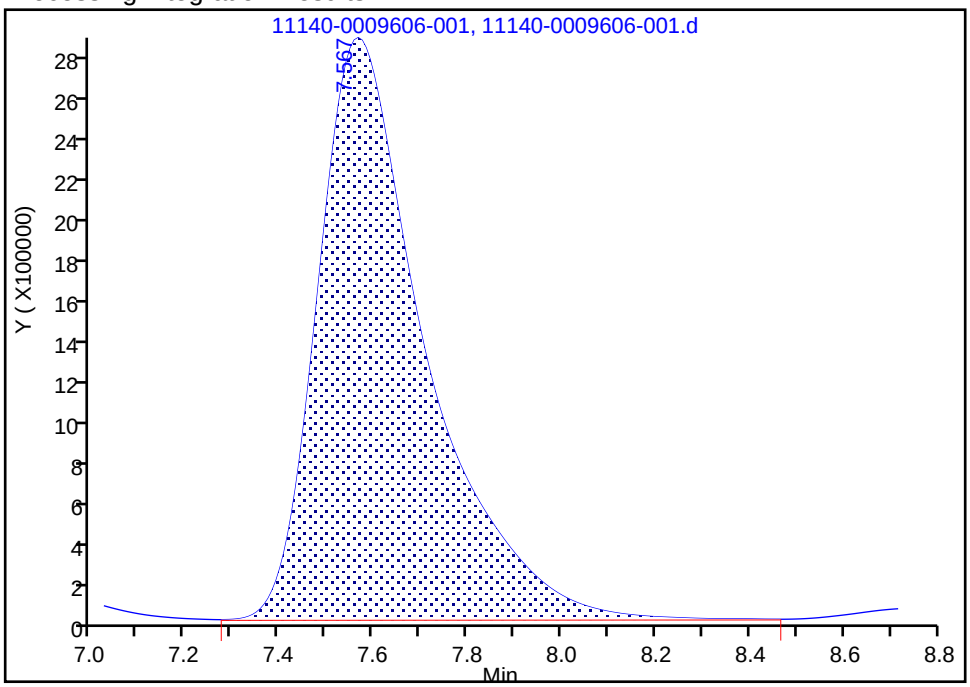
Data File:	\\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\11140-0009606-001.d				
Injection Date:	09-Oct-2018 07:58:00	Instrument ID:	1500		
Lims ID:	CCV				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	1
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

5 Nitrate as N, CAS: 14797-55-8

Signal: 1

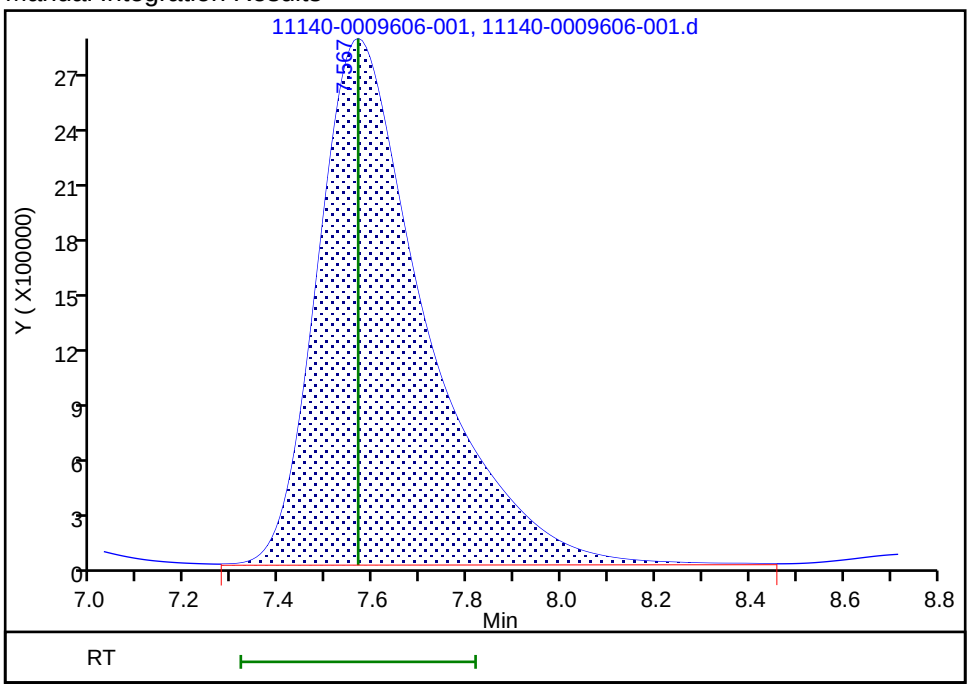
Processing Integration Results

RT: 7.57
Area: 45296646
Amount: 0.914132
Amount Units: ug/ml



Manual Integration Results

RT: 7.57
Area: 45438050
Amount: 0.916890
Amount Units: ug/ml



Reviewer: humphreyj, 10-Oct-2018 06:55:02
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

FORM VII
HPLC/IC CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1

SDG No.:

Lab Sample ID: CCV 140-24330/13 Calibration Date: 10/09/2018 11:30

Instrument ID: 1500 Calib Start Date: 08/01/2018 09:59

GC Column: AS22 ID: Calib End Date: 08/01/2018 11:43

Lab File ID: 23140-0009606-013.d Conc. Units: mg/L

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Fluoride	QuaF		28743632		0.956	1.00	-4.4	10.0
Chloride	QuaF		18609706		0.950	1.00	-5.0	10.0
Nitrite as N	QuaF		40987696		0.951	1.00	-4.9	10.0
Bromide	QuaF		8191553		0.950	1.00	-5.0	10.0
Nitrate as N	QuaF		46953805		0.946	1.00	-5.4	10.0

FORM VII
HPLC/IC CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1

SDG No.:

Lab Sample ID: CCV 140-24330/13 Calibration Date: 10/09/2018 11:30

Instrument ID: 1500 Calib Start Date: 08/01/2018 09:59

GC Column: AS22 ID: Calib End Date: 08/01/2018 11:43

Lab File ID: 23140-0009606-013.d

Analyte	RT	RT WINDOW	
		FROM	TO
Fluoride	3.33	3.08	3.58
Chloride	4.73	4.48	4.98
Nitrite as N	5.67	5.42	5.92
Bromide	6.73	6.48	6.98
Nitrate as N	7.58	7.32	7.82

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\23140-0009606-013.d
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 09-Oct-2018 11:30:00 ALS Bottle#: 0 Worklist Smp#: 13
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0009606-013
Misc. Info.: 23 ccv
Operator ID: Instrument ID: 1500
Sublist: chrom-0050_26A_1500*sub3

Method: \\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 10-Oct-2018 07:19:45 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK015

First Level Reviewer: humphreyj Date: 10-Oct-2018 07:09:04

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride	3.333	3.333	0.000	28743632	1.00	0.9562	Ma
	2 Chloride	4.733	4.733	0.000	18609706	1.00	0.9500	Ma
	3 Nitrite as N	5.667	5.667	0.000	40987696	1.00	0.9513	Ma
	4 Bromide	6.733	6.733	0.000	8191553	1.00	0.9497	Ma
	5 Nitrate as N	7.575	7.567	0.008	46953805	1.00	0.9464	Ma
S	7 Hydrogen Chloride					1.03	0.9769	
S	8 Hydro Fluoric Acid					1.05	1.01	
S	9 Hydrobromic Acid					1.01	0.9617	
S	10 Nitric acid					4.50	4.26	
S	11 Nitrous Acid					3.36	3.19	
S	12 Br					1.00	0.9497	
S	13 Chlorine					1.00	0.9500	

QC Flag Legend

Review Flags
M - Manually Integrated
a - User Assigned ID

Reagents:

85CVM26AP_00083 Amount Added: 10.00 Units: mL

Report Date: 10-Oct-2018 07:19:45 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\23140-0009606-013.d

Injection Date: 09-Oct-2018 11:30:00 Instrument ID: 1500 Operator ID:

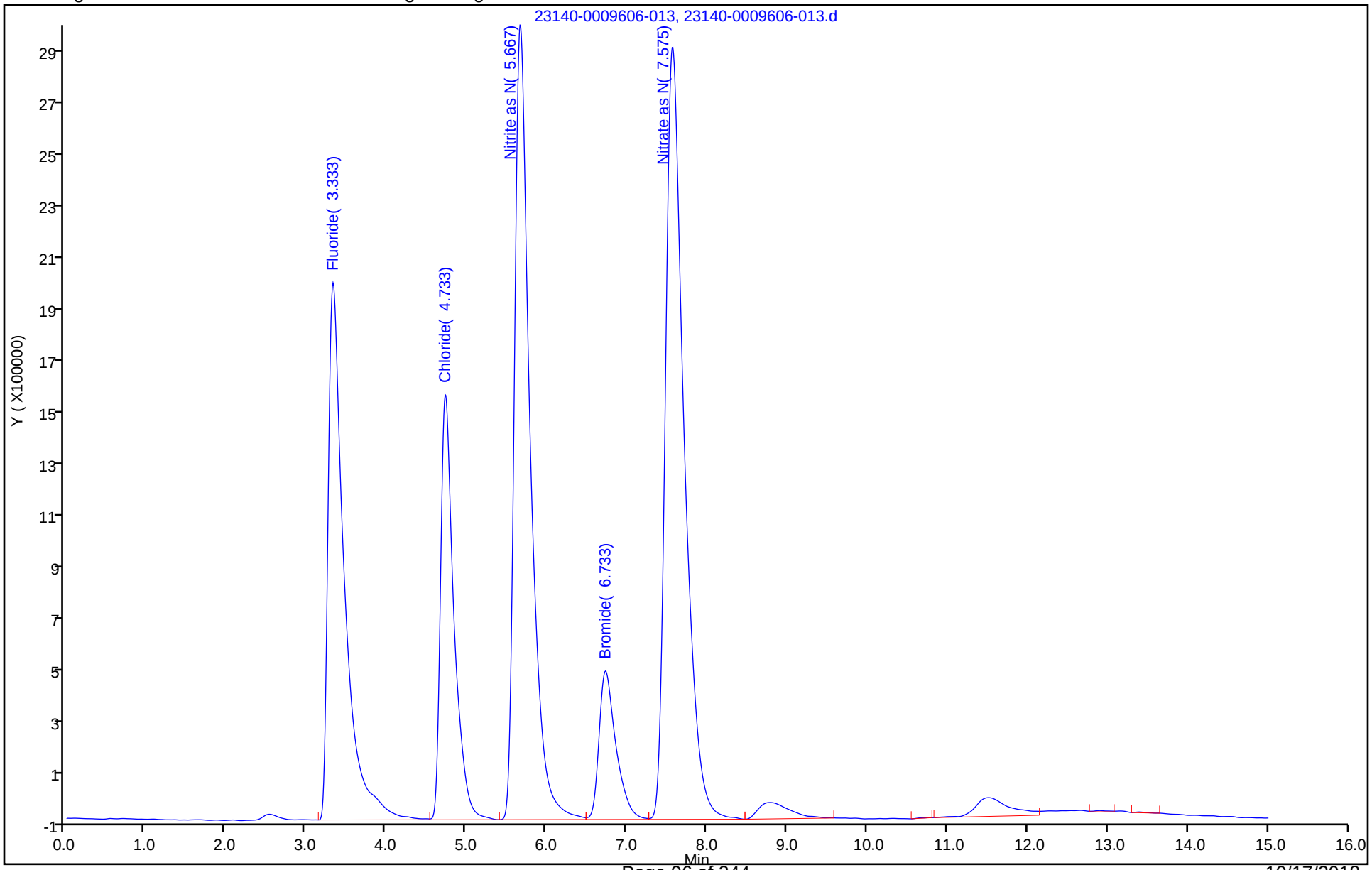
Lims ID: CCV Worklist Smp#: 13

Client ID:

Injection Vol: 1.0 ul Dil. Factor: 1.0000 ALS Bottle#: 0

Method: 0050_26A_1500 Limit Group: IC 0050_26A ICAL

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



Manual Integration/User Assign Peak Report

TestAmerica Knoxville

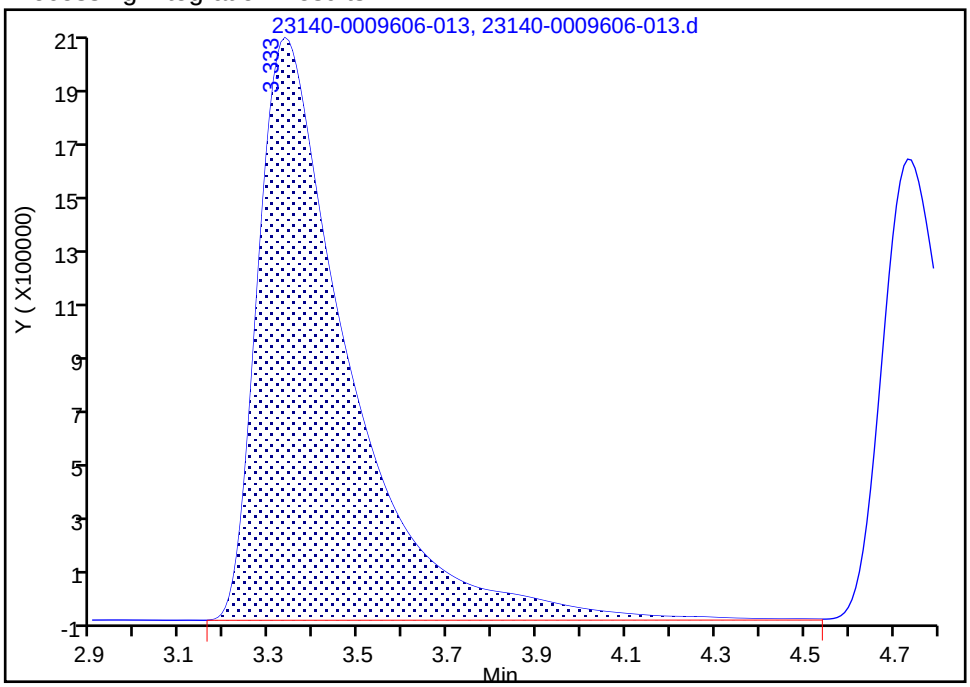
Data File:	\\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\23140-0009606-013.d				
Injection Date:	09-Oct-2018 11:30:00	Instrument ID:	1500		
Lims ID:	CCV				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

1 Fluoride, CAS: 16984-48-8

Signal: 1

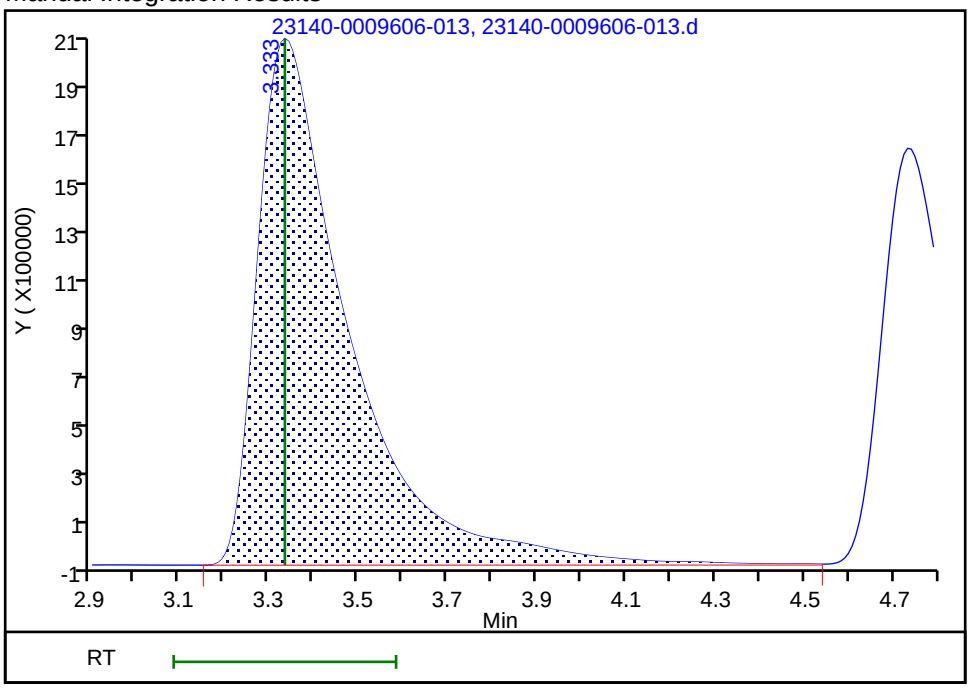
Processing Integration Results

RT: 3.33
Area: 28731423
Amount: 0.955837
Amount Units: ug/ml



Manual Integration Results

RT: 3.33
Area: 28743632
Amount: 0.956233
Amount Units: ug/ml



Reviewer: humphreyj, 10-Oct-2018 07:08:50

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

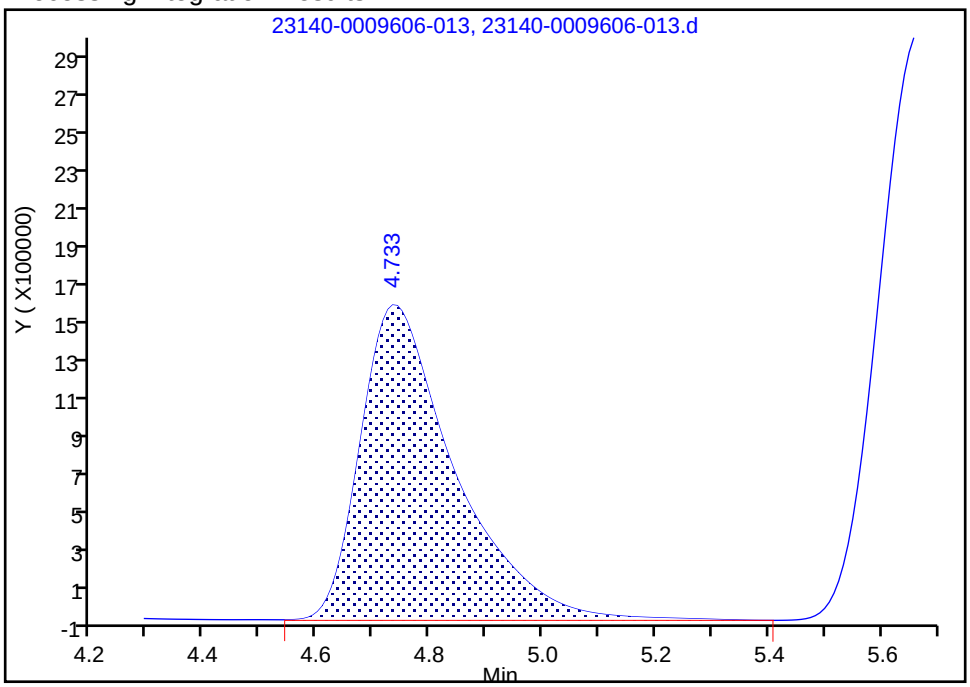
Data File:	\\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\23140-0009606-013.d				
Injection Date:	09-Oct-2018 11:30:00	Instrument ID:	1500		
Lims ID:	CCV				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

2 Chloride, CAS: 16887-00-6

Signal: 1

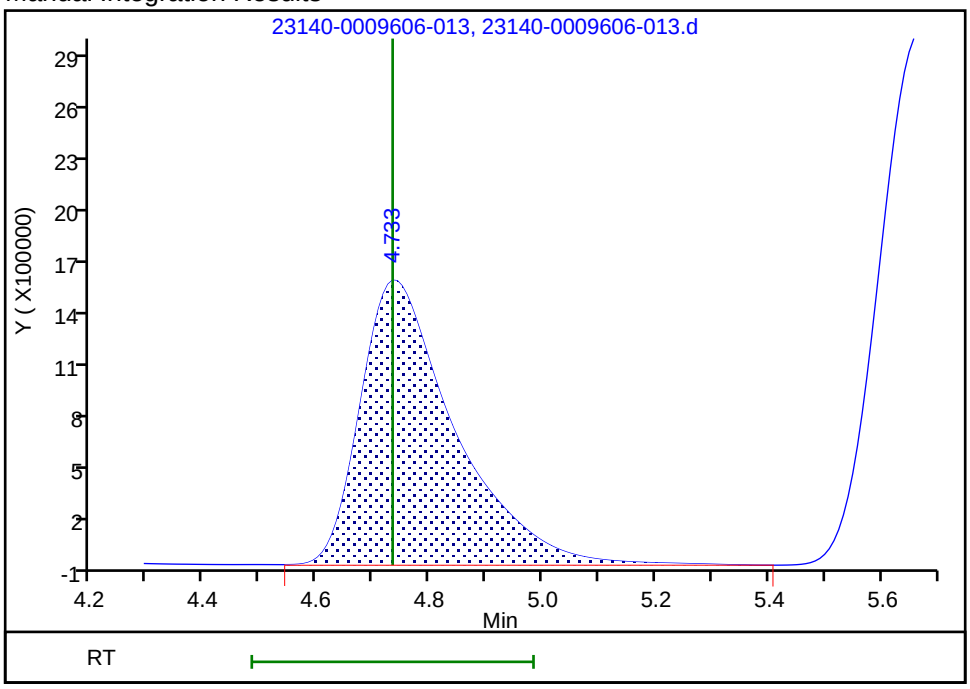
Processing Integration Results

RT: 4.73
Area: 18601984
Amount: 0.949562
Amount Units: ug/ml



Manual Integration Results

RT: 4.73
Area: 18609706
Amount: 0.949950
Amount Units: ug/ml



Reviewer: humphreyj, 10-Oct-2018 07:08:54
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

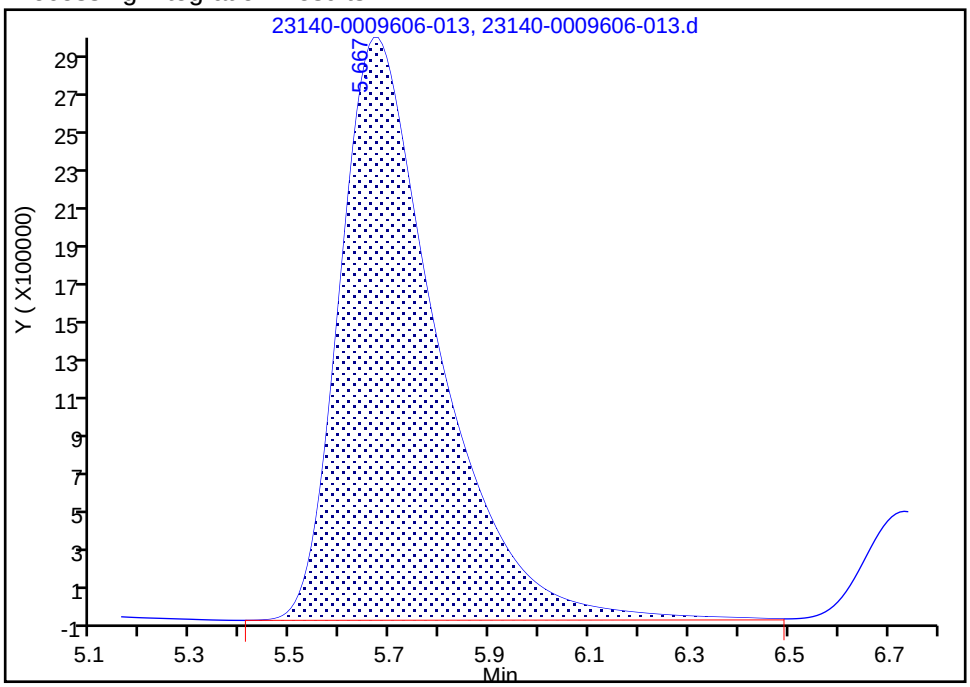
Data File:	\\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\23140-0009606-013.d				
Injection Date:	09-Oct-2018 11:30:00	Instrument ID:	1500		
Lims ID:	CCV				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

3 Nitrite as N, CAS: 14797-65-0

Signal: 1

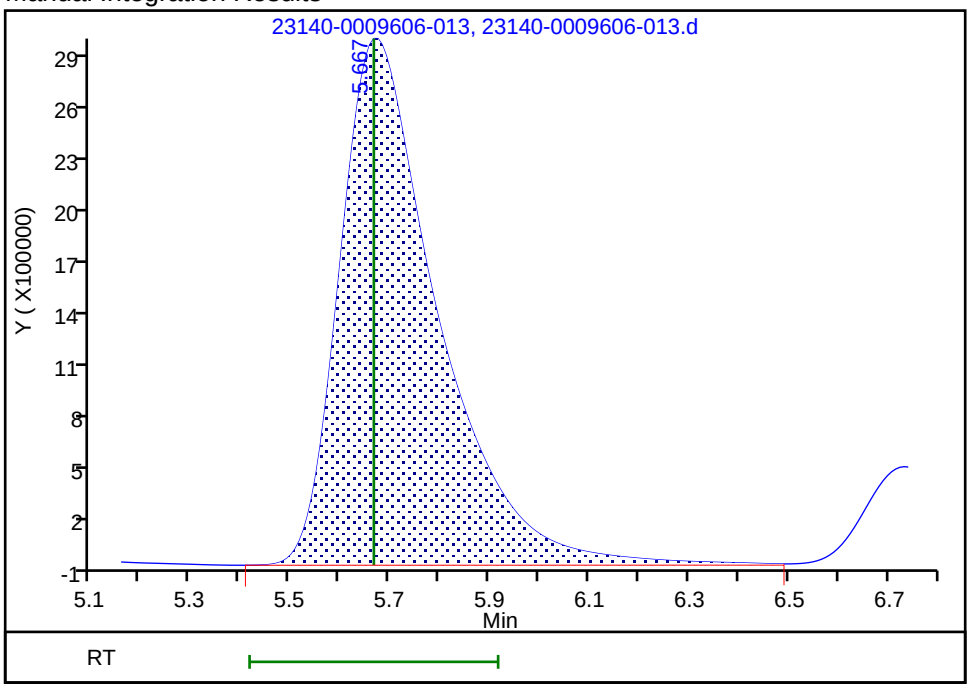
Processing Integration Results

RT: 5.67
Area: 40928676
Amount: 0.949995
Amount Units: ug/ml



Manual Integration Results

RT: 5.67
Area: 40987696
Amount: 0.951327
Amount Units: ug/ml



Reviewer: humphreyj, 10-Oct-2018 07:08:33

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

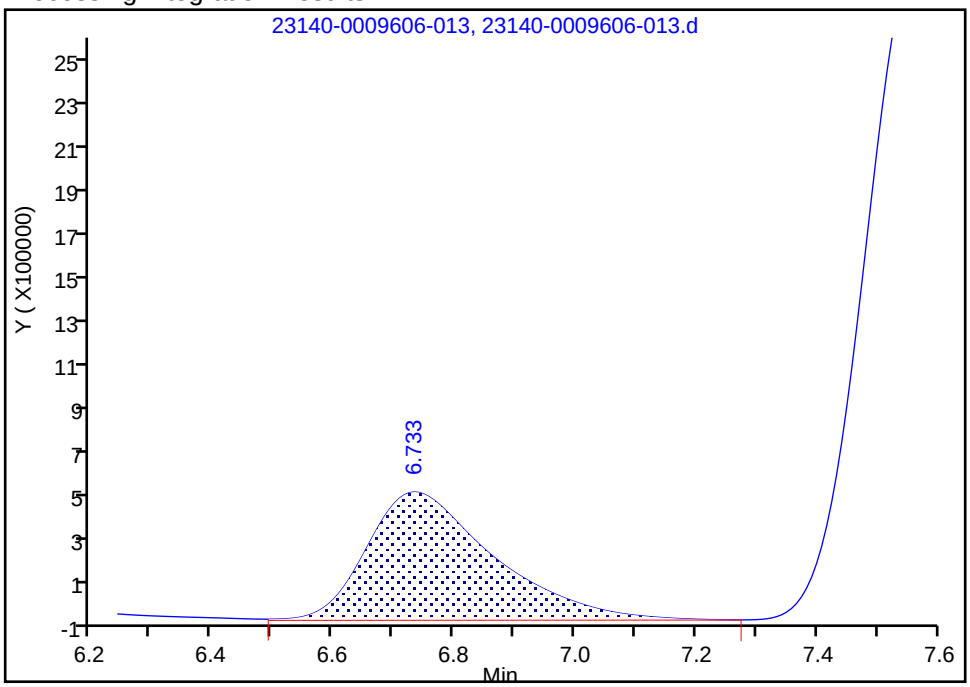
Data File:	\\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\23140-0009606-013.d				
Injection Date:	09-Oct-2018 11:30:00	Instrument ID:	1500		
Lims ID:	CCV				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

4 Bromide, CAS: 24959-67-9

Signal: 1

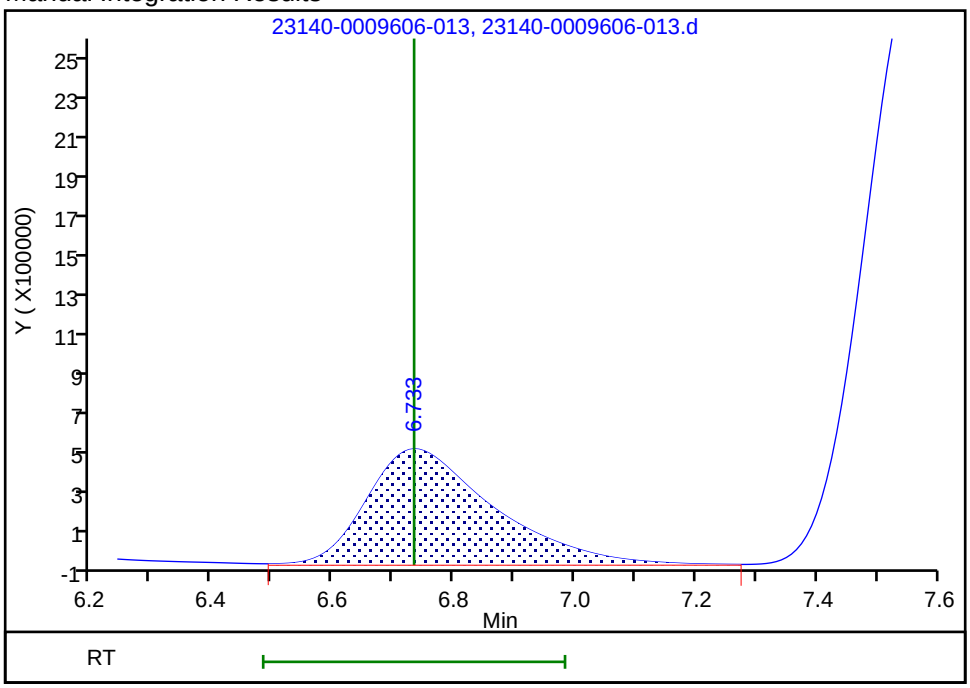
Processing Integration Results

RT: 6.73
Area: 8082818
Amount: 0.937208
Amount Units: ug/ml



Manual Integration Results

RT: 6.73
Area: 8191553
Amount: 0.949719
Amount Units: ug/ml



Reviewer: humphreyj, 10-Oct-2018 07:08:28

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

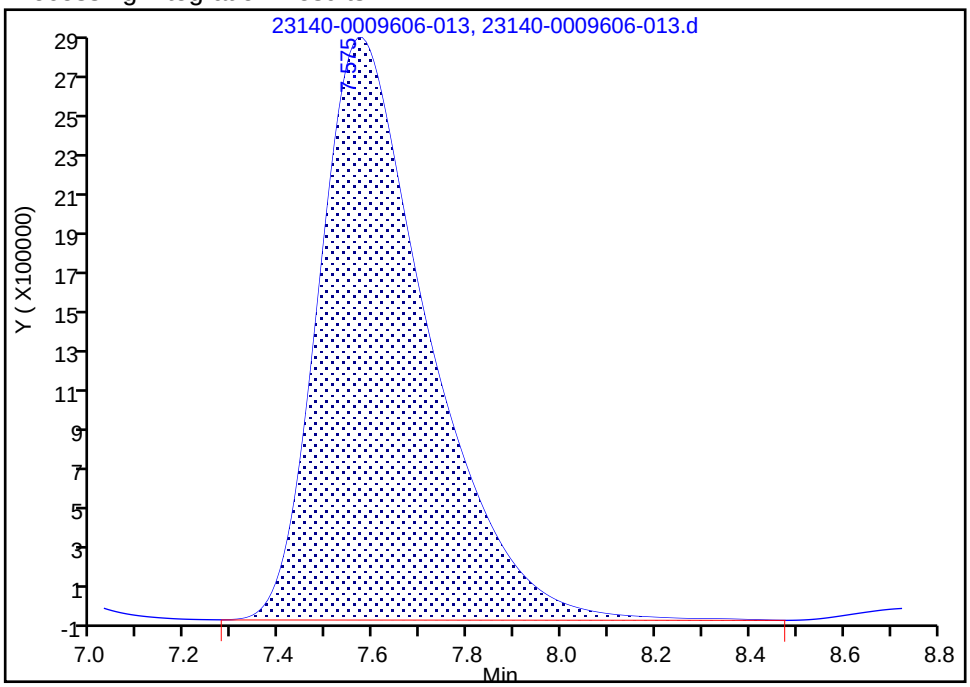
Data File:	\\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\23140-0009606-013.d				
Injection Date:	09-Oct-2018 11:30:00	Instrument ID:	1500		
Lims ID:	CCV				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

5 Nitrate as N, CAS: 14797-55-8

Signal: 1

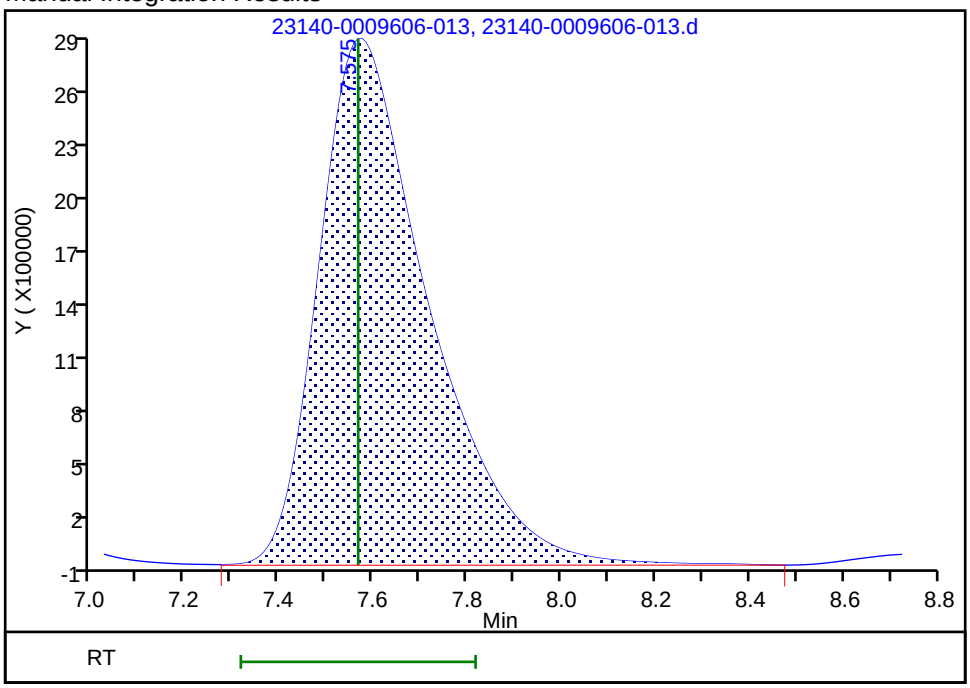
Processing Integration Results

RT: 7.58
Area: 46852608
Amount: 0.944451
Amount Units: ug/ml



Manual Integration Results

RT: 7.58
Area: 46953805
Amount: 0.946421
Amount Units: ug/ml



Reviewer: humphreyj, 10-Oct-2018 07:08:24

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

FORM VII
HPLC/IC CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1

SDG No.:

Lab Sample ID: CCV 140-24330/24 Calibration Date: 10/09/2018 14:53

Instrument ID: 1500 Calib Start Date: 08/01/2018 09:59

GC Column: AS22 ID: Calib End Date: 08/01/2018 11:43

Lab File ID: 34140-0009606-024.d Conc. Units: mg/L

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Fluoride	QuaF		29138277		0.969	1.00	-3.1	10.0
Chloride	QuaF		19998018		1.02	1.00	2.0	10.0
Nitrite as N	QuaF		41658536		0.967	1.00	-3.4	10.0
Bromide	QuaF		8550363		0.991	1.00	-0.9	10.0
Nitrate as N	QuaF		47691916		0.961	1.00	-3.9	10.0

FORM VII
HPLC/IC CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1

SDG No.:

Lab Sample ID: CCV 140-24330/24 Calibration Date: 10/09/2018 14:53

Instrument ID: 1500 Calib Start Date: 08/01/2018 09:59

GC Column: AS22 ID: Calib End Date: 08/01/2018 11:43

Lab File ID: 34140-0009606-024.d

Analyte	RT	RT WINDOW	
		FROM	TO
Fluoride	3.33	3.08	3.58
Chloride	4.74	4.48	4.98
Nitrite as N	5.68	5.42	5.92
Bromide	6.74	6.48	6.98
Nitrate as N	7.58	7.32	7.82

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\34140-0009606-024.d
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 09-Oct-2018 14:53:00 ALS Bottle#: 0 Worklist Smp#: 24
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0009606-024
Misc. Info.: 34 ccv
Operator ID: Instrument ID: 1500
Sublist: chrom-0050_26A_1500*sub3

Method: \\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 10-Oct-2018 07:28:51 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK015

First Level Reviewer: humphreyj Date: 10-Oct-2018 07:18:13

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride	3.333	3.333	0.000	29138277	1.00	0.9690	Ma
	2 Chloride	4.742	4.733	0.009	19998018	1.00	1.02	Ma
	3 Nitrite as N	5.675	5.667	0.008	41658536	1.00	0.9665	Ma
	4 Bromide	6.742	6.733	0.009	8550363	1.00	0.99	Ma
	5 Nitrate as N	7.583	7.567	0.016	47691916	1.00	0.9608	Ma
S	7 Hydrogen Chloride					1.03	1.05	
S	8 Hydro Fluoric Acid					1.05	1.02	
S	9 Hydrobromic Acid					1.01	1.00	
S	10 Nitric acid					4.50	4.32	
S	11 Nitrous Acid					3.36	3.24	
S	12 Br					1.00	0.99	
S	13 Chlorine					1.00	1.02	

QC Flag Legend

Review Flags
M - Manually Integrated
a - User Assigned ID

Reagents:

85CVM26AP_00083 Amount Added: 10.00 Units: mL

Report Date: 10-Oct-2018 07:28:51 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\34140-0009606-024.d

Injection Date: 09-Oct-2018 14:53:00 Instrument ID: 1500 Operator ID:

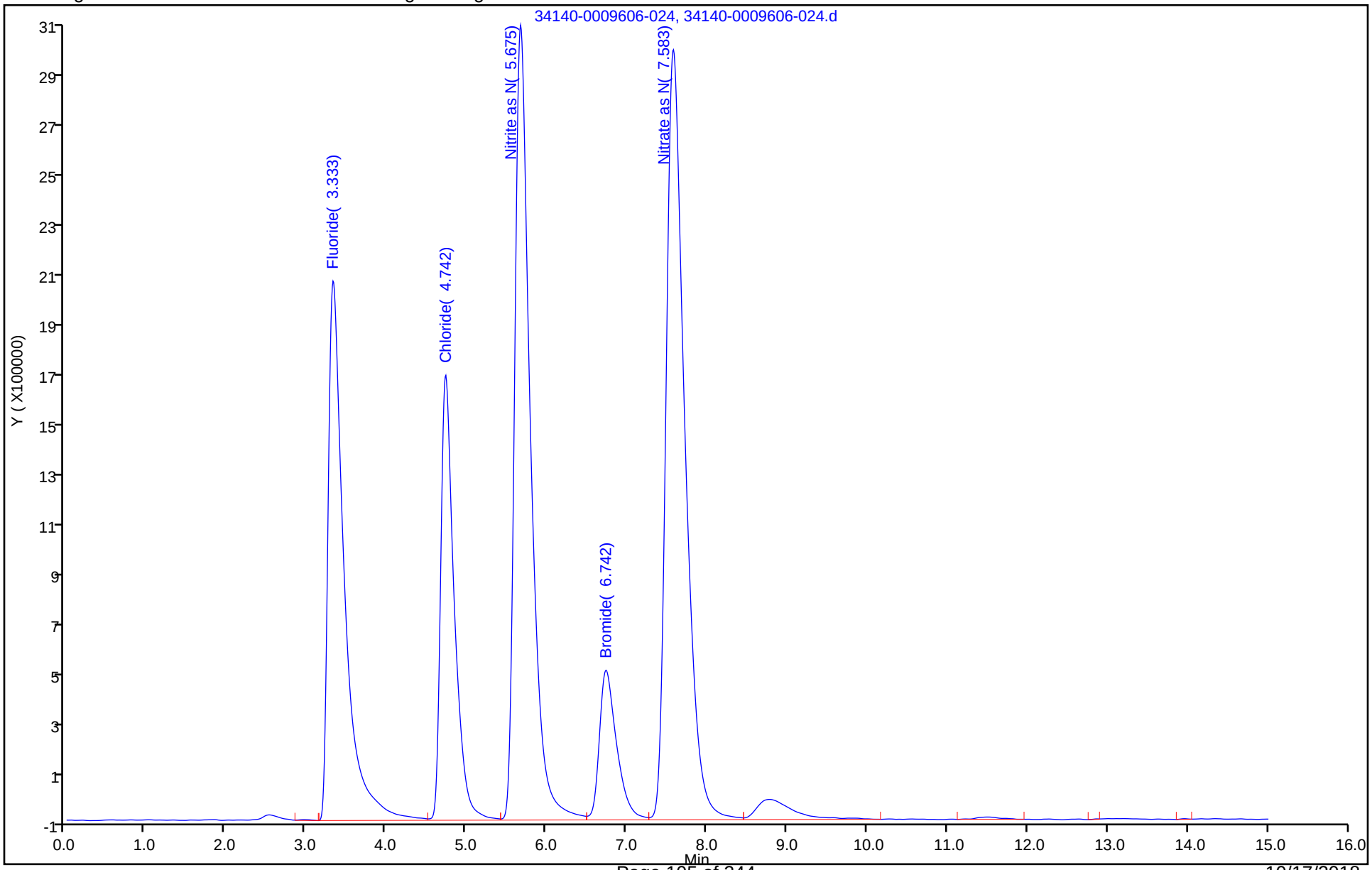
Lims ID: CCV Worklist Smp#: 24

Client ID:

Injection Vol: 1.0 ul Dil. Factor: 1.0000 ALS Bottle#: 0

Method: 0050_26A_1500 Limit Group: IC 0050_26A ICAL

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



Manual Integration/User Assign Peak Report

TestAmerica Knoxville

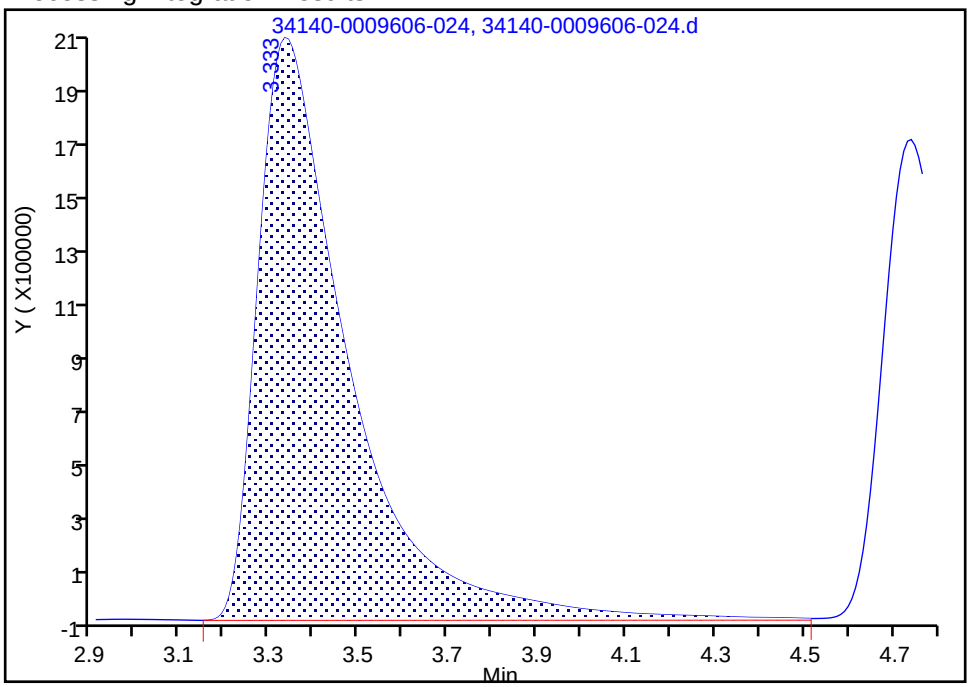
Data File:	\\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\34140-0009606-024.d				
Injection Date:	09-Oct-2018 14:53:00	Instrument ID:	1500		
Lims ID:	CCV				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	24
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

1 Fluoride, CAS: 16984-48-8

Signal: 1

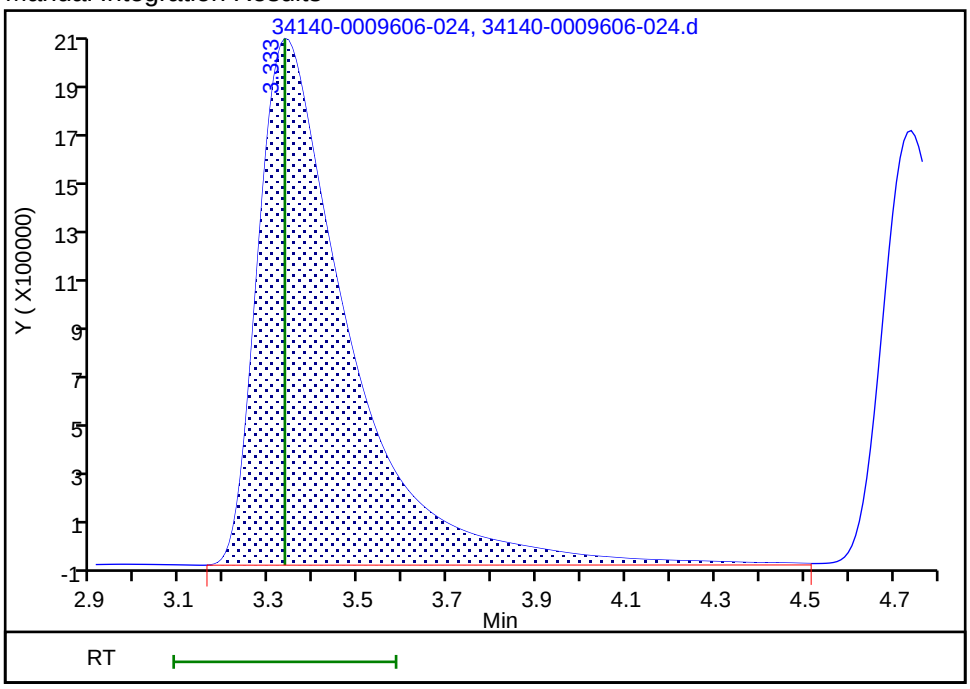
Processing Integration Results

RT: 3.33
Area: 29162992
Amount: 0.969816
Amount Units: ug/ml



Manual Integration Results

RT: 3.33
Area: 29138277
Amount: 0.969016
Amount Units: ug/ml



Reviewer: humphreyj, 10-Oct-2018 07:18:04

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

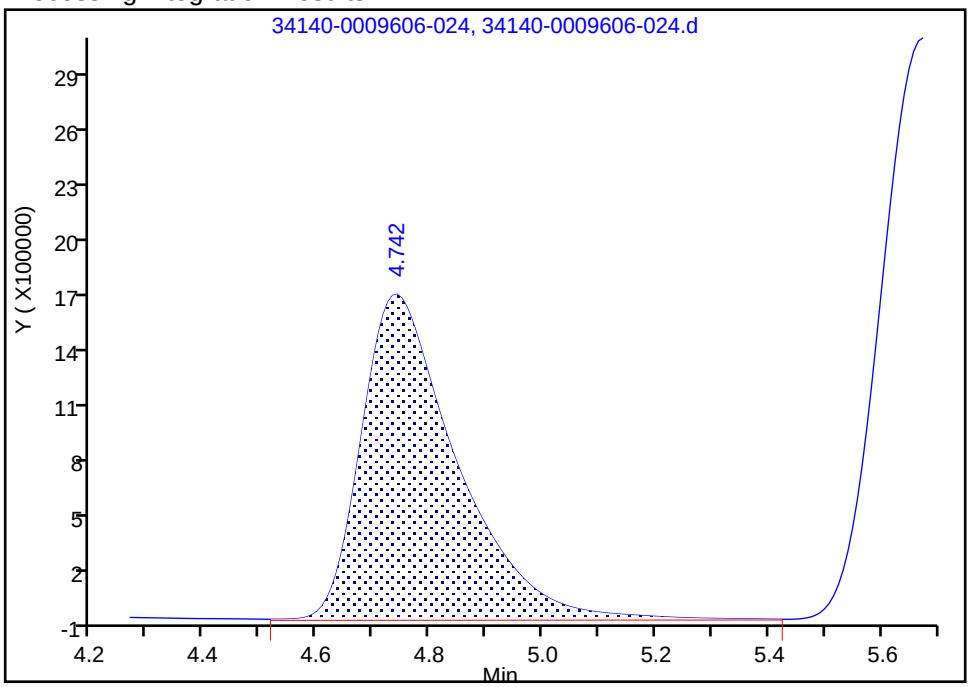
Data File:	\\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\34140-0009606-024.d				
Injection Date:	09-Oct-2018 14:53:00	Instrument ID:	1500		
Lims ID:	CCV				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	24
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

2 Chloride, CAS: 16887-00-6

Signal: 1

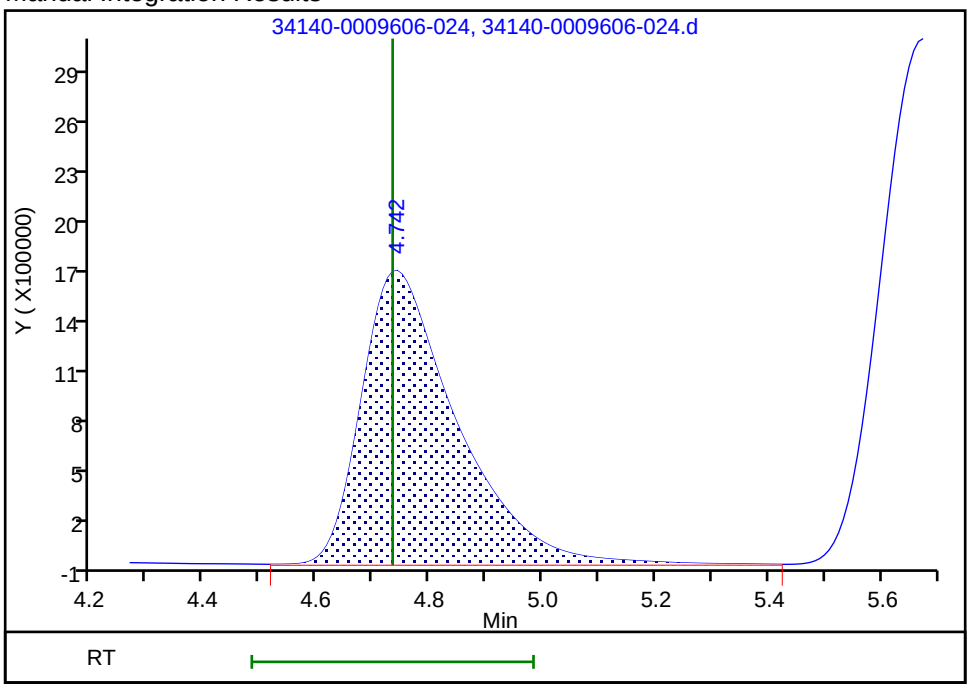
Processing Integration Results

RT: 4.74
Area: 19976954
Amount: 1.018570
Amount Units: ug/ml



Manual Integration Results

RT: 4.74
Area: 19998018
Amount: 1.019626
Amount Units: ug/ml



Reviewer: humphreyj, 10-Oct-2018 07:18:00

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

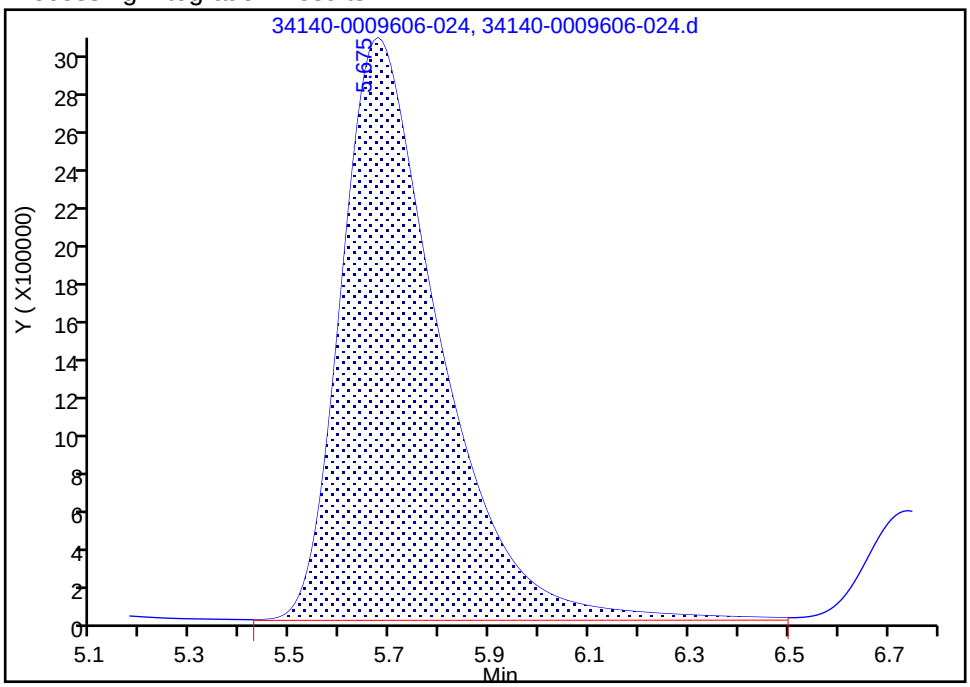
Data File:	\\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\34140-0009606-024.d				
Injection Date:	09-Oct-2018 14:53:00	Instrument ID:	1500		
Lims ID:	CCV				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	24
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

3 Nitrite as N, CAS: 14797-65-0

Signal: 1

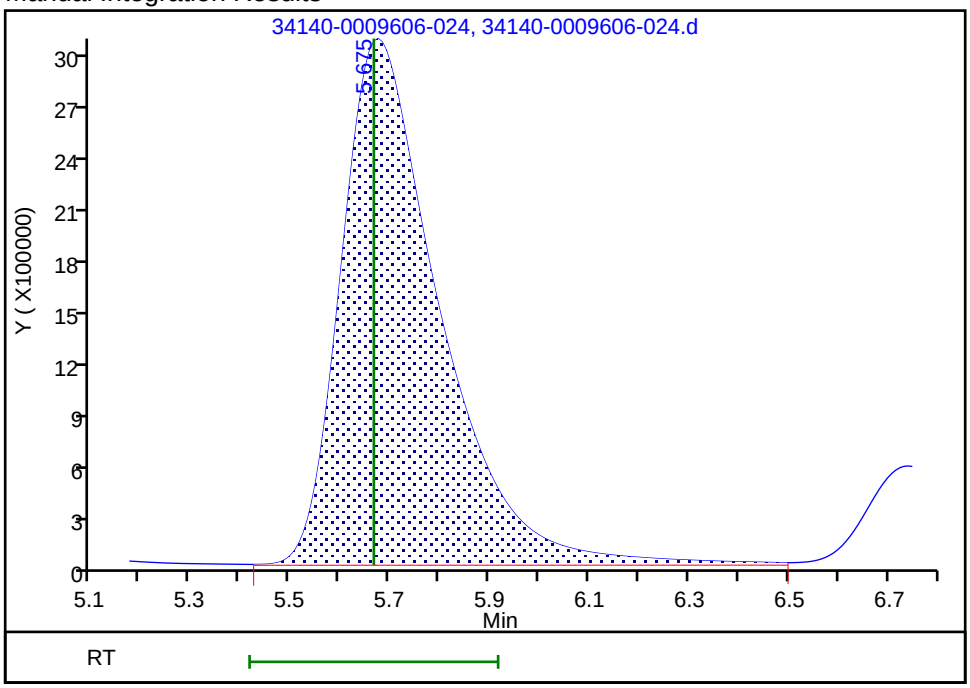
Processing Integration Results

RT: 5.68
Area: 41568429
Amount: 0.964431
Amount Units: ug/ml



Manual Integration Results

RT: 5.68
Area: 41658536
Amount: 0.966464
Amount Units: ug/ml



Reviewer: humphreyj, 10-Oct-2018 07:17:56

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

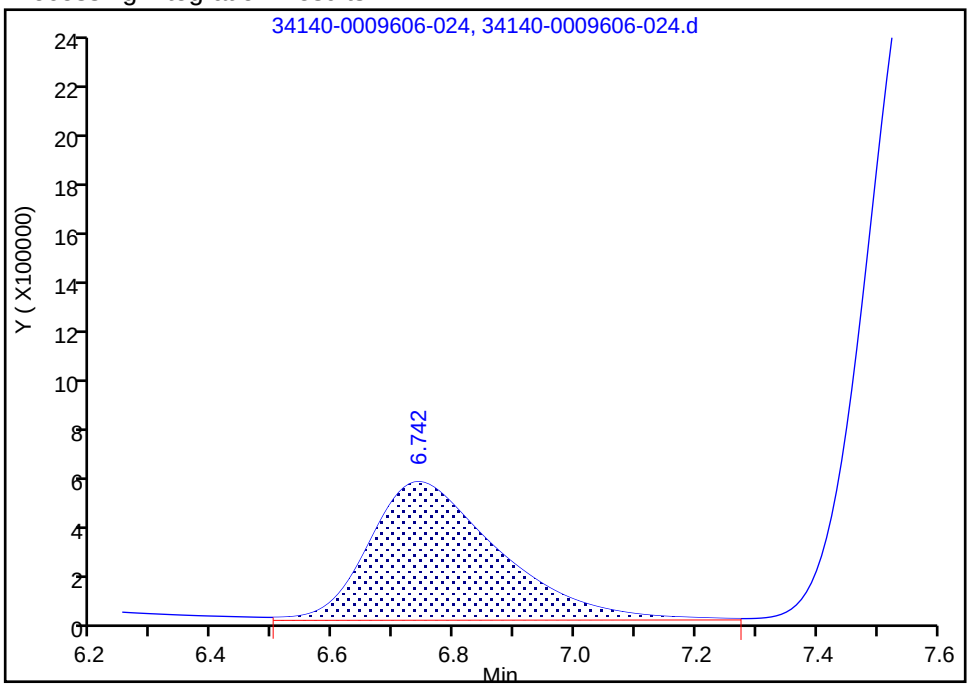
Data File:	\\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\34140-0009606-024.d				
Injection Date:	09-Oct-2018 14:53:00	Instrument ID:	1500		
Lims ID:	CCV				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	24
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

4 Bromide, CAS: 24959-67-9

Signal: 1

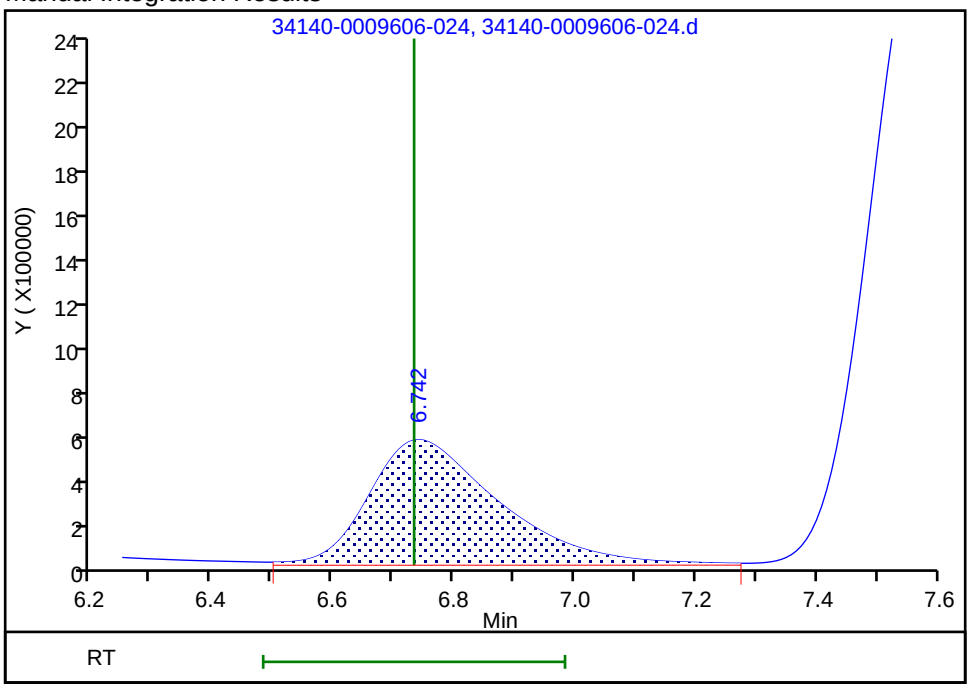
Processing Integration Results

RT: 6.74
Area: 8443018
Amount: 0.978643
Amount Units: ug/ml



Manual Integration Results

RT: 6.74
Area: 8550363
Amount: 0.990986
Amount Units: ug/ml



Reviewer: humphreyj, 10-Oct-2018 07:17:52
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

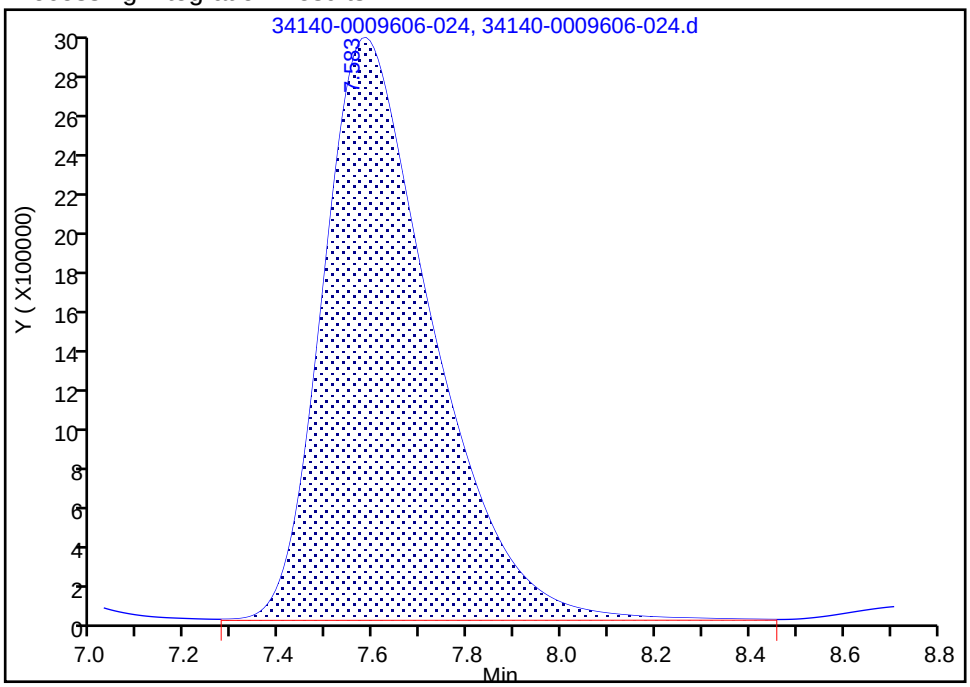
Data File:	\\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\34140-0009606-024.d				
Injection Date:	09-Oct-2018 14:53:00	Instrument ID:	1500		
Lims ID:	CCV				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	24
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

5 Nitrate as N, CAS: 14797-55-8

Signal: 1

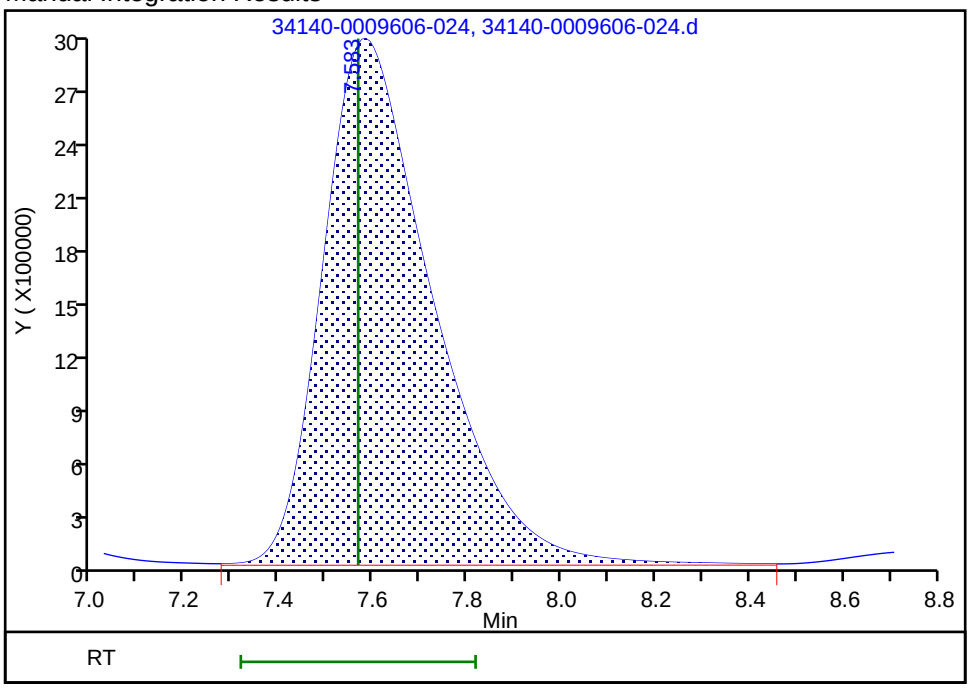
Processing Integration Results

RT: 7.58
Area: 47475757
Amount: 0.956575
Amount Units: ug/ml



Manual Integration Results

RT: 7.58
Area: 47691916
Amount: 0.960778
Amount Units: ug/ml



Reviewer: humphreyj, 10-Oct-2018 07:17:47

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

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Page 111 of 244 10/17/2018

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\15140-0009606-005.d
Lims ID: MB 140-24313/3-A
Client ID:
Sample Type: MB
Inject. Date: 09-Oct-2018 09:08:00 ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0009606-005
Misc. Info.: 15 mb 140-24313/3-a
Operator ID: Instrument ID: 1500

Method: \\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 10-Oct-2018 07:19:37 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK015

First Level Reviewer: humphreyj Date: 10-Oct-2018 07:00:10

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride		3.333				ND	
	2 Chloride	4.708	4.733	-0.025	53946		0.002798	
	3 Nitrite as N	5.642	5.667	-0.025	21766		0.000520	
	4 Bromide		6.733				ND	
	5 Nitrate as N		7.567				ND	
	6 Iodide		14.800				ND	U
S	7 Hydrogen Chloride						0.002878	
S	8 Hydro Fluoric Acid		0.000				ND	
S	9 Hydrobromic Acid		0.000				ND	
S	10 Nitric acid		0.000				ND	
S	11 Nitrous Acid						0.001745	
S	12 Br		0.000				ND	
S	13 Chlorine						0.002798	

QC Flag Legend

Review Flags
U - Marked Undetected

Report Date: 10-Oct-2018 07:19:40 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\15140-0009606-005.d

Injection Date: 09-Oct-2018 09:08:00 Instrument ID: 1500 Operator ID:

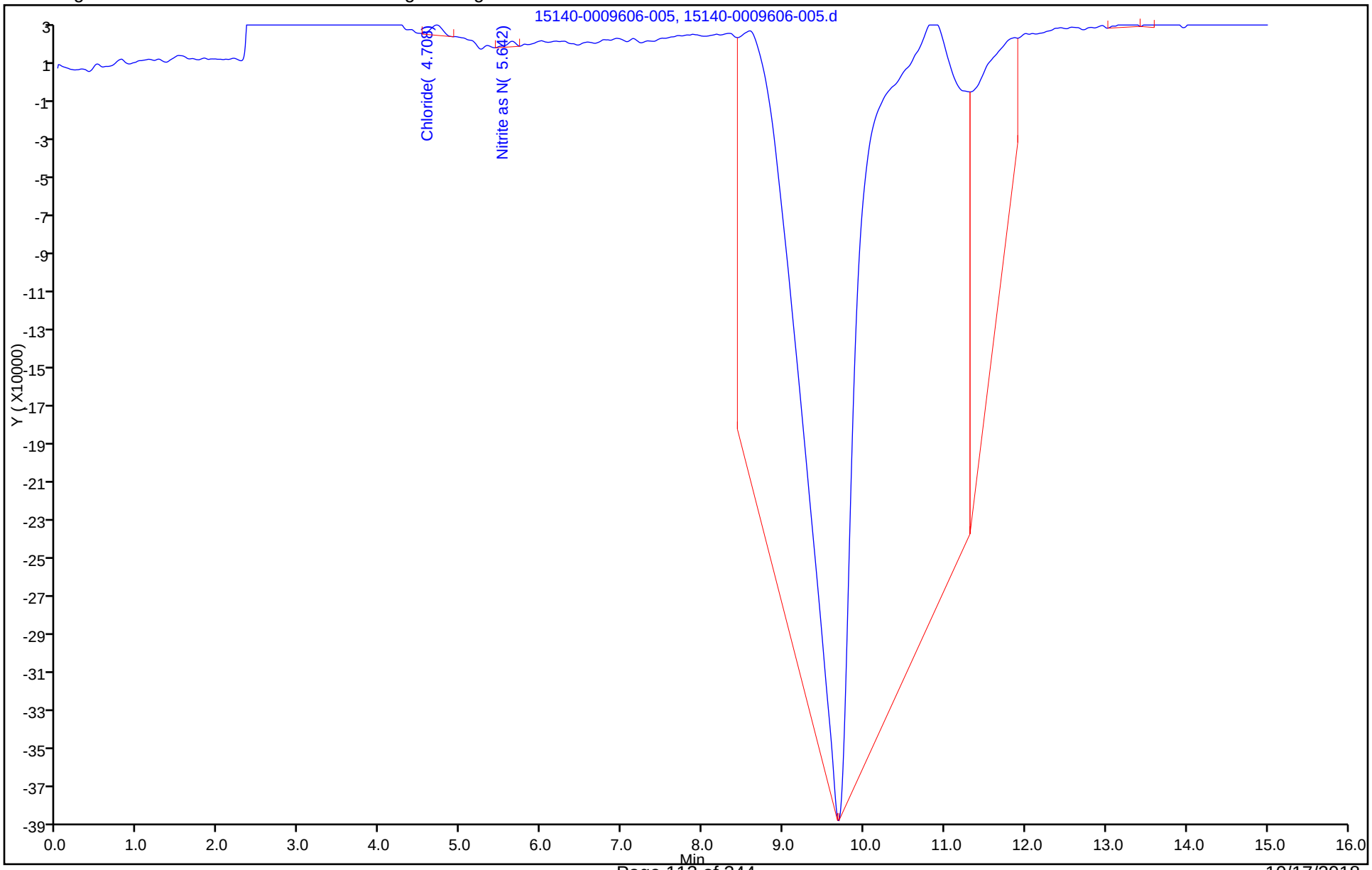
Lims ID: MB 140-24313/3-A Worklist Smp#: 5

Client ID:

Injection Vol: 1.0 ul Dil. Factor: 1.0000 ALS Bottle#: 0

Method: 0050_26A_1500 Limit Group: IC 0050_26A ICAL

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



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%.1□ (00 (0/ %)

Page 114 of 244 10/17/2018

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\12140-0009606-002.d
Lims ID: CCB
Client ID:
Sample Type: CCB
Inject. Date: 09-Oct-2018 08:16:00 ALS Bottle#: 0 Worklist Smp#: 2
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0009606-002
Misc. Info.: 12 ccb
Operator ID: Instrument ID: 1500

Method: \\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 10-Oct-2018 07:19:37 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK015

First Level Reviewer: humphreyj Date: 10-Oct-2018 06:56:07

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride		3.333				ND	U
	2 Chloride	4.733	4.733	0.000	91102		0.004725	
	3 Nitrite as N		5.667				ND	U
	4 Bromide		6.733				ND	
	5 Nitrate as N		7.567				ND	U
	6 Iodide		14.800				ND	
S	7 Hydrogen Chloride						0.004859	
S	8 Hydro Fluoric Acid		0.000				ND	
S	9 Hydrobromic Acid		0.000				ND	
S	10 Nitric acid		0.000				ND	
S	11 Nitrous Acid		0.000				ND	
S	12 Br		0.000				ND	
S	13 Chlorine						0.004725	

QC Flag Legend

Review Flags
U - Marked Undetected

Report Date: 10-Oct-2018 07:19:39 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\12140-0009606-002.d

Injection Date: 09-Oct-2018 08:16:00 Instrument ID: 1500 Operator ID:

Lims ID: CCB Worklist Smp#: 2

Client ID:

Injection Vol: 1.0 ul Dil. Factor: 1.0000 ALS Bottle#: 0

Method: 0050_26A_1500 Limit Group: IC 0050_26A ICAL

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1

FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville
Job No.: 140-12815-1
SDG No.:
Client Sample ID:
Lab Sample ID: CCB 140-24330/14
Matrix: Air
Lab File ID: 24140-0009606-014.d
Analysis Method: 0050/26A
Date Collected:
Extraction Method:
Date Extracted:
Sample wt/vol: 10(mL)
Date Analyzed: 10/09/2018 11:47
Con. Extract Vol.: 10(mL)
Dilution Factor: 1
Injection Volume: 1(uL)
GC Column: AS22 ID:
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 24330
Units: mg/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
7647-01-0	Hydrogen Chloride	ND		0.0500	0.0100

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\24140-0009606-014.d
Lims ID: CCB
Client ID:
Sample Type: CCB
Inject. Date: 09-Oct-2018 11:47:00 ALS Bottle#: 0 Worklist Smp#: 14
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0009606-014
Misc. Info.: 24 ccb
Operator ID: Instrument ID: 1500

Method: \\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 10-Oct-2018 07:19:45 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK015

First Level Reviewer: humphreyj Date: 10-Oct-2018 07:09:40

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride	3.442	3.333	0.109	42871		0.001465	
	2 Chloride	4.750	4.733	0.017	144482		0.007494	
	3 Nitrite as N	5.683	5.667	0.016	34738		0.000830	
	4 Bromide		6.733				ND	U
	5 Nitrate as N		7.567				ND	
	6 Iodide		14.800				ND	
S	7 Hydrogen Chloride						0.007706	
S	8 Hydro Fluoric Acid						0.001543	
S	9 Hydrobromic Acid		0.000				ND	
S	10 Nitric acid		0.000				ND	
S	11 Nitrous Acid						0.002785	
S	12 Br		0.000				ND	
S	13 Chlorine						0.007494	

QC Flag Legend

Review Flags
U - Marked Undetected

Report Date: 10-Oct-2018 07:19:46 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\24140-0009606-014.d

Injection Date: 09-Oct-2018 11:47:00 Instrument ID: 1500 Operator ID:

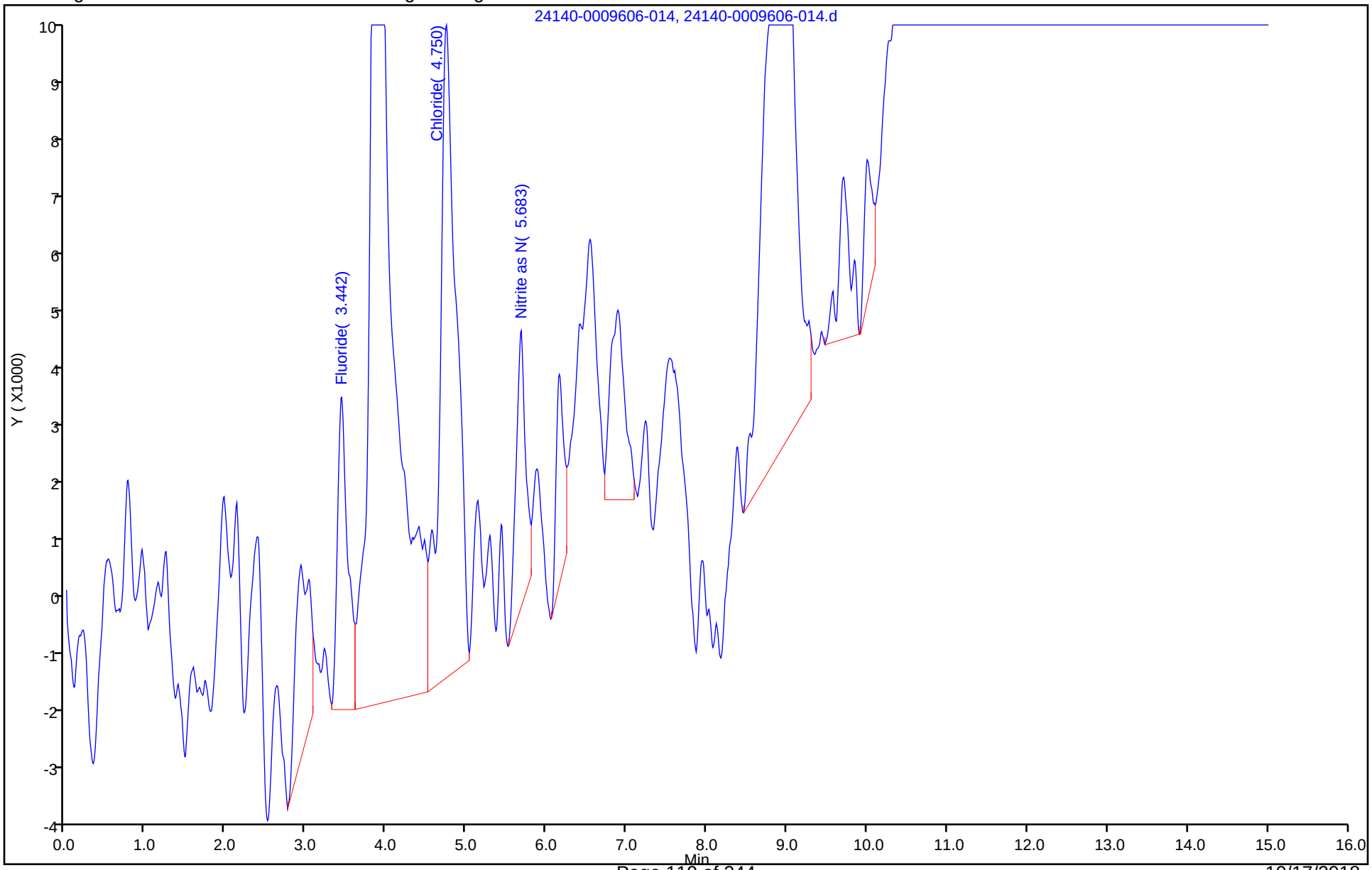
Lims ID: CCB Worklist Smp#: 14

Client ID:

Injection Vol: 1.0 ul Dil. Factor: 1.0000 ALS Bottle#: 0

Method: 0050_26A_1500 Limit Group: IC 0050_26A ICAL

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



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2DG –□. –			
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M t (x –	(	L b %(□ (□–	3(140 0009)0) 0%(.d
n ys (s Method –	00 (0/ %)	D te Co ected –	
Ext ct (on Method –		D te Ext cted –	
2 mp e %t/vo –	10 AmLN	D te n y(ed –	10/09/ %018 1 (–10
Con. Ext ct 5□ . –	10 AmLN	D(ut (on % cto –	1
(n)ect (on 5o ume –	1 AuL N	GC Co umn –	2%% (□–
C Mo(stu e –		G/C C e nup –AU/ –N –	
n ys (s B tch –□. –	%4330	4n(ts –	mg/L

□ 2 –..	□.□/.4–□ – ME	1□24□3	0	1□	MDL
7)47 01 0	Hyd ogen Ch o (de	0.0 %819	)	0.0 (00	0.0100

%.1□ (00 (0/ %)

Page 120 of 244 10/17/2018

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\35140-0009606-025.d
Lims ID: CCB
Client ID:
Sample Type: CCB
Inject. Date: 09-Oct-2018 15:10:00 ALS Bottle#: 0 Worklist Smp#: 25
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0009606-025
Misc. Info.: 35 ccb
Operator ID: Instrument ID: 1500

Method: \\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 10-Oct-2018 07:28:51 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK015

First Level Reviewer: humphreyj Date: 10-Oct-2018 07:28:41

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride	3.425	3.333	0.092	93011		0.003179	
	2 Chloride	4.742	4.733	0.009	528664		0.0274	M
	3 Nitrite as N		5.667				ND	U
	4 Bromide		6.733				ND	
	5 Nitrate as N		7.567				ND	
	6 Iodide		14.800				ND	
S	7 Hydrogen Chloride						0.0282	
S	8 Hydro Fluoric Acid						0.003348	
S	9 Hydrobromic Acid		0.000				ND	
S	10 Nitric acid		0.000				ND	
S	11 Nitrous Acid		0.000				ND	
S	12 Br		0.000				ND	
S	13 Chlorine						0.0274	

QC Flag Legend

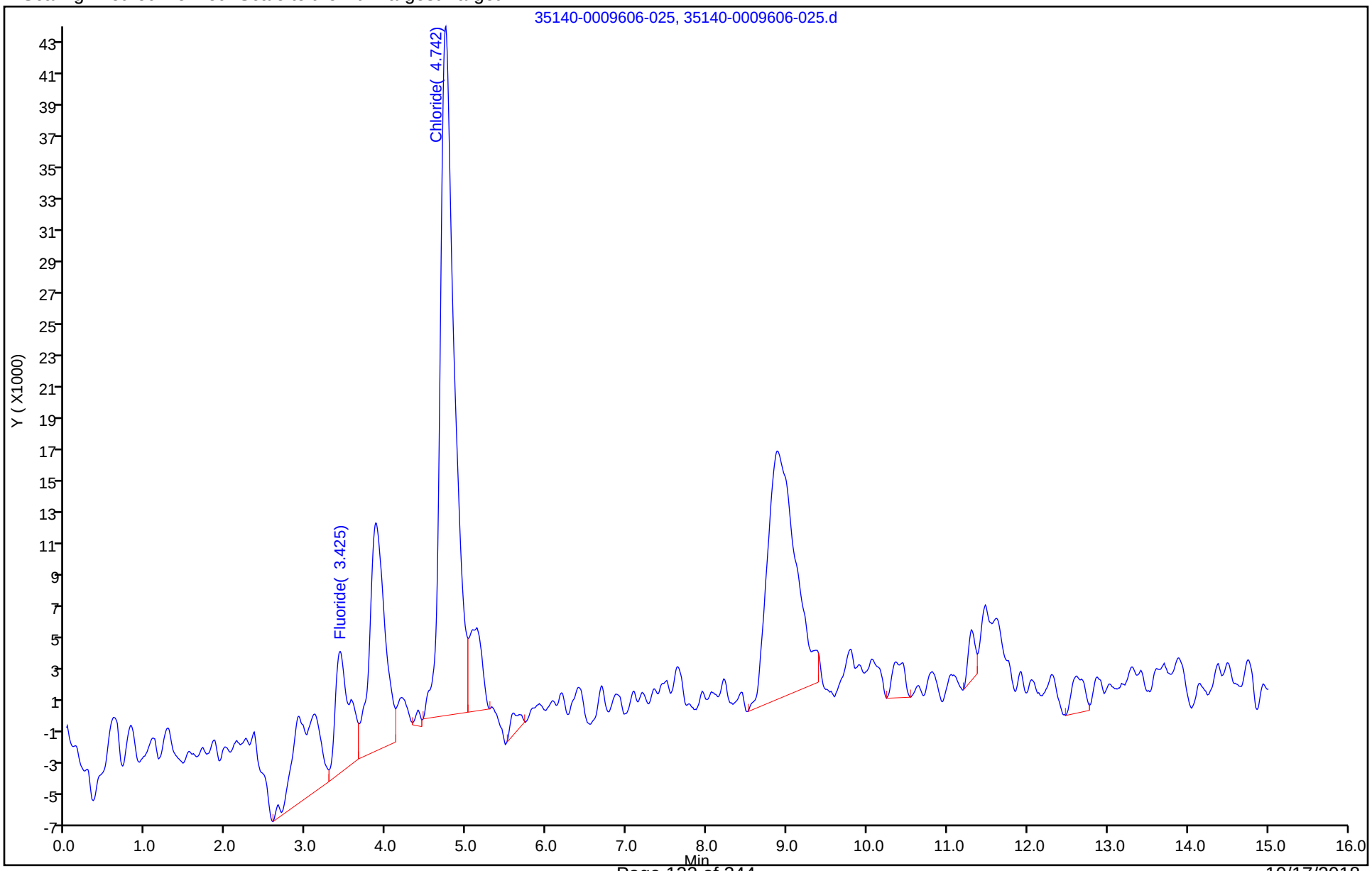
Review Flags
M - Manually Integrated
U - Marked Undetected

Report Date: 10-Oct-2018 07:29:02 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\35140-0009606-025.d				
Injection Date:	09-Oct-2018 15:10:00	Instrument ID:	1500	Operator ID:	
Lims ID:	CCB			Worklist Smp#:	25
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



Manual Integration/User Assign Peak Report

TestAmerica Knoxville

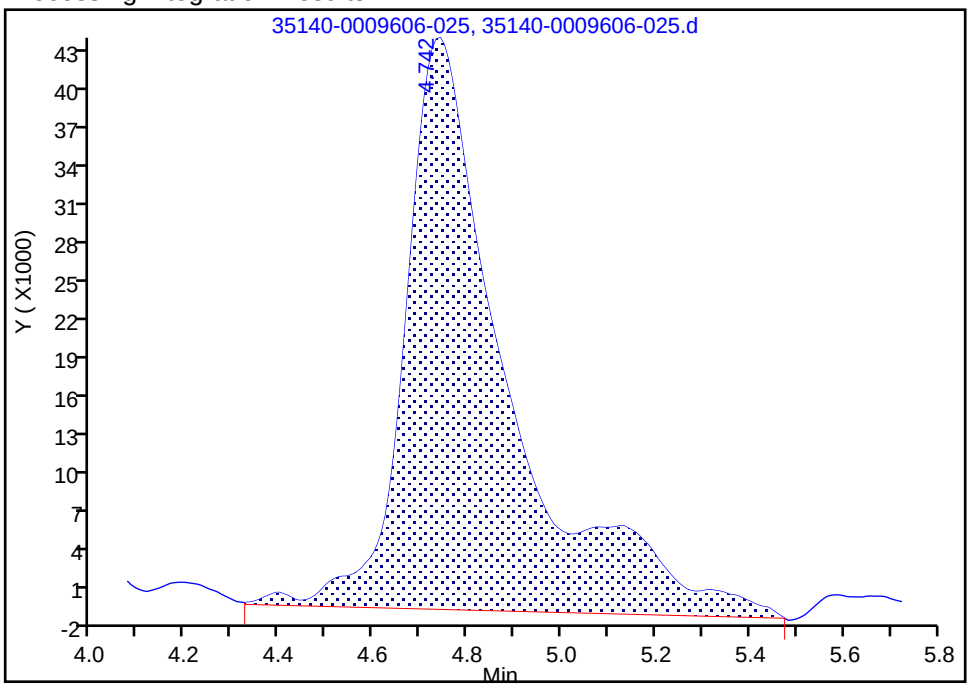
Data File:	\\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\35140-0009606-025.d				
Injection Date:	09-Oct-2018 15:10:00	Instrument ID:	1500		
Lims ID:	CCB				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	25
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

2 Chloride, CAS: 16887-00-6

Signal: 1

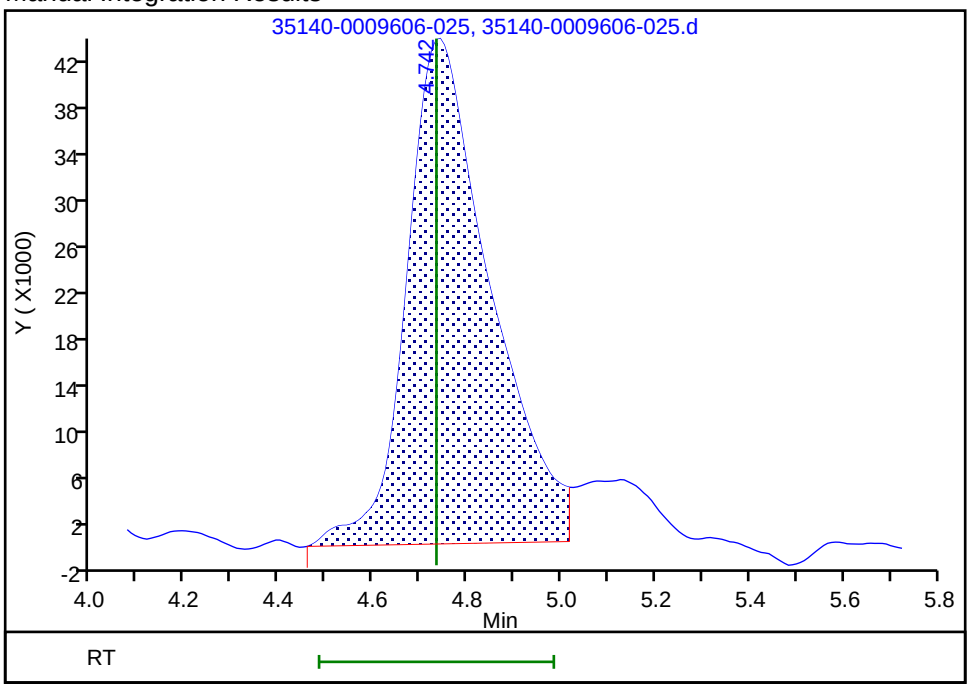
Processing Integration Results

RT: 4.74
Area: 664274
Amount: 0.034437
Amount Units: ug/ml



Manual Integration Results

RT: 4.74
Area: 528664
Amount: 0.027410
Amount Units: ug/ml



Reviewer: humphreyj, 10-Oct-2018 07:28:27

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville
Job No.: 140-12815-1
SDG No.:
Client Sample ID:
Lab Sample ID: ICB 140-22408/9
Matrix: Air
Lab File ID: 9140-0008938-009.d
Analysis Method: 0050/26A
Date Collected:
Extraction Method:
Date Extracted:
Sample wt/vol: 10(mL)
Date Analyzed: 08/01/2018 12:21
Con. Extract Vol.: 10(mL)
Dilution Factor: 1
Injection Volume: 1(uL)
GC Column: AS22 ID:
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 22408
Units: mg/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
7647-01-0	Hydrogen Chloride	ND		0.0500	0.0100

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\9140-0008938-009.d
Lims ID: ICB
Client ID:
Sample Type: ICB
Inject. Date: 01-Aug-2018 12:21:00 ALS Bottle#: 0 Worklist Smp#: 9
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0008938-009
Misc. Info.: 9 icb
Operator ID: Instrument ID: 1500

Method: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 01-Aug-2018 13:07:51 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK022

First Level Reviewer: humphreyj Date: 01-Aug-2018 13:07:16

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride		3.350				ND	U
	2 Chloride	4.800	4.792	0.008	71598		0.003714	M
	3 Nitrite as N		5.742				ND	
	4 Bromide		6.833				ND	U
	5 Nitrate as N		7.700				ND	
	6 Iodide		14.800				ND	
S	7 Hydrogen Chloride						0.003819	
S	8 Hydro Fluoric Acid		0.000				ND	
S	9 Hydrobromic Acid		0.000				ND	
S	10 Nitric acid		0.000				ND	
S	11 Nitrous Acid		0.000				ND	
S	12 Br		0.000				ND	
S	13 Chlorine						0.003714	

QC Flag Legend

Review Flags
M - Manually Integrated
U - Marked Undetected

Report Date: 01-Aug-2018 13:07:53 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\9140-0008938-009.d

Injection Date: 01-Aug-2018 12:21:00 Instrument ID: 1500 Operator ID:

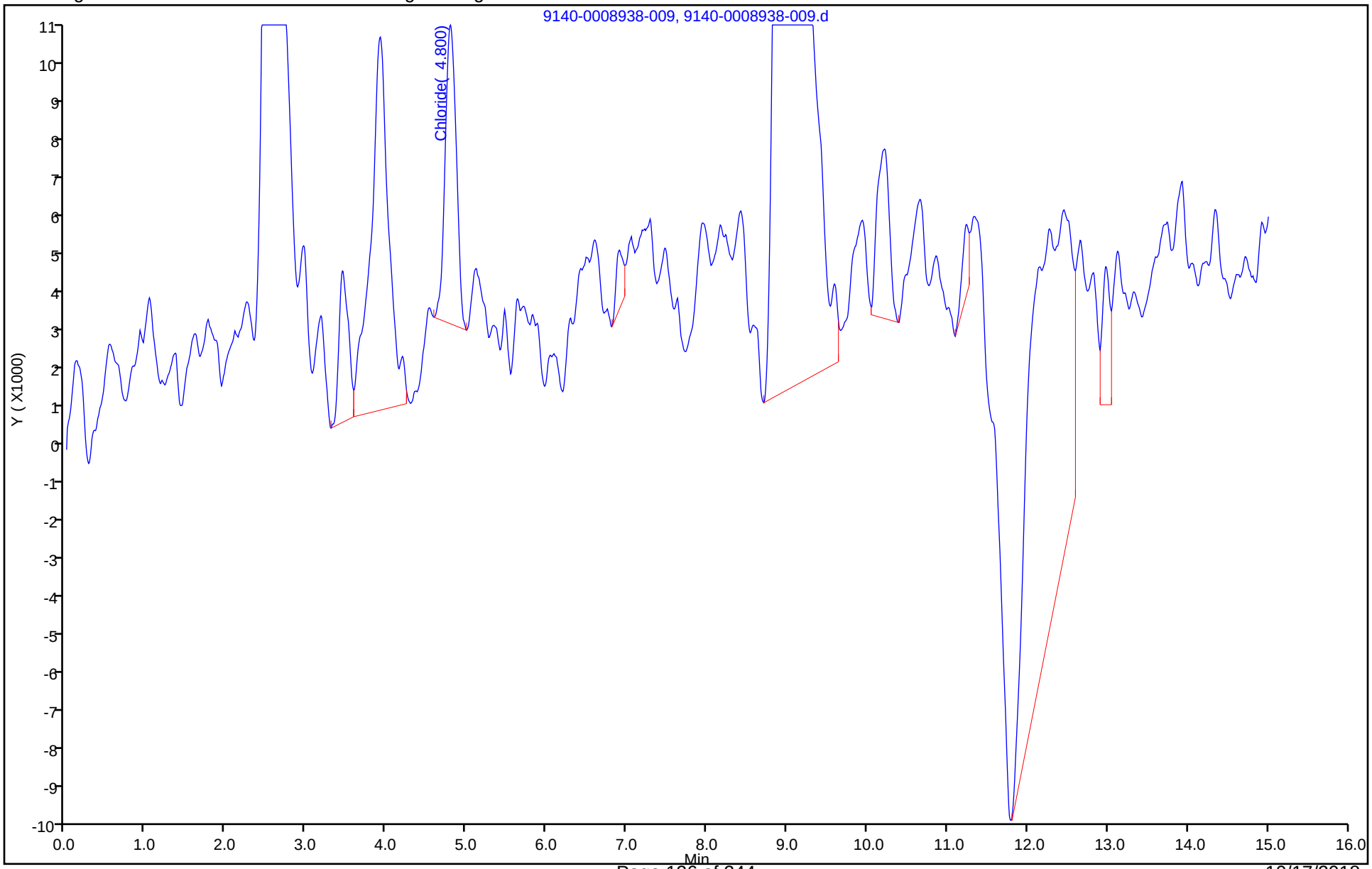
Lims ID: ICB Worklist Smp#: 9

Client ID:

Injection Vol: 1.0 ul Dil. Factor: 1.0000 ALS Bottle#: 0

Method: 0050_26A_1500 Limit Group: IC 0050_26A ICAL

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



Manual Integration/User Assign Peak Report

TestAmerica Knoxville

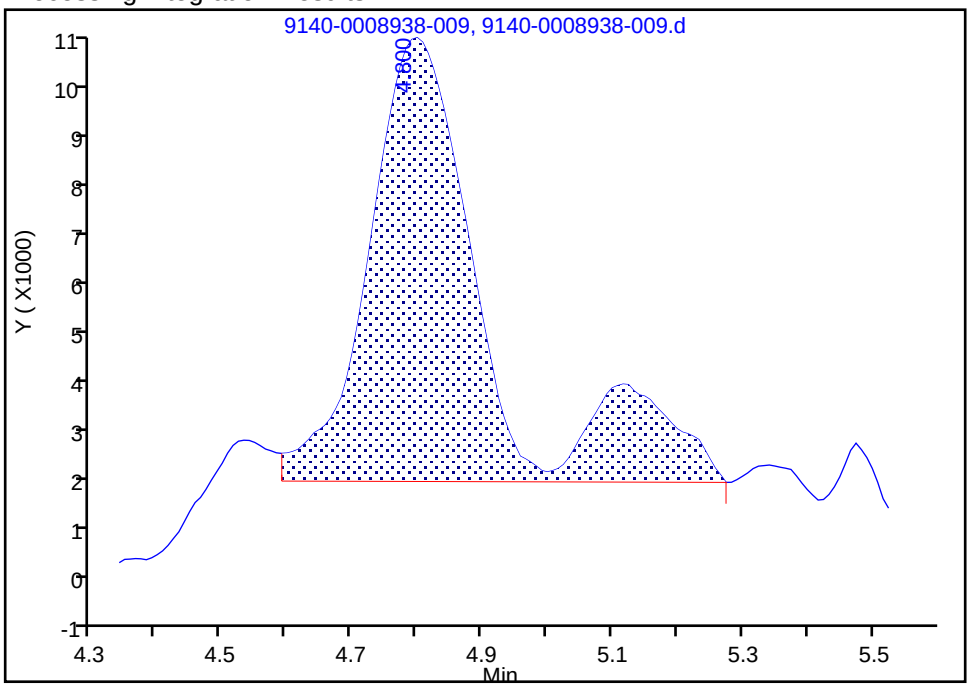
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\9140-0008938-009.d				
Injection Date:	01-Aug-2018 12:21:00	Instrument ID:	1500		
Lims ID:	ICB				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

2 Chloride, CAS: 16887-00-6

Signal: 1

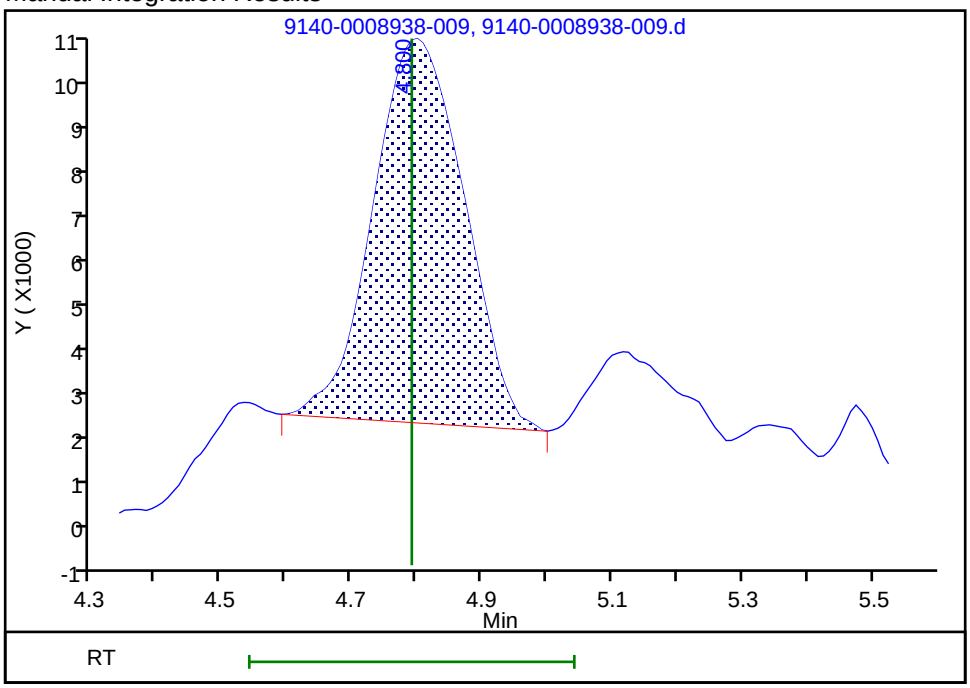
Processing Integration Results

RT: 4.80
Area: 95264
Amount: 0.004941
Amount Units: ug/ml



Manual Integration Results

RT: 4.80
Area: 71598
Amount: 0.003714
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 13:06:53

Audit Action: Manually Integrated Audit Reason: Baseline Smoothing

FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville
Job No.: 140-12815-1
SDG No.:
Client Sample ID:
Lab Sample ID: LCS 140-24313/1-A
Matrix: Air
Lab File ID: 13140-0009606-003.d
Analysis Method: 0050/26A
Date Collected:
Extraction Method: 0050/26A
Date Extracted: 10/09/2018 00:00
Sample wt/vol: 1(Sample)
Date Analyzed: 10/09/2018 08:33
Con. Extract Vol.: 100(mL)
Dilution Factor: 1
Injection Volume: 1(uL)
GC Column: AS22 ID:
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 24330
Units: ug/Sample

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
7647-01-0	Hydrogen Chloride	73.74		10.3	4.32

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\13140-0009606-003.d
Lims ID: LCS 140-24313/1-A
Client ID:
Sample Type: LCS
Inject. Date: 09-Oct-2018 08:33:00 ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0009606-003
Misc. Info.: 13 lcs 140-24313/1-a
Operator ID: Instrument ID: 1500

Method: \\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 10-Oct-2018 07:19:37 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK015

First Level Reviewer: humphreyj Date: 10-Oct-2018 06:58:01

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride	3.325	3.333	-0.008	21499974	0.7500	0.7200	Ma
	2 Chloride	4.733	4.733	0.000	13991306	0.7500	0.7170	Ma
	3 Nitrite as N	5.667	5.667	0.000	31035294	0.7500	0.7252	Ma
	4 Bromide	6.733	6.733	0.000	6206140	0.7500	0.7209	Ma
	5 Nitrate as N	7.575	7.567	0.008	35125353	0.7500	0.7143	Ma
S	7 Hydrogen Chloride					0.7710	0.7374	
S	8 Hydro Fluoric Acid					0.7898	0.7583	
S	9 Hydrobromic Acid					0.7595	0.7300	
S	10 Nitric acid					3.37	3.21	
S	11 Nitrous Acid					2.52	2.43	
S	12 Br					0.7500	0.7209	
S	13 Chlorine					0.7500	0.7170	

QC Flag Legend

Review Flags
M - Manually Integrated
a - User Assigned ID

Reagents:

85SPICVLCSS_00072 Amount Added: 10.00 Units: mL

Report Date: 10-Oct-2018 07:19:39 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\13140-0009606-003.d

Injection Date: 09-Oct-2018 08:33:00 Instrument ID: 1500 Operator ID:

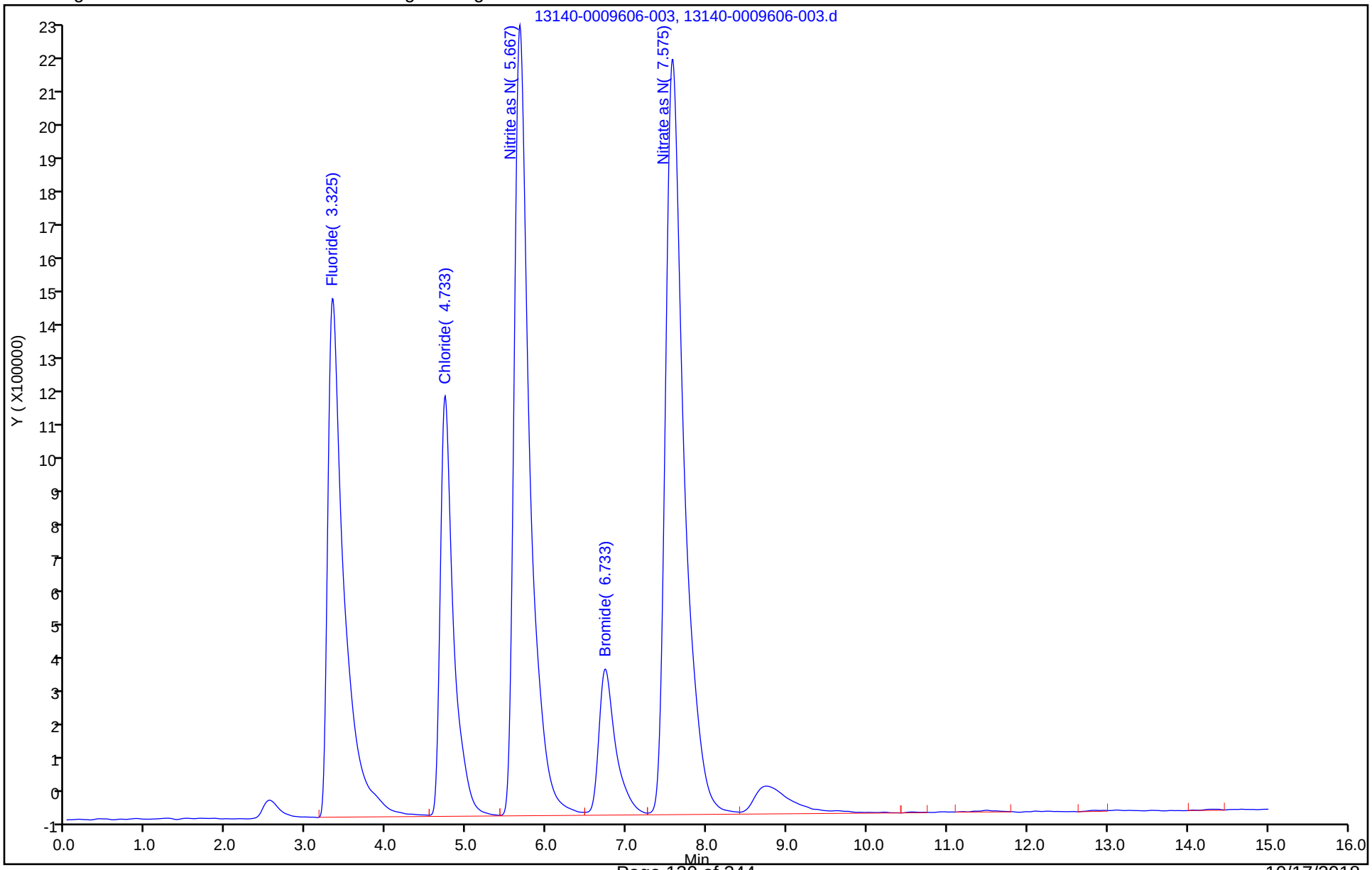
Lims ID: LCS 140-24313/1-A Worklist Smp#: 3

Client ID:

Injection Vol: 1.0 ul Dil. Factor: 1.0000 ALS Bottle#: 0

Method: 0050_26A_1500 Limit Group: IC 0050_26A ICAL

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville
Job No.: 140-12815-1
SDG No.:
Client Sample ID:
Lab Sample ID: LCSD 140-24313/2-A
Matrix: Air
Lab File ID: 14140-0009606-004.d
Analysis Method: 0050/26A
Date Collected:
Extraction Method: 0050/26A
Date Extracted: 10/09/2018 00:00
Sample wt/vol: 1(Sample)
Date Analyzed: 10/09/2018 08:50
Con. Extract Vol.: 100(mL)
Dilution Factor: 1
Injection Volume: 1(uL)
GC Column: AS22 ID:
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 24330
Units: ug/Sample

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
7647-01-0	Hydrogen Chloride	73.83		10.3	4.32

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\14140-0009606-004.d
Lims ID: LCSD 140-24313/2-A
Client ID:
Sample Type: LCSD
Inject. Date: 09-Oct-2018 08:50:00 ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0009606-004
Misc. Info.: 14 lcsd 140-24313/2-a
Operator ID: Instrument ID: 1500

Method: \\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 10-Oct-2018 07:19:37 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK015

First Level Reviewer: humphreyj Date: 10-Oct-2018 06:59:52

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride	3.325	3.333	-0.008	21587933	0.7500	0.7229	Ma
	2 Chloride	4.733	4.733	0.000	14007920	0.7500	0.7178	Ma
	3 Nitrite as N	5.667	5.667	0.000	31111232	0.7500	0.7269	Ma
	4 Bromide	6.733	6.733	0.000	6211417	0.7500	0.7215	Ma
	5 Nitrate as N	7.567	7.567	0.000	35228111	0.7500	0.7163	Ma
S	7 Hydrogen Chloride					0.7710	0.7382	
S	8 Hydro Fluoric Acid					0.7898	0.7614	
S	9 Hydrobromic Acid					0.7595	0.7306	
S	10 Nitric acid					3.37	3.22	
S	11 Nitrous Acid					2.52	2.44	
S	12 Br					0.7500	0.7215	
S	13 Chlorine					0.7500	0.7178	

QC Flag Legend

Review Flags
M - Manually Integrated
a - User Assigned ID

Reagents:

85SPLCSDS_00071 Amount Added: 10.00 Units: mL

Report Date: 10-Oct-2018 07:19:40 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\14140-0009606-004.d

Injection Date: 09-Oct-2018 08:50:00 Instrument ID: 1500 Operator ID:

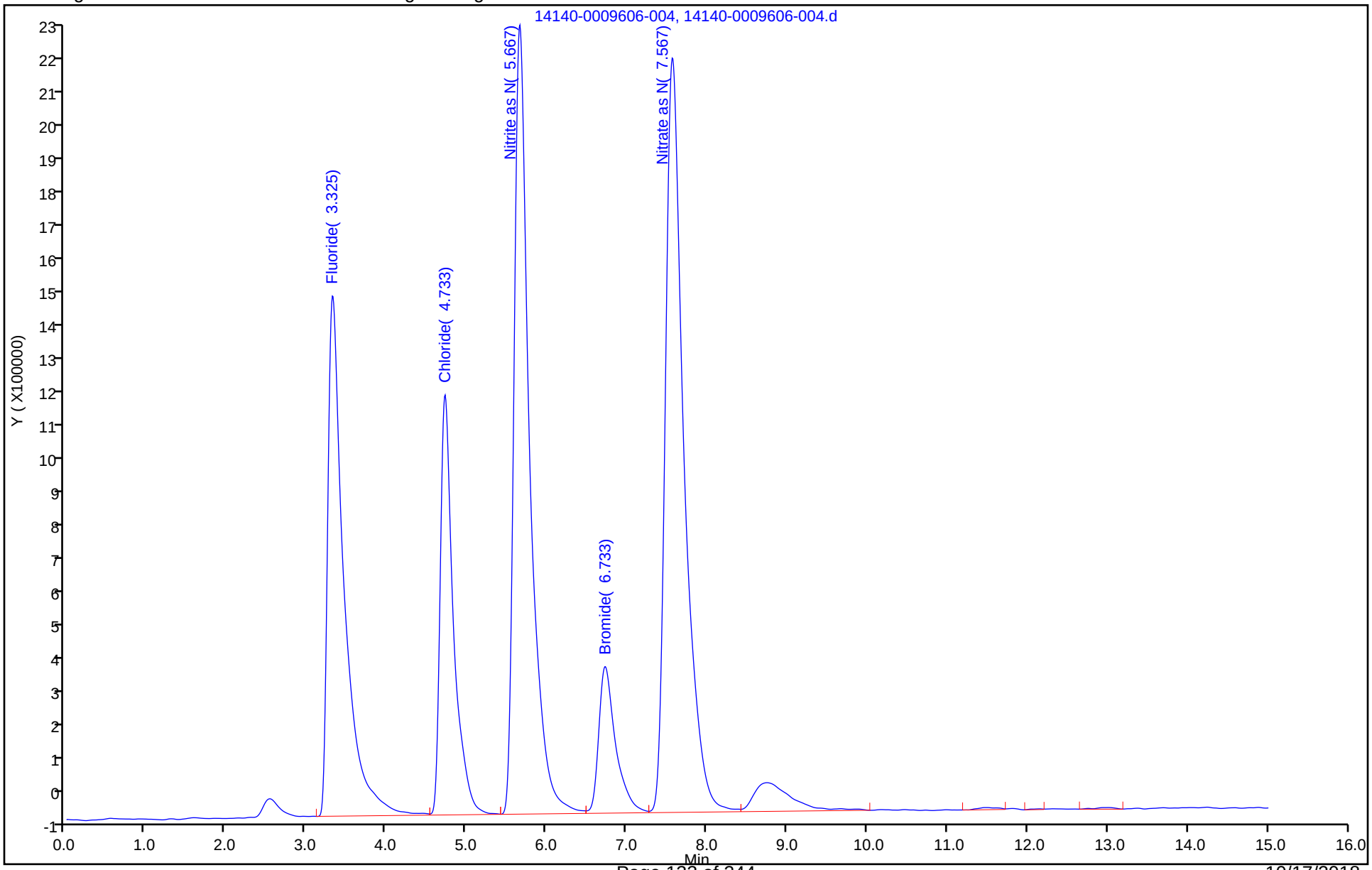
Lims ID: LCSD 140-24313/2-A Worklist Smp#: 4

Client ID:

Injection Vol: 1.0 ul Dil. Factor: 1.0000 ALS Bottle#: 0

Method: 0050_26A_1500 Limit Group: IC 0050_26A ICAL

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville
Job No.: 140-12815-1
SDG No.:
Client Sample ID: M26-2 MS
Lab Sample ID: 140-12815-2 MS
Matrix: Air
Lab File ID: 28140-0009606-018.d
Analysis Method: 0050/26A
Date Collected: 09/18/2018 00:00
Extraction Method: 0050/26A
Date Extracted: 10/09/2018 00:00
Sample wt/vol: 1(Sample)
Date Analyzed: 10/09/2018 12:57
Con. Extract Vol.: 380(mL)
Dilution Factor: 2500
Injection Volume: 1(uL)
GC Column: AS22 ID:
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 24330
Units: ug/Sample

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
7647-01-0	Hydrogen Chloride	1246000		97700	41000

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\28140-0009606-018.d
Lims ID: 140-12815-A-2-B MS
Client ID: M26-2
Sample Type: MS
Inject. Date: 09-Oct-2018 12:57:00 ALS Bottle#: 0 Worklist Smp#: 18
Injection Vol: 1.0 ul Dil. Factor: 2500.0000
Sample Info: 140-0009606-018
Misc. Info.: 28 140-12815-a-2-b ms
Operator ID: Instrument ID: 1500

Method: \\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 10-Oct-2018 07:19:45 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK015

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride	3.333	3.333	0.000	29895370	0.000400	0.99	
	2 Chloride	4.733	4.733	0.000	25121368	0.000400	1.28	
	3 Nitrite as N	5.667	5.667	0.000	42818857	0.000400	0.99	
	4 Bromide	6.733	6.733	0.000	8556671	0.000400	0.99	
	5 Nitrate as N	7.567	7.567	0.000	48427738	0.000400	0.9751	
	6 Iodide		14.800				ND	
S	7 Hydrogen Chloride					0.000411	1.31	
S	8 Hydro Fluoric Acid					0.000421	1.05	
S	9 Hydrobromic Acid					0.000405	1.00	
S	10 Nitric acid					0.001800	4.39	
S	11 Nitrous Acid					0.001343	3.33	
S	12 Br					0.000400	0.99	
S	13 Chlorine					0.000400	1.28	

Reagents:

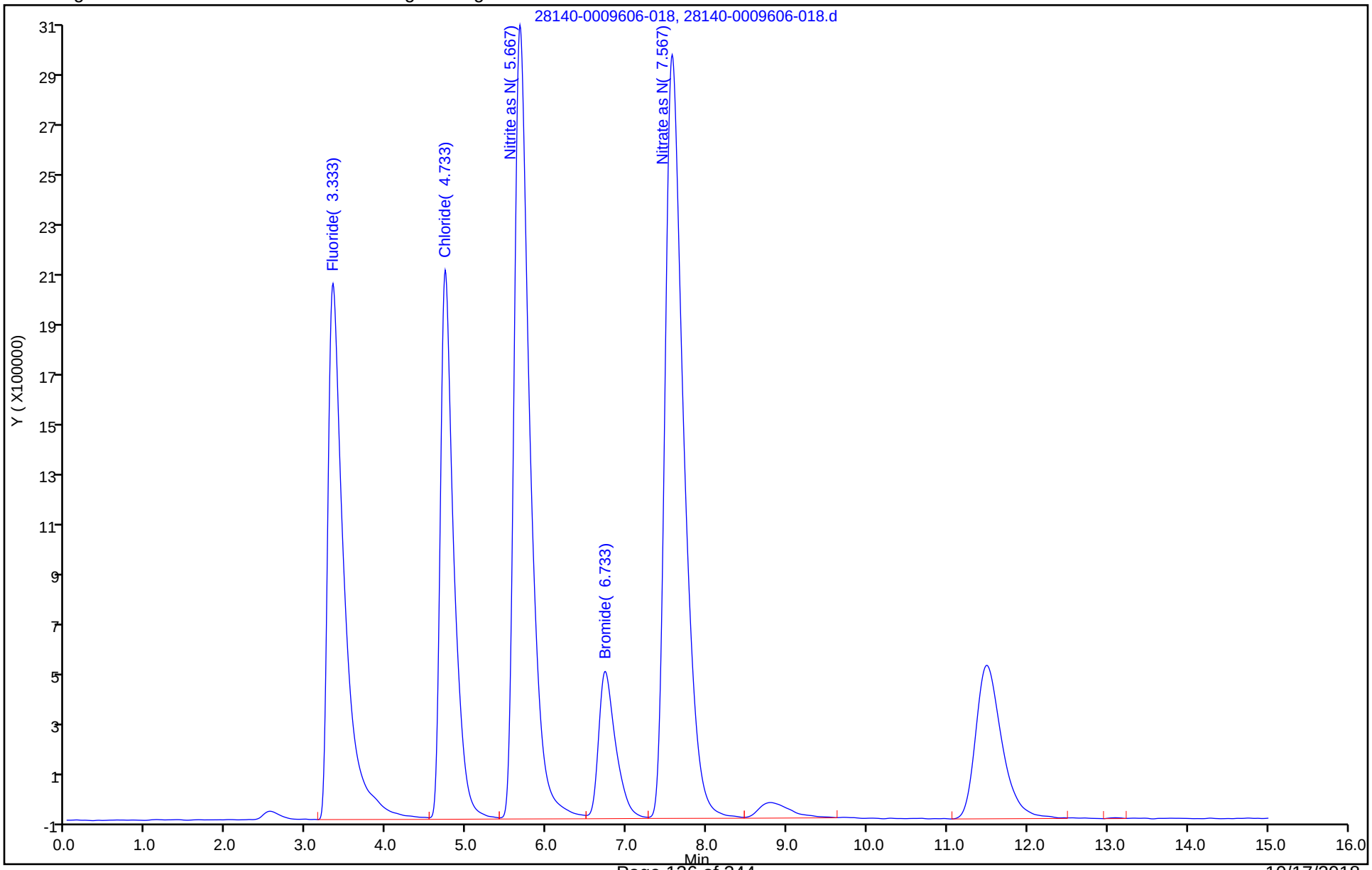
85XXICWI8579S_00020 Amount Added: 0.10 Units: mL

Report Date: 10-Oct-2018 07:19:48 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\28140-0009606-018.d				
Injection Date:	09-Oct-2018 12:57:00	Instrument ID:	1500	Operator ID:	
Lims ID:	140-12815-A-2-B MS			Worklist Smp#:	18
Client ID:	M26-2				
Injection Vol:	1.0 ul	Dil. Factor:	2500.0000	ALS Bottle#:	0
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville
Job No.: 140-12815-1
SDG No.:
Client Sample ID: M26-2 MSD
Lab Sample ID: 140-12815-2 MSD
Matrix: Air
Lab File ID: 29140-0009606-019.d
Analysis Method: 0050/26A
Date Collected: 09/18/2018 00:00
Extraction Method: 0050/26A
Date Extracted: 10/09/2018 00:00
Sample wt/vol: 1(Sample)
Date Analyzed: 10/09/2018 13:14
Con. Extract Vol.: 380(mL)
Dilution Factor: 2500
Injection Volume: 1(uL)
GC Column: AS22 ID:
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 24330
Units: ug/Sample

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
7647-01-0	Hydrogen Chloride	1246000		97700	41000

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\29140-0009606-019.d
Lims ID: 140-12815-A-2-C MSD
Client ID: M26-2
Sample Type: MSD
Inject. Date: 09-Oct-2018 13:14:00 ALS Bottle#: 0 Worklist Smp#: 19
Injection Vol: 1.0 ul Dil. Factor: 2500.0000
Sample Info: 140-0009606-019
Misc. Info.: 29 140-12815-A-2-c msd
Operator ID: Instrument ID: 1500

Method: \\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 10-Oct-2018 07:19:45 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK015

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride	3.333	3.333	0.000	29866831	0.000400	0.99	
	2 Chloride	4.733	4.733	0.000	25118466	0.000400	1.28	
	3 Nitrite as N	5.667	5.667	0.000	42804240	0.000400	0.99	
	4 Bromide	6.733	6.733	0.000	8542464	0.000400	0.99	
	5 Nitrate as N	7.567	7.567	0.000	48461251	0.000400	0.9757	
	6 Iodide		14.800				ND	
S	7 Hydrogen Chloride					0.000411	1.31	
S	8 Hydro Fluoric Acid					0.000421	1.05	
S	9 Hydrobromic Acid					0.000405	1.00	
S	10 Nitric acid					0.001800	4.39	
S	11 Nitrous Acid					0.001343	3.33	
S	12 Br					0.000400	0.99	
S	13 Chlorine					0.000400	1.28	

Reagents:

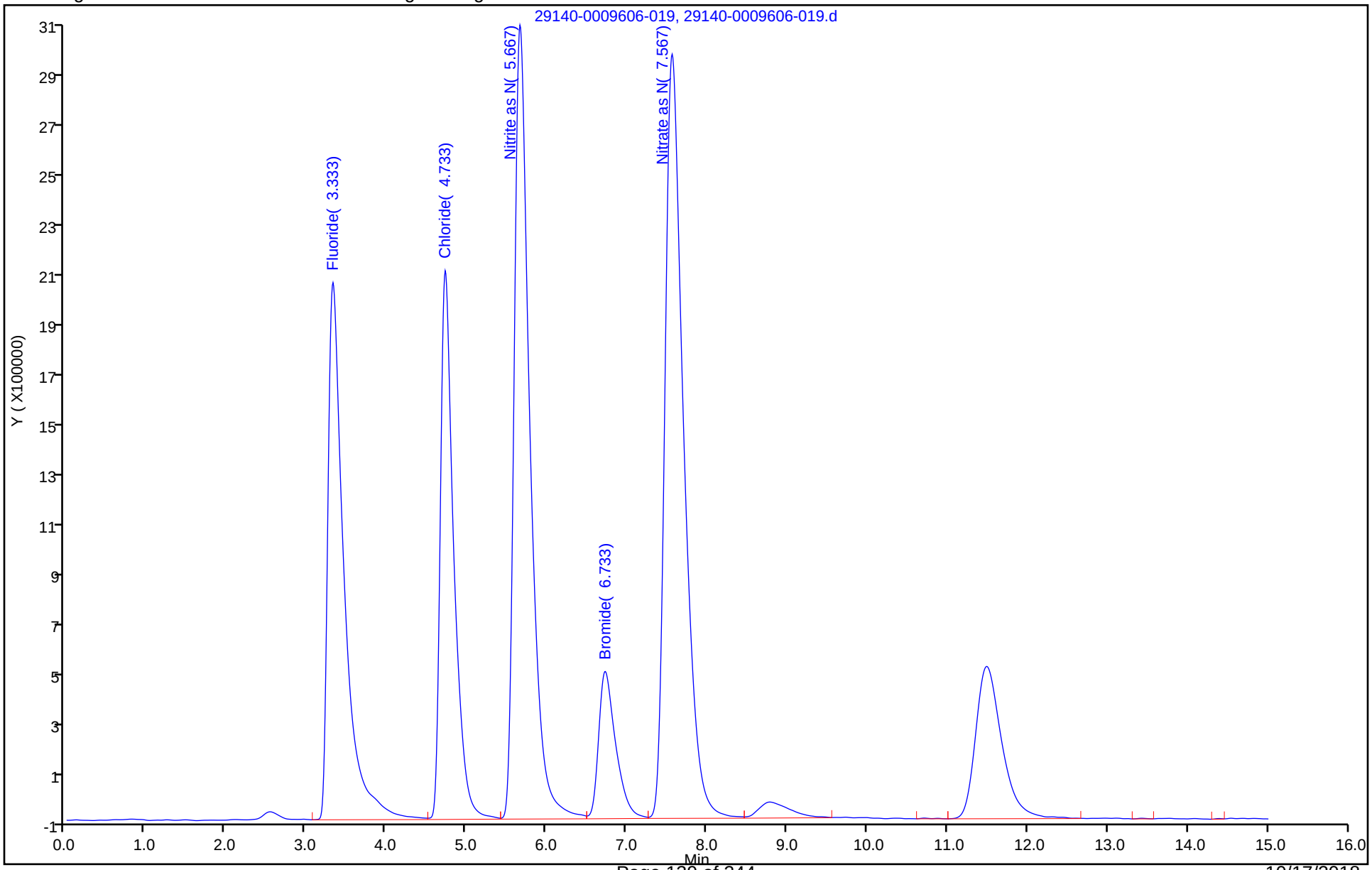
85XXICWI8579S_00020 Amount Added: 0.10 Units: mL

Report Date: 10-Oct-2018 07:19:48 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\1500\20181010-9606.b\29140-0009606-019.d				
Injection Date:	09-Oct-2018 13:14:00	Instrument ID:	1500	Operator ID:	
Lims ID:	140-12815-A-2-C MSD			Worklist Smp#:	19
Client ID:	M26-2				
Injection Vol:	1.0 ul	Dil. Factor:	2500.0000	ALS Bottle#:	0
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



HPLC/IC ANALYSIS RUN LOG

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1

SDG No.:

Instrument ID: 1500 Start Date: 08/01/2018 09:59

Analysis Batch Number: 22408 End Date: 08/01/2018 12:21

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 140-22408/1		08/01/2018 09:59	1	1140-0008938-001.d	AS22
IC 140-22408/2		08/01/2018 10:16	1	2140-0008938-002.d	AS22
IC 140-22408/3		08/01/2018 10:34	1	3140-0008938-003.d	AS22
IC 140-22408/4		08/01/2018 10:51	1	4140-0008938-004.d	AS22
IC 140-22408/5		08/01/2018 11:09	1	5140-0008938-005.d	AS22
IC 140-22408/6		08/01/2018 11:26	1	6140-0008938-006.d	AS22
IC 140-22408/7		08/01/2018 11:43	1	7140-0008938-007.d	AS22
ICV 140-22408/8		08/01/2018 12:03	1	8140-0008938-008.d	AS22
ICB 140-22408/9		08/01/2018 12:21	1	9140-0008938-009.d	AS22

0050/26A

TestAmerica Knoxville
Dionex IC Runlog Cover Page

Analyst:	JMH	Date:	8-1-18	Sequence ID:	H01_AIR ANIONS_080118

Instrument:		Method:	
	☐ DX-600		☐ KNOX-WC-0003, SW-846 0061/7199
	☑ ICS-1500		☐ KNOX-WC-0005, ☐ SW-846 9056 ☐ EPA 300.0 ☐ SW-846 9057-Mod ☑ EPA 26A-Mod
	☐ DX-320		☐ KNOX-WC-0014, EPA 314.0

Preventive Maintenance	Instrument Conditions		
Daily:	Flow Rate =	1.20	mL/min
☑ Check pump and gas pressure	Pressure =	1845	psi
☑ Check all lines for crimping, leaks and discoloration	Conductance =	13.49	µS
As Needed:	Suppressor Current =	31	mA
☐ Change column and guard column	Eluent Generator =	NA	mM KOH
☐ Change column and/or guard column bed support	Analytical Column:	AS22 / AG22	
☐ Clean conductivity cell	WORKING ELUENT & DILUTIONS: 85ELUENTAS22_90014 / 100		
☐ De-gas pump head when flow is erratic			
☐ Check/replace eluant end line filter			

MS/MSD Spike Information

WO #	Compound	Spike ID	Parent Conc.	Spike Added (mL)	Final Volume (mL)	Final Conc.
				JMH		
				8-1-18		

Comments: ICAL 080118

☐ Sodium Thiosulfate added to NaOH impinger samples.

Sequence: H01_AIR ANIONS_080118a
Operator: KnxUser
Printed: 8/1/2018 12:45:33 PM

Title:
Datasource: ICS_1500_net
Location: ICS1500
Timebase: ICS1500
#Samples: 74

Created: 8/1/2018 12:45:16 PM by KnxUser
Last Update: 8/1/2018 12:45:16 PM by KnxUser

No.	Name	Comment	Inj. Vol.	Inj. Date/Time	Dil. Factor	*Multiplier [Liters]	Weight	Type	Status
1	140-0008938-001	ic 1	50.0	8/1/2018 9:59:28 AM	1.0000		1.0000	Standard	Finished
2	140-0008938-002	ic 2	50.0	8/1/2018 10:16:52 AM	1.0000		1.0000	Standard	Finished
3	140-0008938-003	ic 3	50.0	8/1/2018 10:34:16 AM	1.0000		1.0000	Standard	Finished
4	140-0008938-004	ic 4	50.0	8/1/2018 10:51:40 AM	1.0000		1.0000	Standard	Finished
5	140-0008938-005	ic 5	50.0	8/1/2018 11:09:04 AM	1.0000		1.0000	Standard	Finished
6	140-0008938-006	ic 6	50.0	8/1/2018 11:26:28 AM	1.0000		1.0000	Standard	Finished
7	140-0008938-007	ic 7	50.0	8/1/2018 11:43:52 AM	1.0000		1.0000	Standard	Finished
8	140-0008938-008	icv	50.0	8/1/2018 12:03:07 PM	1.0000		1.0000	Unknown	Finished
9	140-0008938-009	icb	50.0	8/1/2018 12:21:02 PM	1.0000		1.0000	Unknown	Finished
10	beaker check 2017 04 10	beaker check	50.0	7/31/2018 12:41:57 PM	1.0000		1.0000	Unknown	Finished
11	CCV	ccv	50.0	7/26/2018 10:08:29 AM	1.0000		1.0000	Unknown	Finished
12	CCB	ccb	50.0	7/26/2018 10:25:54 AM	1.0000		1.0000	Unknown	Finished
13			50.0	7/26/2018 10:43:49 AM	1.0000		1.0000	Unknown	Finished
14			50.0	7/26/2018 11:01:14 AM	1.0000		1.0000	Unknown	Finished
15			50.0	7/26/2018 11:18:38 AM	1.0000		1.0000	Unknown	Finished
16			50.0	7/26/2018 11:36:02 AM	1.0000		1.0000	Unknown	Finished
17			50.0	7/26/2018 11:53:26 AM	1.0000		1.0000	Unknown	Finished
18			50.0	7/26/2018 12:10:51 PM	1.0000		1.0000	Unknown	Finished
19			50.0	7/26/2018 12:28:16 PM	1.0000		1.0000	Unknown	Finished
20			50.0	7/26/2018 12:45:40 PM	1.0000		1.0000	Unknown	Finished
21			50.0	7/26/2018 1:03:05 PM	1.0000		1.0000	Unknown	Finished
22			50.0	7/26/2018 1:20:30 PM	1.0000		1.0000	Unknown	Finished
23			50.0	7/26/2018 1:37:54 PM	1.0000		1.0000	Unknown	Finished
24			50.0	7/26/2018 1:55:18 PM	1.0000		1.0000	Unknown	Finished
25			50.0	7/26/2018 2:12:42 PM	1.0000		1.0000	Unknown	Finished
26			50.0	7/26/2018 2:45:06 PM	1.0000		1.0000	Unknown	Finished
27			50.0	7/26/2018 3:17:30 PM	1.0000		1.0000	Unknown	Finished
28			50.0	7/26/2018 3:49:55 PM	1.0000		1.0000	Unknown	Finished
29			50.0	7/26/2018 4:22:19 PM	1.0000		1.0000	Unknown	Finished
30			50.0	7/26/2018 4:54:43 PM	1.0000		1.0000	Unknown	Finished
31			50.0	7/26/2018 5:27:07 PM	1.0000		1.0000	Unknown	Finished
32			50.0	7/26/2018 5:44:32 PM	1.0000		1.0000	Unknown	Finished
33			50.0	7/26/2018 6:40:44 PM	1.0000		1.0000	Unknown	Finished
34			50.0	7/27/2018 6:37:58 AM	1.0000		1.0000	Unknown	Finished
35			50.0	7/27/2018 6:55:22 AM	1.0000		1.0000	Unknown	Finished
36			50.0	7/27/2018 7:12:47 AM	1.0000		1.0000	Unknown	Finished
37			50.0	7/27/2018 7:45:11 AM	1.0000		1.0000	Unknown	Finished
38			50.0	7/27/2018 8:17:35 AM	1.0000		1.0000	Unknown	Finished
39			50.0	7/27/2018 8:49:59 AM	1.0000		1.0000	Unknown	Finished
40			50.0	7/27/2018 9:07:24 AM	1.0000		1.0000	Unknown	Finished
41			50.0	7/11/2018 7:26:54 AM	1.0000		1.0000	Unknown	Finished
42			50.0	7/5/2018 8:26:13 PM	1.0000		1.0000	Unknown	Finished
43			50.0	7/5/2018 8:43:38 PM	1.0000		1.0000	Unknown	Finished
44			50.0	7/5/2018 9:01:02 PM	1.0000		1.0000	Unknown	Finished
45			50.0	7/5/2018 9:18:27 PM	1.0000		1.0000	Unknown	Finished
46			50.0	7/5/2018 9:35:51 PM	1.0000		1.0000	Unknown	Finished
47			50.0	7/5/2018 9:53:15 PM	1.0000		1.0000	Unknown	Finished
48			50.0	7/5/2018 10:10:39 PM	1.0000		1.0000	Unknown	Finished

Chromeleon © Dionex Corporation, Version 6.50 SP10a Build 1065

TestAmerica Knoxville IC Initial Calibration Data Review Checklist
Methods: 300.0, 9056, 9057 and 26A, SOP: KNOX-WC-0005, Rev. 15

Analysis Date:	08-01-2018	ICAL File ID:	H01_AIR ANIONS_080118	Instrument/Work List:	1500 / 8938

Method Limit Group	ICAL Number	ICAL Batch
☑ IC 0050_26A ICAL	1574	22408
☐ IC 0050_9056 ICAL	NA	NA
☐ IC 300_9056_48HR ICAL	↓	↓
☐ IC 300_9056_28Day ICAL		
☐ IC 9056_TotHAL ICAL		
☐ IC D129_OF & D3177_OF ICAL		
☐ IC 8A ICAL ICAL		

Review Items	NA	Y	N	If No, why is data reportable?	2nd ✓
Section 1: Calibration/Instrument Run QC					
1. Calibrated with minimum 5 standards (6 for quad)?		✓			✓
2. $r \geq 0.995$, or $r^2 \geq 0.990$		✓			✓
3. Intercept < low standard response?		✓			✓
4. Read back error ≤ 40%, at LLOQ ≤ 50%		✓			✓
5. Was the ICV within 90-110%R?		✓			✓
6. ICB < 1/2 RL? ICB ≤10% LLOQ for 9056A?		✓			✓
Section 2: Raw Data & Chrom/TALS Data Review					
1. Was Worklist Sample Number used as the sample ID in the Chromeleon sequence before upload?		✓			✓
2. Was Worklist Sample ID listed in the comment field of the Chromeleon sequence before upload?		✓			✓
3. Any unexplained triangles in the TALS lists after upload from Chrom?			✓		
4. Raw Data					✓
• Chrom reagents entered correctly?		✓			✓
• Is manual integration complete and correct?		✓			✓
5. TALS Worksheet Tab is complete and correct?		✓			✓
6. TALS Reagent Tab is complete and correct?		✓			✓
7. TALS Batch Information Screen documentation is complete?		✓			✓
8. TALS Status set to appropriate review level?		✓			✓
9. Is Run Log cover sheet and Chromeleon sequence scanned and attached to batch?		✓			✓

1st Level Review by: Jm Humphrey 8-1-2018

2nd Level Review by: MSP 8-1-2018

HPLC/IC ANALYSIS RUN LOG

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1

SDG No.:

Instrument ID: 1500 Start Date: 10/09/2018 07:58

Analysis Batch Number: 24330 End Date: 10/09/2018 15:10

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 140-24330/1		10/09/2018 07:58	1	11140-0009606-001.d	AS22
CCB 140-24330/2		10/09/2018 08:16	1	12140-0009606-002.d	AS22
LCS 140-24313/1-A		10/09/2018 08:33	1	13140-0009606-003.d	AS22
LCSD 140-24313/2-A		10/09/2018 08:50	1	14140-0009606-004.d	AS22
MB 140-24313/3-A		10/09/2018 09:08	1	15140-0009606-005.d	AS22
ZZZZZ		10/09/2018 09:25	2		AS22
ZZZZZ		10/09/2018 09:46	2		AS22
ZZZZZ		10/09/2018 10:03	2		AS22
ZZZZZ		10/09/2018 10:20	2		AS22
ZZZZZ		10/09/2018 10:38	2		AS22
ZZZZZ		10/09/2018 10:55	2		AS22
ZZZZZ		10/09/2018 11:13	2		AS22
CCV 140-24330/13		10/09/2018 11:30	1	23140-0009606-013.d	AS22
CCB 140-24330/14		10/09/2018 11:47	1	24140-0009606-014.d	AS22
140-12815-1		10/09/2018 12:05	2	25140-0009606-015.d	AS22
140-12815-1		10/09/2018 12:22	2000	26140-0009606-016.d	AS22
140-12815-2		10/09/2018 12:40	2500	27140-0009606-017.d	AS22
140-12815-2 MS		10/09/2018 12:57	2500	28140-0009606-018.d	AS22
140-12815-2 MSD		10/09/2018 13:14	2500	29140-0009606-019.d	AS22
140-12815-3		10/09/2018 13:32	2000	30140-0009606-020.d	AS22
140-12815-4		10/09/2018 13:49	2	31140-0009606-021.d	AS22
140-12815-4		10/09/2018 14:07	1000	32140-0009606-022.d	AS22
140-12815-4		10/09/2018 14:36	50000	33140-0009606-023.d	AS22
CCV 140-24330/24		10/09/2018 14:53	1	34140-0009606-024.d	AS22
CCB 140-24330/25		10/09/2018 15:10	1	35140-0009606-025.d	AS22

0050/26A

TestAmerica Knoxville
Dionex IC Runlog Cover Page

Analyst:	JMH	Date:	10-9-18	Sequence ID:	J09-AIR ANIONS-100918

Instrument:		Method:	
	☐ DX-600		☐ KNOX-WC-0003, SW-846 0061/7199
	☑ ICS-1500		☐ KNOX-WC-0005, ☐ SW-846 9056 ☐ EPA 300.0 ☐ SW-846 9057-Mod ☑ EPA 26A-Mod
	☐ DX-320		☐ KNOX-WC-0014, EPA 314.0

Preventive Maintenance	Instrument Conditions		
Daily:	Flow Rate =	1.20	mL/min
☑ Check pump and gas pressure	Pressure =	1900	psi
☑ Check all lines for crimping, leaks and discoloration	Conductance =	19.75	µS
As Needed:	Suppressor Current =	31	mA
☐ Change column and guard column	Eluent Generator =	NA	mM KOH
☐ Change column and/or guard column bed support	Analytical Column:	AS22 / AG22	
☐ Clean conductivity cell	WORKING ELUENT & DILUTIONS: 85ELUENTAS22_00014 / 100		
☐ De-gas pump head when flow is erratic			
☐ Check/replace eluant end line filter			

MS/MSD Spike Information

WO #	Compound	Spike ID	Parent Conc.	Spike Added (mL)	Final Volume (mL)	Final Conc.
140-12962-A-2	Fluoride	85XXICW185795_00020	100 mg/L	0.100	10	1 mg/L
↓	Chloride	↓	↓	↓	↓	↓
140-12815-A-2	Chloride	↓	↓	↓	↓	↓
				JMH		
				10-9-18		

Comments: 140-12962 (HF, ~~HCL~~ HCL) JMH 10-9-18

140-12815 (HCL)

☐ Sodium Thiosulfate added to NaOH impinger samples.

Title:
Datasource: ICS_1500_net
Location: ICS1500
Timebase: ICS1500 Created: 10/9/2018 6:59:01 AM by KnxUser
#Samples: 74 Last Update: 10/10/2018 6:23:02 AM by KnxUser

No.	Name	Comment	Inj. Vol.	Inj. Date/Time	Dil. Factor	*Multiplier [Liters]	Weight	Type
1	IC 1 0.050 mg/L	ic 1	50.0	8/1/2018 9:59:28 AM	1.0000		1.0000	Standard
2	IC 2 0.075 mg/L	ic 2	50.0	8/1/2018 10:16:52 AM	1.0000		1.0000	Standard
3	IC 3 0.100 mg/L	ic 3	50.0	8/1/2018 10:34:16 AM	1.0000		1.0000	Standard
4	IC 4 0.250 mg/L	ic 4	50.0	8/1/2018 10:51:40 AM	1.0000		1.0000	Standard
5	IC 5 0.500 mg/L	ic 5	50.0	8/1/2018 11:09:04 AM	1.0000		1.0000	Standard
6	IC 6 1.000 mg/L	ic 6	50.0	8/1/2018 11:26:28 AM	1.0000		1.0000	Standard
7	IC 7 2.000 mg/L	ic 7	50.0	8/1/2018 11:43:52 AM	1.0000		1.0000	Standard
8	ICV	icv	50.0	8/1/2018 12:03:07 PM	1.0000		1.0000	Unknown
9	ICB	icb	50.0	8/1/2018 12:21:02 PM	1.0000		1.0000	Unknown
10	beaker check 2017 05 18	beaker check	50.0	10/9/2018 6:59:32 AM	1.0000		1.0000	Unknown
11	140-0009606-001	ccv	50.0	10/9/2018 7:58:41 AM	1.0000		1.0000	Unknown
12	140-0009606-002	ccb	50.0	10/9/2018 8:16:06 AM	1.0000		1.0000	Unknown
13	140-0009606-003	lcs 140-24313/1-a	50.0	10/9/2018 8:33:31 AM	1.0000		1.0000	Unknown
14	140-0009606-004	lcsd 140-24313/2-a	50.0	10/9/2018 8:50:55 AM	1.0000		1.0000	Unknown
15	140-0009606-005	mb 140-24313/3-a	50.0	10/9/2018 9:08:19 AM	1.0000		1.0000	Unknown
16	140-0009606-006	140-12962-a-1-a	50.0	10/9/2018 9:25:43 AM	2.0000		1.0000	Unknown
17	140-0009606-007	140-12962-a-2-a	50.0	10/9/2018 9:46:01 AM	2.0000		1.0000	Unknown
18	140-0009606-008	140-12962-a-2-b ms	50.0	10/9/2018 10:03:25 AM	2.0000		1.0000	Unknown
19	140-0009606-009	140-12962-a-2-c msd	50.0	10/9/2018 10:20:49 AM	2.0000		1.0000	Unknown
20	140-0009606-010	140-12962-a-3-a	50.0	10/9/2018 10:38:13 AM	2.0000		1.0000	Unknown
21	140-0009606-011	140-12962-a-4-a	50.0	10/9/2018 10:55:37 AM	2.0000		1.0000	Unknown
22	140-0009606-012	140-12962-a-5-a	50.0	10/9/2018 11:13:01 AM	2.0000		1.0000	Unknown
23	140-0009606-013	ccv	50.0	10/9/2018 11:30:26 AM	1.0000		1.0000	Unknown
24	140-0009606-014	ccb	50.0	10/9/2018 11:47:50 AM	1.0000		1.0000	Unknown
25	140-0009606-015	140-12815-a-1-a	50.0	10/9/2018 12:05:15 PM	2.0000		1.0000	Unknown
26	140-0009606-016	140-12815-a-1-a	50.0	10/9/2018 12:22:39 PM	2000.0000		1.0000	Unknown
27	140-0009606-017	140-12815-a-2-a	50.0	10/9/2018 12:40:03 PM	2500.0000		1.0000	Unknown
28	140-0009606-018	140-12815-a-2-b ms	50.0	10/9/2018 12:57:27 PM	2500.0000		1.0000	Unknown
29	140-0009606-019	140-12815-A-2-c msd	50.0	10/9/2018 1:14:51 PM	2500.0000		1.0000	Unknown
30	140-0009606-020	140-12815-a-3-a	50.0	10/9/2018 1:32:15 PM	2000.0000		1.0000	Unknown
31	140-0009606-021	140-12815-a-4-a	50.0	10/9/2018 1:49:40 PM	2.0000		1.0000	Unknown
32	140-0009606-022	140-12815-a-4-a	50.0	10/9/2018 2:07:04 PM	1000.0000		1.0000	Unknown
33	140-0009606-023	140-12815-a-4-a	50.0	10/9/2018 2:36:07 PM	50000.0000		1.0000	Unknown
34	140-0009606-024	ccv	50.0	10/9/2018 2:53:31 PM	1.0000		1.0000	Unknown
35	140-0009606-025	ccb	50.0	10/9/2018 3:10:56 PM	1.0000		1.0000	Unknown
36	SHUTDOWN	off	50.0	10/9/2018 3:28:20 PM	1.0000		1.0000	Unknown
37			50.0	9/26/2018 4:49:38 PM	1.0000		1.0000	Unknown
38			50.0	9/25/2018 9:15:36 AM	1.0000		1.0000	Unknown
39			50.0	9/25/2018 9:48:01 AM	1.0000		1.0000	Unknown
40			50.0	9/25/2018 10:20:25 AM	1.0000		1.0000	Unknown
41			50.0	9/25/2018 10:52:50 AM	1.0000		1.0000	Unknown
42			50.0	9/25/2018 11:25:14 AM	1.0000		1.0000	Unknown
43			50.0	9/25/2018 11:57:38 AM	1.0000		1.0000	Unknown
44			50.0	9/25/2018 12:30:03 PM	1.0000		1.0000	Unknown
45			50.0	9/25/2018 12:47:27 PM	1.0000		1.0000	Unknown
46			50.0	9/11/2018 8:47:33 PM	1.0000		1.0000	Unknown
47			50.0	9/11/2018 9:19:57 PM	1.0000		1.0000	Unknown
48			50.0	9/11/2018 9:37:22 PM	1.0000		1.0000	Unknown

TestAmerica Knoxville Anions by IC Batch Data Review Checklist
Methods: 300.0, 9056 & 9056A; Air Anions by 0050/26A; SOP: KNOX-WC-0005, Rev. 15

Analytical Batch:	24330	**Prep Batch(s):**	24313	**Instrument/Work List:**	1500 / 9606
Analysis Date:	10-9-18	**Job(s):**	140-12962 / 12815		
ICAL File ID:	H01_AIR ANIONS_0801 18	**ICAL Batch:**	22408	**ICAL Number:**	1574
Method Limit Group:	☑ IC 0050_26A ICAL ☐ IC 0050_9056 ICAL ☐ IC 300_9056_48HR ICAL ☐ IC 300_9056_28Day ICAL ☐ IC 9056_TotHAL ICAL ☐ IC D129_OF & D3177_OF ICAL ☐ IC 8A ICAL				

Review Items	NA	Y	N	If No, why is data reportable?	2nd ✓
Section 1: Calibration/Instrument Run QC					
1. Calibrated with minimum 5 standards (6 for quad)?		✓			✓
2. $r \geq 0.995$, or $r^2 \geq 0.990$		✓			✓
3. Intercept < low standard response?		✓			✓
4. Read back error ≤ 40%, at LLOQ ≤ 50%		✓			✓
5. Was the ICV within 90-110%R?		✓			✓
6. ICB < 1/2 RL? ICB ≤10% LLOQ for 9056A?		✓			✓
7. Were CCVs/CCBs run after every 10 samples, and at end of sequence?		✓			✓
8. Is %D <10% for each CCV?		✓		☐ **CCV - %D, High, Sample ND** (NCM#_____)	✓
9. If CCV failed, was it rerun only once?	✓			☐ CCV reanalyzed one time; reanalysis within limits	✓
10. CCB < 1/2 RL? CCB ≤10% LLOQ for 9056A?		✓		☐ **CCB-Out, Samples ND or 10x** (NCM#_____)	✓
Section 2: Prep Data					
1. Appropriate prep batches created for prep chain?		✓			✓
2. Batch information complete?		✓			✓
3. Correct analyst identified?		✓			✓
4. Worksheet complete?		✓			✓
5. Reagents tab complete and correct?		✓			✓
6. Was pH adjustment required for Back Half samples?	✓				✓
7. External prep data attached to batch as external prep worksheet?		✓			✓
Section 3: Sample Analysis/Prep QC					
1. LCS/LCSD analytes within 90-110%R?		✓		☐ **LCS/LCSD –Insufficient Sample** (NCM#_____) ☐ **LCS/LCSD - %R High** (NCM#_____)	✓
2. MB < 1/2 RL? MB ≤10% LLOQ for 9056A		✓		☐ **Method Blank–Report, ND** (NCM#_____) ☐ **Method Blank – Report, 10X** (NCM#_____) ☐ **Method Blank–Insufficient Sample** (NCM#_____)	✓
3. MS/MSD/DUP run at required frequency?		✓		☐ **MS/MSD/DUP-Insufficient Vol** (NCM#_____)	✓
4. MS/MSD/DUP within QC limits?			✓	☑ **MS/MSD-%R, LCS Pass** (NCM#_____-optional) ☐ **MS/MSD/DUP-%RPD** (NCM#_____-optional)	
5. Are OR, MS, MSD, & DU linked correctly?		✓			✓
6. Sample analyses done within holding time (HT)?		✓		☐ **Holding Time-Receipt** (NCM# _____) ☐ **Holding Time- Insufficient Time** (NCM# _____) ☐ [Option-narrate] Analysis requested after HT expired.	✓
7. Are positive results within the calibration range?		✓			✓
8. Are ND derived from undiluted runs? DF 2		✓		☐ **RL-Dilution, Matrix** (NCM# _____) ☐ **RL-Dilution, Interferents** (NCM# _____)	✓
Section 4: Raw Data & Chrom/TALS Data Review					
1. Does 1st prep in the chain have original Sample ID as starting point?		✓			✓
2. Does each additional step in the chain use the output ID of the previous step as the starting point?		✓			✓
3. Was Worklist built with final prep output ID?		✓			✓
4. Was Worklist Sample Number used as the sample ID in the Chromeleon sequence before upload?		✓			✓
5. Was Worklist Sample ID listed in the comment field of the Chromeleon sequence before upload?		✓			✓
6. Any unexplained triangles in the TALS lists after upload from Chrom?			✓		✓
7. Raw Data	—	—	—		
• Chrom sample information complete and correct? Are any samples linked to unnecessary Method Limit Groups in sample information?		✓			✓
• Chrom reagents entered correctly?		✓			✓
• Is manual integration complete and correct?		✓			✓
• Are unused data clearly identified?		✓			✓
• Is out of control QC clearly identified?		✓			✓
• Data with a qualifier or flag is repaired with appropriate action taken?		✓			✓
Section 4: Raw Data & Chrom/TALS Data Review (continued)					

TestAmerica Knoxville Anions by IC Batch Data Review Checklist
Methods: 300.0, 9056 & 9056A; Air Anions by 0050/26A; SOP: KNOX-WC-0005, Rev. 15

Review Items	NA	Y	N	If No, why is data reportable?	2nd ✓
8. TALS Samples Tab:					✓
• LIMS Sample IDs / Containers are correct?		✓			✓
• Method and matrix are correct?		✓			✓
• Date and time match raw data?		✓			✓
• Dilutions are correct?		✓			✓
• Correct suffix designated (where applicable)?		✓			✓
9. TALS Worksheet Tab is complete and correct?		✓			✓
10. TALS Reagent Tab is complete and correct?		✓			✓
11. TALS QC Links Tab is correct?		✓			✓
12. TALS Sample Results Tab					
• All unused data are marked Rejected or Accepted?		✓			✓
• All reported analytes are marked Primary or Secondary?		✓			✓
13. TALS Batch Information Screen documentation is complete?		✓			✓
14. TALS Status set to appropriate review level?		✓			✓
15. Calculations checked for error? *(Document manual calculation checks in worksheet notes. Include all prep factor information from prep batch worksheets and the analytical batch.)*		✓			✓
16. Are any prep factor data (input-output volumes, etc.) duplicated in prep batches and analytical batches?			✓	If yes, re-check calculations and repair the data.	✓
17. Is Run Log cover sheet and Chromeleon sequence scanned and attached to batch?		✓			✓
18. Correct Narrative NCM chosen?					✓
• Anions in Water	NA			☐ [5909]	NA
• Anions in DI Leachates				☐ [5910]	
• Anions in Soils				☐ [5912]	
• Anions in Waste				☐ [6307]	
• HCl, Cl2 in Air				☐ [5819]	
• HCl in Air		✓		☑ [5820] 140-12815	✓
• HF, HCl, Cl2 in Air	NA			☐ [6057]	NA
• HF, HCl, HBr, Cl2, Br2 in Air				☐ [6058]	
• HF, HCl, HNO2,HNO3, Cl2 in Air				☐ [6059]	
• HF,HCl, HBr,Cl2, Br2, I- in Air				☐ [6060]	
• Cl-, F-, NO2-, NO3- in Air				☐ [6077]	
• HF, HCl in Air		✓		☐ [6078]	✓
• H2SO4 in Air	NA			☐ [6109]	NA
• HF, HCl, HNO3 in Air				☐ [6779]	
• Sulfate in Air				☐ [6111]	

1st Level Review by: JM Humphrey 10-10-2018

2nd Level Review by: [signature] 10-10-18

140-12962-A-2 MS/MSD FOR F⁻ < 75% MATRIX EFFECT ~~EFFECT~~ JMH 10-10-18

NCM NARR: HF, HCL ONLY 140-12962

HPLC/IC BATCH WORKSHEET

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1

SDG No.:

Batch Number: 24313 Batch Start Date: 10/09/18 00:00 Batch Analyst: Humphrey, Jon M

Batch Method: 0050/26A Batch End Date: 10/09/18 00:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	ReceivedpH			
LCS 140-24313/1		0050/26A, 0050/26A		1 Sample	100 mL				
LCSD 140-24313/2		0050/26A, 0050/26A		1 Sample	100 mL				
MB 140-24313/3		0050/26A, 0050/26A		1 Sample	100 mL				
140-12815-A-1	M26-1	0050/26A, 0050/26A	T	1 Sample	370 mL	< 2 SU			
140-12815-A-2	M26-2	0050/26A, 0050/26A	T	1 Sample	380 mL	< 2 SU			
140-12815-A-2 MS	M26-2	0050/26A, 0050/26A	T	1 Sample	380 mL	< 2 SU			
140-12815-A-2 MSD	M26-2	0050/26A, 0050/26A	T	1 Sample	380 mL	< 2 SU			
140-12815-A-3	M26-3	0050/26A, 0050/26A	T	1 Sample	325 mL	< 2 SU			
140-12815-A-4	M26-REAGENT BLANK	0050/26A, 0050/26A	T	1 Sample	100 mL	< 2 SU			

Batch Notes	
Batch Comment	R7NA81995
NaOH Lot #	85INNaOH 10NP_00001
pH Paper ID	HC849161

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

24313

TestAmerica Knoxville
Source Air Analysis Sample Information

Analyst	Date	Lot #	Work Order #	FH or BH	Impinger Volume (mL)	Impinger pH as received	Impinger pH after adjustment	Amount added to adjust pH
JMH	10-9-18	140-12962	A-1	FH	340	≤2		
			A-2	FH	345	≤2		
			A-3	FH	335	≤2		
			A-4	FH (RB)	200 (100)	≤7		
			A-5	FH (RB)	135 (100)	≤2		
		140-12815	A-1	FH	370	≤2	JMH 10-9-18	
			A-2	FH	380	≤2		
			A-3	FH	325	≤2		
			A-4	FH (RB)	210 (100)	≤2		
				JMH 10-9-18				

Comments: 140-12962 (HF, HCL)
140-12815 (HCL)

WC076r1.doc, 011708

Method 8A

Determination of Sulfuric Acid and Sulfur Dioxide Emissions by Method 8A

FORM III
HPLC/IC LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1

SDG No.:

Matrix: Air Level: Low Lab File ID: 12140-0009644-004.d

Lab ID: LCS 140-24428/2-A Client ID:

COMPOUND	SPIKE ADDED (ug/Sample)	LCS CONCENTRATION (ug/Sample)	LCS % REC	QC LIMITS REC	#
Sulfate	500	507.8	102	90-110	

Column to be used to flag recovery and RPD values

FORM III 8A

FORM III
HPLC/IC MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1

SDG No.:

Matrix: Air Level: Low Lab File ID: 16140-0009644-008.d

Lab ID: 140-12815-6 MS Client ID: CCM-2 MS

COMPOUND	SPIKE ADDED (ug/Sample)	SAMPLE CONCENTRATION (ug/Sample)	MS CONCENTRATION (ug/Sample)	MS % REC	QC LIMITS REC	#
Sulfate	27000	26600	54460	103	75-125	

Column to be used to flag recovery and RPD values

FORM III 8A

FORM III
HPLC/IC MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1

SDG No.:

Matrix: Air Level: Low Lab File ID: 17140-0009644-009.d

Lab ID: 140-12815-6 MSD Client ID: CCM-2 MSD

COMPOUND	SPIKE ADDED (ug/Sample)	MSD CONCENTRATION (ug/Sample)	MSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Sulfate	27000	53760	101	1	20	75-125	

Column to be used to flag recovery and RPD values

FORM III 8A

FORM IV
HPLC/IC METHOD BLANK SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1

SDG No.:

Lab File ID: 11140-0009644-003.d Lab Sample ID: MB 140-24428/1-A

Matrix: Air Date Extracted: 10/12/2018 00:00

Instrument ID: 320 Date Analyzed: 10/12/2018 12:48

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 140-24428/2-A	12140-00096 44-004.d	10/12/2018 13:08
CCM-1	140-12815-5	14140-00096 44-006.d	10/12/2018 13:47
CCM-2	140-12815-6	15140-00096 44-007.d	10/12/2018 14:07
CCM-2 MS	140-12815-6 MS	16140-00096 44-008.d	10/12/2018 14:27
CCM-2 MSD	140-12815-6 MSD	17140-00096 44-009.d	10/12/2018 14:46
CCM-3	140-12815-7	18140-00096 44-010.d	10/12/2018 15:06
CCM-REAGENT BLANK	140-12815-8	19140-00096 44-011.d	10/12/2018 15:26

FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville
Job No.: 140-12815-1
SDG No.:
Client Sample ID: CCM-1
Lab Sample ID: 140-12815-5
Matrix: Air
Lab File ID: 14140-0009644-006.d
Analysis Method: 8A
Date Collected: 09/18/2018 00:00
Extraction Method: 8A
Date Extracted: 10/12/2018 00:00
Sample wt/vol: 1(Sample)
Date Analyzed: 10/12/2018 13:47
Con. Extract Vol.: 22(mL)
Dilution Factor: 200
Injection Volume: 1(uL)
GC Column: AS22 ID:
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 24430
Units: ug/Sample

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
14808-79-8	Sulfate	20700		4400	792

TestAmerica Knoxville
Target Compound Quantitation Report

Data File:	\\ChromNA\Knoxville\ChromData\320\20181012-9644.b\14140-0009644-006.d				
Lims ID:	140-12815-A-5-A				
Client ID:	CCM-1				
Sample Type:	Client				
Inject. Date:	12-Oct-2018 13:47:00	ALS Bottle#:	0	Worklist Smp#:	6
Injection Vol:	1.0 ul	Dil. Factor:	200.0000		
Sample Info:	140-0009644-006				
Misc. Info.:	14 140-12815-a-5-a				
Operator ID:		Instrument ID:	320		
Method:	\\ChromNA\Knoxville\ChromData\320\20181012-9644.b\Anions_320.m				
Limit Group:	IC 8A ICAL				
Last Update:	12-Oct-2018 15:44:28	Calib Date:	29-Sep-2018 11:26:00		
Integrator:	Falcon				
Quant Method:	External Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Knoxville\ChromData\320\20180929-9518.b\7140-0009518-007.d				
Column 1 :			Det: IC		
Process Host:	XAWRK007				
First Level Reviewer: humphreyj		Date:	12-Oct-2018 14:42:20		

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	OnCol Amt ug/ml	Flags
7 Sulfate	11.083	11.092	-0.009	60988839	4.71	M
S 18 Sulfuric acid					4.80	

QC Flag Legend

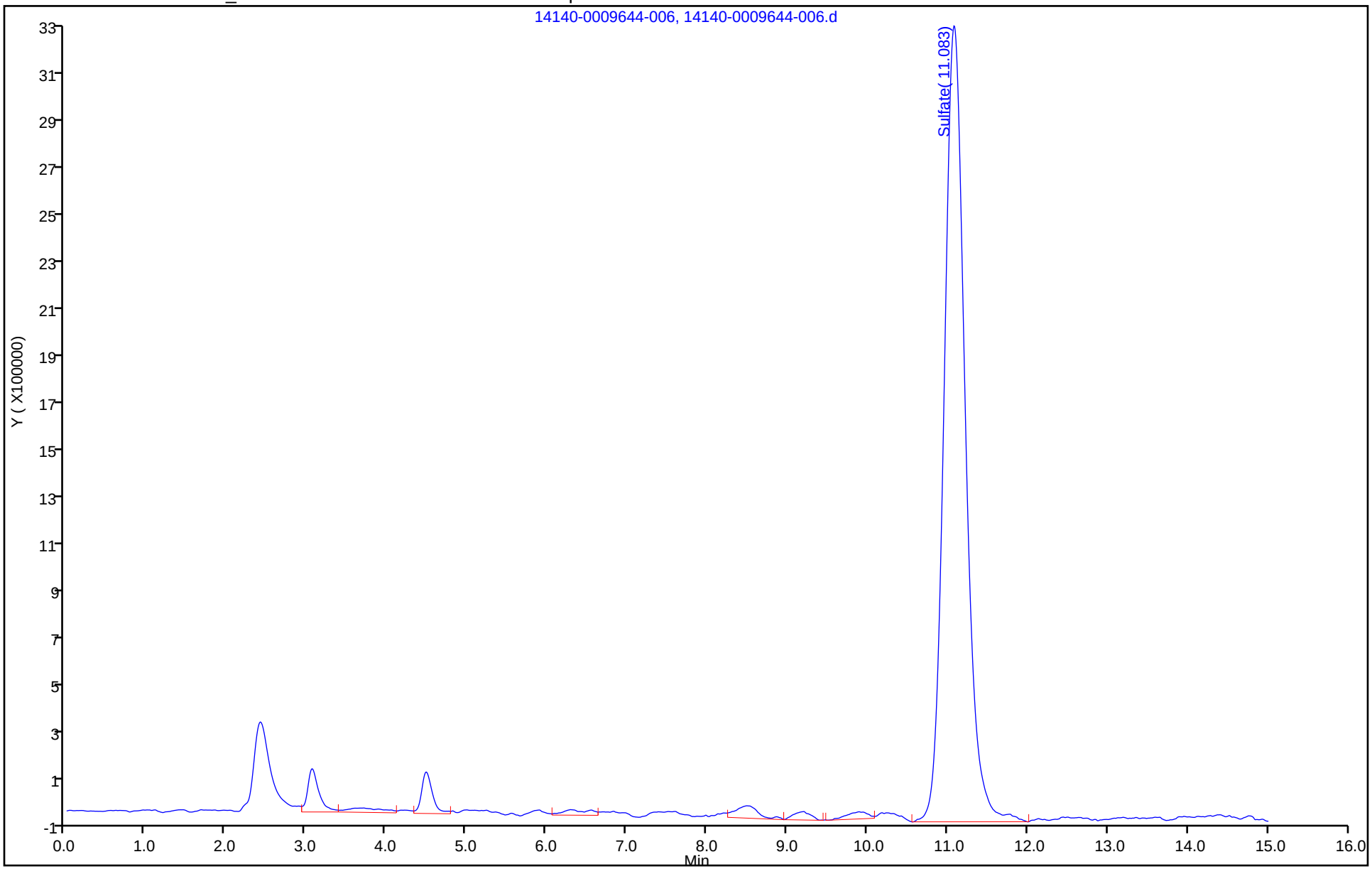
Review Flags

M - Manually Integrated

Report Date: 12-Oct-2018 15:44:32 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\320\20181012-9644.b\14140-0009644-006.d				
Injection Date:	12-Oct-2018 13:47:00	Instrument ID:	320	Operator ID:	
Lims ID:	140-12815-A-5-A	Lab Sample ID:	140-12815-5	Worklist Smp#:	6
Client ID:	CCM-1				
Injection Vol:	1.0 ul	Dil. Factor:	200.0000	ALS Bottle#:	0
Method:	Anions_320	Limit Group:	IC 8A ICAL		



Manual Integration/User Assign Peak Report

TestAmerica Knoxville

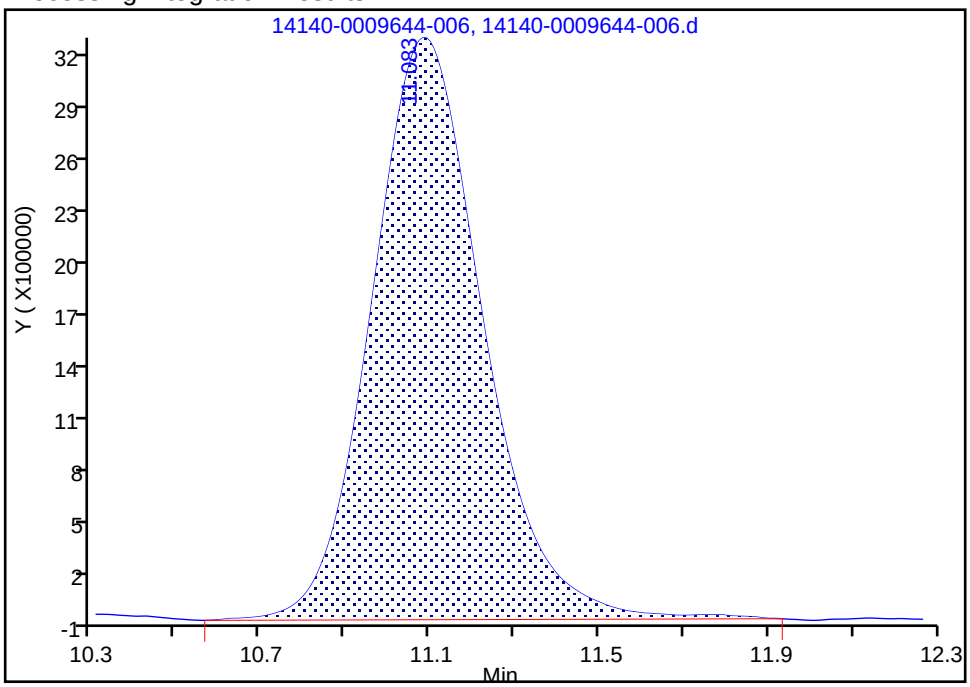
Data File:	\\ChromNA\Knoxville\ChromData\320\20181012-9644.b\14140-0009644-006.d				
Injection Date:	12-Oct-2018 13:47:00	Instrument ID:	320		
Lims ID:	140-12815-A-5-A	Lab Sample ID:	140-12815-5		
Client ID:	CCM-1				
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	6
Injection Vol:	1.0 ul	Dil. Factor:	200.0000		
Method:	Anions_320	Limit Group:	IC 8A ICAL		
Column:		Detector	IC		

7 Sulfate, CAS: 14808-79-8

Signal: 1

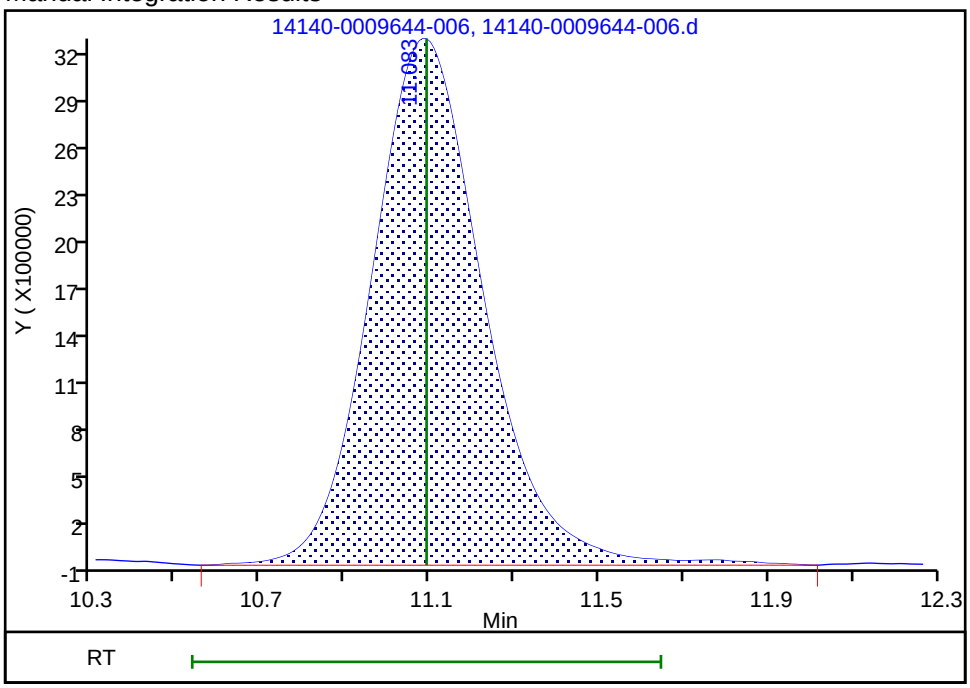
Processing Integration Results

RT: 11.08
Area: 60613286
Amount: 4.677954
Amount Units: ug/ml



Manual Integration Results

RT: 11.08
Area: 60988839
Amount: 4.706119
Amount Units: ug/ml



Reviewer: humphreyj, 12-Oct-2018 14:42:15

Audit Action: Manually Integrated Audit Reason: Baseline Smoothing

FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville | Job No.: 140-12815-1

SDG No.:

Client Sample ID: CCM-2 | Lab Sample ID: 140-12815-6

Matrix: Air | Lab File ID: 15140-0009644-007.d

Analysis Method: 8A | Date Collected: 09/18/2018 00:00

Extraction Method: 8A | Date Extracted: 10/12/2018 00:00

Sample wt/vol: 1(Sample) | Date Analyzed: 10/12/2018 14:07

Con. Extract Vol.: 27(mL) | Dilution Factor: 200

Injection Volume: 1(uL) | GC Column: AS22 ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 24430 | Units: ug/Sample

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
14808-79-8	Sulfate	26600		5400	972

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\320\20181012-9644.b\15140-0009644-007.d
Lims ID: 140-12815-A-6-A
Client ID: CCM-2
Sample Type: Client
Inject. Date: 12-Oct-2018 14:07:00 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 1.0 ul Dil. Factor: 200.0000
Sample Info: 140-0009644-007
Misc. Info.: 15 140-12815-a-6-a
Operator ID: Instrument ID: 320

Method: \\ChromNA\Knoxville\ChromData\320\20181012-9644.b\Anions_320.m
Limit Group: IC 8A ICAL
Last Update: 12-Oct-2018 15:44:28 Calib Date: 29-Sep-2018 11:26:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\320\20180929-9518.b\7140-0009518-007.d

Column 1 : Det: IC
Process Host: XAWRK007

First Level Reviewer: humphreyj Date: 12-Oct-2018 14:42:42

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	OnCol Amt ug/ml	Flags
	1 Fluoride		3.083			ND	
	2 Chloride		4.508			ND	
	3 Nitrite as N	5.592	5.467	0.125	1130328	NC	
	4 Bromide		6.575			ND	
	5 Nitrate as N		7.375			ND	
	6 Orthophosphate as P		9.733			ND	
	7 Sulfate	11.092	11.092	0.000	63905416	4.92	M
	8 Iodide		15.100			ND	
S	15 Hydro Fluoric Acid		0.000			ND	
S	14 Hydrogen Chloride		0.000			ND	
S	16 Nitrite as NO2		0.000			ND	
S	18 Sulfuric acid					5.03	
S	17 Nitrate as NO3		0.000			ND	
S	10 Sulfur					1.64	
S	9 Chlorine		0.000			ND	
S	11 Iodine		0.000			ND	
S	13 Fluorine		0.000			ND	
S	12 Br		0.000			ND	

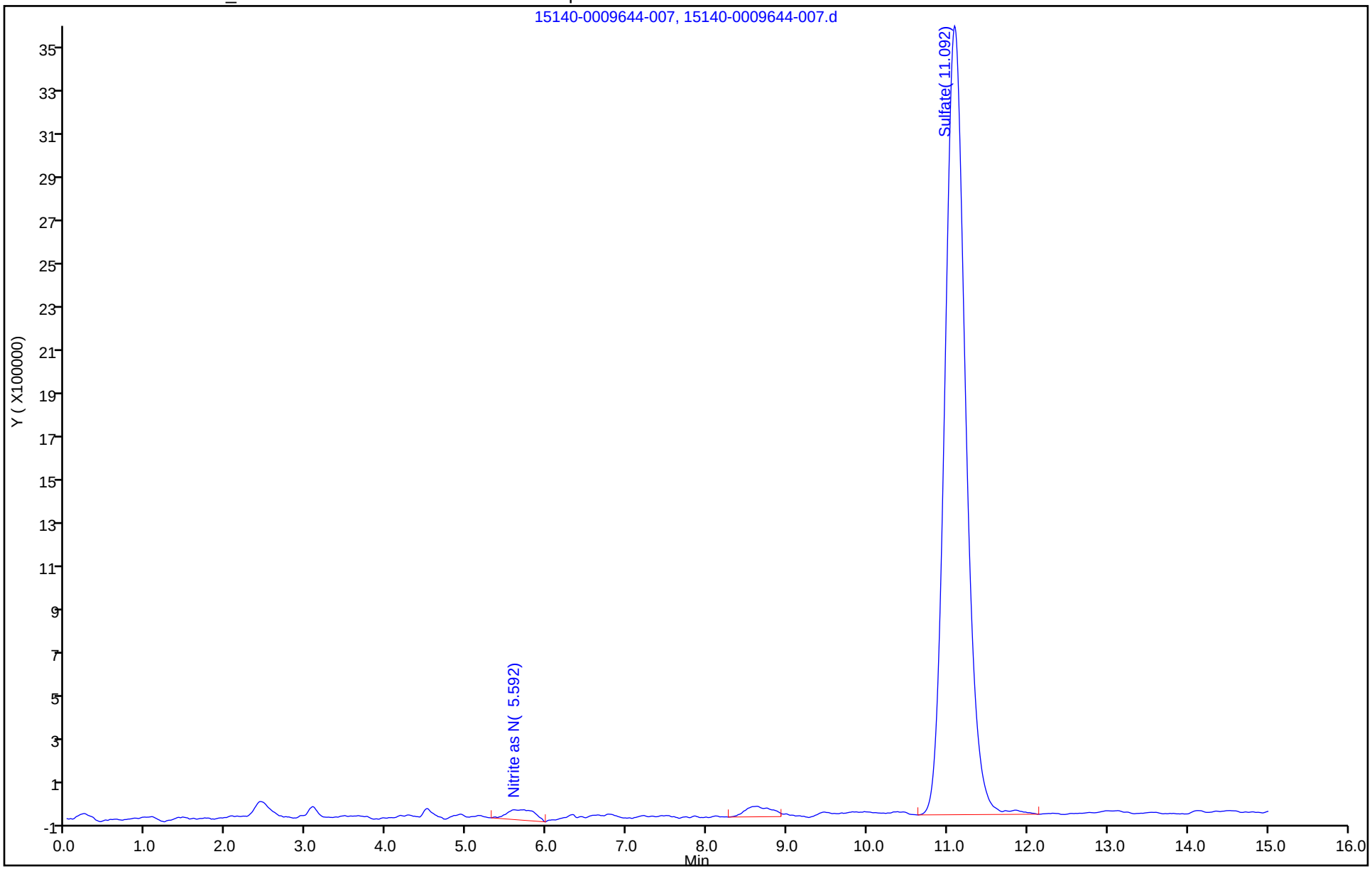
QC Flag Legend

Processing Flags
NC - Not Calibrated
Review Flags
M - Manually Integrated

Report Date: 12-Oct-2018 15:44:32 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\320\20181012-9644.b\15140-0009644-007.d				
Injection Date:	12-Oct-2018 14:07:00	Instrument ID:	320	Operator ID:	
Lims ID:	140-12815-A-6-A	Lab Sample ID:	140-12815-6	Worklist Smp#:	7
Client ID:	CCM-2				
Injection Vol:	1.0 ul	Dil. Factor:	200.0000	ALS Bottle#:	0
Method:	Anions_320	Limit Group:	IC 8A ICAL		



Manual Integration/User Assign Peak Report

TestAmerica Knoxville

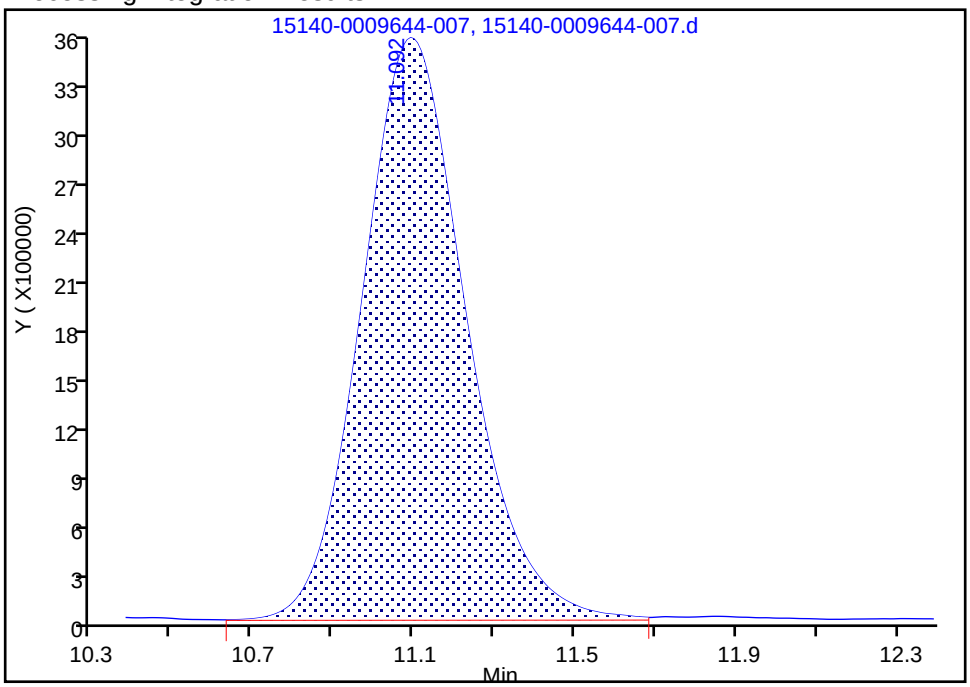
Data File:	\\ChromNA\Knoxville\ChromData\320\20181012-9644.b\15140-0009644-007.d				
Injection Date:	12-Oct-2018 14:07:00	Instrument ID:	320		
Lims ID:	140-12815-A-6-A	Lab Sample ID:	140-12815-6		
Client ID:	CCM-2				
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	200.0000		
Method:	Anions_320	Limit Group:	IC 8A ICAL		
Column:		Detector	IC		

7 Sulfate, CAS: 14808-79-8

Signal: 1

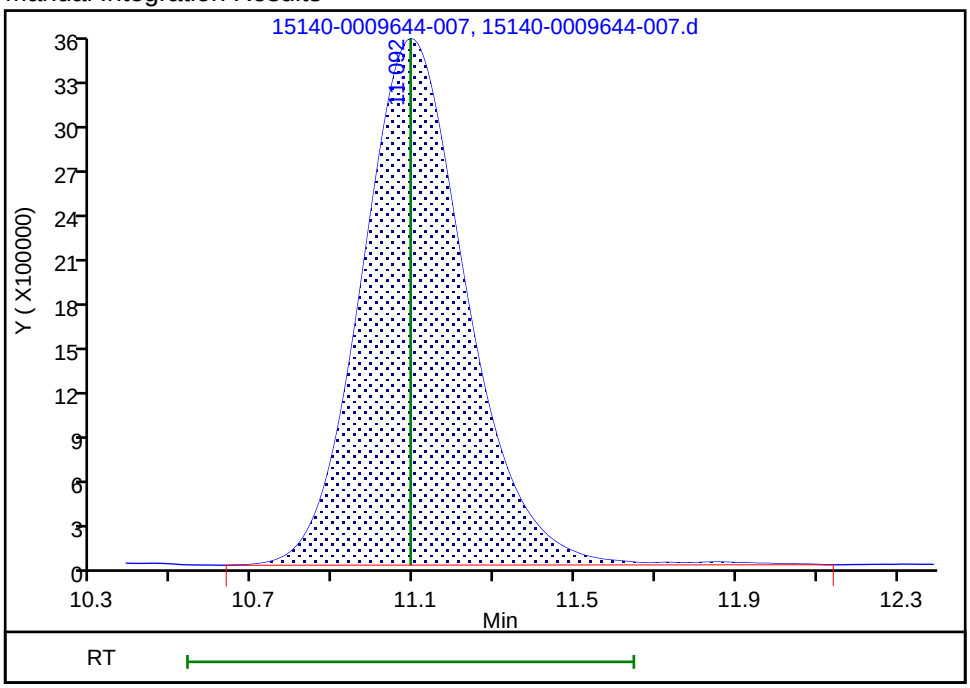
Processing Integration Results

RT: 11.09
Area: 63816558
Amount: 4.917828
Amount Units: ug/ml



Manual Integration Results

RT: 11.09
Area: 63905416
Amount: 4.924470
Amount Units: ug/ml



Reviewer: humphreyj, 12-Oct-2018 14:42:39

Audit Action: Manually Integrated Audit Reason: Baseline Smoothing

FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville | Job No.: 140-12815-1

SDG No.:

Client Sample ID: CCM-3 | Lab Sample ID: 140-12815-7

Matrix: Air | Lab File ID: 18140-0009644-010.d

Analysis Method: 8A | Date Collected: 09/19/2018 00:00

Extraction Method: 8A | Date Extracted: 10/12/2018 00:00

Sample wt/vol: 1(Sample) | Date Analyzed: 10/12/2018 15:06

Con. Extract Vol.: 26(mL) | Dilution Factor: 200

Injection Volume: 1(uL) | GC Column: AS22 ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 24430 | Units: ug/Sample

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
14808-79-8	Sulfate	19500		5200	936

TestAmerica Knoxville
Target Compound Quantitation Report

Data File:	\\ChromNA\Knoxville\ChromData\320\20181012-9644.b\18140-0009644-010.d				
Lims ID:	140-12815-A-7-A				
Client ID:	CCM-3				
Sample Type:	Client				
Inject. Date:	12-Oct-2018 15:06:00	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	200.0000		
Sample Info:	140-0009644-010				
Misc. Info.:	18 140-12815-a-7-a				
Operator ID:		Instrument ID:	320		
Method:	\\ChromNA\Knoxville\ChromData\320\20181012-9644.b\Anions_320.m				
Limit Group:	IC 8A ICAL				
Last Update:	12-Oct-2018 15:44:28	Calib Date:	29-Sep-2018 11:26:00		
Integrator:	Falcon				
Quant Method:	External Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Knoxville\ChromData\320\20180929-9518.b\7140-0009518-007.d				
Column 1 :			Det: IC		
Process Host:	XAWRK007				
First Level Reviewer: humphreyj		Date:	12-Oct-2018 15:43:58		

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	OnCol Amt ug/ml	Flags
7 Sulfate	11.117	11.092	0.025	48326566	3.75	M
S 18 Sulfuric acid					3.83	

QC Flag Legend

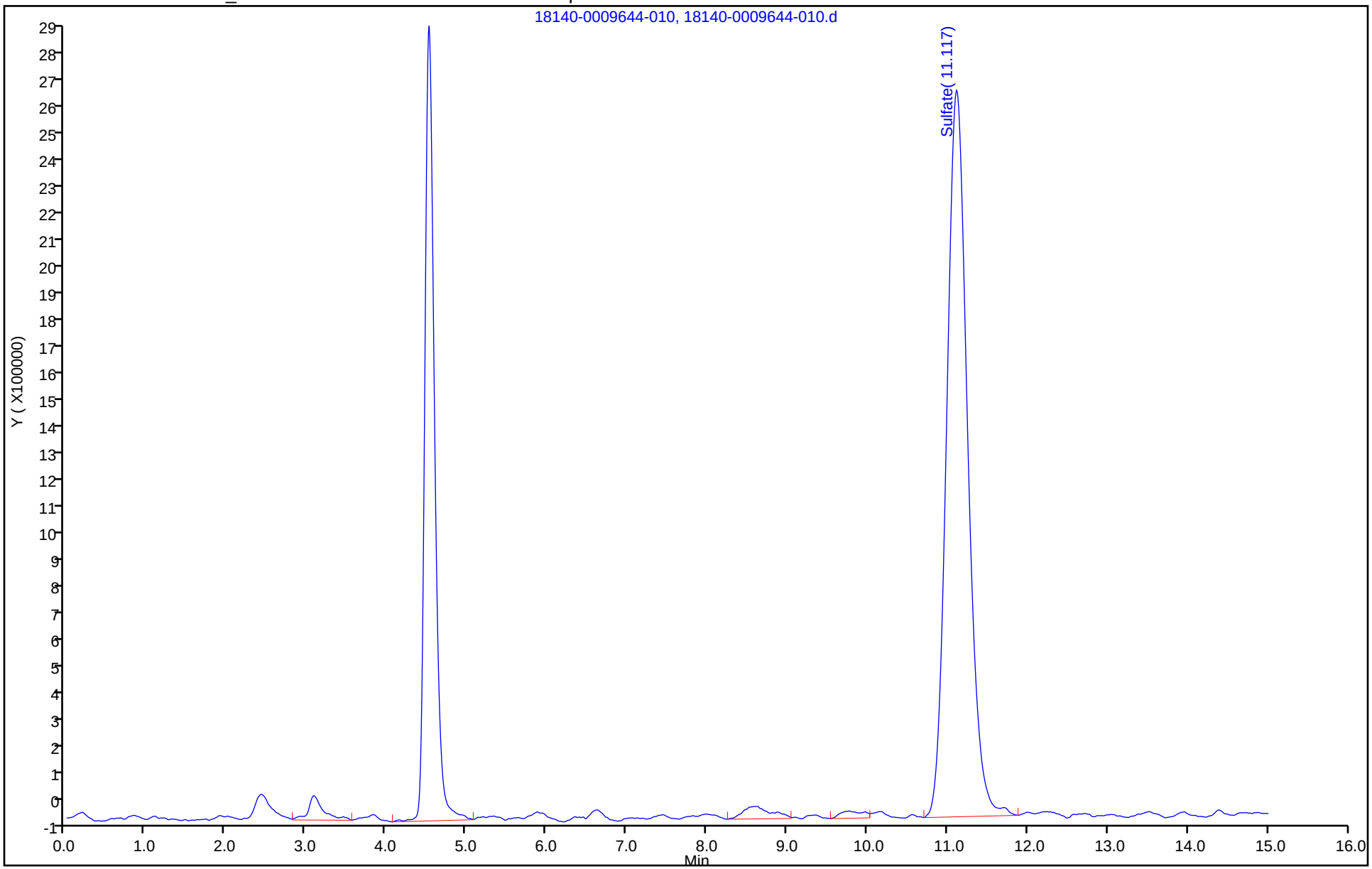
Review Flags

M - Manually Integrated

Report Date: 12-Oct-2018 15:44:34 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\320\20181012-9644.b\18140-0009644-010.d				
Injection Date:	12-Oct-2018 15:06:00	Instrument ID:	320	Operator ID:	
Lims ID:	140-12815-A-7-A	Lab Sample ID:	140-12815-7	Worklist Smp#:	10
Client ID:	CCM-3				
Injection Vol:	1.0 ul	Dil. Factor:	200.0000	ALS Bottle#:	0
Method:	Anions_320	Limit Group:	IC 8A ICAL		



Manual Integration/User Assign Peak Report

TestAmerica Knoxville

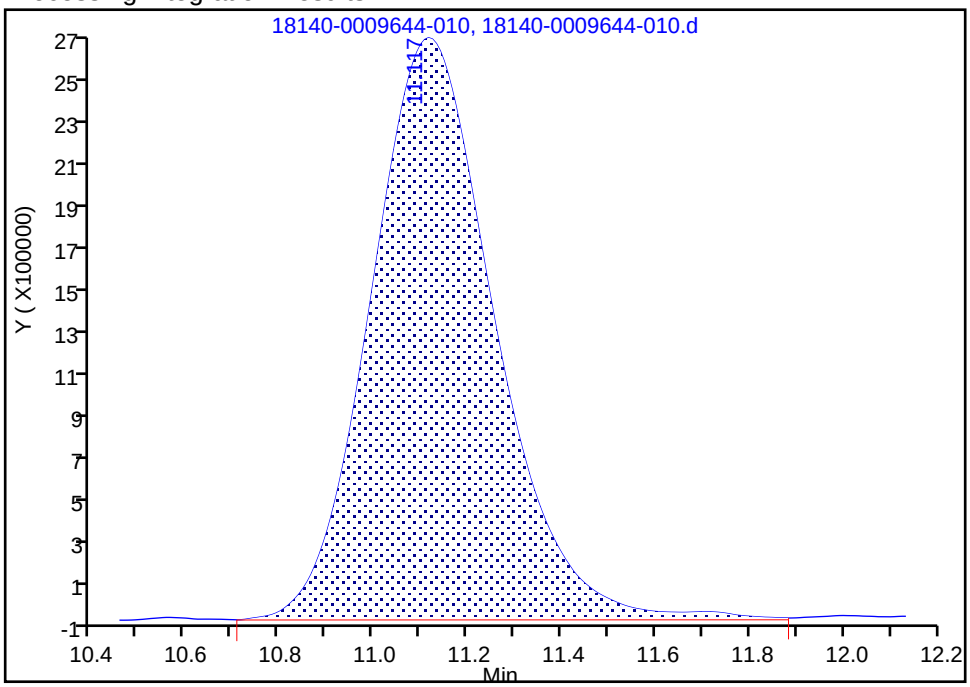
Data File:	\\ChromNA\Knoxville\ChromData\320\20181012-9644.b\18140-0009644-010.d				
Injection Date:	12-Oct-2018 15:06:00	Instrument ID:	320		
Lims ID:	140-12815-A-7-A	Lab Sample ID:	140-12815-7		
Client ID:	CCM-3				
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	200.0000		
Method:	Anions_320	Limit Group:	IC 8A ICAL		
Column:		Detector	IC		

7 Sulfate, CAS: 14808-79-8

Signal: 1

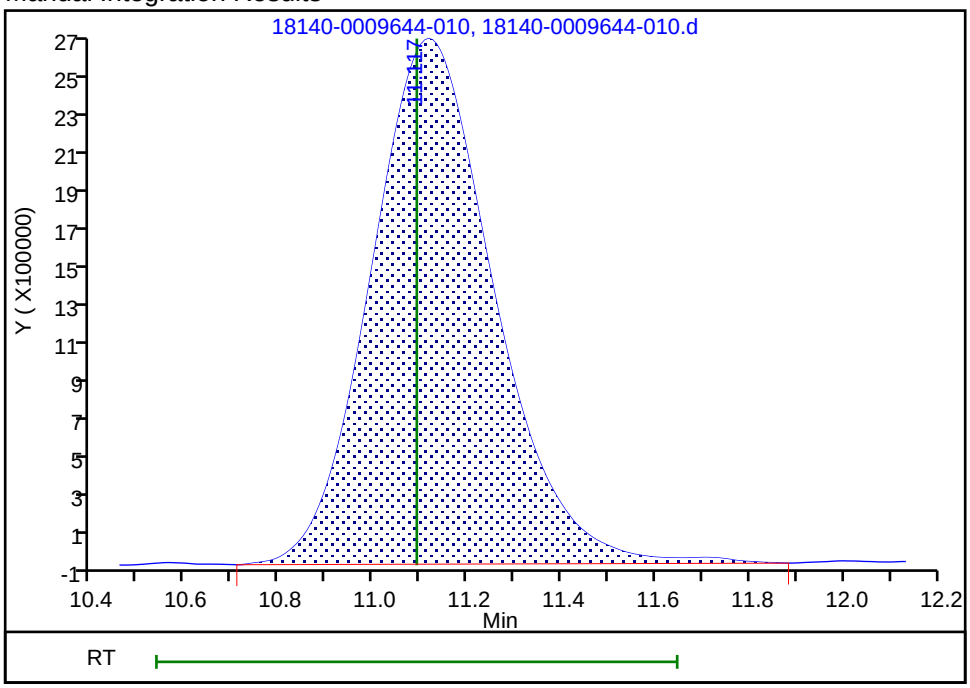
Processing Integration Results

RT: 11.12
Area: 48640749
Amount: 3.774129
Amount Units: ug/ml



Manual Integration Results

RT: 11.12
Area: 48326566
Amount: 3.750254
Amount Units: ug/ml



Reviewer: humphreyj, 12-Oct-2018 15:43:53

Audit Action: Manually Integrated Audit Reason: Baseline Smoothing

FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville | Job No.: 140-12815-1

SDG No.:

Client Sample ID: CCM-REAGENT BLANK | Lab Sample ID: 140-12815-8

Matrix: Air | Lab File ID: 19140-0009644-011.d

Analysis Method: 8A | Date Collected: 09/19/2018 00:00

Extraction Method: 8A | Date Extracted: 10/12/2018 00:00

Sample wt/vol: 1(Sample) | Date Analyzed: 10/12/2018 15:26

Con. Extract Vol.: 100(mL) | Dilution Factor: 20

Injection Volume: 1(uL) | GC Column: AS22 ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 24430 | Units: ug/Sample

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
14808-79-8	Sulfate	ND		2000	360

TestAmerica Knoxville
Target Compound Quantitation Report

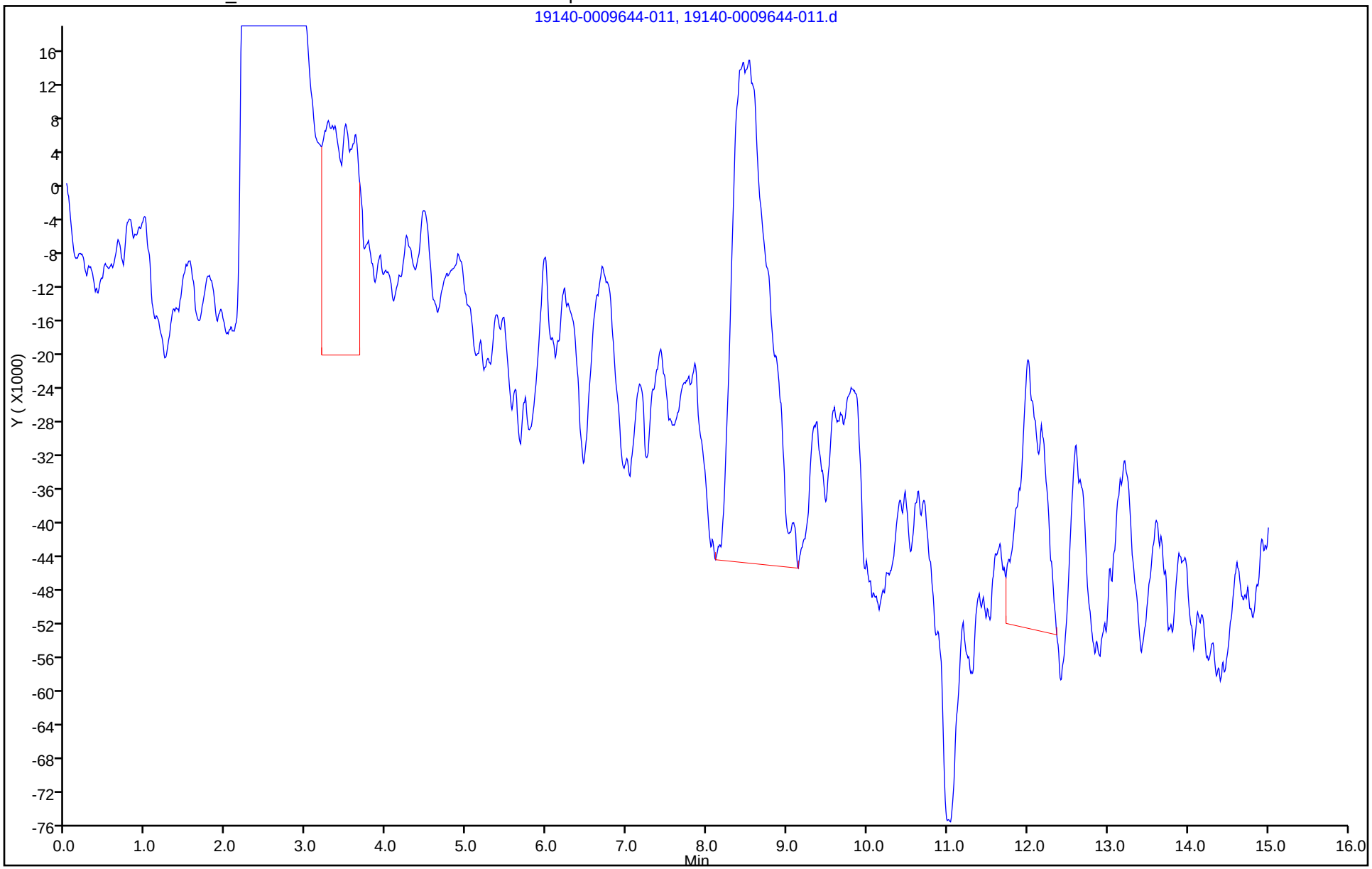
Data File:	\\ChromNA\Knoxville\ChromData\320\20181012-9644.b\19140-0009644-011.d				
Lims ID:	140-12815-A-8-A				
Client ID:	CCM-REAGENT BLANK				
Sample Type:	Client				
Inject. Date:	12-Oct-2018 15:26:00	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	1.0 ul	Dil. Factor:	20.0000		
Sample Info:	140-0009644-011				
Misc. Info.:	19 140-12815-a-8-a				
Operator ID:		Instrument ID:	320		
Method:	\\ChromNA\Knoxville\ChromData\320\20181012-9644.b\Anions_320.m				
Limit Group:	IC 8A ICAL				
Last Update:	12-Oct-2018 15:44:28	Calib Date:	29-Sep-2018 11:26:00		
Integrator:	Falcon				
Quant Method:	External Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Knoxville\ChromData\320\20180929-9518.b\7140-0009518-007.d				
Column 1 :			Det: IC		
Process Host:	XAWRK007				

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	OnCol Amt ug/ml	Flags
7 Sulfate		11.092			ND	
S 18 Sulfuric acid		0.000			ND	

Report Date: 12-Oct-2018 15:44:35 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\320\20181012-9644.b\19140-0009644-011.d				
Injection Date:	12-Oct-2018 15:26:00	Instrument ID:	320	Operator ID:	
Lims ID:	140-12815-A-8-A	Lab Sample ID:	140-12815-8	Worklist Smp#:	11
Client ID:	CCM-REAGENT BLANK				
Injection Vol:	1.0 ul	Dil. Factor:	20.0000	ALS Bottle#:	0
Method:	Anions_320	Limit Group:	IC 8A ICAL		



FORM VI
HPLC/IC BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RETENTION TIME SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1 Analy Batch No.: 24062

SDG No.:

Instrument ID: 320 GC Column: AS22 ID: Heated Purge: (Y/N) N

Calibration Start Date: 09/29/2018 09:09 Calibration End Date: 09/29/2018 11:26 Calibration ID: 1698

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 140-24062/1	1140-0009518-001.d
Level 2	IC 140-24062/2	2140-0009518-002.d
Level 3	IC 140-24062/3	3140-0009518-003.d
Level 4	IC 140-24062/4	4140-0009518-004.d
Level 5	IC 140-24062/5	5140-0009518-005.d
Level 6	IC 140-24062/6	6140-0009518-006.d
Level 7	IC 140-24062/7	7140-0009518-007.d

ANALYTE	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7				RT WINDOW	AVG RT
Sulfate	11.200	11.208	11.192	11.183	11.167	11.142	11.150				10.624 - 11.743	11.177

FORM VI
HPLC/IC BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1 Analy Batch No.: 24062

SDG No.:

Instrument ID: 320 GC Column: AS22 ID: Heated Purge: (Y/N) N

Calibration Start Date: 09/29/2018 09:09 Calibration End Date: 09/29/2018 11:26 Calibration ID: 1698

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 140-24062/1	1140-0009518-001.d
Level 2	IC 140-24062/2	2140-0009518-002.d
Level 3	IC 140-24062/3	3140-0009518-003.d
Level 4	IC 140-24062/4	4140-0009518-004.d
Level 5	IC 140-24062/5	5140-0009518-005.d
Level 6	IC 140-24062/6	6140-0009518-006.d
Level 7	IC 140-24062/7	7140-0009518-007.d

ANALYTE	CF				CURVE TYPE	COEFFICIENT			#	MIN CF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 5	LVL 2 LVL 6	LVL 3 LVL 7	LVL 4		B	M1	M2								
Sulfate	14568150 13178628	12634184 13886862	12962147 15280869	12868015	Qua	305439.120	12452419.3	93953.3435						1.0000		0.9900

Note: The M1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI
HPLC/IC BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1 Analy Batch No.: 24062

SDG No.:

Instrument ID: 320 GC Column: AS22 ID: Heated Purge: (Y/N) N

Calibration Start Date: 09/29/2018 09:09 Calibration End Date: 09/29/2018 11:26 Calibration ID: 1698

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 140-24062/1	1140-0009518-001.d
Level 2	IC 140-24062/2	2140-0009518-002.d
Level 3	IC 140-24062/3	3140-0009518-003.d
Level 4	IC 140-24062/4	4140-0009518-004.d
Level 5	IC 140-24062/5	5140-0009518-005.d
Level 6	IC 140-24062/6	6140-0009518-006.d
Level 7	IC 140-24062/7	7140-0009518-007.d

ANALYTE	CURVE TYPE	RESPONSE					CONCENTRATION (UG/ML)				
		LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Sulfate	Qua	2913630 208302931	6317092 458426068	12962147	38604046	98839712	0.200 15.0	0.500 30.0	1.00	3.00	7.50

Curve Type Legend:

Qua = Quadratic

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\320\20180929-9518.b\1140-0009518-001.d
Lims ID: IC STD1
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 29-Sep-2018 09:09:00 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0009518-001
Misc. Info.: 1 ic std1
Operator ID: Instrument ID: 320
Sublist: chrom-Anions_320*sub6

Method: \\ChromNA\Knoxville\ChromData\320\20180929-9518.b\Anions_320.m
Limit Group: IC 8A ICAL
Last Update: 29-Sep-2018 16:39:08 Calib Date: 29-Sep-2018 11:26:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\320\20180929-9518.b\7140-0009518-007.d

Column 1 : Det: IC
Process Host: CTX1003

First Level Reviewer: humphreyj Date: 29-Sep-2018 13:35:16

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 Fluoride	3.133	3.133	0.000	3076238	NC	NC	
2 Chloride	4.600	4.608	-0.008	1673609	NC	NC	M
3 Nitrite as N	5.575	5.592	-0.017	1666223	NC	NC	
4 Bromide	6.758	6.792	-0.034	1777745	NC	NC	
5 Nitrate as N	7.633	7.650	-0.017	2893242	NC	NC	M
6 Orthophosphate as P	9.858	9.825	0.033	2848826	NC	NC	M
7 Sulfate	11.200	11.183	0.017	2913630	0.2000	0.2091	M
8 Iodide	15.592	15.550	0.042	874438	NC	NC	M
S 15 Hydro Fluoric Acid		0.000			0.1053	ND	
S 14 Hydrogen Chloride		0.000			0.1028	ND	
S 16 Nitrite as NO2		0.000			0.1642	ND	
S 18 Sulfuric acid					0.2042	0.2135	
S 17 Nitrate as NO3		0.000			0.2213	ND	
S 10 Sulfur					0.0668	0.0698	
S 9 Chlorine		0.000			0.1000	ND	
S 11 Iodine		0.000			0.2000	ND	
S 13 Fluorine		0.000			0.1000	ND	
S 12 Br		0.000			0.2000	ND	

QC Flag Legend

Processing Flags
NC - Not Calibrated
Review Flags
M - Manually Integrated

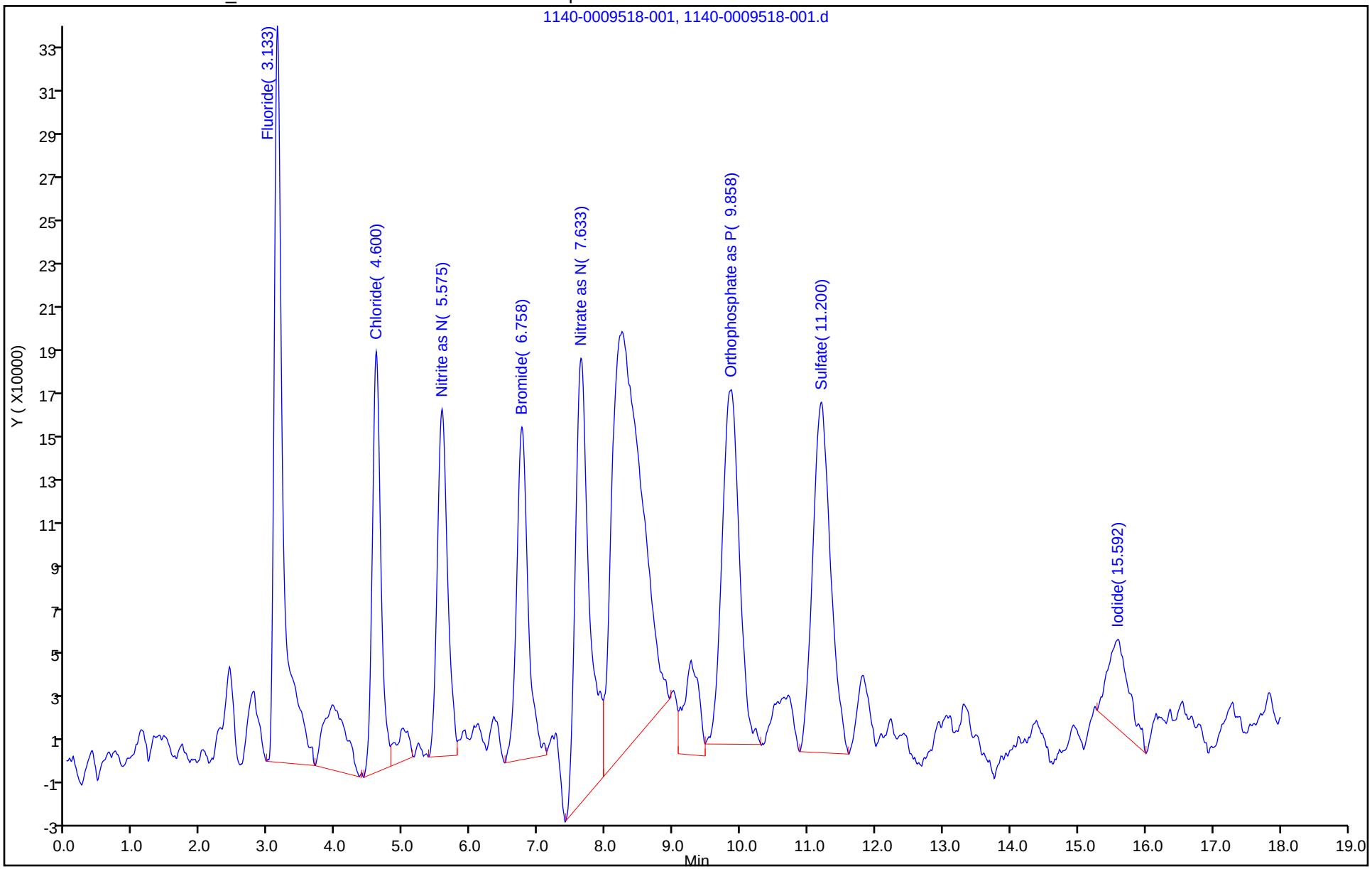
Reagents:

85L19056ICALP_00020 Amount Added: 10.00 Units: mL

Report Date: 29-Sep-2018 16:39:16 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\320\20180929-9518.b\1140-0009518-001.d				
Injection Date:	29-Sep-2018 09:09:00	Instrument ID:	320	Operator ID:	
Lims ID:	IC STD1			Worklist Smp#:	1
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_320	Limit Group:	IC 8A ICAL		



Manual Integration/User Assign Peak Report

TestAmerica Knoxville

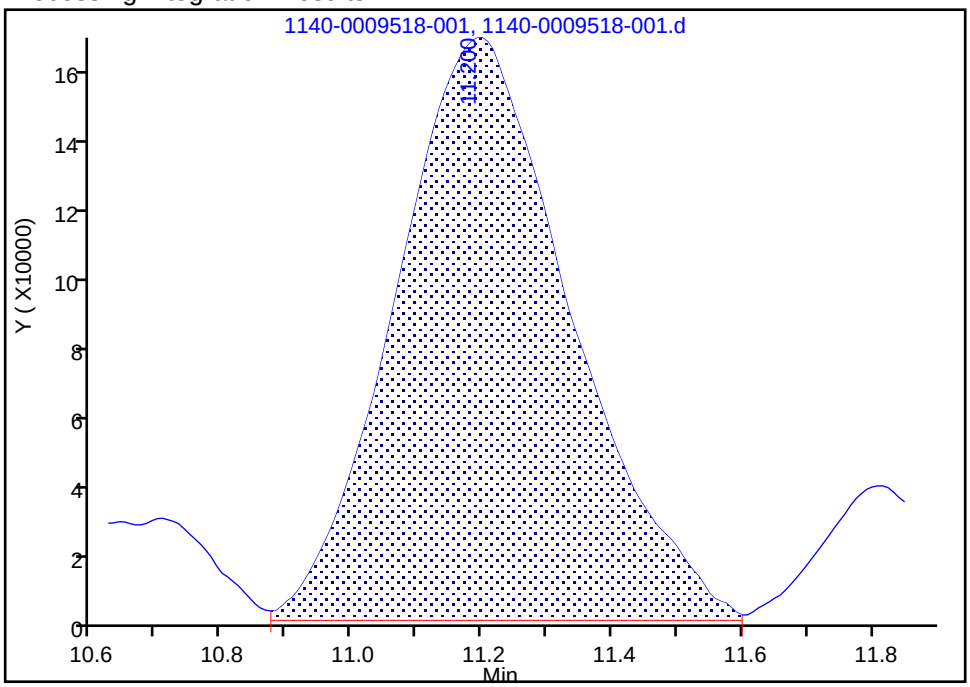
Data File:	\\ChromNA\Knoxville\ChromData\320\20180929-9518.b\1140-0009518-001.d				
Injection Date:	29-Sep-2018 09:09:00	Instrument ID:	320		
Lims ID:	IC STD1				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	1
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Anions_320	Limit Group:	IC 8A ICAL		
Column:		Detector	IC		

7 Sulfate, CAS: 14808-79-8

Signal: 1

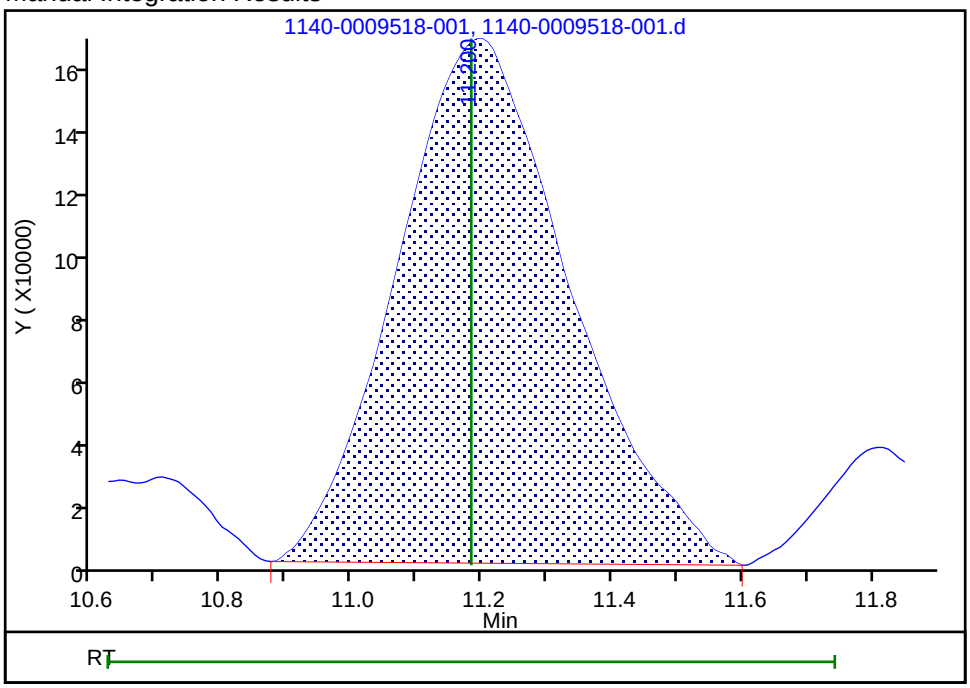
Processing Integration Results

RT: 11.20
Area: 3001586
Amount: 0.239141
Amount Units: ug/ml



Manual Integration Results

RT: 11.20
Area: 2913630
Amount: 0.209123
Amount Units: ug/ml



Reviewer: humphreyj, 29-Sep-2018 13:34:48

Audit Action: Manually Integrated Audit Reason: Baseline Smoothing

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\320\20180929-9518.b\2140-0009518-002.d
Lims ID: IC STD2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 29-Sep-2018 09:32:00 ALS Bottle#: 0 Worklist Smp#: 2
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0009518-002
Misc. Info.: 2 ic std2
Operator ID: Instrument ID: 320
Sublist: chrom-Anions_320*sub6

Method: \\ChromNA\Knoxville\ChromData\320\20180929-9518.b\Anions_320.m
Limit Group: IC 8A ICAL
Last Update: 29-Sep-2018 16:39:18 Calib Date: 29-Sep-2018 11:26:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\320\20180929-9518.b\7140-0009518-007.d

Column 1 : Det: IC
Process Host: CTX1003

First Level Reviewer: wasmundd Date: 29-Sep-2018 16:28:44

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 Fluoride	3.133	3.133	0.000	6315234	NC	NC	M
2 Chloride	4.608	4.608	0.000	4235791	NC	NC	M
3 Nitrite as N	5.583	5.592	-0.009	3175289	NC	NC	M
4 Bromide	6.783	6.792	-0.009	3686149	NC	NC	M
5 Nitrate as N	7.658	7.650	0.008	5975586	NC	NC	M
6 Orthophosphate as P	9.850	9.825	0.025	7190919	NC	NC	M
7 Sulfate	11.208	11.183	0.025	6317092	0.5000	0.4810	M
8 Iodide	15.575	15.550	0.025	2090208	NC	NC	M
S 15 Hydro Fluoric Acid		0.000			0.2633	ND	
S 14 Hydrogen Chloride		0.000			0.2571	ND	
S 16 Nitrite as NO2		0.000			0.4106	ND	
S 18 Sulfuric acid					0.5105	0.4911	
S 17 Nitrate as NO3		0.000			0.5534	ND	
S 10 Sulfur					0.1669	0.1606	
S 9 Chlorine		0.000			0.2500	ND	
S 11 Iodine		0.000			0.5000	ND	
S 13 Fluorine		0.000			0.2500	ND	
S 12 Br		0.000			0.5000	ND	

QC Flag Legend

Processing Flags
NC - Not Calibrated
Review Flags
M - Manually Integrated

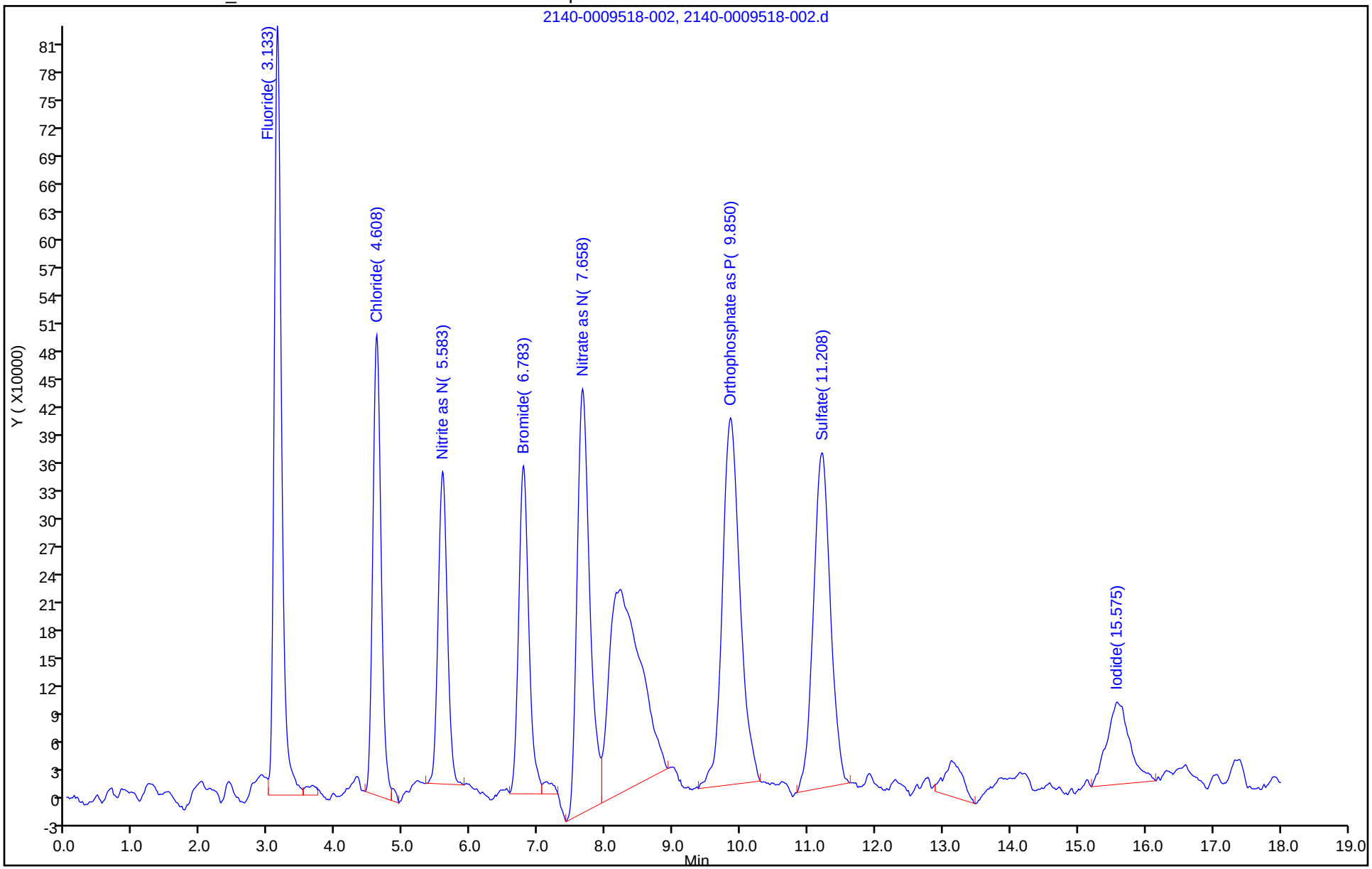
Reagents:

85L29056ICALP_00021 Amount Added: 10.00 Units: mL

Report Date: 29-Sep-2018 16:39:26 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\320\20180929-9518.b\2140-0009518-002.d				
Injection Date:	29-Sep-2018 09:32:00	Instrument ID:	320	Operator ID:	
Lims ID:	IC STD2			Worklist Smp#:	2
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_320	Limit Group:	IC 8A ICAL		



Manual Integration/User Assign Peak Report

TestAmerica Knoxville

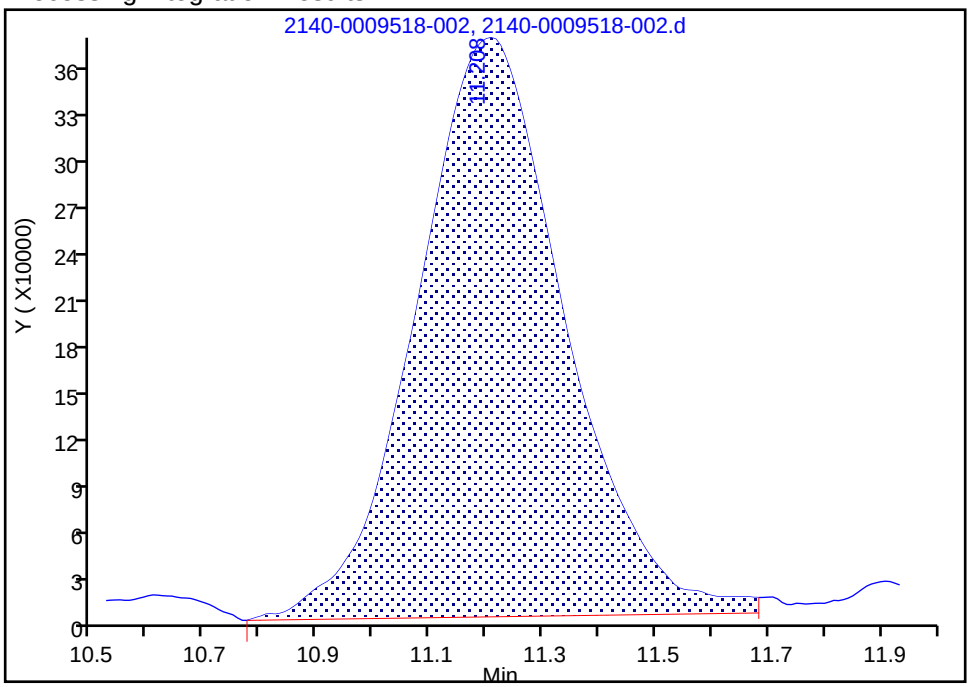
Data File:	\\ChromNA\Knoxville\ChromData\320\20180929-9518.b\2140-0009518-002.d				
Injection Date:	29-Sep-2018 09:32:00	Instrument ID:	320		
Lims ID:	IC STD2				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	2
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Anions_320	Limit Group:	IC 8A ICAL		
Column:		Detector	IC		

7 Sulfate, CAS: 14808-79-8

Signal: 1

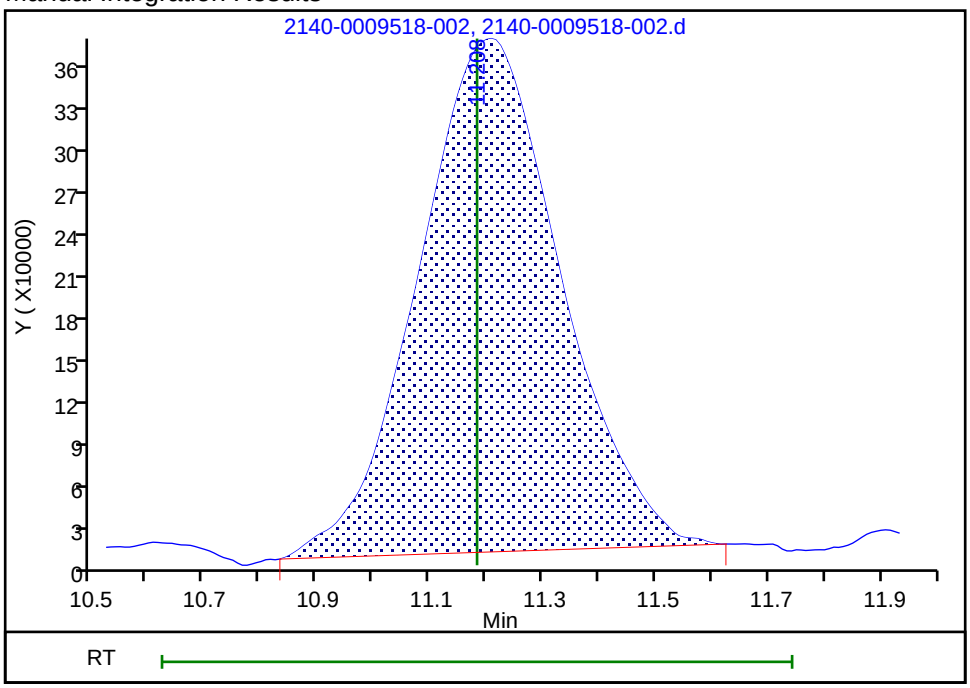
Processing Integration Results

RT: 11.21
Area: 6706887
Amount: 0.533212
Amount Units: ug/ml



Manual Integration Results

RT: 11.21
Area: 6317092
Amount: 0.481024
Amount Units: ug/ml



Reviewer: humphreyj, 29-Sep-2018 13:37:57

Audit Action: Manually Integrated Audit Reason: Baseline Smoothing

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\320\20180929-9518.b\3140-0009518-003.d
Lims ID: IC STD3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 29-Sep-2018 09:55:00 ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0009518-003
Misc. Info.: 3 ic std3
Operator ID: Instrument ID: 320
Sublist: chrom-Anions_320*sub6

Method: \\ChromNA\Knoxville\ChromData\320\20180929-9518.b\Anions_320.m
Limit Group: IC 8A ICAL
Last Update: 29-Sep-2018 16:39:29 Calib Date: 29-Sep-2018 11:26:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\320\20180929-9518.b\7140-0009518-007.d

Column 1 : Det: IC
Process Host: CTX1003

First Level Reviewer: humphreyj Date: 29-Sep-2018 13:39:55

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 Fluoride	3.142	3.142	0.000	13532658	NC	NC	
2 Chloride	4.600	4.600	0.000	9226028	NC	NC	
3 Nitrite as N	5.575	5.575	0.000	7400610	NC	NC	
4 Bromide	6.758	6.758	0.000	7462894	NC	NC	
5 Nitrate as N	7.617	7.617	0.000	10337754	NC	NC	M
6 Orthophosphate as P	9.842	9.842	0.000	14526300	NC	NC	
7 Sulfate	11.192	11.192	0.000	12962147	1.00	1.01	
8 Iodide	15.633	15.633	0.000	4776399	NC	NC	
S 15 Hydro Fluoric Acid		0.000			0.5266	ND	
S 14 Hydrogen Chloride		0.000			0.5142	ND	
S 16 Nitrite as NO2		0.000			0.8211	ND	
S 18 Sulfuric acid					1.02	1.03	
S 17 Nitrate as NO3		0.000			1.11	ND	
S 10 Sulfur					0.3338	0.3367	
S 9 Chlorine		0.000			0.5000	ND	
S 11 Iodine		0.000			1.00	ND	
S 13 Fluorine		0.000			0.5000	ND	
S 12 Br		0.000			1.00	ND	

QC Flag Legend

Processing Flags
NC - Not Calibrated
Review Flags
M - Manually Integrated

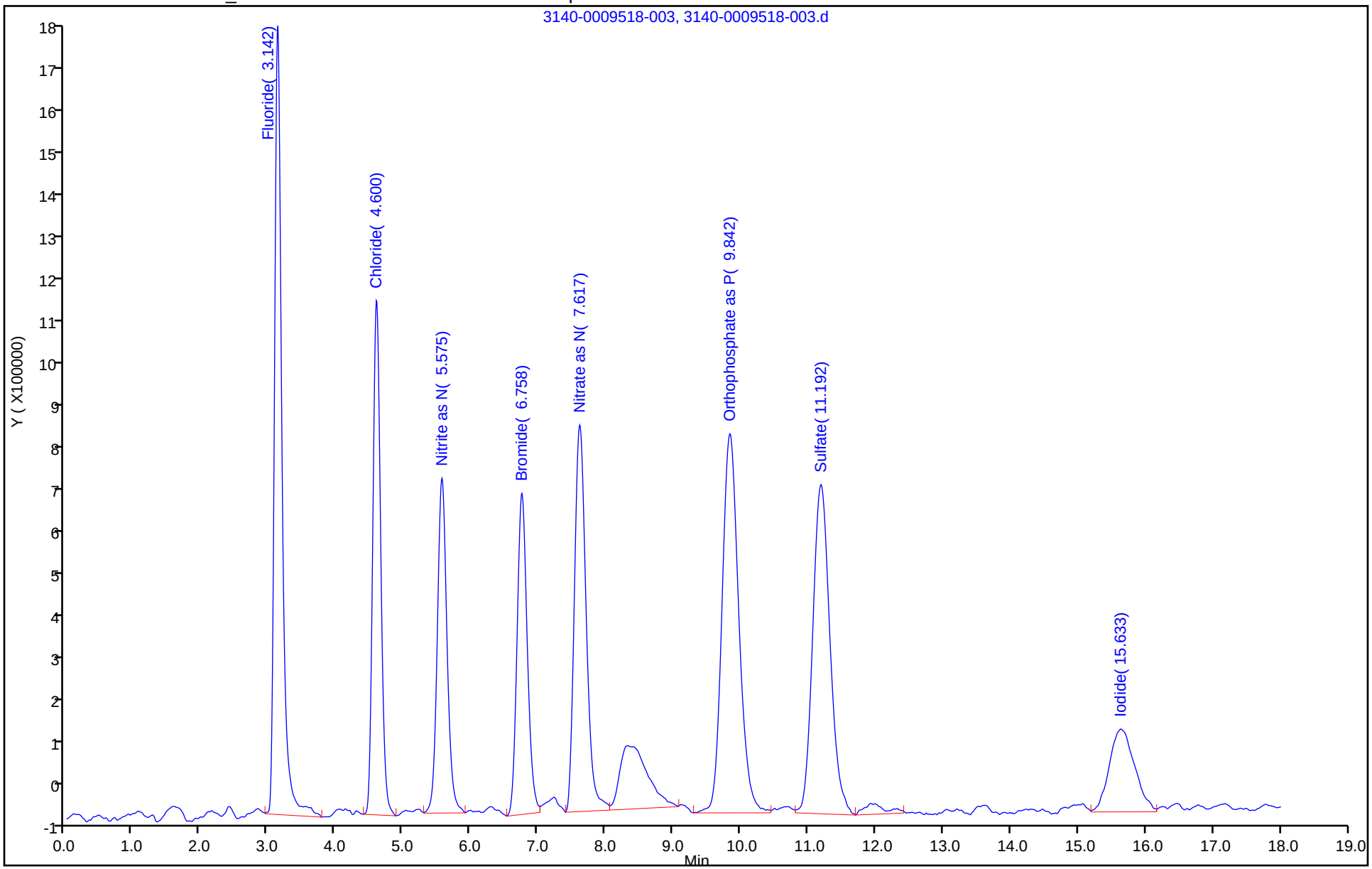
Reagents:

85L39056ICALP_00020 Amount Added: 10.00 Units: mL

Report Date: 29-Sep-2018 16:39:33 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\320\20180929-9518.b\3140-0009518-003.d				
Injection Date:	29-Sep-2018 09:55:00	Instrument ID:	320	Operator ID:	
Lims ID:	IC STD3			Worklist Smp#:	3
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_320	Limit Group:	IC 8A ICAL		



TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\320\20180929-9518.b\4140-0009518-004.d
Lims ID: IC STD4
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 29-Sep-2018 10:17:00 ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0009518-004
Misc. Info.: 4 ic std4
Operator ID: Instrument ID: 320
Sublist: chrom-Anions_320*sub6

Method: \\ChromNA\Knoxville\ChromData\320\20180929-9518.b\Anions_320.m
Limit Group: IC 8A ICAL
Last Update: 29-Sep-2018 16:39:36 Calib Date: 29-Sep-2018 11:26:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\320\20180929-9518.b\7140-0009518-007.d

Column 1 : Det: IC
Process Host: CTX1003

First Level Reviewer: humphreyj Date: 29-Sep-2018 13:45:20

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 Fluoride	3.133	3.133	0.000	41757246	NC	NC	M
2 Chloride	4.608	4.608	0.000	26221117	NC	NC	Ma
3 Nitrite as N	5.592	5.592	0.000	41736418	NC	NC	Ma
4 Bromide	6.792	6.792	0.000	10955182	NC	NC	M
5 Nitrate as N	7.650	7.650	0.000	57238526	NC	NC	Ma
6 Orthophosphate as P	9.825	9.825	0.000	21880216	NC	NC	Ma
7 Sulfate	11.183	11.183	0.000	38604046	3.00	3.01	M
8 Iodide	15.550	15.550	0.000	7266130	NC	NC	
S 15 Hydro Fluoric Acid		0.000			1.58	ND	
S 14 Hydrogen Chloride		0.000			1.54	ND	
S 16 Nitrite as NO2		0.000			4.93	ND	
S 18 Sulfuric acid					3.06	3.07	
S 17 Nitrate as NO3		0.000			6.64	ND	
S 10 Sulfur					1.00	1.00	
S 9 Chlorine		0.000			1.50	ND	
S 11 Iodine		0.000			1.50	ND	
S 13 Fluorine		0.000			1.50	ND	
S 12 Br		0.000			1.50	ND	

QC Flag Legend

Processing Flags
NC - Not Calibrated
Review Flags
M - Manually Integrated
a - User Assigned ID

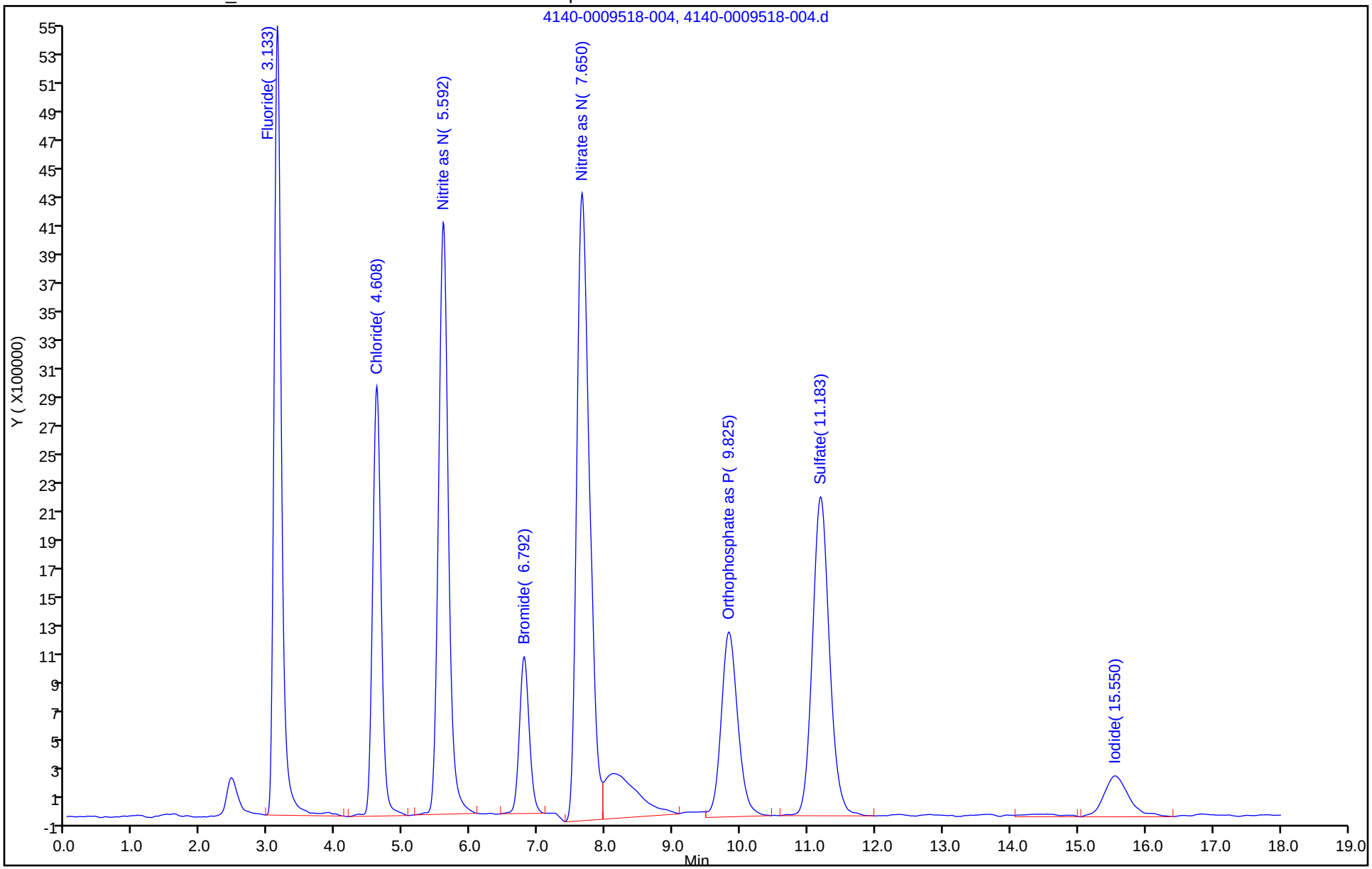
Reagents:

85L49056ICALP_00019 Amount Added: 10.00 Units: mL

Report Date: 29-Sep-2018 16:39:48 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\320\20180929-9518.b\4140-0009518-004.d				
Injection Date:	29-Sep-2018 10:17:00	Instrument ID:	320	Operator ID:	
Lims ID:	IC STD4			Worklist Smp#:	4
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_320	Limit Group:	IC 8A ICAL		



Manual Integration/User Assign Peak Report

TestAmerica Knoxville

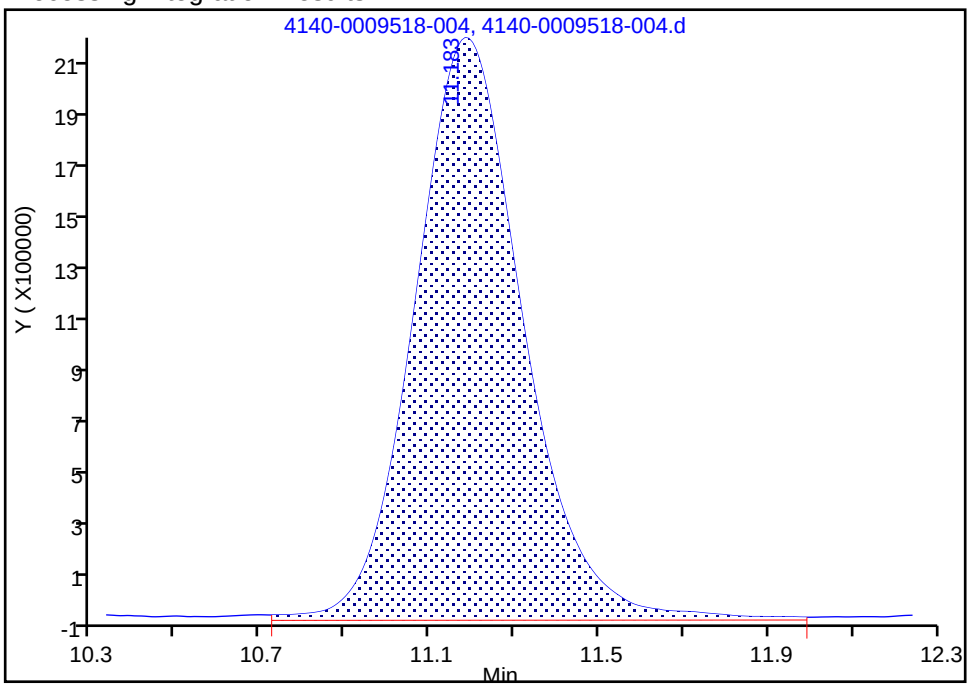
Data File:	\\ChromNA\Knoxville\ChromData\320\20180929-9518.b\4140-0009518-004.d				
Injection Date:	29-Sep-2018 10:17:00	Instrument ID:	320		
Lims ID:	IC STD4				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	4
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Anions_320	Limit Group:	IC 8A ICAL		
Column:		Detector	IC		

7 Sulfate, CAS: 14808-79-8

Signal: 1

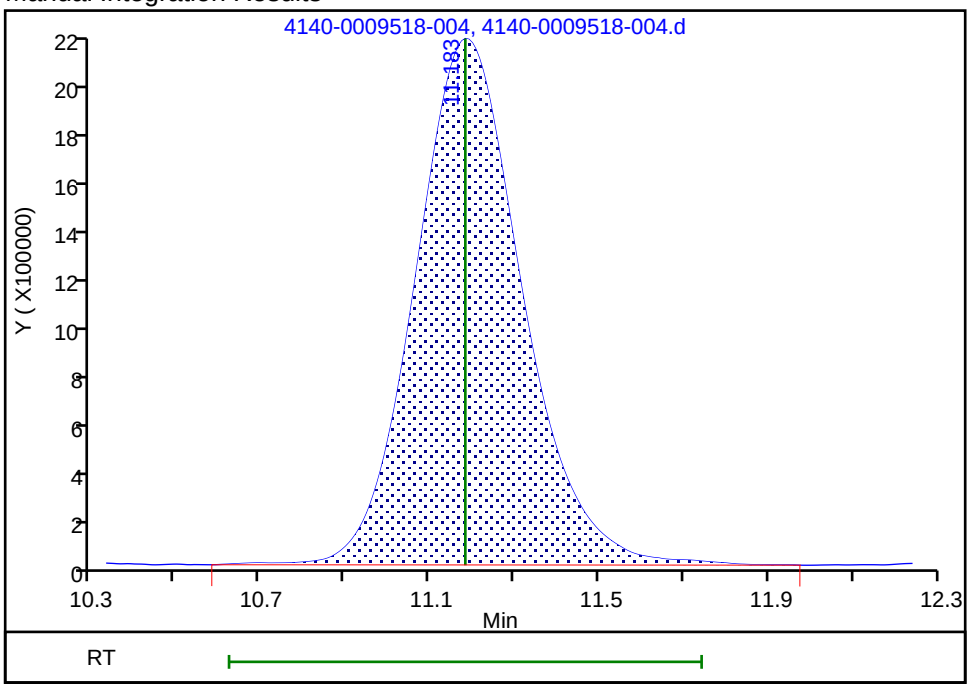
Processing Integration Results

RT: 11.18
Area: 39491930
Amount: 0
Amount Units: ug/ml



Manual Integration Results

RT: 11.18
Area: 38604046
Amount: 3.007357
Amount Units: ug/ml



Reviewer: humphreyj, 29-Sep-2018 13:43:54

Audit Action: Manually Integrated Audit Reason: Baseline Smoothing

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\320\20180929-9518.b\5140-0009518-005.d
Lims ID: IC STD5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 29-Sep-2018 10:40:00 ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0009518-005
Misc. Info.: 5 ic std5
Operator ID: Instrument ID: 320
Sublist: chrom-Anions_320*sub6

Method: \\ChromNA\Knoxville\ChromData\320\20180929-9518.b\Anions_320.m
Limit Group: IC 8A ICAL
Last Update: 29-Sep-2018 16:39:51 Calib Date: 29-Sep-2018 11:26:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\320\20180929-9518.b\7140-0009518-007.d

Column 1 : Det: IC
Process Host: CTX1003

First Level Reviewer: humphreyj Date: 29-Sep-2018 13:48:08

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride	3.133	3.133	0.000	110504144	NC	NC	M
	2 Chloride	4.575	4.608	-0.033	67142842	NC	NC	
	3 Nitrite as N	5.550	5.592	-0.042	106614558	NC	NC	M
	4 Bromide	6.717	6.792	-0.075	28170954	NC	NC	Ma
	5 Nitrate as N	7.533	7.650	-0.117	176990946	NC	NC	M
	6 Orthophosphate as P	9.792	9.825	-0.033	58169905	NC	NC	
	7 Sulfate	11.167	11.183	-0.016	98839712	7.50	7.49	
	8 Iodide	15.392	15.550	-0.158	16899166	NC	NC	
S	15 Hydro Fluoric Acid		0.000			3.95	ND	
S	14 Hydrogen Chloride		0.000			3.86	ND	
S	16 Nitrite as NO2		0.000			12.3	ND	
S	18 Sulfuric acid					7.66	7.65	
S	17 Nitrate as NO3		0.000			16.6	ND	
S	10 Sulfur					2.50	2.50	
S	9 Chlorine		0.000			3.75	ND	
S	11 Iodine		0.000			3.75	ND	
S	13 Fluorine		0.000			3.75	ND	
S	12 Br		0.000			3.75	ND	

QC Flag Legend

Processing Flags
NC - Not Calibrated
Review Flags
M - Manually Integrated
a - User Assigned ID

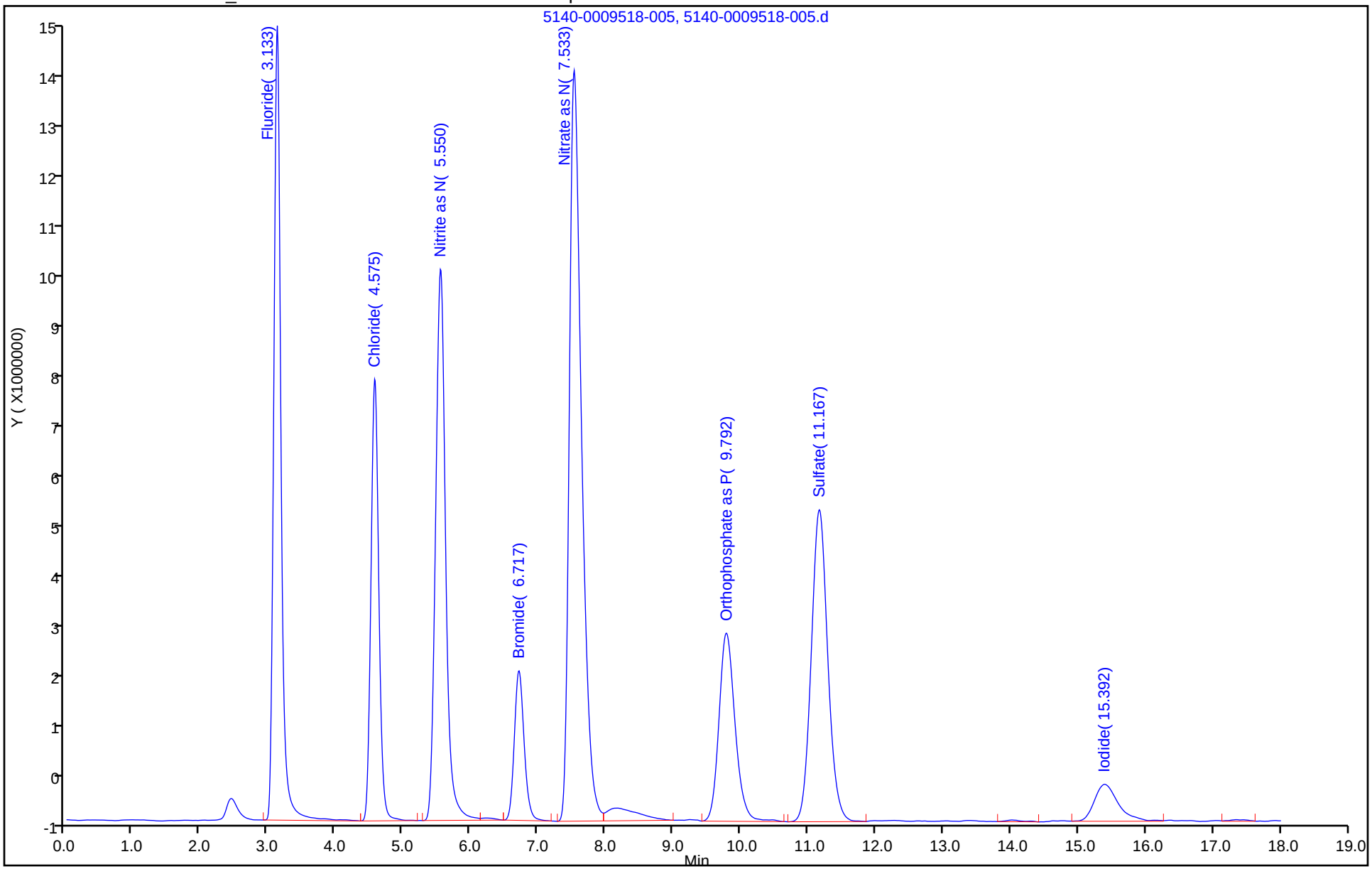
Reagents:

85L59056ICALP_00019 Amount Added: 10.00 Units: mL

Report Date: 29-Sep-2018 16:39:58 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\320\20180929-9518.b\5140-0009518-005.d				
Injection Date:	29-Sep-2018 10:40:00	Instrument ID:	320	Operator ID:	
Lims ID:	IC STD5			Worklist Smp#:	5
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_320	Limit Group:	IC 8A ICAL		



TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\320\20180929-9518.b\6140-0009518-006.d
Lims ID: IC STD6
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 29-Sep-2018 11:03:00 ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0009518-006
Misc. Info.: 6 ic std6
Operator ID: Instrument ID: 320
Sublist: chrom-Anions_320*sub6

Method: \\ChromNA\Knoxville\ChromData\320\20180929-9518.b\Anions_320.m
Limit Group: IC 8A ICAL
Last Update: 29-Sep-2018 16:40:02 Calib Date: 29-Sep-2018 11:26:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\320\20180929-9518.b\7140-0009518-007.d

Column 1 : Det: IC
Process Host: CTX1003

First Level Reviewer: wasmundd Date: 29-Sep-2018 16:36:18

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 Fluoride	3.133	3.133	0.000	232794216	NC	NC	
2 Chloride	4.567	4.608	-0.041	143914519	NC	NC	
3 Nitrite as N	5.550	5.592	-0.042	216372306	NC	NC	Ma
4 Bromide	6.700	6.792	-0.092	59062237	NC	NC	Ma
5 Nitrate as N	7.483	7.650	-0.167	386390665	NC	NC	Ma
6 Orthophosphate as P	9.750	9.825	-0.075	122714175	NC	NC	
7 Sulfate	11.142	11.183	-0.041	208302931	15.0	15.0	
8 Iodide	15.358	15.550	-0.192	34804462	NC	NC	
S 15 Hydro Fluoric Acid		0.000			7.90	ND	
S 14 Hydrogen Chloride		0.000			7.71	ND	
S 16 Nitrite as NO2		0.000			24.6	ND	
S 18 Sulfuric acid					15.3	15.3	
S 17 Nitrate as NO3		0.000			33.2	ND	
S 10 Sulfur					5.01	5.01	
S 9 Chlorine		0.000			7.50	ND	
S 11 Iodine		0.000			7.50	ND	
S 13 Fluorine		0.000			7.50	ND	
S 12 Br		0.000			7.50	ND	

QC Flag Legend

Processing Flags
NC - Not Calibrated
Review Flags
M - Manually Integrated
a - User Assigned ID

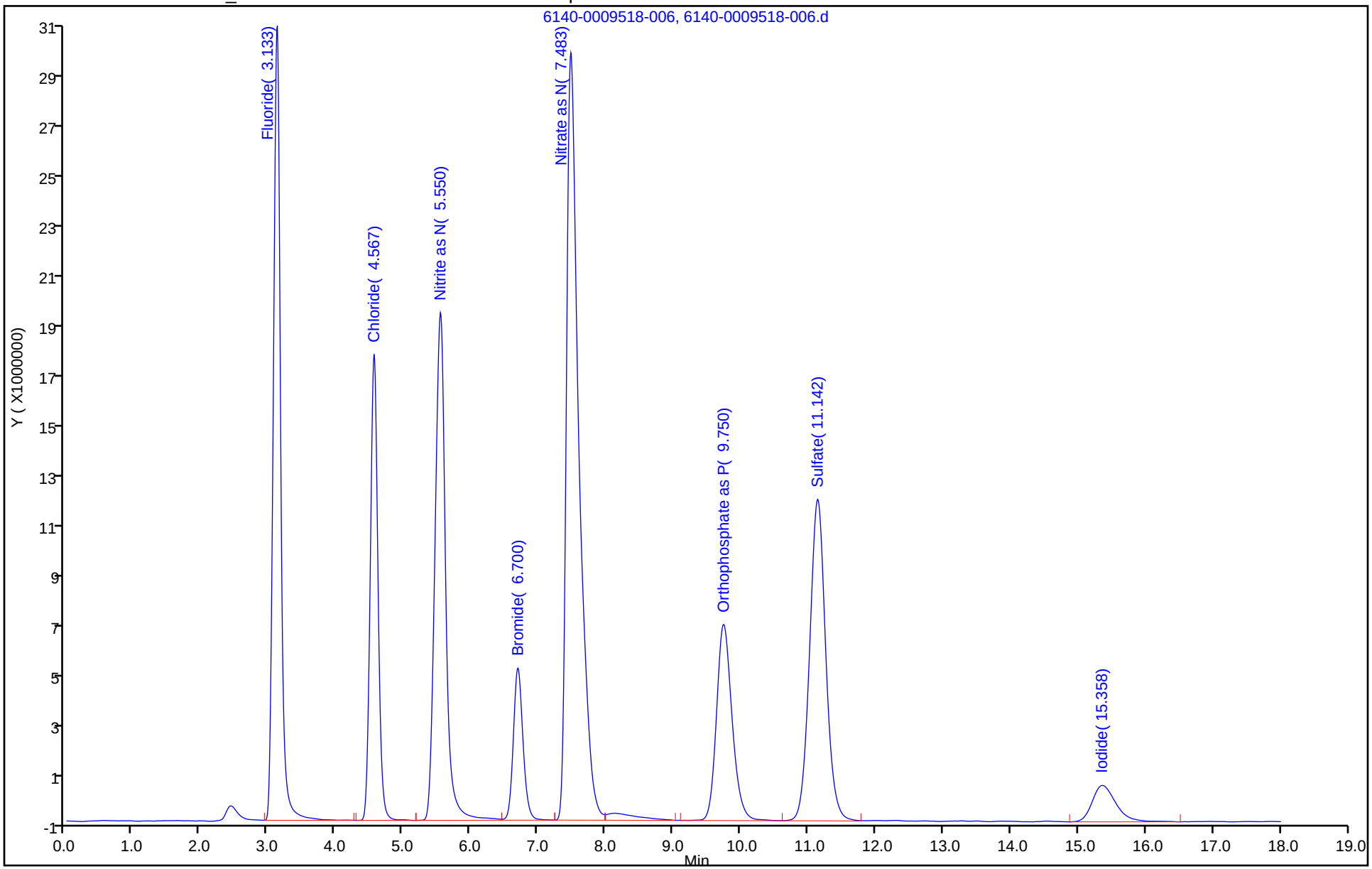
Reagents:

85L69056ICALP_00030 Amount Added: 10.00 Units: mL

Report Date: 29-Sep-2018 16:40:04 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\320\20180929-9518.b\6140-0009518-006.d				
Injection Date:	29-Sep-2018 11:03:00	Instrument ID:	320	Operator ID:	
Lims ID:	IC STD6			Worklist Smp#:	6
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_320	Limit Group:	IC 8A ICAL		



TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\320\20180929-9518.b\7140-0009518-007.d
Lims ID: IC STD7
Client ID:
Sample Type: IC Calib Level: 7
Inject. Date: 29-Sep-2018 11:26:00 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0009518-007
Misc. Info.: 7 ic std7
Operator ID: Instrument ID: 320
Sublist: chrom-Anions_320*sub6

Method: \\ChromNA\Knoxville\ChromData\320\20180929-9518.b\Anions_320.m
Limit Group: IC 8A ICAL
Last Update: 29-Sep-2018 16:40:12 Calib Date: 29-Sep-2018 11:26:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\320\20180929-9518.b\7140-0009518-007.d

Column 1 : Det: IC
Process Host: CTX1003

First Level Reviewer: wasmundd Date: 29-Sep-2018 16:38:40

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride	3.142	3.133	0.009	490040063	NC	NC	
	2 Chloride	4.575	4.608	-0.033	321450447	NC	NC	
	3 Nitrite as N	5.583	5.592	-0.009	435885590	NC	NC	
	4 Bromide	6.708	6.792	-0.084	127701090	NC	NC	
	5 Nitrate as N	7.450	7.650	-0.200	852211602	NC	NC	
	6 Orthophosphate as P	9.733	9.825	-0.092	277433829	NC	NC	
	7 Sulfate	11.150	11.183	-0.033	458426068	30.0	30.0	
	8 Iodide	15.300	15.550	-0.250	70791915	NC	NC	
S	15 Hydro Fluoric Acid		0.000			15.8	ND	
S	14 Hydrogen Chloride		0.000			15.4	ND	
S	16 Nitrite as NO2		0.000			49.3	ND	
S	18 Sulfuric acid					30.6	30.6	
S	17 Nitrate as NO3		0.000			66.4	ND	
S	10 Sulfur					10.0	10.0	
S	9 Chlorine		0.000			15.0	ND	
S	11 Iodine		0.000			15.0	ND	
S	13 Fluorine		0.000			15.0	ND	
S	12 Br		0.000			15.0	ND	

QC Flag Legend

Processing Flags
NC - Not Calibrated

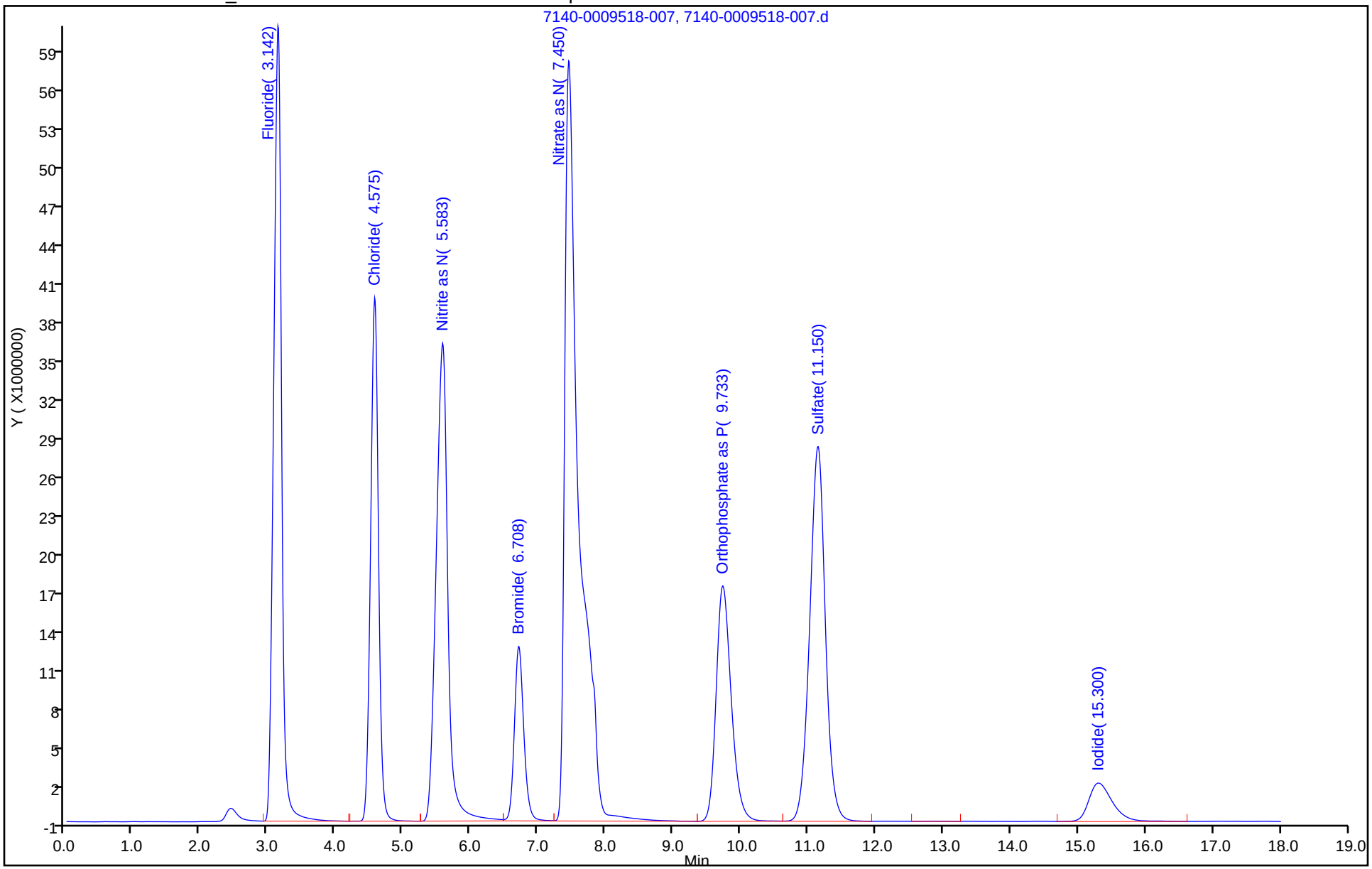
Reagents:

85L69056ICALP_00031 Amount Added: 10.00 Units: mL

Report Date: 29-Sep-2018 16:40:14 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\320\20180929-9518.b\7140-0009518-007.d				
Injection Date:	29-Sep-2018 11:26:00	Instrument ID:	320	Operator ID:	
Lims ID:	IC STD7			Worklist Smp#:	7
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_320	Limit Group:	IC 8A ICAL		



FORM VII
HPLC/IC CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1

SDG No.:

Lab Sample ID: ICV 140-24062/8 Calibration Date: 09/29/2018 12:25

Instrument ID: 320 Calib Start Date: 09/29/2018 09:09

GC Column: AS22 ID: Calib End Date: 09/29/2018 11:26

Lab File ID: 8140-0009518-008.d Conc. Units: mg/L

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Sulfate	Qua		12371291		2.42	2.50	-3.4	10.0

FORM VII 8A

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SDG –☐. –			
L b S mp e ID –	ICV 140 24062/8	C ib tion D te –	09/29/2018 12 –25
Inst ument ID –	320	C ib St t D te –	09/29/2018 09 –09
GC Co umn–	S22 ID –	C ib End D te –	09/29/2018 11 –26
L b Fi e ID –	8140 0009518 008.d		

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Su f te	11.10	10.62	11.74

Fo m VII 8

Page 192 of 244 10/17/2018

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\320\20180929-9518.b\8140-0009518-008.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 29-Sep-2018 12:25:00 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0009518-008
Misc. Info.: 8 icv
Operator ID: Instrument ID: 320
Sublist:

Method: \\ChromNA\Knoxville\ChromData\320\20180929-9518.b\Anions_320.m
Limit Group: IC 8A ICAL
Last Update: 29-Sep-2018 16:37:22 Calib Date: 29-Sep-2018 11:26:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\320\20180929-9518.b\7140-0009518-007.d

Column 1 : Det: IC
Process Host: CTX1003

First Level Reviewer: humphreyj Date: 29-Sep-2018 13:55:59

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 Fluoride	3.125	3.133	-0.008	69910565	NC	NC	
2 Chloride	4.567	4.608	-0.041	42599139	NC	NC	
3 Nitrite as N	5.525	5.592	-0.067	74532964	NC	NC	
4 Bromide	6.667	6.792	-0.125	18751273	NC	NC	
5 Nitrate as N	7.483	7.650	-0.167	110628737	NC	NC	
6 Orthophosphate as P	9.775	9.825	-0.050	36582111	NC	NC	
7 Sulfate	11.100	11.183	-0.083	30928227	2.50	2.42	
8 Iodide	15.392	15.550	-0.158	11212857	NC	NC	
S 15 Hydro Fluoric Acid		0.000			2.63	ND	
S 14 Hydrogen Chloride		0.000			2.57	ND	
S 16 Nitrite as NO2		0.000			8.21	ND	
S 18 Sulfuric acid					2.55	2.47	
S 17 Nitrate as NO3		0.000			11.1	ND	
S 10 Sulfur					0.8345	0.8062	
S 9 Chlorine		0.000			2.50	ND	
S 11 Iodine		0.000			2.50	ND	
S 13 Fluorine		0.000			2.50	ND	
S 12 Br		0.000			2.50	ND	

QC Flag Legend

Processing Flags
NC - Not Calibrated

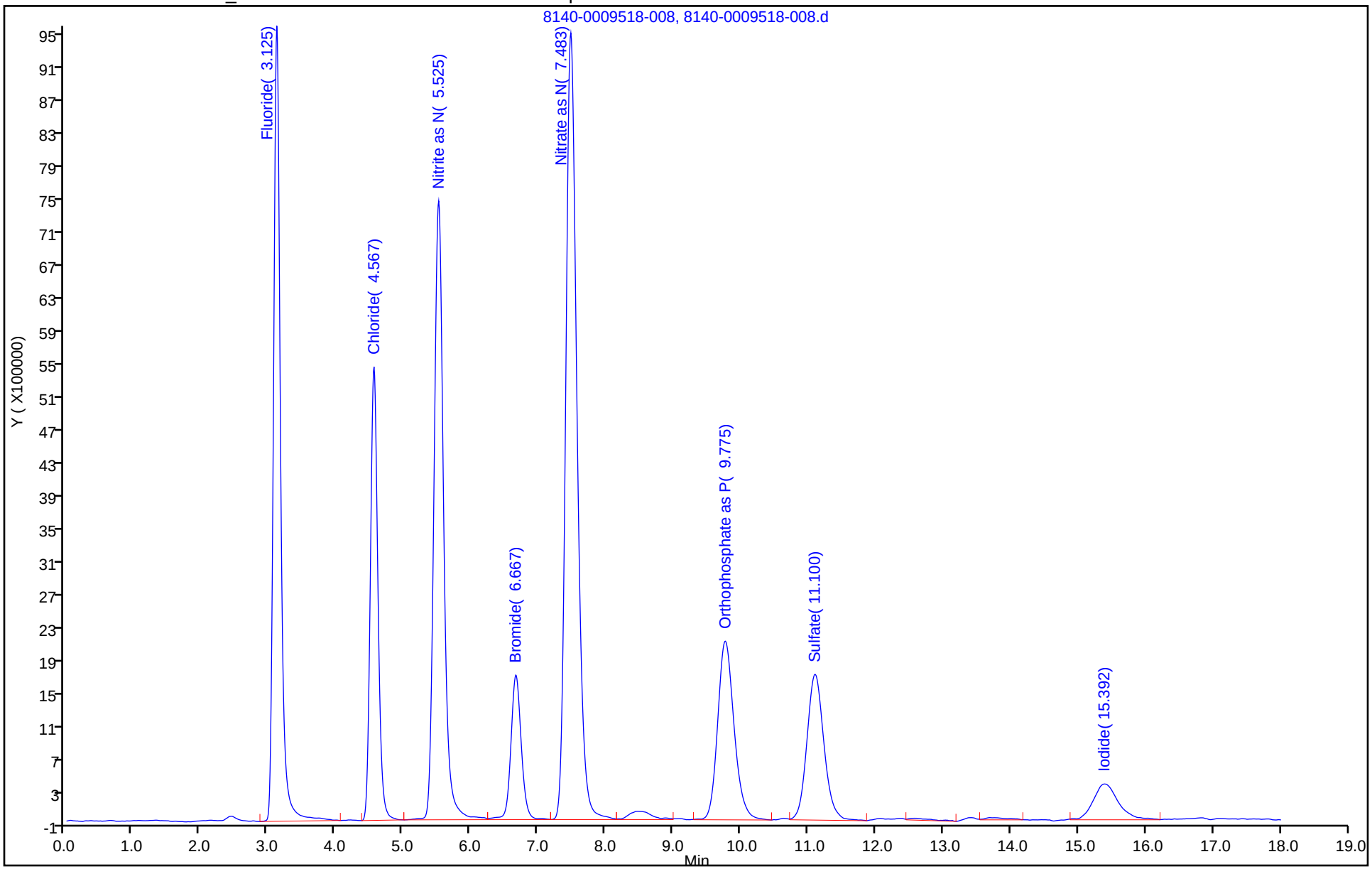
Reagents:

85SP9056LCS_S_00017 Amount Added: 0.25 Units: mL

Report Date: 29-Sep-2018 16:37:40 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\320\20180929-9518.b\8140-0009518-008.d				
Injection Date:	29-Sep-2018 12:25:00	Instrument ID:	320	Operator ID:	
Lims ID:	ICV			Worklist Smp#:	8
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_320	Limit Group:	IC 8A ICAL		



FORM VII
HPLC/IC CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1

SDG No.:

Lab Sample ID: CCV 140-24430/1 Calibration Date: 10/12/2018 12:09

Instrument ID: 320 Calib Start Date: 09/29/2018 09:09

GC Column: AS22 ID: Calib End Date: 09/29/2018 11:26

Lab File ID: 9140-0009644-001.d Conc. Units: mg/L

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Sulfate	Qua		13701874		10.2	10.0	1.9	10.0

FORM VII 8A

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TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\320\20181012-9644.b\9140-0009644-001.d
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 12-Oct-2018 12:09:00 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0009644-001
Misc. Info.: 9 ccv
Operator ID: Instrument ID: 320
Sublist: chrom-Anions_320*sub6

Method: \\ChromNA\Knoxville\ChromData\320\20181012-9644.b\Anions_320.m
Limit Group: IC 8A ICAL
Last Update: 12-Oct-2018 15:44:28 Calib Date: 29-Sep-2018 11:26:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\320\20180929-9518.b\7140-0009518-007.d

Column 1 : Det: IC
Process Host: XAWRK007

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride	3.083	3.083	0.000	153168029	NC	NC	
	2 Chloride	4.508	4.508	0.000	94493387	NC	NC	
	3 Nitrite as N	5.467	5.467	0.000	197828725	NC	NC	
	4 Bromide	6.575	6.575	0.000	40163015	NC	NC	
	5 Nitrate as N	7.375	7.375	0.000	255428238	NC	NC	
	6 Orthophosphate as P	9.733	9.733	0.000	81967671	NC	NC	
	7 Sulfate	11.092	11.092	0.000	137018741	10.0	10.2	
	8 Iodide		15.100			ND	ND	
S	15 Hydro Fluoric Acid		0.000			5.27	ND	
S	14 Hydrogen Chloride		0.000			5.14	ND	
S	16 Nitrite as NO2		0.000			16.4	ND	
S	18 Sulfuric acid					10.2	10.4	
S	17 Nitrate as NO3		0.000			22.1	ND	
S	10 Sulfur					3.34	3.40	
S	9 Chlorine		0.000			5.00	ND	
S	11 Iodine		0.000			5.00	ND	
S	13 Fluorine		0.000			5.00	ND	
S	12 Br		0.000			5.00	ND	

QC Flag Legend

Processing Flags
NC - Not Calibrated
ND - Not Detected or Marked ND

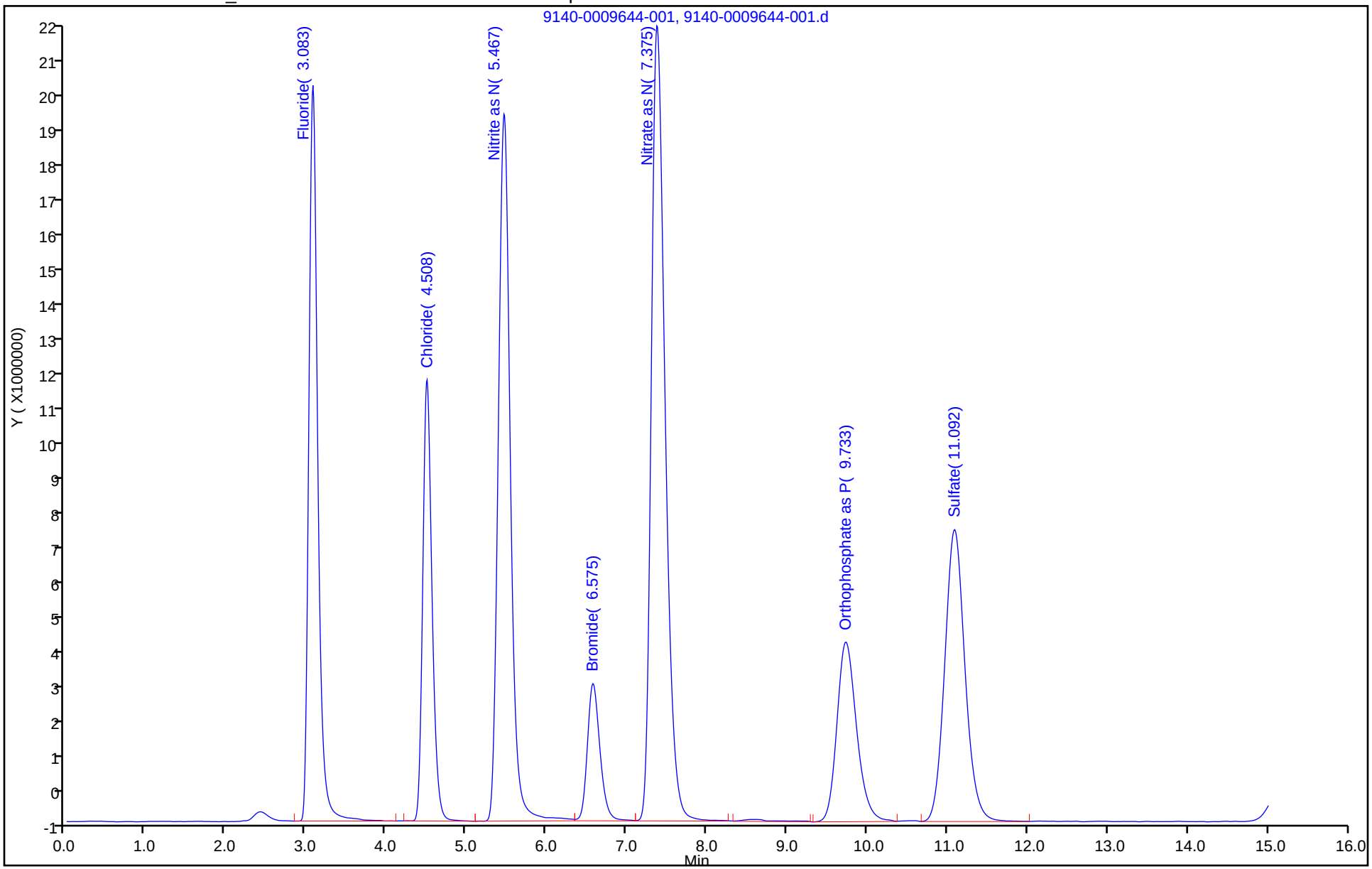
Reagents:

85SPANIONSA_P_00013 Amount Added: 0.50 Units: mL

Report Date: 12-Oct-2018 15:44:28 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\320\20181012-9644.b\9140-0009644-001.d				
Injection Date:	12-Oct-2018 12:09:00	Instrument ID:	320	Operator ID:	
Lims ID:	CCV			Worklist Smp#:	1
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_320	Limit Group:	IC 8A ICAL		



FORM VII
HPLC/IC CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1

SDG No.:

Lab Sample ID: CCV 140-24430/12 Calibration Date: 10/12/2018 15:45

Instrument ID: 320 Calib Start Date: 09/29/2018 09:09

GC Column: AS22 ID: Calib End Date: 09/29/2018 11:26

Lab File ID: 20140-0009644-012.d Conc. Units: mg/L

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Sulfate	Qua		13702921		10.2	10.0	2.0	10.0

FORM VII 8A

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TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\320\20181012-9644.b\20140-0009644-012.d
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 12-Oct-2018 15:45:00 ALS Bottle#: 0 Worklist Smp#: 12
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0009644-012
Misc. Info.: 20 ccv
Operator ID: Instrument ID: 320
Sublist: chrom-Anions_320*sub6

Method: \\ChromNA\Knoxville\ChromData\320\20181012-9644.b\Anions_320.m
Limit Group: IC 8A ICAL
Last Update: 12-Oct-2018 16:27:30 Calib Date: 29-Sep-2018 11:26:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\320\20180929-9518.b\7140-0009518-007.d

Column 1 : Det: IC
Process Host: XAWRK007

First Level Reviewer: humphreyj Date: 12-Oct-2018 16:26:21

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride	3.100	3.083	0.017	155383904	NC	NC	Ma
	2 Chloride	4.525	4.508	0.017	95374121	NC	NC	
	3 Nitrite as N	5.500	5.467	0.033	199065934	NC	NC	
	4 Bromide	6.617	6.575	0.042	40392324	NC	NC	
	5 Nitrate as N	7.417	7.375	0.042	257046477	NC	NC	
	6 Orthophosphate as P	9.758	9.733	0.025	81904815	NC	NC	Ma
	7 Sulfate	11.100	11.092	0.008	137029208	10.0	10.2	Ma
	8 Iodide		15.100			ND	ND	
S	15 Hydro Fluoric Acid		0.000			5.27	ND	
S	14 Hydrogen Chloride		0.000			5.14	ND	
S	16 Nitrite as NO2		0.000			16.4	ND	
S	18 Sulfuric acid					10.2	10.4	
S	17 Nitrate as NO3		0.000			22.1	ND	
S	10 Sulfur					3.34	3.40	
S	9 Chlorine		0.000			5.00	ND	
S	11 Iodine		0.000			5.00	ND	
S	13 Fluorine		0.000			5.00	ND	
S	12 Br		0.000			5.00	ND	

QC Flag Legend

Processing Flags
NC - Not Calibrated
ND - Not Detected or Marked ND
Review Flags
M - Manually Integrated
a - User Assigned ID

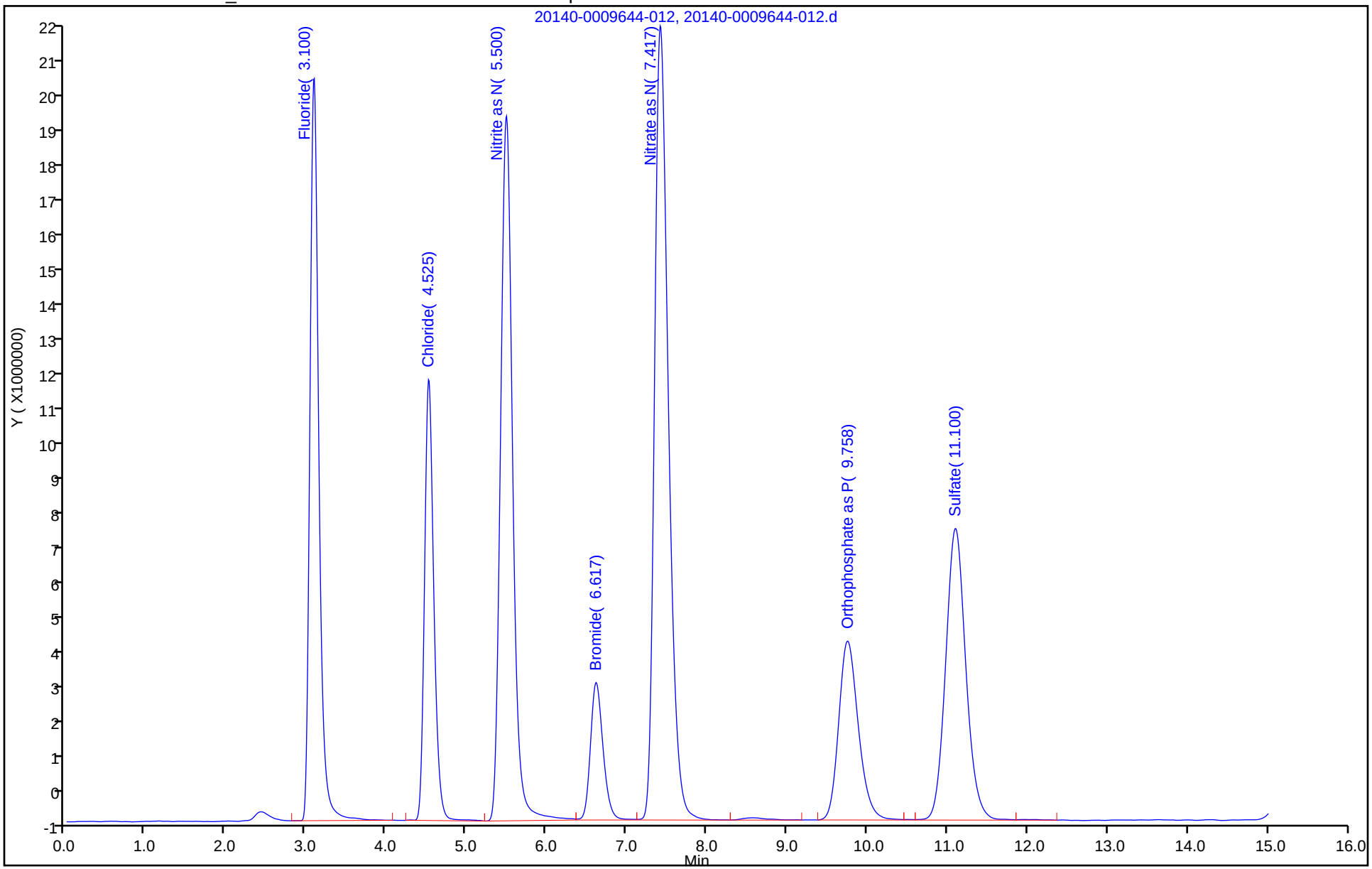
Reagents:

85SPANIONSA_P_00013 Amount Added: 0.50 Units: mL

Report Date: 12-Oct-2018 16:27:30 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\320\20181012-9644.b\20140-0009644-012.d				
Injection Date:	12-Oct-2018 15:45:00	Instrument ID:	320	Operator ID:	
Lims ID:	CCV			Worklist Smp#:	12
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_320	Limit Group:	IC 8A ICAL		



Manual Integration/User Assign Peak Report

TestAmerica Knoxville

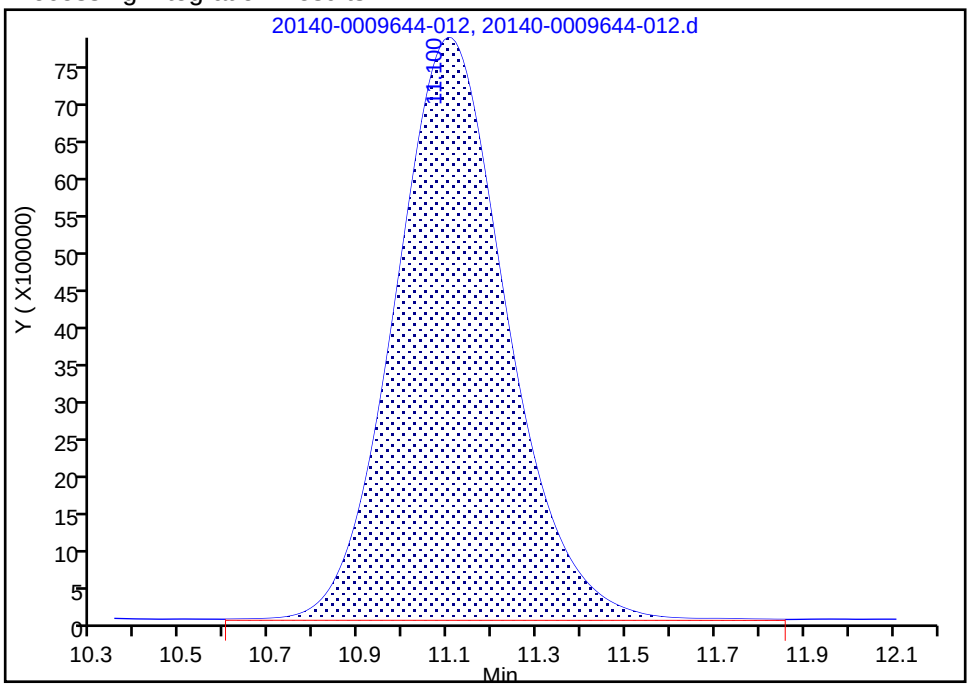
Data File:	\\ChromNA\Knoxville\ChromData\320\20181012-9644.b\20140-0009644-012.d				
Injection Date:	12-Oct-2018 15:45:00	Instrument ID:	320		
Lims ID:	CCV				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Anions_320	Limit Group:	IC 8A ICAL		
Column:		Detector	IC		

7 Sulfate, CAS: 14808-79-8

Signal: 1

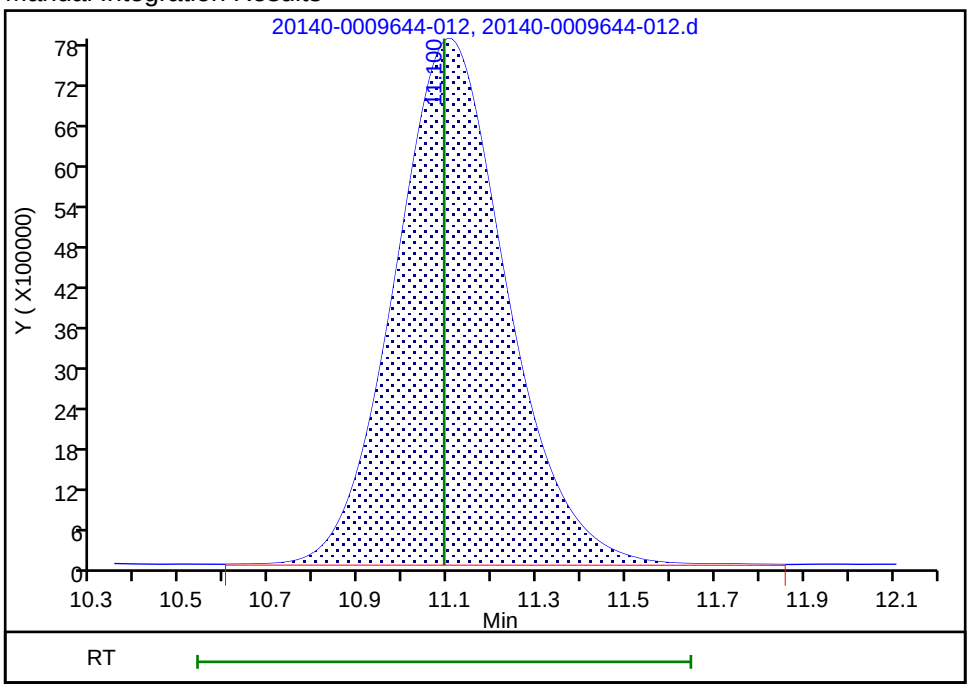
Processing Integration Results

RT: 11.10
Area: 137123810
Amount: 10.202003
Amount Units: ug/ml



Manual Integration Results

RT: 11.10
Area: 137029208
Amount: 10.195420
Amount Units: ug/ml



Reviewer: humphreyj, 12-Oct-2018 16:26:52
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason:

FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville
Job No.: 140-12815-1
SDG No.:
Client Sample ID:
Lab Sample ID: MB 140-24428/1-A
Matrix: Air
Lab File ID: 11140-0009644-003.d
Analysis Method: 8A
Date Collected:
Extraction Method: 8A
Date Extracted: 10/12/2018 00:00
Sample wt/vol: 1(Sample)
Date Analyzed: 10/12/2018 12:48
Con. Extract Vol.: 100(mL)
Dilution Factor: 1
Injection Volume: 1(uL)
GC Column: AS22 ID:
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 24430
Units: ug/Sample

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
14808-79-8	Sulfate	ND		100	18.0

TestAmerica Knoxville
Target Compound Quantitation Report

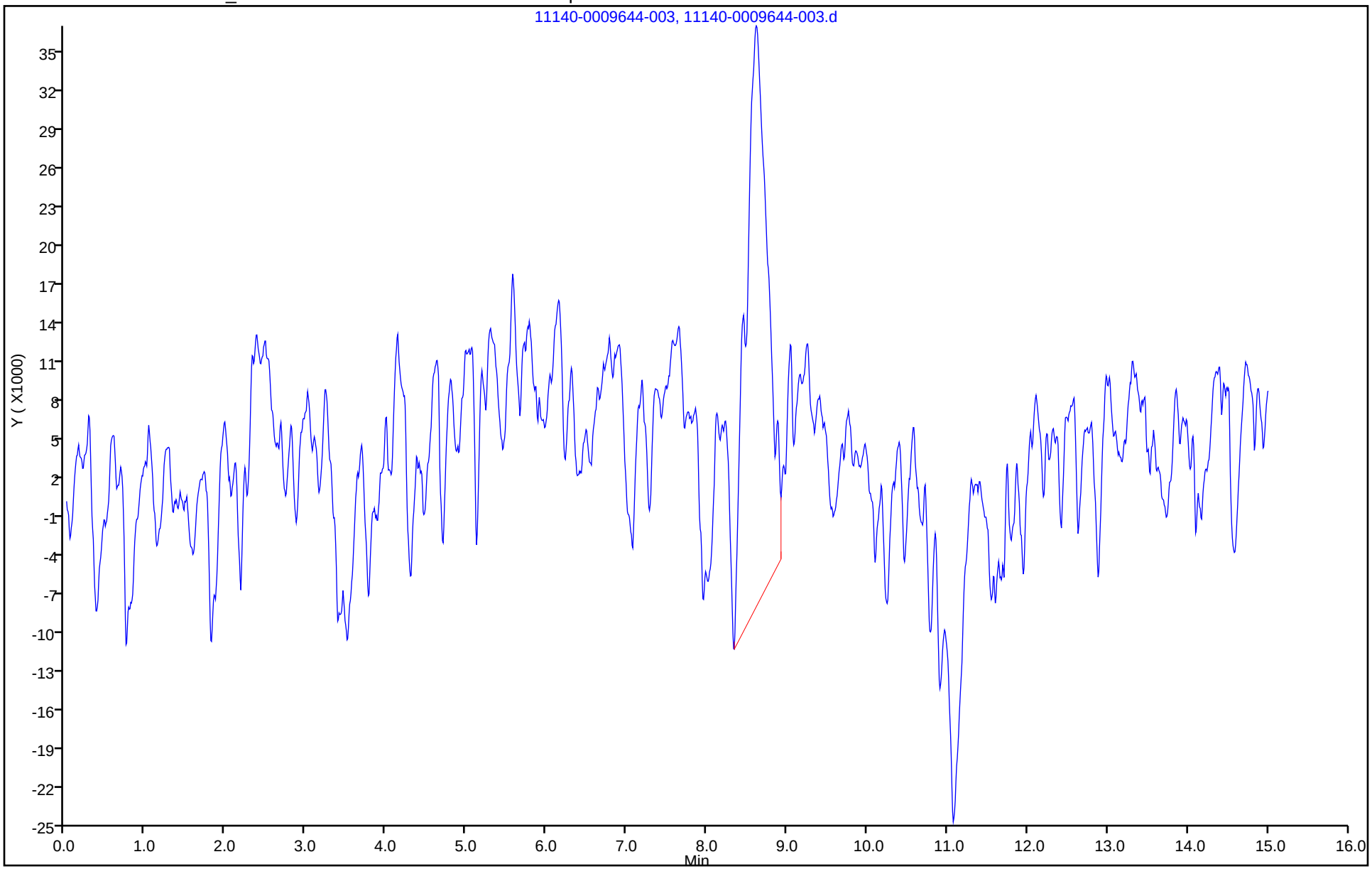
Data File:	\\ChromNA\Knoxville\ChromData\320\20181012-9644.b\11140-0009644-003.d				
Lims ID:	MB 140-24428/1-A				
Client ID:					
Sample Type:	MB				
Inject. Date:	12-Oct-2018 12:48:00	ALS Bottle#:	0	Worklist Smp#:	3
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Sample Info:	140-0009644-003				
Misc. Info.:	11 mb 140-24428/1-a				
Operator ID:		Instrument ID:	320		
Method:	\\ChromNA\Knoxville\ChromData\320\20181012-9644.b\Anions_320.m				
Limit Group:	IC 8A ICAL				
Last Update:	12-Oct-2018 15:44:28	Calib Date:	29-Sep-2018 11:26:00		
Integrator:	Falcon				
Quant Method:	External Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Knoxville\ChromData\320\20180929-9518.b\7140-0009518-007.d				
Column 1 :			Det: IC		
Process Host:	XAWRK007				

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride		3.083				ND	
	2 Chloride		4.508				ND	
	3 Nitrite as N		5.467				ND	
	4 Bromide		6.575				ND	
	5 Nitrate as N		7.375				ND	
	6 Orthophosphate as P		9.733				ND	
	7 Sulfate		11.092				ND	
	8 Iodide		15.100				ND	
S	15 Hydro Fluoric Acid		0.000				ND	
S	14 Hydrogen Chloride		0.000				ND	
S	16 Nitrite as NO2		0.000				ND	
S	18 Sulfuric acid		0.000				ND	
S	17 Nitrate as NO3		0.000				ND	
S	10 Sulfur		0.000				ND	
S	9 Chlorine		0.000				ND	
S	11 Iodine		0.000				ND	
S	13 Fluorine		0.000				ND	
S	12 Br		0.000				ND	

Report Date: 12-Oct-2018 15:44:30 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\320\20181012-9644.b\11140-0009644-003.d				
Injection Date:	12-Oct-2018 12:48:00	Instrument ID:	320	Operator ID:	
Lims ID:	MB 140-24428/1-A			Worklist Smp#:	3
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_320	Limit Group:	IC 8A ICAL		



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Con. Ext ct 5□ . –	10 AmLN	D(ut (on % cto –	1
(n)ect (on 5o ume –	1 AuL N	GC Co umn –	2%% (□–
C Mo(stu e –		G/C C e nup –AU/ –N –	
n ys (s B tch –□. –	%4430	4n(ts –	mg/L

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Page 208 of 244 10/17/2018

TestAmerica Knoxville
Target Compound Quantitation Report

Data File:	\\ChromNA\Knoxville\ChromData\320\20181012-9644.b\10140-0009644-002.d				
Lims ID:	CCB				
Client ID:					
Sample Type:	CCB				
Inject. Date:	12-Oct-2018 12:28:00	ALS Bottle#:	0	Worklist Smp#:	2
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Sample Info:	140-0009644-002				
Misc. Info.:	10 ccb				
Operator ID:		Instrument ID:	320		
Method:	\\ChromNA\Knoxville\ChromData\320\20181012-9644.b\Anions_320.m				
Limit Group:	IC 8A ICAL				
Last Update:	12-Oct-2018 15:44:28	Calib Date:	29-Sep-2018 11:26:00		
Integrator:	Falcon				
Quant Method:	External Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Knoxville\ChromData\320\20180929-9518.b\7140-0009518-007.d				
Column 1 :			Det: IC		
Process Host:	XAWRK007				
First Level Reviewer: humphreyj		Date:	12-Oct-2018 14:41:19		

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride		3.083				ND	
	2 Chloride		4.508				ND	
	3 Nitrite as N		5.467				ND	
	4 Bromide		6.575				ND	
	5 Nitrate as N		7.375				ND	
	6 Orthophosphate as P		9.733				ND	
	7 Sulfate		11.092				ND	U
	8 Iodide		15.100				ND	
S	15 Hydro Fluoric Acid		0.000				ND	
S	14 Hydrogen Chloride		0.000				ND	
S	16 Nitrite as NO2		0.000				ND	
S	18 Sulfuric acid		0.000				ND	
S	17 Nitrate as NO3		0.000				ND	
S	10 Sulfur		0.000				ND	
S	9 Chlorine		0.000				ND	
S	11 Iodine		0.000				ND	
S	13 Fluorine		0.000				ND	
S	12 Br		0.000				ND	

QC Flag Legend

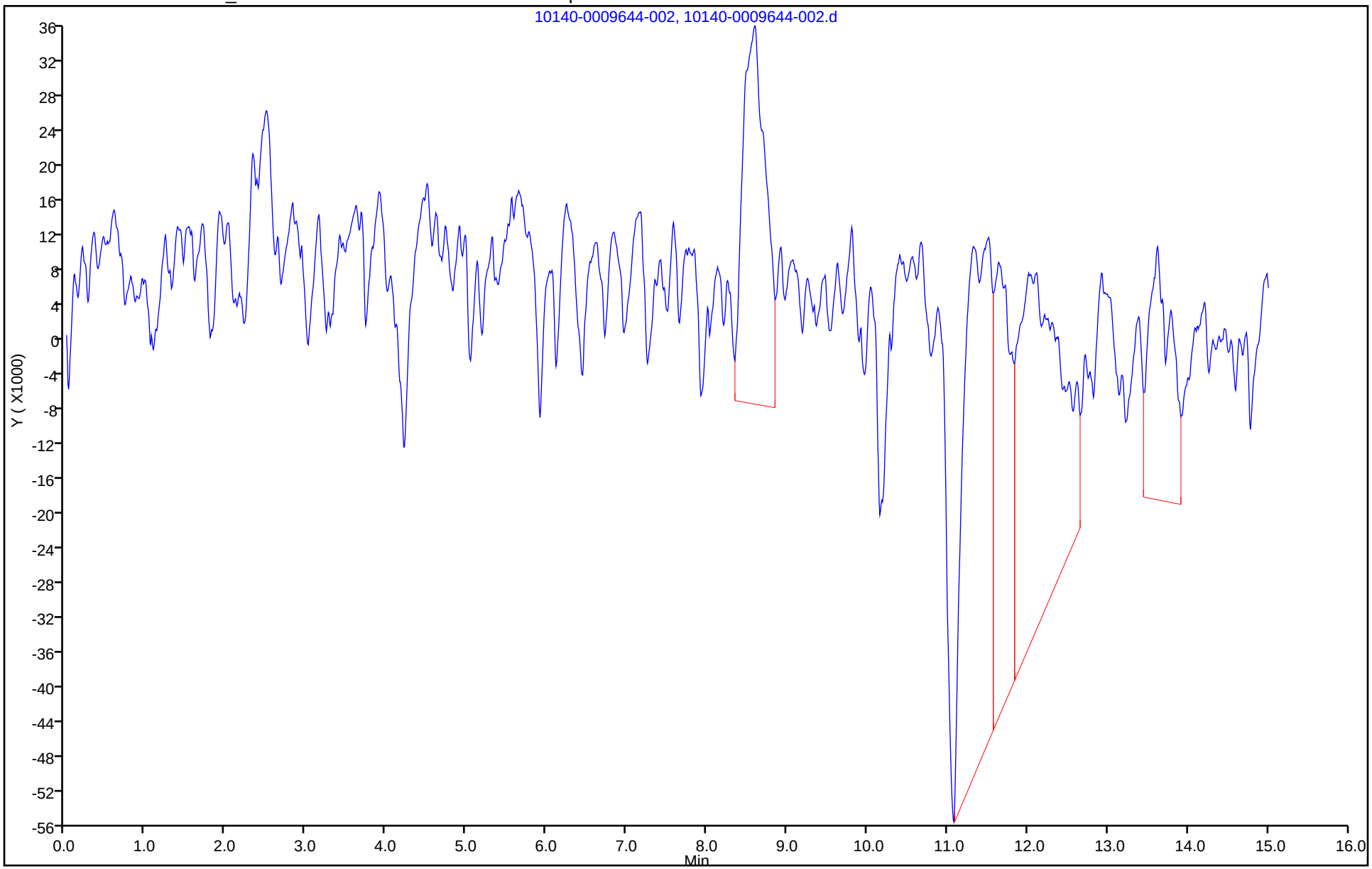
Review Flags

U - Marked Undetected

Report Date: 12-Oct-2018 15:44:29 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\320\20181012-9644.b\10140-0009644-002.d				
Injection Date:	12-Oct-2018 12:28:00	Instrument ID:	320	Operator ID:	
Lims ID:	CCB			Worklist Smp#:	2
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_320	Limit Group:	IC 8A ICAL		



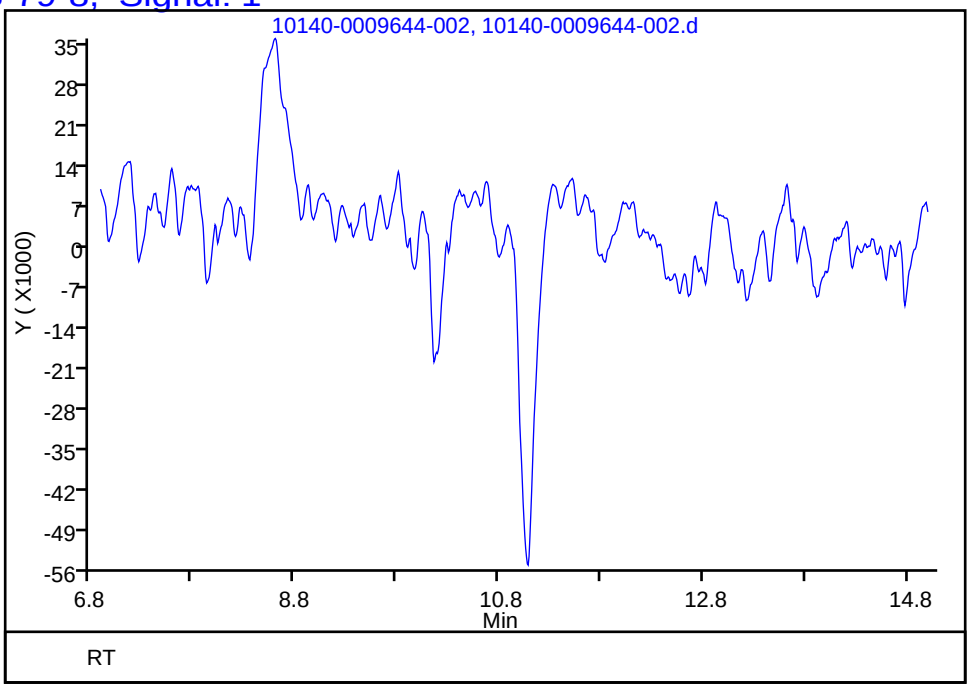
User Disabled Compound Report

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\320\20181012-9644.b\10140-0009644-002.d				
Injection Date:	12-Oct-2018 12:28:00	Instrument ID:	320		
Lims ID:	CCB				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	2
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Anions_320	Limit Group:	IC 8A ICAL		
Column:		Detector	IC		

7 Sulfate, CAS: 14808-79-8, Signal: 1

RT: 11.33
Response: 1420975
Amount: 0.089523



Reviewer: humphreyj, 12-Oct-2018 14:41:19
Audit Action: Manually Integrated Audit Reason:

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2DG –□. –			
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n ys (s B tch –□. –	%4430	4n(ts –	mg/L

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14808 79 8	2u % te	–□		0. (00	0.180

%.1□ (8

Page 212 of 244 10/17/2018

TestAmerica Knoxville
Target Compound Quantitation Report

Data File:	\\ChromNA\Knoxville\ChromData\320\20181012-9644.b\21140-0009644-013.d				
Lims ID:	CCB				
Client ID:					
Sample Type:	CCB				
Inject. Date:	12-Oct-2018 16:05:00	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Sample Info:	140-0009644-013				
Misc. Info.:	21 ccb				
Operator ID:		Instrument ID:	320		
Method:	\\ChromNA\Knoxville\ChromData\320\20181012-9644.b\Anions_320.m				
Limit Group:	IC 8A ICAL				
Last Update:	12-Oct-2018 16:27:30	Calib Date:	29-Sep-2018 11:26:00		
Integrator:	Falcon				
Quant Method:	External Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Knoxville\ChromData\320\20180929-9518.b\7140-0009518-007.d				
Column 1 :			Det: IC		
Process Host:	XAWRK007				
First Level Reviewer: humphreyj		Date:	12-Oct-2018 16:26:30		

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride		3.083				ND	
	2 Chloride		4.508				ND	
	3 Nitrite as N		5.467				ND	
	4 Bromide		6.575				ND	
	5 Nitrate as N		7.375				ND	
	6 Orthophosphate as P		9.733				ND	
	7 Sulfate		11.092				ND	
	8 Iodide		15.100				ND	U
S	15 Hydro Fluoric Acid		0.000				ND	
S	14 Hydrogen Chloride		0.000				ND	
S	16 Nitrite as NO2		0.000				ND	
S	18 Sulfuric acid		0.000				ND	
S	17 Nitrate as NO3		0.000				ND	
S	10 Sulfur		0.000				ND	
S	9 Chlorine		0.000				ND	
S	11 Iodine		0.000				ND	
S	13 Fluorine		0.000				ND	
S	12 Br		0.000				ND	

QC Flag Legend

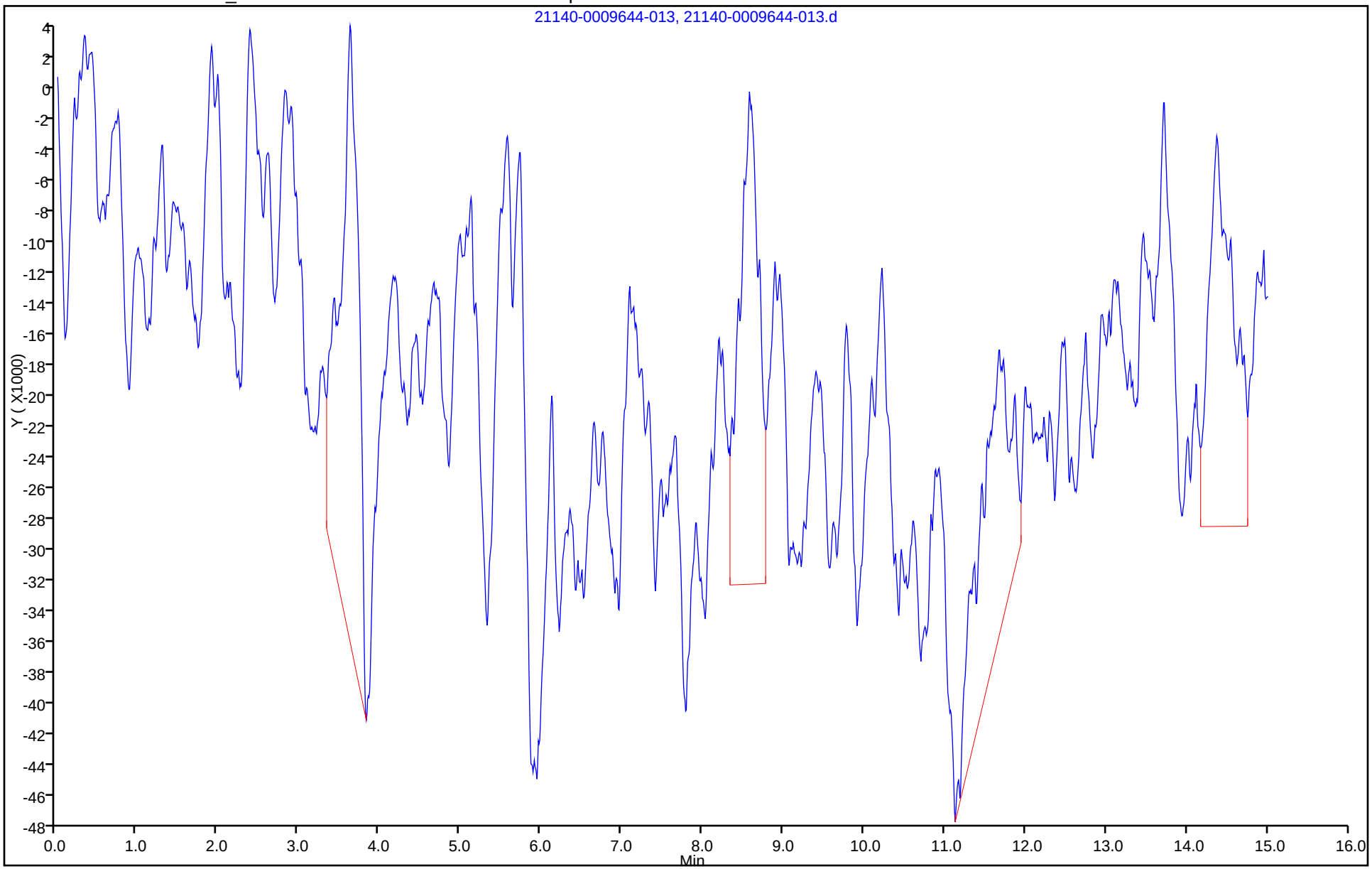
Review Flags

U - Marked Undetected

Report Date: 12-Oct-2018 16:27:31 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\320\20181012-9644.b\21140-0009644-013.d				
Injection Date:	12-Oct-2018 16:05:00	Instrument ID:	320	Operator ID:	
Lims ID:	CCB			Worklist Smp#:	13
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_320	Limit Group:	IC 8A ICAL		



FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville
Job No.: 140-12815-1
SDG No.:
Client Sample ID:
Lab Sample ID: ICB 140-24062/9
Matrix: Air
Lab File ID: 9140-0009518-009.d
Analysis Method: 8A
Date Collected:
Extraction Method:
Date Extracted:
Sample wt/vol: 10(mL)
Date Analyzed: 09/29/2018 12:48
Con. Extract Vol.: 10(mL)
Dilution Factor: 1
Injection Volume: 1(uL)
GC Column: AS22 ID:
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 24062
Units: mg/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
14808-79-8	Sulfate	ND		0.500	0.180

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\320\20180929-9518.b\9140-0009518-009.d
Lims ID: ICB
Client ID:
Sample Type: ICB
Inject. Date: 29-Sep-2018 12:48:00 ALS Bottle#: 0 Worklist Smp#: 9
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0009518-009
Misc. Info.: 9 icb
Operator ID: Instrument ID: 320

Method: \\ChromNA\Knoxville\ChromData\320\20180929-9518.b\Anions_320.m
Limit Group: IC 8A ICAL
Last Update: 29-Sep-2018 16:38:58 Calib Date: 29-Sep-2018 11:26:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\320\20180929-9518.b\7140-0009518-007.d

Column 1 : Det: IC
Process Host: CTX1003

First Level Reviewer: humphreyj Date: 29-Sep-2018 13:57:42

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride		3.133				ND	
	2 Chloride	4.542	4.608	-0.066	473294		NC	M
	3 Nitrite as N		5.592				ND	
	4 Bromide		6.792				ND	
	5 Nitrate as N		7.650				ND	
	6 Orthophosphate as P		9.825				ND	U
	7 Sulfate	11.033	11.183	-0.150	468708		0.0131	M
	8 Iodide		15.550				ND	
S	15 Hydro Fluoric Acid		0.000				ND	
S	14 Hydrogen Chloride		0.000				ND	
S	16 Nitrite as NO2		0.000				ND	
S	18 Sulfuric acid						0.0134	
S	17 Nitrate as NO3		0.000				ND	
S	10 Sulfur						0.004376	
S	9 Chlorine		0.000				ND	
S	11 Iodine		0.000				ND	
S	13 Fluorine		0.000				ND	
S	12 Br		0.000				ND	

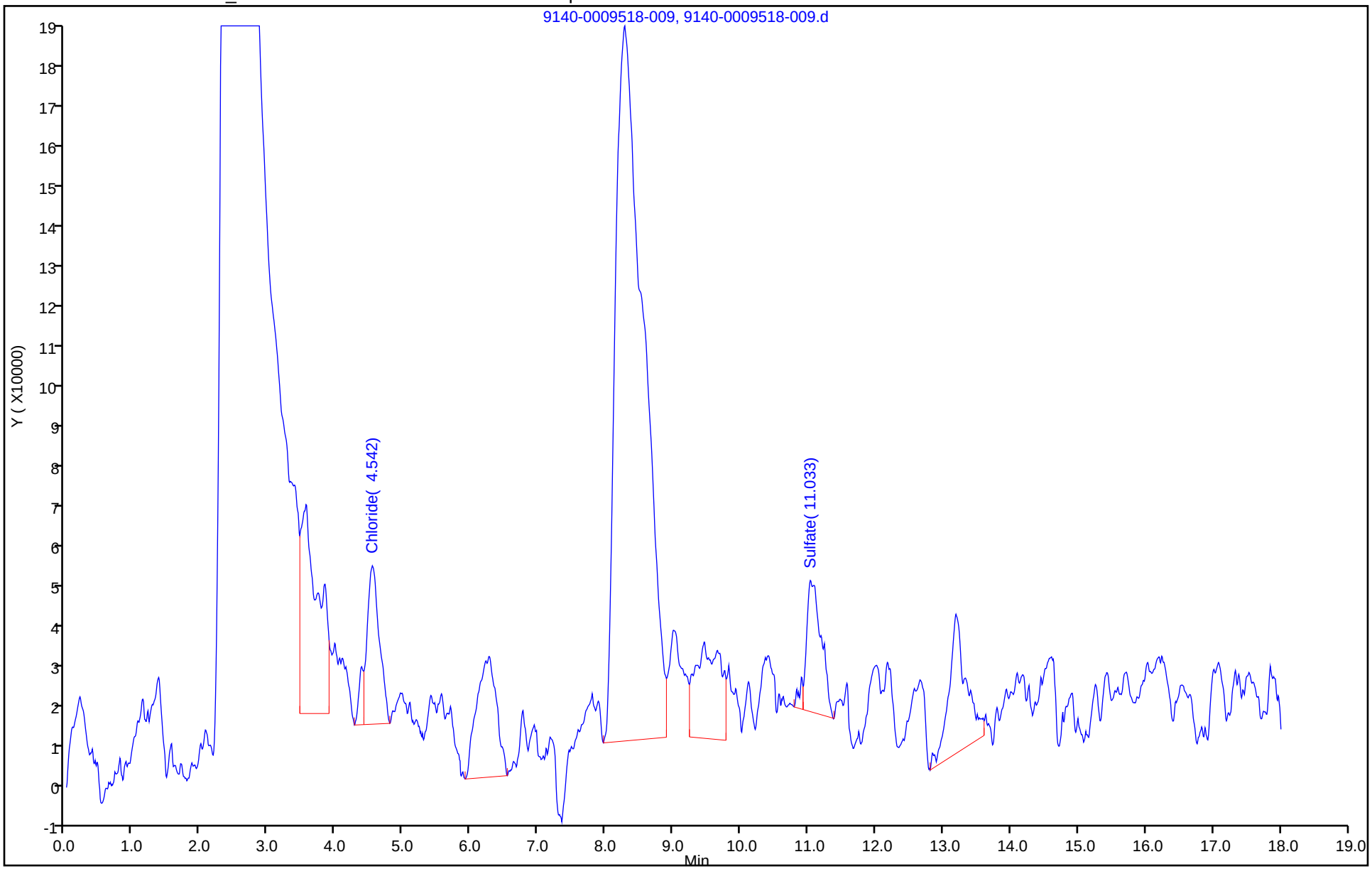
QC Flag Legend

Processing Flags
NC - Not Calibrated
Review Flags
M - Manually Integrated
U - Marked Undetected

Report Date: 29-Sep-2018 16:39:01 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\320\20180929-9518.b\9140-0009518-009.d				
Injection Date:	29-Sep-2018 12:48:00	Instrument ID:	320	Operator ID:	
Lims ID:	ICB			Worklist Smp#:	9
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_320	Limit Group:	IC 8A ICAL		



Manual Integration/User Assign Peak Report

TestAmerica Knoxville

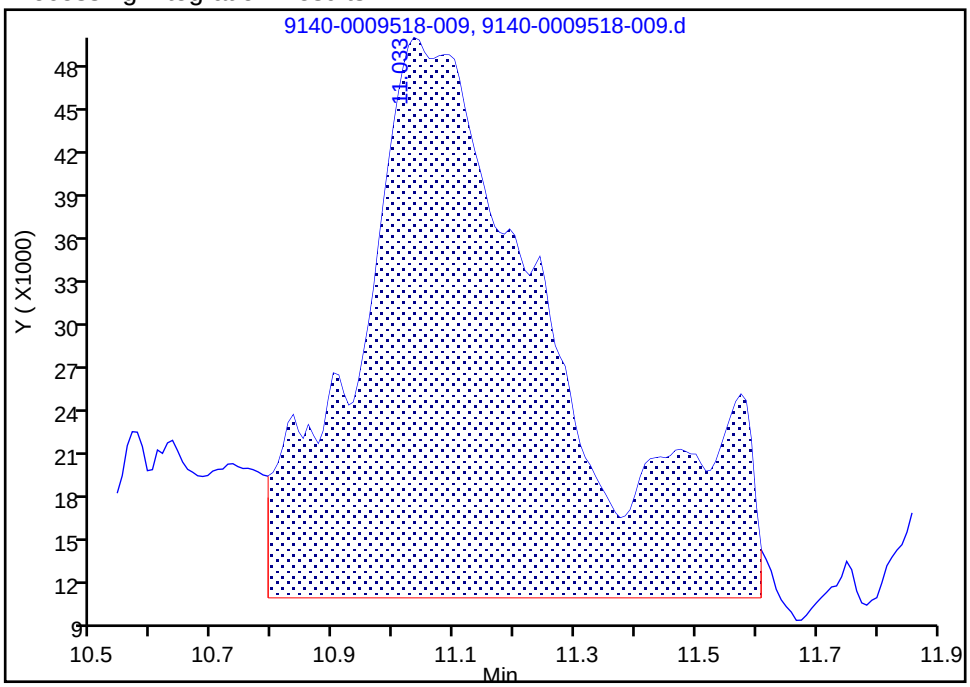
Data File:	\\ChromNA\Knoxville\ChromData\320\20180929-9518.b\9140-0009518-009.d				
Injection Date:	29-Sep-2018 12:48:00	Instrument ID:	320		
Lims ID:	ICB				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	Anions_320	Limit Group:	IC 8A ICAL		
Column:		Detector	IC		

7 Sulfate, CAS: 14808-79-8

Signal: 1

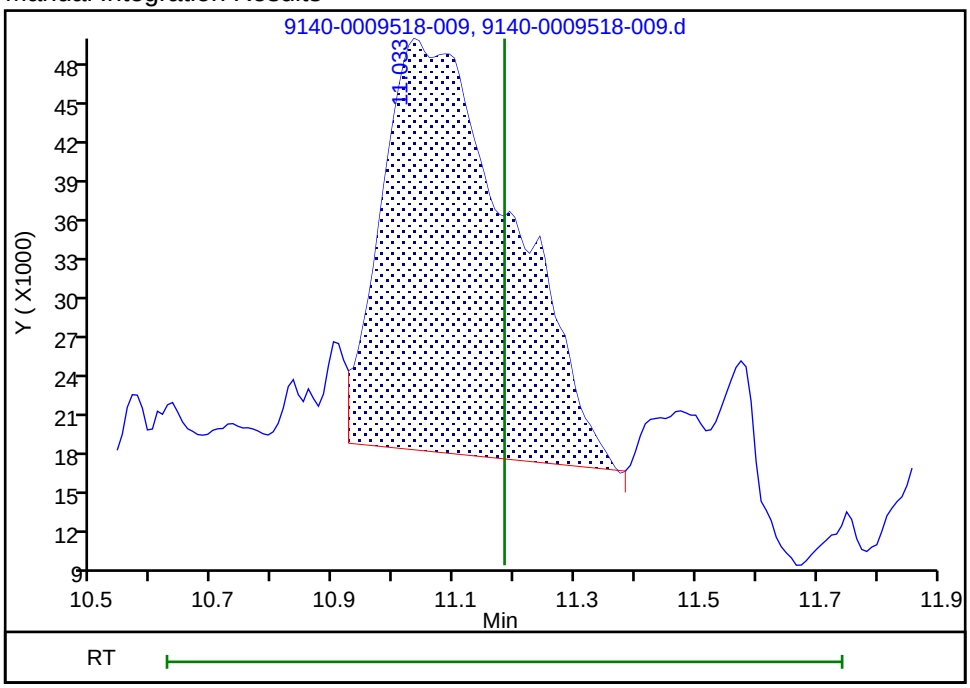
Processing Integration Results

RT: 11.03
Area: 879880
Amount: 0
Amount Units: ug/ml



Manual Integration Results

RT: 11.03
Area: 468708
Amount: 0.013110
Amount Units: ug/ml



Reviewer: humphreyj, 29-Sep-2018 13:57:22

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville
Job No.: 140-12815-1
SDG No.:
Client Sample ID:
Lab Sample ID: LCS 140-24428/2-A
Matrix: Air
Lab File ID: 12140-0009644-004.d
Analysis Method: 8A
Date Collected:
Extraction Method: 8A
Date Extracted: 10/12/2018 00:00
Sample wt/vol: 1(Sample)
Date Analyzed: 10/12/2018 13:08
Con. Extract Vol.: 100(mL)
Dilution Factor: 1
Injection Volume: 1(uL)
GC Column: AS22 ID:
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 24430
Units: ug/Sample

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
14808-79-8	Sulfate	507.8		100	18.0

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\320\20181012-9644.b\12140-0009644-004.d
Lims ID: LCS 140-24428/2-A
Client ID:
Sample Type: LCS
Inject. Date: 12-Oct-2018 13:08:00 ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0009644-004
Misc. Info.: 12 lcs 140-24428/2-a
Operator ID: Instrument ID: 320

Method: \\ChromNA\Knoxville\ChromData\320\20181012-9644.b\Anions_320.m
Limit Group: IC 8A ICAL
Last Update: 12-Oct-2018 16:09:33 Calib Date: 29-Sep-2018 11:26:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\320\20180929-9518.b\7140-0009518-007.d

Column 1 : Det: IC
Process Host: XAWRK007

First Level Reviewer: humphreyj Date: 12-Oct-2018 15:51:33

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
7 Sulfate	11.075	11.092	-0.017	65956266	5.00	5.08	
S 18 Sulfuric acid					5.11	5.18	
S 10 Sulfur					1.67	1.69	

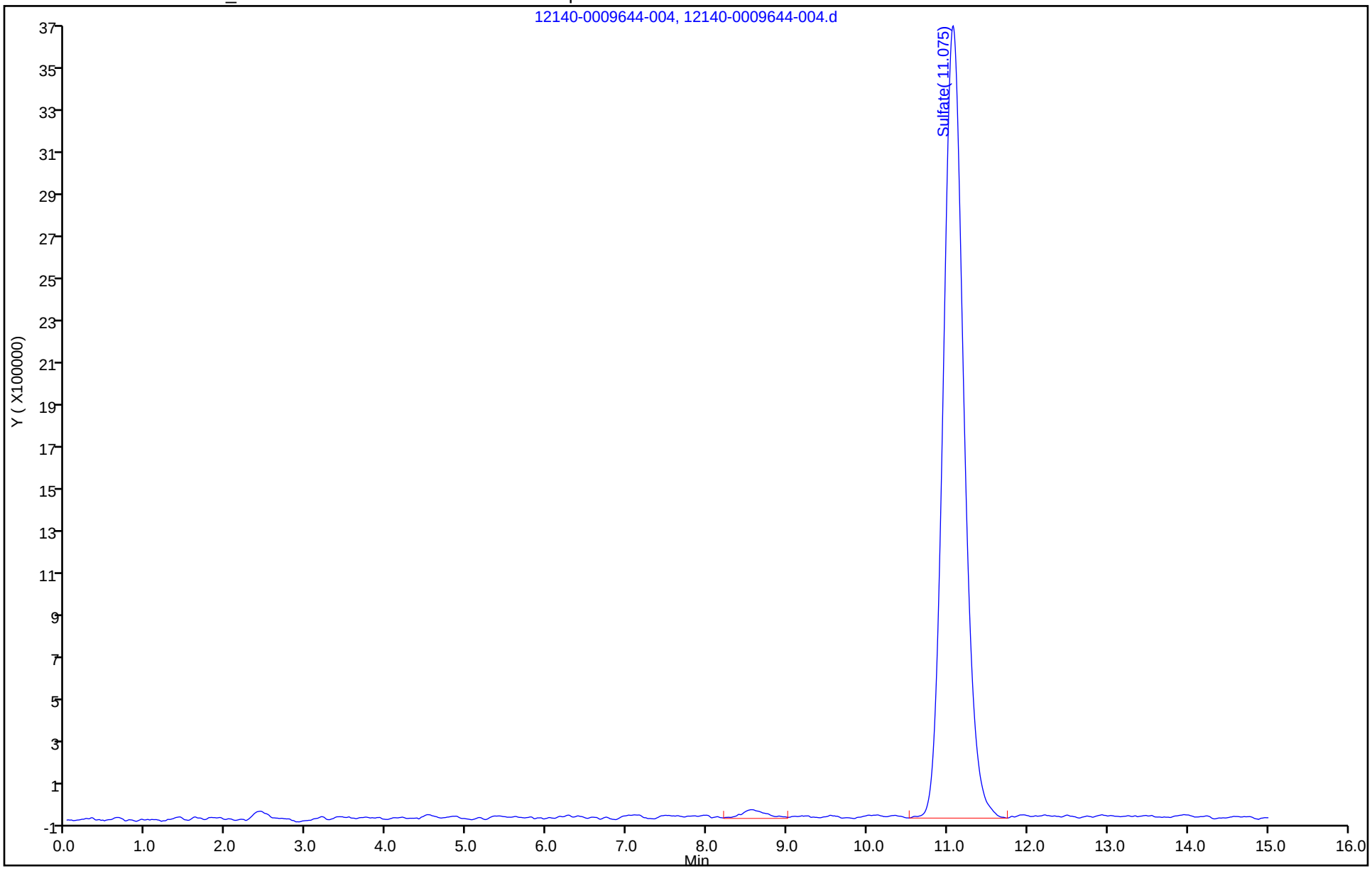
Reagents:

85INSPEXSO4S_00005 Amount Added: 0.05 Units: mL

Report Date: 12-Oct-2018 16:09:43 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\320\20181012-9644.b\12140-0009644-004.d				
Injection Date:	12-Oct-2018 13:08:00	Instrument ID:	320	Operator ID:	
Lims ID:	LCS 140-24428/2-A			Worklist Smp#:	4
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_320	Limit Group:	IC 8A ICAL		



FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville
Job No.: 140-12815-1
SDG No.:
Client Sample ID: CCM-2 MS
Lab Sample ID: 140-12815-6 MS
Matrix: Air
Lab File ID: 16140-0009644-008.d
Analysis Method: 8A
Date Collected: 09/18/2018 00:00
Extraction Method: 8A
Date Extracted: 10/12/2018 00:00
Sample wt/vol: 1(Sample)
Date Analyzed: 10/12/2018 14:27
Con. Extract Vol.: 27(mL)
Dilution Factor: 200
Injection Volume: 1(uL)
GC Column: AS22 ID:
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 24430
Units: ug/Sample

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
14808-79-8	Sulfate	54460		5400	972

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\320\20181012-9644.b\16140-0009644-008.d
Lims ID: 140-12815-A-6-B MS
Client ID: CCM-2
Sample Type: MS
Inject. Date: 12-Oct-2018 14:27:00 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 1.0 ul Dil. Factor: 200.0000
Sample Info: 140-0009644-008
Misc. Info.: 16 140-12815-a-6-b ms
Operator ID: Instrument ID: 320

Method: \\ChromNA\Knoxville\ChromData\320\20181012-9644.b\Anions_320.m
Limit Group: IC 8A ICAL
Last Update: 12-Oct-2018 16:09:33 Calib Date: 29-Sep-2018 11:26:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\320\20180929-9518.b\7140-0009518-007.d

Column 1 : Det: IC
Process Host: XAWRK007

First Level Reviewer: humphreyj Date: 12-Oct-2018 15:06:48

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride	3.075	3.083	-0.008	1070855		NC	
	2 Chloride	4.500	4.508	-0.008	679993		NC	
	3 Nitrite as N		5.467				ND	
	4 Bromide		6.575				ND	
	5 Nitrate as N		7.375				ND	
	6 Orthophosphate as P	9.492	9.733	-0.241	549228		NC	
	7 Sulfate	11.125	11.092	0.033	135434496	0.0250	10.1	
	8 Iodide		15.100				ND	
S	15 Hydro Fluoric Acid		0.000				ND	
S	14 Hydrogen Chloride		0.000				ND	
S	16 Nitrite as NO2		0.000				ND	
S	18 Sulfuric acid					0.0255	10.3	
S	17 Nitrate as NO3		0.000				ND	
S	10 Sulfur					0.008345	3.37	
S	9 Chlorine		0.000				ND	
S	11 Iodine		0.000				ND	
S	13 Fluorine		0.000				ND	
S	12 Br		0.000				ND	

QC Flag Legend

Processing Flags
NC - Not Calibrated

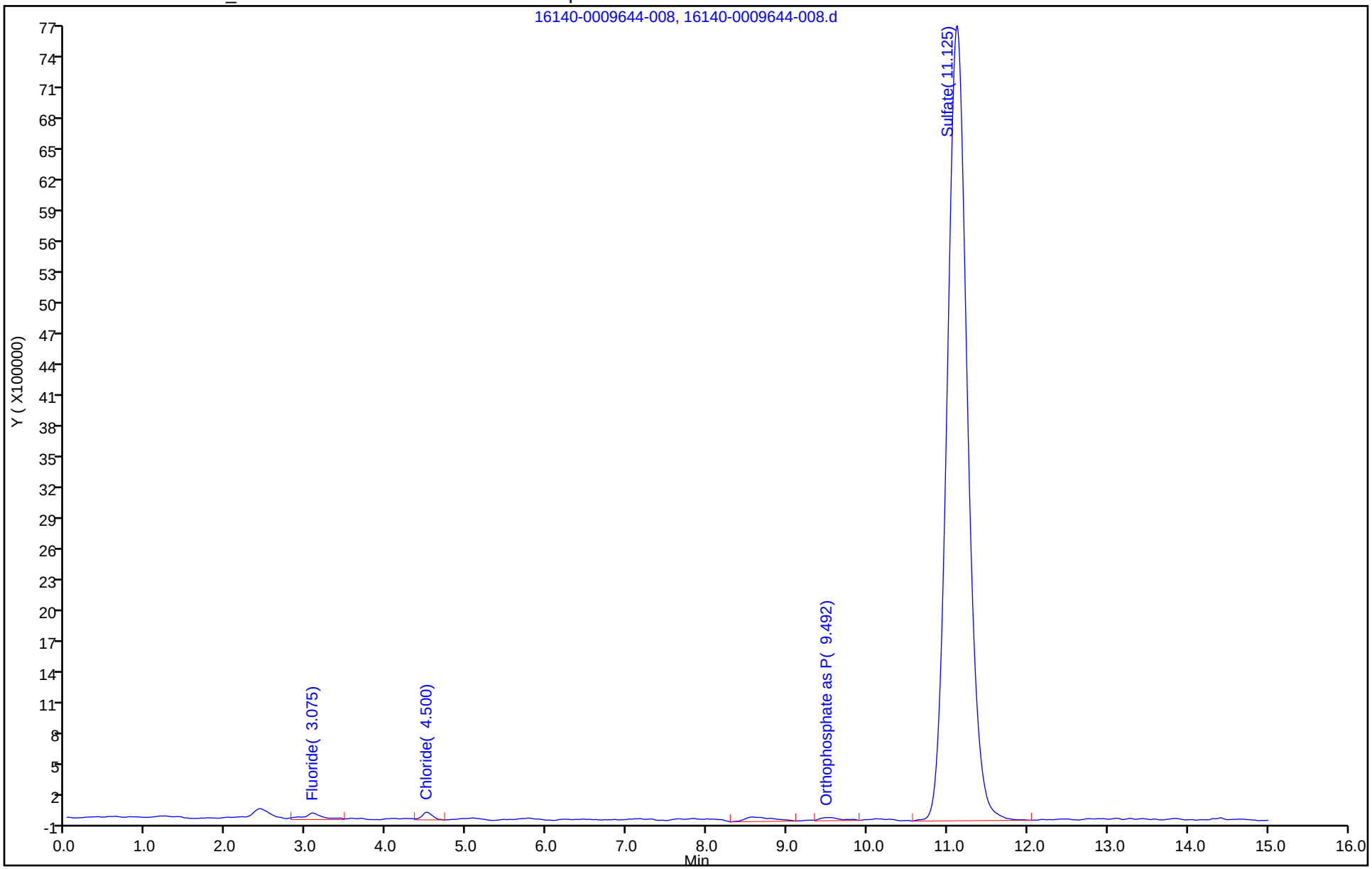
Reagents:

85INSPEXSO4S_00005 Amount Added: 0.05 Units: mL

Report Date: 12-Oct-2018 16:09:43 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\320\20181012-9644.b\16140-0009644-008.d				
Injection Date:	12-Oct-2018 14:27:00	Instrument ID:	320	Operator ID:	
Lims ID:	140-12815-A-6-B MS			Worklist Smp#:	8
Client ID:	CCM-2				
Injection Vol:	1.0 ul	Dil. Factor:	200.0000	ALS Bottle#:	0
Method:	Anions_320	Limit Group:	IC 8A ICAL		



FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville | Job No.: 140-12815-1

SDG No.:

Client Sample ID: CCM-2 MSD | Lab Sample ID: 140-12815-6 MSD

Matrix: Air | Lab File ID: 17140-0009644-009.d

Analysis Method: 8A | Date Collected: 09/18/2018 00:00

Extraction Method: 8A | Date Extracted: 10/12/2018 00:00

Sample wt/vol: 1(Sample) | Date Analyzed: 10/12/2018 14:46

Con. Extract Vol.: 27(mL) | Dilution Factor: 200

Injection Volume: 1(uL) | GC Column: AS22 ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 24430 | Units: ug/Sample

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
14808-79-8	Sulfate	53760		5400	972

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\320\20181012-9644.b\17140-0009644-009.d
Lims ID: 140-12815-A-6-C MSD
Client ID: CCM-2
Sample Type: MSD
Inject. Date: 12-Oct-2018 14:46:00 ALS Bottle#: 0 Worklist Smp#: 9
Injection Vol: 1.0 ul Dil. Factor: 200.0000
Sample Info: 140-0009644-009
Misc. Info.: 17 140-12815-a-6-c msd
Operator ID: Instrument ID: 320

Method: \\ChromNA\Knoxville\ChromData\320\20181012-9644.b\Anions_320.m
Limit Group: IC 8A ICAL
Last Update: 12-Oct-2018 16:09:33 Calib Date: 29-Sep-2018 11:26:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\320\20180929-9518.b\7140-0009518-007.d

Column 1 : Det: IC
Process Host: XAWRK007

First Level Reviewer: humphreyj Date: 12-Oct-2018 15:06:39

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride		3.083				ND	
	2 Chloride	4.508	4.508	0.000	673513		NC	
	3 Nitrite as N		5.467				ND	
	4 Bromide		6.575				ND	
	5 Nitrate as N		7.375				ND	
	6 Orthophosphate as P	9.742	9.733	0.009	708533		NC	
	7 Sulfate	11.075	11.092	-0.017	133588469	0.0250	9.96	M
	8 Iodide		15.100				ND	
S	15 Hydro Fluoric Acid		0.000				ND	
S	14 Hydrogen Chloride		0.000				ND	
S	16 Nitrite as NO2		0.000				ND	
S	18 Sulfuric acid					0.0255	10.2	
S	17 Nitrate as NO3		0.000				ND	
S	10 Sulfur					0.008345	3.32	
S	9 Chlorine		0.000				ND	
S	11 Iodine		0.000				ND	
S	13 Fluorine		0.000				ND	
S	12 Br		0.000				ND	

QC Flag Legend

Processing Flags
NC - Not Calibrated
Review Flags
M - Manually Integrated

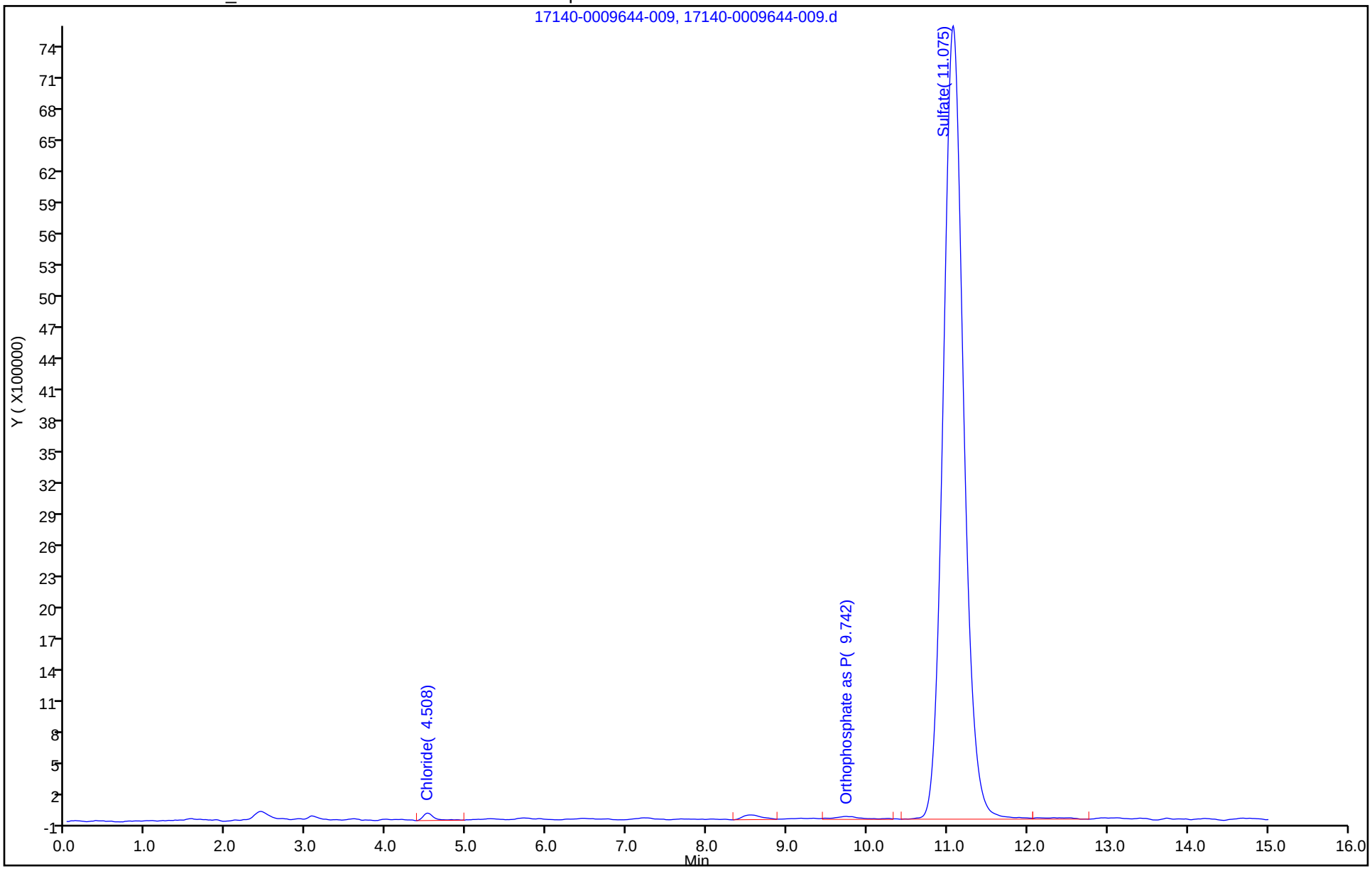
Reagents:

85INSPEXSO4S_00005 Amount Added: 0.05 Units: mL

Report Date: 12-Oct-2018 16:09:44 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\320\20181012-9644.b\17140-0009644-009.d				
Injection Date:	12-Oct-2018 14:46:00	Instrument ID:	320	Operator ID:	
Lims ID:	140-12815-A-6-C MSD			Worklist Smp#:	9
Client ID:	CCM-2				
Injection Vol:	1.0 ul	Dil. Factor:	200.0000	ALS Bottle#:	0
Method:	Anions_320	Limit Group:	IC 8A ICAL		



Manual Integration/User Assign Peak Report

TestAmerica Knoxville

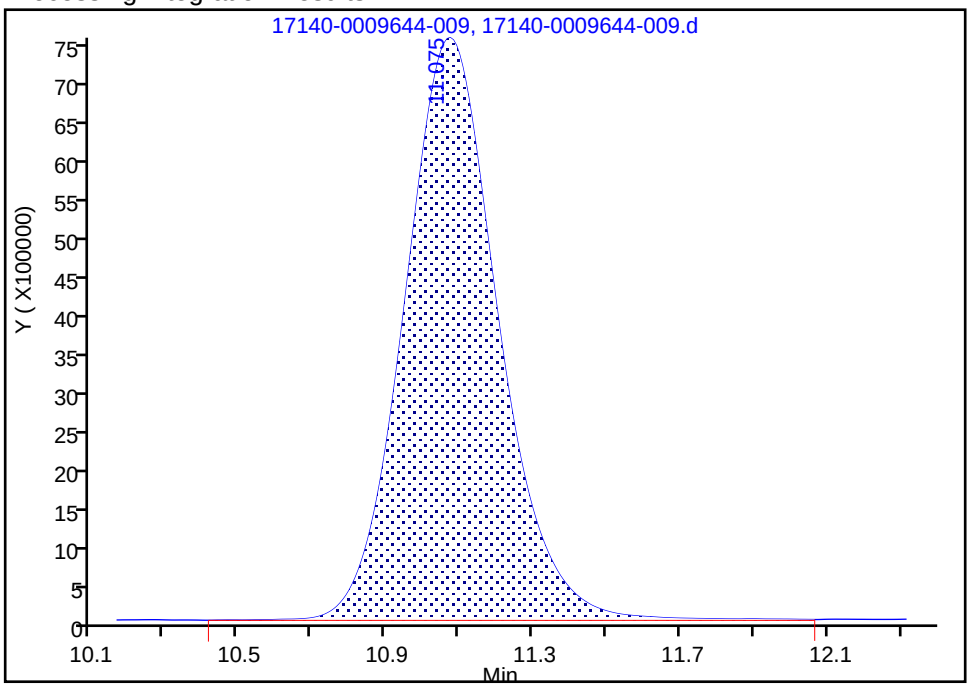
Data File:	\\ChromNA\Knoxville\ChromData\320\20181012-9644.b\17140-0009644-009.d				
Injection Date:	12-Oct-2018 14:46:00	Instrument ID:	320		
Lims ID:	140-12815-A-6-C MSD				
Client ID:	CCM-2				
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	200.0000		
Method:	Anions_320	Limit Group:	IC 8A ICAL		
Column:		Detector	IC		

7 Sulfate, CAS: 14808-79-8

Signal: 1

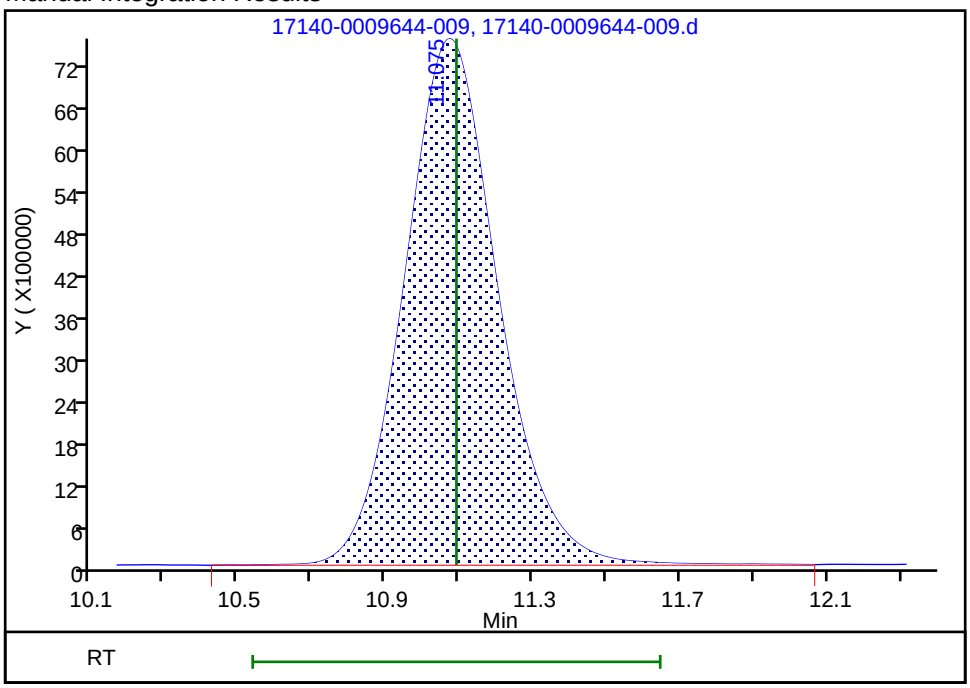
Processing Integration Results

RT: 11.08
Area: 133771767
Amount: 9.968371
Amount Units: ug/ml



Manual Integration Results

RT: 11.08
Area: 133588469
Amount: 9.955575
Amount Units: ug/ml



Reviewer: humphreyj, 12-Oct-2018 15:06:28

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

HPLC/IC ANALYSIS RUN LOG

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1

SDG No.:

Instrument ID: 320 Start Date: 09/29/2018 09:09

Analysis Batch Number: 24062 End Date: 09/29/2018 12:48

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 140-24062/1		09/29/2018 09:09	1	1140-0009518-001.d	AS22
IC 140-24062/2		09/29/2018 09:32	1	2140-0009518-002.d	AS22
IC 140-24062/3		09/29/2018 09:55	1	3140-0009518-003.d	AS22
IC 140-24062/4		09/29/2018 10:17	1	4140-0009518-004.d	AS22
IC 140-24062/5		09/29/2018 10:40	1	5140-0009518-005.d	AS22
IC 140-24062/6		09/29/2018 11:03	1	6140-0009518-006.d	AS22
IC 140-24062/7		09/29/2018 11:26	1	7140-0009518-007.d	AS22
ICV 140-24062/8		09/29/2018 12:25	1	8140-0009518-008.d	AS22
ICB 140-24062/9		09/29/2018 12:48	1	9140-0009518-009.d	AS22

8A

TestAmerica Knoxville
Dionex IC Runlog Cover Page

Analyst:	JMH	Date:	9-29-18	Sequence ID:	I29LM_ANIONS_092918

Instrument:	☐ DX-600	Method:	☐ KNOX-WC-0003, SW-846 0061/7199
	☐ ICS-1500		☐ KNOX-WC-0005, ☑ SW-846 9056 ☑ EPA 300.0 ☐ SW-846 9057-Mod ☐ EPA 26A-Mod
	☑ DX-320		☐ KNOX-WC-0014, EPA 314.0

Preventive Maintenance	Instrument Conditions		
Daily:	Flow Rate =	1.20	mL/min
☑ Check pump and gas pressure	Pressure =	2383	psi
☑ Check all lines for crimping, leaks and discoloration	Conductance =	18.923	µS
As Needed:	Suppressor Current =	50	mA
☐ Change column and guard column	Eluent Generator =	NA	mM KOH
☐ Change column and/or guard column bed support	Analytical Column:	AS22 / AG22	
☐ Clean conductivity cell	WORKING ELUENT & DILUTIONS: 85ELUENTAS22-00014 / 100		
☐ De-gas pump head when flow is erratic			
☐ Check/replace eluant end line filter			

MS/MSD Spike Information

WO #	Compound	Spike ID	Parent Conc.	Spike Added (mL)	Final Volume (mL)	Final Conc.
			JMH			
			9-29-18			

Comments:

☐ Sodium Thiosulfate added to NaOH impinger samples.

Title:
Datasource: LilMike_net
Location: IC_LIL_MIKE
Timebase: IC_Lil_Mike
#Samples: 81
Created: 9/29/2018 1:29:50 PM by KnxUser
Last Update: 9/29/2018 1:29:50 PM by KnxUser

No.	Name	Pos.	Comment	Inj. Vol.	Inj. Date/Time	Dil. Factor	*Multiplier [Liters]	Weight	Type
1	140-0009518-001	43	ic std1	65.0	9/29/2018 9:09:43 AM	1.0000		1.0000	Standard
2	140-0009518-002	44	ic std2	65.0	9/29/2018 9:32:27 AM	1.0000		1.0000	Standard
3	140-0009518-003	45	ic std3	65.0	9/29/2018 9:55:10 AM	1.0000		1.0000	Standard
4	140-0009518-004	46	ic std4	65.0	9/29/2018 10:17:53 AM	1.0000		1.0000	Standard
5	140-0009518-005	47	ic std5	65.0	9/29/2018 10:40:37 AM	1.0000		1.0000	Standard
6	140-0009518-006	48	ic std6	65.0	9/29/2018 11:03:20 AM	1.0000		1.0000	Standard
7	140-0009518-007	49	ic std7	65.0	9/29/2018 11:26:04 AM	1.0000		1.0000	Unknown
8	140-0009518-008	1	icv	65.0	9/29/2018 12:25:27 PM	1.0000		1.0000	Unknown
9	140-0009518-009	2	icb	65.0	9/29/2018 12:48:10 PM	1.0000		1.0000	Unknown
10	CCV	3	ccv	65.0	9/29/2018 1:10:54 PM	1.0000		1.0000	Unknown
11	CCB	4	ccb	65.0	9/29/2018 1:29:01 PM	1.0000		1.0000	Unknown
12	MB	5	mb	65.0	9/28/2018 3:06:56 PM	1.0000		1.0000	Unknown
13	LCS	6	lcs	65.0	9/28/2018 3:29:40 PM	1.0000		1.0000	Unknown
14	140-12035-A-2 MDLV	7	140-12035-a-2 mdlv	65.0	9/28/2018 3:52:23 PM	1.0000		1.0000	Unknown
15	MB	8	mb	65.0	9/28/2018 4:15:06 PM	1.0000		1.0000	Unknown
16	LCS	9	lcs	65.0	9/28/2018 4:37:50 PM	1.0000		1.0000	Unknown
17	140-12036-A-2 MDLV	10	140-12036-a-2 mdlv	65.0	9/28/2018 5:00:33 PM	1.0000		1.0000	Unknown
18	CCV	11	ccv	65.0	9/28/2018 5:23:16 PM	1.0000		1.0000	Unknown
19	CCB	12	ccb	65.0	9/28/2018 5:46:02 PM	1.0000		1.0000	Unknown
20	MB	13	mb 140-23906/1-b	65.0	9/28/2018 6:08:45 PM	1.0000		1.0000	Unknown
21	LCS	14	lcs 140-23906/2-b	65.0	9/28/2018 6:31:29 PM	10.0000		1.0000	Unknown
22	140-12773-A-1	15	140-12773-a-1-d	65.0	9/28/2018 6:54:13 PM	1.0000		1.0000	Unknown
23	140-12773-A-1 DU	16	140-12773-a-1-e du	65.0	9/28/2018 7:16:56 PM	1.0000		1.0000	Unknown
24	140-12773-A-1	17	140-12773-a-1-d	65.0	9/28/2018 7:39:40 PM	100.0000		1.0000	Unknown
25	140-12773-A-1 DU	18	140-12773-a-1-e du	65.0	9/28/2018 8:02:23 PM	100.0000		1.0000	Unknown
26	140-12773-A-2	19	140-12773-a-2-c	65.0	9/28/2018 8:25:06 PM	1.0000		1.0000	Unknown
27	140-12773-A-3	20	140-12773-a-3-c	65.0	9/28/2018 8:47:50 PM	1.0000		1.0000	Unknown
28	140-12730-A-1	21	140-12730-a-1-d	65.0	9/28/2018 9:10:33 PM	1.0000		1.0000	Unknown
29	CCV	22	ccv	65.0	9/28/2018 9:33:17 PM	1.0000		1.0000	Unknown
30	CCB	23	ccb	65.0	9/28/2018 9:56:00 PM	1.0000		1.0000	Unknown
31	140-12730-A-1 MS	24	140-12730-a-1-e ms	65.0	9/28/2018 10:18:43 PM	10.0000		1.0000	Unknown
32	140-12730-A-1 MSD	25	140-12730-a-1-f msd	65.0	9/28/2018 10:41:26 PM	10.0000		1.0000	Unknown
33	140-12730-A-2	26	140-12730-a-2-b	65.0	9/28/2018 11:04:09 PM	1.0000		1.0000	Unknown
34	140-12757-A-1	27	140-12757-a-1-g	65.0	9/28/2018 11:26:53 PM	1.0000		1.0000	Unknown
35	140-12757-A-1 MS	28	140-12757-a-1-h ms	65.0	9/28/2018 11:49:36 PM	10.0000		1.0000	Unknown
36	140-12757-A-1 MSD	29	140-12757-a-1-i msd	65.0	9/29/2018 12:12:19 AM	10.0000		1.0000	Unknown
37	CCV	30	ccv	65.0	9/29/2018 12:35:04 AM	1.0000		1.0000	Unknown
38	CCB	31	ccb	65.0	9/29/2018 12:57:47 AM	1.0000		1.0000	Unknown
39	SHUTDOWN	32	off	65.0	9/29/2018 1:15:54 AM	1.0000		1.0000	Unknown
40		33		65.0	9/25/2018 7:58:30 AM	1.0000		1.0000	Unknown
41		34		65.0	9/25/2018 8:21:14 AM	1.0000		1.0000	Unknown
42		35		65.0	9/25/2018 8:43:58 AM	1.0000		1.0000	Unknown
43		36		65.0	9/25/2018 9:29:37 AM	1.0000		1.0000	Unknown
44		37		65.0	9/25/2018 11:07:57 AM	1.0000		1.0000	Unknown
45		38		65.0	9/25/2018 11:30:40 AM	1.0000		1.0000	Unknown
46		39		65.0	9/25/2018 11:53:23 AM	1.0000		1.0000	Unknown
47		40		65.0	9/25/2018 12:11:30 PM	1.0000		1.0000	Unknown
48		41		65.0	9/21/2018 10:32:35 PM	1.0000		1.0000	Unknown

TestAmerica Knoxville IC Initial Calibration Data Review Checklist
Methods: 300.0, 9056, 9057 and 26A, SOP: KNOX-WC-0005, Rev. 15

Analysis Date:	9-29-18	ICAL File ID:	I29LM_ANIONS_092918	Instrument/Work List:	DX 320 / 9518

Method Limit Group	ICAL Number	ICAL Batch
☐ IC 0050_26A ICAL	–	–
☑ IC 0050_9056 ICAL	1693	24057
☑ IC 300_9056_48HR ICAL	1694	24058
☑ IC 300_9056_28Day ICAL	1696	24060
☑ IC 9056_TotHAL ICAL	1697	24061
☑ IC D129_OF & D3177_OF ICAL	1695	24059
☑ IC 8A ICAL ICAL	1698	24062

Review Items	NA	Y	N	If No, why is data reportable?	2nd ✓
Section 1: Calibration/Instrument Run QC					
1. Calibrated with minimum 5 standards (6 for quad)?		✓			✓
2. $r \geq 0.995$, or $r^2 \geq 0.990$		✓			✓
3. Intercept < low standard response?		✓			✓
4. Read back error ≤ 40%, at LLOQ ≤ 50%		✓			✓
5. Was the ICV within 90-110%R?		✓			✓
6. ICB < 1/2 RL? ICB ≤10% LLOQ for 9056A?		✓			✓
Section 2: Raw Data & Chrom/TALS Data Review					
1. Was Worklist Sample Number used as the sample ID in the Chromeleon sequence before upload?		✓			✓
2. Was Worklist Sample ID listed in the comment field of the Chromeleon sequence before upload?		✓			✓
3. Any unexplained triangles in the TALS lists after upload from Chrom?			✓		✓
4. Raw Data					
• Chrom reagents entered correctly?		✓			✓
• Is manual integration complete and correct?		✓			✓
5. TALS Worksheet Tab is complete and correct?		✓			✓
6. TALS Reagent Tab is complete and correct?		✓			✓
7. TALS Batch Information Screen documentation is complete?		✓			✓
8. TALS Status set to appropriate review level?		✓			✓
9. Is Run Log cover sheet and Chromeleon sequence scanned and attached to batch?		✓			✓

1st Level Review by: Jm Humphrey 9-29-18

2nd Level Review by: [signature] 10-1-18

HPLC/IC ANALYSIS RUN LOG

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1

SDG No.:

Instrument ID: 320 Start Date: 10/12/2018 12:09

Analysis Batch Number: 24430 End Date: 10/12/2018 16:05

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 140-24430/1		10/12/2018 12:09	1	9140-0009644-001.d	AS22
CCB 140-24430/2		10/12/2018 12:28	1	10140-0009644-002.d	AS22
MB 140-24428/1-A		10/12/2018 12:48	1	11140-0009644-003.d	AS22
LCS 140-24428/2-A		10/12/2018 13:08	1	12140-0009644-004.d	AS22
140-12815-5		10/12/2018 13:27	20	13140-0009644-005.d	AS22
140-12815-5		10/12/2018 13:47	200	14140-0009644-006.d	AS22
140-12815-6		10/12/2018 14:07	200	15140-0009644-007.d	AS22
140-12815-6 MS		10/12/2018 14:27	200	16140-0009644-008.d	AS22
140-12815-6 MSD		10/12/2018 14:46	200	17140-0009644-009.d	AS22
140-12815-7		10/12/2018 15:06	200	18140-0009644-010.d	AS22
140-12815-8		10/12/2018 15:26	20	19140-0009644-011.d	AS22
CCV 140-24430/12		10/12/2018 15:45	1	20140-0009644-012.d	AS22
CCB 140-24430/13		10/12/2018 16:05	1	21140-0009644-013.d	AS22

8A

TestAmerica Knoxville
Dionex IC Runlog Cover Page

Analyst:	JMH	Date:	10-12-18	Sequence ID:	J12LM_ANIONS_101218

Instrument:	☐ DX-600	Method:	☐ KNOX-WC-0003, SW-846 0061/7199
	☐ ICS-1500		☐ KNOX-WC-0005, ☑ SW-846 9056 ☑ EPA 300.0 ☐ SW-846 9057-Mod ☐ EPA 26A-Mod
	☐ DX-320		☐ KNOX-WC-0014, EPA 314.0

Preventive Maintenance	Instrument Conditions		
Daily:	Flow Rate =	1.20	mL/min
☑ Check pump and gas pressure	Pressure =	2239	psi
☑ Check all lines for crimping, leaks and discoloration	Conductance =	19.306	µS
As Needed:	Suppressor Current =	50	mA
☐ Change column and guard column	Eluent Generator =	NA	mM KOH
☐ Change column and/or guard column bed support	Analytical Column:	AS22 / AG22	
☐ Clean conductivity cell	WORKING ELUENT & DILUTIONS: 85ELUENTAS22_00014 / ~~200~~ 100		
☐ De-gas pump head when flow is erratic	JMH 10-12-18		
☐ Check/replace eluant end line filter			

MS/MSD Spike Information

WO #	Compound	Spike ID	Parent Conc.	Spike Added (mL)	Final Volume (mL)	Final Conc.
140-12815-A-6	Sulfate	85INSPEXS048_00005	1000 mg/L	0.050	10	5 mg/L

JMH 10-12-18

Comments: 8A (H_2SO_4, SO_4^-) 140-12815

☐ Sodium Thiosulfate added to NaOH impinger samples.

Title:
Datasource: LilMike_net
Location: IC_LIL_MIKE
Timebase: IC_Lil_Mike
#Samples: 81

Created: 10/12/2018 10:16:57 AM by KnxUser
Last Update: 10/12/2018 4:21:22 PM by KnxUser

No.	Name	Pos.	Comment	Inj. Vol.	Inj. Date/Time	Dil. Factor	*Multiplier [Liters]	Weight	Type
1	ICAL L1	43	CAL STD 1 - 0.1 mg/L	65.0	9/29/2018 9:09:43 AM	1.0000		1.0000	Standard
2	ICAL L2	44	CAL STD 2 - 0.25 mg/L	65.0	9/29/2018 9:32:27 AM	1.0000		1.0000	Standard
3	ICAL L3	45	CAL STD 3 - 0.50 mg/L	65.0	9/29/2018 9:55:10 AM	1.0000		1.0000	Standard
4	ICAL L4	46	CAL STD 4 - 1.50 mg/L	65.0	9/29/2018 10:17:53 AM	1.0000		1.0000	Standard
5	ICAL L5	47	CAL STD 5 - 3.75 mg/L	65.0	9/29/2018 10:40:37 AM	1.0000		1.0000	Standard
6	ICAL L6	48	CAL STD 6 - 7.50 mg/L	65.0	9/29/2018 11:03:20 AM	1.0000		1.0000	Standard
7	ICAL L7	49	CAL STD 7 - 15.0 mg/L	65.0	9/29/2018 11:26:04 AM	1.0000		1.0000	Unknown
8	beaker check 2017 05 18	1	beaker check	65.0	10/12/2018 11:49:21 AM	1.0000		1.0000	Unknown
9	140-0009644-001	2	ccv	65.0	10/12/2018 12:09:04 PM	1.0000		1.0000	Unknown
10	140-0009644-002	3	ccb	65.0	10/12/2018 12:28:47 PM	1.0000		1.0000	Unknown
11	140-0009644-003	4	mb 140-24428/1-a	65.0	10/12/2018 12:48:30 PM	1.0000		1.0000	Unknown
12	140-0009644-004	5	lcs 140-24428/2-a	65.0	10/12/2018 1:08:14 PM	1.0000		1.0000	Unknown
13	140-0009644-005	6	140-12815-a-5-a	65.0	10/12/2018 1:27:57 PM	20.0000		1.0000	Unknown
14	140-0009644-006	7	140-12815-a-5-a	65.0	10/12/2018 1:47:40 PM	200.0000		1.0000	Unknown
15	140-0009644-007	8	140-12815-a-6-a	65.0	10/12/2018 2:07:23 PM	200.0000		1.0000	Unknown
16	140-0009644-008	9	140-12815-a-6-b ms	65.0	10/12/2018 2:27:06 PM	200.0000		1.0000	Unknown
17	140-0009644-009	10	140-12815-a-6-c msd	65.0	10/12/2018 2:46:48 PM	200.0000		1.0000	Unknown
18	140-0009644-010	11	140-12815-a-7-a	65.0	10/12/2018 3:06:32 PM	200.0000		1.0000	Unknown
19	140-0009644-011	12	140-12815-a-8-a	65.0	10/12/2018 3:26:15 PM	20.0000		1.0000	Unknown
20	140-0009644-012	13	ccv	65.0	10/12/2018 3:45:58 PM	1.0000		1.0000	Unknown
21	140-0009644-013	14	ccb	65.0	10/12/2018 4:05:42 PM	1.0000		1.0000	Unknown
22		15		65.0	10/12/2018 8:45:10 AM	1.0000		1.0000	Unknown
23		16		65.0	10/12/2018 9:04:53 AM	1.0000		1.0000	Unknown
24		17		65.0	10/12/2018 9:24:36 AM	1.0000		1.0000	Unknown
25		18		65.0	10/12/2018 9:44:19 AM	1.0000		1.0000	Unknown
26		19		65.0	10/12/2018 9:59:26 AM	1.0000		1.0000	Unknown
27		20		65.0	9/29/2018 7:16:15 PM	1.0000		1.0000	Unknown
28		21		65.0	9/29/2018 7:35:58 PM	1.0000		1.0000	Unknown
29		22		65.0	9/29/2018 7:55:41 PM	1.0000		1.0000	Unknown
30		23		65.0	9/29/2018 8:15:24 PM	1.0000		1.0000	Unknown
31		24		65.0	9/29/2018 8:35:07 PM	1.0000		1.0000	Unknown
32		25		65.0	9/29/2018 8:54:50 PM	1.0000		1.0000	Unknown
33		26		65.0	9/29/2018 9:14:34 PM	1.0000		1.0000	Unknown
34		27		65.0	9/29/2018 9:34:17 PM	1.0000		1.0000	Unknown
35		28		65.0	9/29/2018 9:54:01 PM	1.0000		1.0000	Unknown
36		29		65.0	9/29/2018 10:13:45 PM	1.0000		1.0000	Unknown
37		30		65.0	9/29/2018 10:33:29 PM	1.0000		1.0000	Unknown
38		31		65.0	9/29/2018 10:53:12 PM	1.0000		1.0000	Unknown
39		32		65.0	9/29/2018 11:12:55 PM	1.0000		1.0000	Unknown
40		33		65.0	9/29/2018 11:32:38 PM	1.0000		1.0000	Unknown
41		34		65.0	9/29/2018 11:52:21 PM	1.0000		1.0000	Unknown
42		35		65.0	9/30/2018 12:12:05 AM	1.0000		1.0000	Unknown
43		36		65.0	9/30/2018 12:31:48 AM	1.0000		1.0000	Unknown
44		37		65.0	9/30/2018 12:51:32 AM	1.0000		1.0000	Unknown
45		38		65.0	9/30/2018 1:11:15 AM	1.0000		1.0000	Unknown
46		39		65.0	9/30/2018 1:30:59 AM	1.0000		1.0000	Unknown
47		40		65.0	9/30/2018 1:46:05 AM	1.0000		1.0000	Unknown
48		41		65.0	9/21/2018 10:32:35 PM	1.0000		1.0000	Unknown

TestAmerica Knoxville Anions by IC Batch Data Review Checklist
Methods: 300.0, 9056 & 9056A; Air Anions by 0050/26A; SOP: KNOX-WC-0005, Rev. 15

Analytical Batch:	24430	**Prep Batch(s):**	24428	**Instrument/Work List:**	DX320 / 9644
Analysis Date:	10-12-18	**Job(s):**	140-12815		
ICAL File ID:	129IAL_ANIONS_092018	**ICAL Batch:**	24062	**ICAL Number:**	1698
Method Limit Group:	☐ IC 0050_26A ICAL ☐ IC 9056_TotHAL ICAL	☐ IC 0050_9056 ICAL ☐ IC D129_OF & D3177_OF ICAL	☐ IC 300_9056_48HR ICAL ☑ IC 8A ICAL	☐ IC 300_9056_28Day ICAL	

Review Items	NA	Y	N	If No, why is data reportable?	2nd ✓
Section 1: Calibration/Instrument Run QC					
1. Calibrated with minimum 5 standards (6 for quad)?		✓			✓
2. $r \geq 0.995$, or $r^2 \geq 0.990$		✓			✓
3. Intercept < low standard response?		✓			✓
4. Read back error ≤ 40%, at LLOQ ≤ 50%		✓			✓
5. Was the ICV within 90-110%R?		✓			✓
6. ICB < 1/2 RL? ICB ≤10% LLOQ for 9056A?		✓			✓
7. Were CCVs/CCBs run after every 10 samples, and at end of sequence?		✓			✓
8. Is %D <10% for each CCV?		✓		☐ **CCV - %D, High, Sample ND** (NCM#_____)	✓
9. If CCV failed, was it rerun only once?	✓			☐ CCV reanalyzed one time; reanalysis within limits	NA
10. CCB < 1/2 RL? CCB ≤10% LLOQ for 9056A?		✓		☐ **CCB-Out, Samples ND or 10x** (NCM#_____)	✓
Section 2: Prep Data					
1. Appropriate prep batches created for prep chain?		✓			✓
2. Batch information complete?		✓			✓
3. Correct analyst identified?		✓			✓
4. Worksheet complete?		✓			✓
5. Reagents tab complete and correct?		✓			✓
6. Was pH adjustment required for Back Half samples?	✓				NA
7. External prep data attached to batch as external prep worksheet?		✓			✓
Section 3: Sample Analysis/Prep QC					
1. LCS/LCSD analytes within 90-110%R?		✓		☐ **LCS/LCSD –Insufficient Sample** (NCM#_____) ☐ **LCS/LCSD - %R High** (NCM#_____)	✓
2. MB < 1/2 RL? MB ≤10% LLOQ for 9056A		✓		☐ **Method Blank–Report, ND** (NCM#_____) ☐ **Method Blank – Report, 10X** (NCM#_____) ☐ **Method Blank–Insufficient Sample** (NCM#_____)	✓
3. MS/MSD/DUP run at required frequency? BMS 10-12-18	✓	✓		☐ **MS/MSD/DUP-Insufficient Vol** (NCM#_____)	✓
4. MS/MSD/DUP within QC limits?		✓		☐ **MS/MSD-%R, LCS Pass** (NCM#_____-optional) ☐ **MS/MSD/DUP-%RPD** (NCM#_____-optional)	✓
5. Are OR, MS, MSD, & DU linked correctly?		✓			✓
6. Sample analyses done within holding time (HT)?		✓		☐ **Holding Time-Receipt** (NCM# _____) ☐ **Holding Time- Insufficient Time** (NCM# _____) ☐ [Option-narrate] Analysis requested after HT expired.	✓
7. Are positive results within the calibration range?		✓			✓
8. Are ND derived from undiluted runs?	✓			☐ **RL-Dilution, Matrix** (NCM# _____) ☐ **RL-Dilution, Interferents** (NCM# _____)	NA
Section 4: Raw Data & Chrom/TALS Data Review					
1. Does 1st prep in the chain have original Sample ID as starting point?		✓			✓
2. Does each additional step in the chain use the output ID of the previous step as the starting point?		✓			✓
3. Was Worklist built with final prep output ID?		✓			✓
4. Was Worklist Sample Number used as the sample ID in the Chromeleon sequence before upload?		✓			✓
5. Was Worklist Sample ID listed in the comment field of the Chromeleon sequence before upload?		✓			✓
6. Any unexplained triangles in the TALS lists after upload from Chrom?			✓		✓
7. Raw Data					
• Chrom sample information complete and correct? Are any samples linked to unnecessary Method Limit Groups in sample information?		✓			✓
• Chrom reagents entered correctly?		✓			✓
• Is manual integration complete and correct?		✓			✓
• Are unused data clearly identified?		✓			✓
• Is out of control QC clearly identified?		✓			✓
• Data with a qualifier or flag is repaired with appropriate action taken?		✓			✓
Section 4: Raw Data & Chrom/TALS Data Review (continued)					

TestAmerica Knoxville Anions by IC Batch Data Review Checklist
Methods: 300.0, 9056 & 9056A; Air Anions by 0050/26A; SOP: KNOX-WC-0005, Rev. 15

Review Items	NA	Y	N	If No, why is data reportable?	2nd ✓
8. TALS Samples Tab:					
• LIMS Sample IDs / Containers are correct?		✓			✓
• Method and matrix are correct?		✓			✓
• Date and time match raw data?		✓			✓
• Dilutions are correct?		✓			✓
• Correct suffix designated (where applicable)?		✓			✓
9. TALS Worksheet Tab is complete and correct?		✓			✓
10. TALS Reagent Tab is complete and correct?		✓			✓
11. TALS QC Links Tab is correct?		✓			✓
12. TALS Sample Results Tab					
• All unused data are marked Rejected or Accepted?		✓			✓
• All reported analytes are marked Primary or Secondary?		✓			✓
13. TALS Batch Information Screen documentation is complete?		✓			✓
14. TALS Status set to appropriate review level?		✓			✓
15. Calculations checked for error? *(Document manual calculation checks in worksheet notes. Include all prep factor information from prep batch worksheets and the analytical batch.)*		✓			✓
16. Are any prep factor data (input-output volumes, etc.) duplicated in prep batches and analytical batches?			✓	If yes, re-check calculations and repair the data.	✓
17. Is Run Log cover sheet and Chromeleon sequence scanned and attached to batch?		✓			✓
18. Correct Narrative NCM chosen?		✓			✓
• Anions in Water	NA			□ [5909]	NA
• Anions in DI Leachates				□ [5910]	
• Anions in Soils				□ [5912]	
• Anions in Waste				□ [6307]	
• HCl, Cl2 in Air				□ [5819]	
• HCl in Air				□ [5820]	
• HF, HCl, Cl2 in Air				□ [6057]	
• HF, HCl, HBr, Cl2, Br2 in Air				□ [6058]	
• HF, HCl, HNO2,HNO3, Cl2 in Air				□ [6059]	
• HF,HCl, HBr,Cl2, Br2, I- in Air				□ [6060]	
• Cl-, F-, NO2-, NO3- in Air				□ [6077]	
• HF, HCl in Air				□ [6078]	
• H2SO4 in Air				□ [6109]	
• HF, HCl, HNO3 in Air				□ [6779]	
• Sulfate in Air				☒ [6111]	✓

1st Level Review by: Jm Humphrey 10-12-18	2nd Level Review by: [signature] 10-15-18

HPLC/IC BATCH WORKSHEET

Lab Name: TestAmerica Knoxville Job No.: 140-12815-1

SDG No.:

Batch Number: 24428 Batch Start Date: 10/12/18 00:00 Batch Analyst: Humphrey, Jon M

Batch Method: 8A Batch End Date: 10/12/18 00:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	AnalysisComment			
MB 140-24428/1		8A, 8A		1 Sample	100 mL				
LCS 140-24428/2		8A, 8A		1 Sample	100 mL				
140-12815-A-5	CCM-1	8A, 8A	T	1 Sample	22 mL	< 2			
140-12815-A-6	CCM-2	8A, 8A	T	1 Sample	27 mL	< 2			
140-12815-A-6 MS	CCM-2	8A, 8A	T	1 Sample	27 mL	< 2			
140-12815-A-6 MSD	CCM-2	8A, 8A	T	1 Sample	27 mL	< 2			
140-12815-A-7	CCM-3	8A, 8A	T	1 Sample	26 mL	< 2			
140-12815-A-8	CCM-REAGENT BLANK	8A, 8A	T	1 Sample	100 mL	< 7			

Batch Notes	

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

TestAmerica Knoxville
Source Air Analysis Sample Information

Analyst	Date	Lot #	Work Order #	FH or BH	Impinger Volume (mL)	Impinger pH as received	Impinger pH after adjustment	Amount added to adjust pH
JMH	10-12-18	140- 12815	A-5	NA	22	≤2		
↓	↓	↓	A-6	↓	27	≤2		
↓	↓	↓	A-7	↓	26	≤2	JMH 10-12-18	
↓	↓	↓	A-8	↓ (RB)	22 (100)	≤7		
				JMH 10-12-18				

Comments: (8A) H_2SO_4 (SO_4^-) 140 - 12815

WC076r1.doc, 011708

Shipping and Receiving Documents

AECOM

Chain of Custody Record

Project	Granite City Operations
Site	Bypass Vent Stack No. 6
Purchase Order	60582380.4
Prepared by:	

Test America
5815 Middlebrook Pike
Knoxville, TN 37921

Sample ID	Sample Matrix	Date/Time	HCl by by Method 26A	Method CTM-13 (SO4 by IC)					Comments
M26-1	0.1N H2SO4		X						
M26-2	0.1N H2SO4		X						
M26-3	0.1N H2SO4		X						
M26-reagent blank	0.1N H2SO4		X						
CCM-1	Water	9/18/2018		X					
CCM-2	Water	9/18/2018		X					
CCM-3	Water	9/19/2018		X					
CCM-reagent blank	Water	9/19/2018		X					

140-12815 Chain of Custody

Contact: John Carson 865.425.7014; john.r.carson@aecom.com; Courtney Adkins 865.291.3019

Relinquished by:	Date	Time	Received by:	Date	Time	Relinquished by:	Date	Time
[signature]	9/25/18	16:50	[signature] TA-KNX	9-25-18	16:50			
Received by:	Date	Time	Relinquished by:	Date	Time			

Received for Laboratory by:	Date	Time	Air bill No.	Opened by:	Seal #	Date	Time	Temp (C)

Seal #	Condition

Remarks

HAND DELIVERED
NO CUSTODY SEALS
RECEIVED AMBIENT RT 20.6/CT 20.50
DFD 9-25-18

Loc: 140
12815

TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Log In Number:

Review Items	Yes	No	NA	If No, what was the problem?
1. Are the shipping containers intact?	✓			☐ **Containers, Broken**
2. Were ambient air containers received intact?			✓	☐ Checked in lab
3. The coolers/containers custody seal if present, is it intact?			✓	☐ Yes ☐ NA
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID :_____ Correction factor: _____			✓	☐ **Cooler Out of Temp, Client Contacted, Proceed/Cancel** ☐ **Cooler Out of Temp, Same Day Receipt**
5. Were all of the sample containers received intact?	✓			☐ **Containers, Broken**
6. Were samples received in appropriate containers?	✓			☐ **Containers, Improper; Client Contacted; Proceed/Cancel**
7. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ **COC & Samples Do Not Match** ☐ **COC Incorrect/Incomplete** ☐ **COC Not Received**
8. Were all of the samples listed on the COC received?	✓			☐ **Sample Received, Not on COC** ☐ **Sample on COC, Not Received**
9. Is the date/time of sample collection noted?	✓	✓		☑ **COC; No Date/Time; Client Contacted**
10. Was the sampler identified on the COC?			✓	☐ **Sampler Not Listed on COC**
11. Is the client and project name/# identified?	✓			☐ **COC Incorrect/Incomplete**
12. Are tests/parameters listed for each sample?	✓			☐ **COC No tests on COC**
13. Is the matrix of the samples noted?	✓			☐ **COC Incorrect/Incomplete**
14. Was COC relinquished? (Signed/Dated/Timed)	✓			☐ **COC Incorrect/Incomplete**
15. Were samples received within holding time?	✓			☐ **Holding Time - Receipt**
16. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ **pH Adjusted, pH Included (See box 16A)** ☐ **Incorrect Preservative**
17. Were VOA samples received without headspace?			✓	☐ **Headspace (VOA only)**
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:_____			✓	☐ **Residual Chlorine**
19. For 1613B water samples is pH<9?			✓	☐ If no, lab will adjust
20. For rad samples was sample activity info. Provided?			✓	☐ Project missing info

Comments/Actions Taken

9, NO COLLECTION DATE FOR M-26 SAMPLES, WILL LOG USING 9-18-19

Labeling Verified by: **Date:**

pH test strip lot number:

Box 16A: pH Preservation	Box 18A: Residual Chlorine
Preservative:	
Lot Number:	
Exp Date:	
Analyst:	
Date:	
Time:	

Project #: 14004550 PM Instructions:

Sample Receiving Associate: [signature] Date: 9-26-18

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AECOM

Chain of Custody Record

Project	Granite City Operations
Site	Bypass Vent Stack No. 6
Purchase Order	60582380.4
Prepared by:	

Test America
5815 Middlebrook Pike
Knoxville, TN 37921

Sample ID	Sample Matrix	Date/Time	HCl by by Method 26A	Method CTM-13 (SO4 by IC)					Comments
M26-1	0.1N H2SO4		X						
M26-2	0.1N H2SO4		X						
M26-3	0.1N H2SO4		X						
M26-reagent blank	0.1N H2SO4		X						
CCM-1	Water	9/18/2018		X					
CCM-2	Water	9/18/2018		X					
CCM-3	Water	9/19/2018		X					
CCM-reagent blank	Water	9/19/2018		X					

140-12815 Chain of Custody

Contact: John Carson 865.425.7014; john.r.carson@aecom.com; Courtney Adkins 865.291.3019

Relinquished by:	Date	Time	Received by:	Date	Time	Relinquished by:	Date	Time
[signature]	9/25/18	16:50	[signature] TA-KNX	9-25-18	16:50			
Received by:	Date	Time	Relinquished by:	Date	Time			

Received for Laboratory by:	Date	Time	Air bill No.	Opened by:	Seal #	Date	Time	Temp (C)

Seal #	Condition

Remarks

HAND DELIVERED
NO CUSTODY SEALS
RECEIVED AMBIENT RT 20.6/CT 20.5°C
DFD 9-25-18

Loc: 140
12815

TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Log In Number:

Review Items	Yes	No	NA	If No, what was the problem?
1. Are the shipping containers intact?	✓			☐ **Containers, Broken**
2. Were ambient air containers received intact?			✓	☐ Checked in lab
3. The coolers/containers custody seal if present, is it intact?			✓	☐ Yes ☐ NA
4. Is the cooler temperature within limits? (> freezing temp. of water to 6°C, VOST: 10°C) Thermometer ID :_____ Correction factor: _____			✓	☐ **Cooler Out of Temp, Client Contacted, Proceed/Cancel** ☐ **Cooler Out of Temp, Same Day Receipt**
5. Were all of the sample containers received intact?	✓			☐ **Containers, Broken**
6. Were samples received in appropriate containers?	✓			☐ **Containers, Improper; Client Contacted; Proceed/Cancel**
7. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ **COC & Samples Do Not Match** ☐ **COC Incorrect/Incomplete** ☐ **COC Not Received**
8. Were all of the samples listed on the COC received?	✓			☐ **Sample Received, Not on COC** ☐ **Sample on COC, Not Received**
9. Is the date/time of sample collection noted?	✓	✓		☑ **COC; No Date/Time; Client Contacted**
10. Was the sampler identified on the COC?			✓	☐ **Sampler Not Listed on COC**
11. Is the client and project name/# identified?	✓			☐ **COC Incorrect/Incomplete**
12. Are tests/parameters listed for each sample?	✓			☐ **COC No tests on COC**
13. Is the matrix of the samples noted?	✓			☐ **COC Incorrect/Incomplete**
14. Was COC relinquished? (Signed/Dated/Timed)	✓			☐ **COC Incorrect/Incomplete**
15. Were samples received within holding time?	✓			☐ **Holding Time - Receipt**
16. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ **pH Adjusted, pH Included (See box 16A)** ☐ **Incorrect Preservative**
17. Were VOA samples received without headspace?			✓	☐ **Headspace (VOA only)**
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			✓	☐ **Residual Chlorine**
19. For 1613B water samples is pH<9?			✓	☐ If no, lab will adjust
20. For rad samples was sample activity info. Provided?				☐ Project missing info

Comments/Actions Taken

9. NO COLLECTION DATE FOR M-26 SAMPLES, WILL LOG USING 9-18-19

Labeling Verified by: **Date:**

pH test strip lot number:

Box 16A: pH Preservation	Box 18A: Residual Chlorine
Preservative:	
Lot Number:	
Exp Date:	
Analyst:	
Date:	
Time:	

Project #: 1400450 PM Instructions:

Sample Receiving Associate: [signature] Date: 9-26-18

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ANALYTICAL REPORT

Job Number: 140-13157-1

HCl Re-analysis

Job Description: Granite City - M26

For:
URS Corporation
105 Mitchell Road, Suite 200
Oak Ridge, TN 37830

Attention: John Carson

Approved for release.
Courtney M Adkins
Project Manager I
10/31/2018 9:14 AM

Courtney M Adkins, Project Manager I
5815 Middlebrook Pike, Knoxville, TN, 37921
(865)291-3000
courtney.adkins@testamericainc.com
10/31/2018

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Table of Contents

Cover Title Page 1

Data Summaries 4

Definitions 4

Method Summary 5

Sample Summary 6

Case Narrative 7

QC Association 8

Client Sample Results 9

Default Detection Limits 10

QC Sample Results 11

Chronicle 12

Certification Summary 14

Manual Integration Summary 15

Organic Sample Data 18

HPLC/IC 18

Method 0050_26A 18

Method 0050_26A QC Summary 19

Method 0050_26A Sample Data 26

Standards Data 38

Method 0050_26A ICAL Data 38

Method 0050_26A CCAL Data 69

Raw QC Data 90

Method 0050_26A Blank Data 90

Method 0050_26A LCS/LCSD Data 111

Method 0050_26A MS/MSD Data 117

Method 0050_26A Run Logs 127

Table of Contents

Method 0050_26A Prep Data 136

Shipping and Receiving Documents 138

Client Chain of Custody 139

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Method Summary

Client: URS Corporation
Project/Site: Granite City - M26

TestAmerica Job ID: 140-13157-1

Method	Method Description	Protocol	Laboratory
0050/26A	Hydrogen Halide and Halogen Emissions/Stationary Sources (Mod)	SW846	TAL KNX
0050/26A	Extraction of Hydrogen Halide and Halogen Emissions	SW846	TAL KNX

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL KNX = TestAmerica Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Sample Summary

Client: URS Corporation
Project/Site: Granite City - M26

TestAmerica Job ID: 140-13157-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
140-13157-1	M26-REAGENT BLANK	Air	10/25/18 00:00	10/25/18 16:50
140-13157-2	M26-1	Air	09/18/18 00:00	09/25/18 16:50
140-13157-3	M26-2	Air	09/18/18 00:00	09/25/18 16:50
140-13157-4	M26-3	Air	09/18/18 00:00	09/25/18 16:50

Job Narrative
140-13157-1

Sample Receipt

The samples were received on October 25, 2018 at 4:50 PM in good condition and properly preserved. The temperature of the cooler at receipt was 20.3º C.

Receipt Exceptions

The following samples were re-analyzed outside of holding time: M26-1 (140-13157-2), M26-2 (140-13157-3) and M26-3 (140-13157-4).

Quality Control and Data Interpretation

Unless otherwise noted, all holding times, and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

General Chemistry

Analysis of Stationary Source Emission Samples by Ion Chromatography: Samples were analyzed for chloride and fluoride by ion chromatography using SOP number KNOX-WC-005 (based on EPA methods 9056, 9057 and 26A). Results for the sulfuric acid impinger samples were reported as total µg hydrogen chloride and total µg hydrogen fluoride.

Results were calculated using the following equations:

Hydrogen Chloride, µg = (Chloride, µg/mL) × (Sample Volume, mL) × (Molecular Weight HCl / Molecular Weight Cl) × Bench DF

Note: A sample volume of 100 mL was used to convert the results to total µg for the method blanks, laboratory control samples, and client reagent blanks.

For demonstration of analytical method performance on these samples, TestAmerica Knoxville analyzed matrix spikes (MS) and matrix spike duplicates (MSD). Acceptable recoveries of these spikes demonstrate that quantitation from this particular stack gas matrix is accurate and acceptable. Impinger samples containing 0.1N sulfuric acid and 0.1N sodium hydroxide often display matrix interference effects causing poor method performance and possibly giving unreliable data unless the interference is dealt with. Therefore, the samples were diluted in the lab to reduce the interference for a more accurate anion response. The samples may be analyzed at increasing dilutions along with matrix spikes until matrix spikes display acceptable recoveries.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

QC Association Summary

Client: URS Corporation
Project/Site: Granite City - M26

TestAmerica Job ID: 140-13157-1

HPLC/IC

Prep Batch: 24919

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-13157-1	M26-REAGENT BLANK	Total/NA	Air	0050/26A	
140-13157-2	M26-1	Total/NA	Air	0050/26A	
140-13157-3	M26-2	Total/NA	Air	0050/26A	
140-13157-4	M26-3	Total/NA	Air	0050/26A	
MB 140-24919/3-A	Method Blank	Total/NA	Air	0050/26A	
LCS 140-24919/1-A	Lab Control Sample	Total/NA	Air	0050/26A	
LCSD 140-24919/2-A	Lab Control Sample Dup	Total/NA	Air	0050/26A	
140-13157-4 MS	M26-3	Total/NA	Air	0050/26A	
140-13157-4 MSD	M26-3	Total/NA	Air	0050/26A	

Analysis Batch: 24920

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-13157-1	M26-REAGENT BLANK	Total/NA	Air	0050/26A	24919
140-13157-2	M26-1	Total/NA	Air	0050/26A	24919
140-13157-3	M26-2	Total/NA	Air	0050/26A	24919
140-13157-4	M26-3	Total/NA	Air	0050/26A	24919
MB 140-24919/3-A	Method Blank	Total/NA	Air	0050/26A	24919
LCS 140-24919/1-A	Lab Control Sample	Total/NA	Air	0050/26A	24919
LCSD 140-24919/2-A	Lab Control Sample Dup	Total/NA	Air	0050/26A	24919
140-13157-4 MS	M26-3	Total/NA	Air	0050/26A	24919
140-13157-4 MS	M26-3	Total/NA	Air	0050/26A	24919
140-13157-4 MSD	M26-3	Total/NA	Air	0050/26A	24919
140-13157-4 MSD	M26-3	Total/NA	Air	0050/26A	24919

Client Sample Results

Client: URS Corporation
Project/Site: Granite City - M26

TestAmerica Job ID: 140-13157-1

Client Sample ID: M26-REAGENT BLANK — Lab Sample ID: 140-13157-1

Date Collected: 10/25/18 00:00 — **Matrix: Air**
Date Received: 10/25/18 16:50
Sample Container: Amber Glass 250ml - unpreserved

Method: 0050/26A - Hydrogen Halide and Halogen Emissions/Stationary Sources (Mod)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen Chloride	ND		20.6	8.64	ug/Sample		10/29/18 00:00	10/29/18 10:55	2

Client Sample ID: M26-1 — Lab Sample ID: 140-13157-2

Date Collected: 09/18/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 1 liter Wide - unpreserved

Method: 0050/26A - Hydrogen Halide and Halogen Emissions/Stationary Sources (Mod)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen Chloride	**360000**	**H**	38100	16000	ug/Sample		10/29/18 00:00	10/29/18 11:54	1000

Client Sample ID: M26-2 — Lab Sample ID: 140-13157-3

Date Collected: 09/18/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 1 liter Wide - unpreserved

Method: 0050/26A - Hydrogen Halide and Halogen Emissions/Stationary Sources (Mod)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen Chloride	**295000**	**H**	39100	16400	ug/Sample		10/29/18 00:00	10/29/18 12:29	1000

Client Sample ID: M26-3 — Lab Sample ID: 140-13157-4

Date Collected: 09/18/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50
Sample Container: Amber Glass 1 liter Wide - unpreserved

Method: 0050/26A - Hydrogen Halide and Halogen Emissions/Stationary Sources (Mod)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen Chloride	**268000**	**H**	83600	35100	ug/Sample		10/29/18 00:00	10/29/18 14:31	2500

) - 5 M h
) -

Hydrogen Chloride	10.3	4.32	ug/Sample	0050/26A

QC Sample Results

Client: URS Corporation
Project/Site: Granite City - M26

TestAmerica Job ID: 140-13157-1

Method: 0050/26A - Hydrogen Halide and Halogen Emissions/Stationary Sources (Mod)

Lab Sample ID: MB 140-24919/3-A — **Client Sample ID: Method Blank**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24920 — **Prep Batch: 24919**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen Chloride	ND		10.3	4.32	ug/Sample		10/29/18 00:00	10/29/18 10:20	1

Lab Sample ID: LCS 140-24919/1-A — **Client Sample ID: Lab Control Sample**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24920 — **Prep Batch: 24919**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Hydrogen Chloride	77.1	76.95		ug/Sample		100	90 - 110
Hydrogen Fluoride	79.0	79.53		ug/Sample		101	90 - 110

Lab Sample ID: LCSD 140-24919/2-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24920 — **Prep Batch: 24919**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Hydrogen Chloride	77.1	76.90		ug/Sample		100	90 - 110	0	20
Hydrogen Fluoride	79.0	78.94		ug/Sample		100	90 - 110	1	20

Lab Sample ID: 140-13157-4 MS — **Client Sample ID: M26-3**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24920 — **Prep Batch: 24919**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Hydrogen Fluoride	6320	H	13700	19830	H	ug/Sample		99	75 - 125

Lab Sample ID: 140-13157-4 MS — **Client Sample ID: M26-3**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24920 — **Prep Batch: 24919**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Hydrogen Chloride	268000	H	835000	1098000	H	ug/Sample		99	75 - 125

Lab Sample ID: 140-13157-4 MSD — **Client Sample ID: M26-3**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24920 — **Prep Batch: 24919**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Hydrogen Fluoride	6320	H	13700	19690	H	ug/Sample		98	75 - 125	1	20

Lab Sample ID: 140-13157-4 MSD — **Client Sample ID: M26-3**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 24920 — **Prep Batch: 24919**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Hydrogen Chloride	268000	H	835000	1096000	H	ug/Sample		99	75 - 125	0	20

Lab Chronicle

Client: URS Corporation
Project/Site: Granite City - M26

TestAmerica Job ID: 140-13157-1

Client Sample ID: M26-REAGENT BLANK — Lab Sample ID: 140-13157-1

Date Collected: 10/25/18 00:00 — **Matrix: Air**
Date Received: 10/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	0050/26A			1 Sample	100 mL	24919	10/29/18 00:00	JMH	TAL KNX
Total/NA	Analysis	0050/26A		2	10 mL	10 mL	24920	10/29/18 10:55	JMH	TAL KNX
	Instrument ID: 1500									

Client Sample ID: M26-1 — Lab Sample ID: 140-13157-2

Date Collected: 09/18/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	0050/26A			1 Sample	370 mL	24919	10/29/18 00:00	JMH	TAL KNX
Total/NA	Analysis	0050/26A		1000	10 mL	10 mL	24920	10/29/18 11:54	JMH	TAL KNX
	Instrument ID: 1500									

Client Sample ID: M26-2 — Lab Sample ID: 140-13157-3

Date Collected: 09/18/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	0050/26A			1 Sample	380 mL	24919	10/29/18 00:00	JMH	TAL KNX
Total/NA	Analysis	0050/26A		1000	10 mL	10 mL	24920	10/29/18 12:29	JMH	TAL KNX
	Instrument ID: 1500									

Client Sample ID: M26-3 — Lab Sample ID: 140-13157-4

Date Collected: 09/18/18 00:00 — **Matrix: Air**
Date Received: 09/25/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	0050/26A			1 Sample	325 mL	24919	10/29/18 00:00	JMH	TAL KNX
Total/NA	Analysis	0050/26A		2500	10 mL	10 mL	24920	10/29/18 14:31	JMH	TAL KNX
	Instrument ID: 1500									

Client Sample ID: Method Blank — Lab Sample ID: MB 140-24919/3-A

Date Collected: N/A — **Matrix: Air**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	0050/26A			1 Sample	100 mL	24919	10/29/18 00:00	JMH	TAL KNX
Total/NA	Analysis	0050/26A		1	10 mL	10 mL	24920	10/29/18 10:20	JMH	TAL KNX
	Instrument ID: 1500									

Lab Chronicle

Client: URS Corporation
Project/Site: Granite City - M26

TestAmerica Job ID: 140-13157-1

Client Sample ID: Lab Control Sample — Lab Sample ID: LCS 140-24919/1-A

Date Collected: N/A
Date Received: N/A
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	0050/26A			1 Sample	100 mL	24919	10/29/18 00:00	JMH	TAL KNX
Total/NA	Analysis	0050/26A		1	10 mL	10 mL	24920	10/29/18 09:45	JMH	TAL KNX
	Instrument ID: 1500									

Client Sample ID: Lab Control Sample Dup — Lab Sample ID: LCSD 140-24919/2-A

Date Collected: N/A
Date Received: N/A
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	0050/26A			1 Sample	100 mL	24919	10/29/18 00:00	JMH	TAL KNX
Total/NA	Analysis	0050/26A		1	10 mL	10 mL	24920	10/29/18 10:02	JMH	TAL KNX
	Instrument ID: 1500									

Client Sample ID: M26-3 — Lab Sample ID: 140-13157-4 MS

Date Collected: 09/18/18 00:00
Date Received: 09/25/18 16:50
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	0050/26A			1 Sample	325 mL	24919	10/29/18 00:00	JMH	TAL KNX
Total/NA	Analysis	0050/26A		40	10 mL	10 mL	24920	10/29/18 13:56	JMH	TAL KNX
	Instrument ID: 1500									
Total/NA	Prep	0050/26A			1 Sample	325 mL	24919	10/29/18 00:00	JMH	TAL KNX
Total/NA	Analysis	0050/26A		2500	10 mL	10 mL	24920	10/29/18 14:48	JMH	TAL KNX
	Instrument ID: 1500									

Client Sample ID: M26-3 — Lab Sample ID: 140-13157-4 MSD

Date Collected: 09/18/18 00:00
Date Received: 09/25/18 16:50
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	0050/26A			1 Sample	325 mL	24919	10/29/18 00:00	JMH	TAL KNX
Total/NA	Analysis	0050/26A		40	10 mL	10 mL	24920	10/29/18 14:13	JMH	TAL KNX
	Instrument ID: 1500									
Total/NA	Prep	0050/26A			1 Sample	325 mL	24919	10/29/18 00:00	JMH	TAL KNX
Total/NA	Analysis	0050/26A		2500	10 mL	10 mL	24920	10/29/18 15:06	JMH	TAL KNX
	Instrument ID: 1500									

Laboratory References:

TAL KNX = TestAmerica Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Accreditation/Certification Summary

Client: URS Corporation
Project/Site: Granite City - M26

TestAmerica Job ID: 140-13157-1

Laboratory: TestAmerica Knoxville

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
	AFCEE		N/A	
ANAB	DoD ELAP		L2311	02-13-19
Arkansas DEQ	State Program	6	88-0688	06-16-19
California	State Program	9	2423	06-30-19
Colorado	State Program	8	TN00009	02-28-19
Connecticut	State Program	1	PH-0223	09-30-19
Florida	NELAP	4	E87177	06-30-19
Georgia	State Program	4	906	04-13-20
Hawaii	State Program	9	N/A	04-13-19
Kansas	NELAP	7	E-10349	10-31-18 *
Kentucky (DW)	State Program	4	90101	12-31-18
Louisiana	NELAP	6	83979	06-30-19
Louisiana (DW)	NELAP	6	LA160005	12-31-18
Maryland	State Program	3	277	03-31-19
Michigan	State Program	5	9933	04-13-20
Nevada	State Program	9	TN00009	07-31-19
New Jersey	NELAP	2	TN001	06-30-19
New York	NELAP	2	10781	03-31-19
North Carolina (DW)	State Program	4	21705	07-31-19
North Carolina (WW/SW)	State Program	4	64	12-31-18
Ohio VAP	State Program	5	CL0059	08-28-20
Oklahoma	State Program	6	9415	08-31-19
Oregon	NELAP	10	TNI0189	01-01-19
Pennsylvania	NELAP	3	68-00576	12-31-18
Tennessee	State Program	4	2014	04-13-20
Texas	NELAP	6	T104704380-16-9	08-31-19
US Fish & Wildlife	Federal		LE-058448-0	07-31-19
USDA	Federal		P330-16-00262	08-20-19
Utah	NELAP	8	TN00009	07-31-19
Virginia	NELAP	3	460176	09-14-19
Washington	State Program	10	C593	01-19-19
West Virginia (DW)	State Program	3	9955C	12-31-18
West Virginia DEP	State Program	3	345	04-30-19
Wisconsin	State Program	5	998044300	08-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

HPLC/IC MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-13157-1

SDG No.:

Instrument ID: 1500 Analysis Batch Number: 22408

Lab Sample ID: IC 140-22408/2 Client Sample ID:

Date Analyzed: 08/01/18 10:16 Lab File ID: 2140-0008938-002.d GC Column: AS22 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Fluoride	3.36	Split Peak	humphreyj	08/01/18 12:59
Chloride	4.79	Split Peak	humphreyj	08/01/18 12:59
Nitrite as N	5.74	Split Peak	humphreyj	08/01/18 12:59
Bromide	6.84	Split Peak	humphreyj	08/01/18 12:59
Nitrate as N	7.70	Split Peak	humphreyj	08/01/18 12:59

Lab Sample ID: IC 140-22408/3 Client Sample ID:

Date Analyzed: 08/01/18 10:34 Lab File ID: 3140-0008938-003.d GC Column: AS22 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Fluoride	3.35	Split Peak	humphreyj	08/01/18 13:01
Chloride	4.78	Baseline Smoothing	humphreyj	08/01/18 13:00
Nitrite as N	5.74	Baseline Smoothing	humphreyj	08/01/18 13:00
Bromide	6.83	Baseline Smoothing	humphreyj	08/01/18 13:00
Nitrate as N	7.70	Baseline Smoothing	humphreyj	08/01/18 13:00

Lab Sample ID: IC 140-22408/4 Client Sample ID:

Date Analyzed: 08/01/18 10:51 Lab File ID: 4140-0008938-004.d GC Column: AS22 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Fluoride	3.35	Split Peak	humphreyj	08/01/18 13:02
Chloride	4.79	Split Peak	humphreyj	08/01/18 13:02
Nitrate as N	7.70	Split Peak	humphreyj	08/01/18 13:02

HPLC/IC MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-13157-1

SDG No.:

Instrument ID: 1500 Analysis Batch Number: 22408

Lab Sample ID: IC 140-22408/5 Client Sample ID:

Date Analyzed: 08/01/18 11:09 Lab File ID: 5140-0008938-005.d GC Column: AS22 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Nitrate as N	7.70	Baseline Smoothing	humphreyj	08/01/18 13:03

Lab Sample ID: ICV 140-22408/8 Client Sample ID:

Date Analyzed: 08/01/18 12:03 Lab File ID: 8140-0008938-008.d GC Column: AS22 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Fluoride	3.36	Split Peak	humphreyj	08/01/18 13:06
Chloride	4.80	Split Peak	humphreyj	08/01/18 13:06
Nitrite as N	5.76	Split Peak	humphreyj	08/01/18 13:06
Bromide	6.86	Split Peak	humphreyj	08/01/18 13:06
Nitrate as N	7.73	Split Peak	humphreyj	08/01/18 13:05

Lab Sample ID: ICB 140-22408/9 Client Sample ID:

Date Analyzed: 08/01/18 12:21 Lab File ID: 9140-0008938-009.d GC Column: AS22 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Chloride	4.80	Baseline Smoothing	humphreyj	08/01/18 13:06
Fluoride		Unspecified		

0050/26A

HPLC/IC MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-13157-1

SDG No.:

Instrument ID: 1500 Analysis Batch Number: 24920

Lab Sample ID: CCB 140-24920/2 Client Sample ID:

Date Analyzed: 10/29/18 09:28 Lab File ID: 12140-0009818-002.d GC Column: AS22 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Fluoride	3.42	Baseline Smoothing	humphreyj	10/30/18 08:59
Chloride	4.74	Baseline Smoothing	humphreyj	10/30/18 08:59

Lab Sample ID: CCB 140-24920/14 Client Sample ID:

Date Analyzed: 10/29/18 13:04 Lab File ID: 24140-0009818-014.d GC Column: AS22 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Chloride	4.76	Split Peak	humphreyj	10/30/18 09:10

Lab Sample ID: CCB 140-24920/23 Client Sample ID:

Date Analyzed: 10/29/18 15:40 Lab File ID: 33140-0009818-023.d GC Column: AS22 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Chloride	4.76	Baseline Smoothing	humphreyj	10/30/18 09:13

Method 0050_26A

Hydrogen Halide and Halogen Emissions/Stationary Sources (Mod) by Method 0050_26A

FORM III
HPLC/IC LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Knoxville Job No.: 140-13157-1

SDG No.:

Matrix: Air Level: Low Lab File ID: 13140-0009818-003.d

Lab ID: LCS 140-24919/1-A Client ID:

COMPOUND	SPIKE ADDED (ug/Sample)	LCS CONCENTRATION (ug/Sample)	LCS % REC	QC LIMITS REC	#
Hydrogen Chloride	77.1	76.95	100	90-110	
Hydrogen Fluoride	79.0	79.53	101	90-110	

Column to be used to flag recovery and RPD values

FORM III 0050/26A

FORM III
HPLC/IC LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Knoxville Job No.: 140-13157-1

SDG No.:

Matrix: Air Level: Low Lab File ID: 14140-0009818-004.d

Lab ID: LCSD 140-24919/2-A Client ID:

COMPOUND	SPIKE ADDED (ug/Sample)	LCSD CONCENTRATION (ug/Sample)	LCSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Hydrogen Chloride	77.1	76.90	100	0	20	90-110	
Hydrogen Fluoride	79.0	78.94	100	1	20	90-110	

Column to be used to flag recovery and RPD values

FORM III 0050/26A

FORM III
HPLC/IC MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Knoxville Job No.: 140-13157-1

SDG No.:

Matrix: Air Level: Low Lab File ID: 27140-0009818-017.d

Lab ID: 140-13157-4 MS Client ID: M26-3 MS

COMPOUND	SPIKE ADDED (ug/Sample)	SAMPLE CONCENTRATION (ug/Sample)	MS CONCENTRATION (ug/Sample)	MS % REC	QC LIMITS REC	#
Hydrogen Fluoride	13700	6320	19830	99	75-125	H

Column to be used to flag recovery and RPD values

FORM III 0050/26A

FORM III
HPLC/IC MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Knoxville Job No.: 140-13157-1

SDG No.:

Matrix: Air Level: Low Lab File ID: 30140-0009818-020.d

Lab ID: 140-13157-4 MS Client ID: M26-3 MS

COMPOUND	SPIKE ADDED (ug/Sample)	SAMPLE CONCENTRATION (ug/Sample)	MS CONCENTRATION (ug/Sample)	MS % REC	QC LIMITS REC	#
Hydrogen Chloride	835000	268000	1098000	99	75-125	H

Column to be used to flag recovery and RPD values

FORM III 0050/26A

FORM III
HPLC/IC MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Knoxville Job No.: 140-13157-1

SDG No.:

Matrix: Air Level: Low Lab File ID: 28140-0009818-018.d

Lab ID: 140-13157-4 MSD Client ID: M26-3 MSD

COMPOUND	SPIKE ADDED (ug/Sample)	MSD CONCENTRATION (ug/Sample)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Hydrogen Fluoride	13700	19690	98	1	20	75-125	H

Column to be used to flag recovery and RPD values

FORM III 0050/26A

FORM III
HPLC/IC MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Knoxville Job No.: 140-13157-1

SDG No.:

Matrix: Air Level: Low Lab File ID: 31140-0009818-021.d

Lab ID: 140-13157-4 MSD Client ID: M26-3 MSD

COMPOUND	SPIKE ADDED (ug/Sample)	MSD CONCENTRATION (ug/Sample)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Hydrogen Chloride	835000	1096000	99	0	20	75-125	H

Column to be used to flag recovery and RPD values

FORM III 0050/26A

FORM IV
HPLC/IC METHOD BLANK SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-13157-1

SDG No.:

Lab File ID: 15140-0009818-005.d Lab Sample ID: MB 140-24919/3-A

Matrix: Air Date Extracted: 10/29/2018 00:00

Instrument ID: 1500 Date Analyzed: 10/29/2018 10:20

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 140-24919/1-A	13140-00098 18-003.d	10/29/2018 09:45
	LCSD 140-24919/2-A	14140-00098 18-004.d	10/29/2018 10:02
M26-REAGENT BLANK	140-13157-1	17140-00098 18-007.d	10/29/2018 10:55
M26-1	140-13157-2	20140-00098 18-010.d	10/29/2018 11:54
M26-2	140-13157-3	22140-00098 18-012.d	10/29/2018 12:29
M26-3 MS	140-13157-4 MS	27140-00098 18-017.d	10/29/2018 13:56
M26-3 MSD	140-13157-4 MSD	28140-00098 18-018.d	10/29/2018 14:13
M26-3	140-13157-4	29140-00098 18-019.d	10/29/2018 14:31
M26-3 MS	140-13157-4 MS	30140-00098 18-020.d	10/29/2018 14:48
M26-3 MSD	140-13157-4 MSD	31140-00098 18-021.d	10/29/2018 15:06

FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville
Job No.: 140-13157-1
SDG No.:
Client Sample ID: M26-REAGENT BLANK
Lab Sample ID: 140-13157-1
Matrix: Air
Lab File ID: 17140-0009818-007.d
Analysis Method: 0050/26A
Date Collected: 10/25/2018 00:00
Extraction Method: 0050/26A
Date Extracted: 10/29/2018 00:00
Sample wt/vol: 1(Sample)
Date Analyzed: 10/29/2018 10:55
Con. Extract Vol.: 100(mL)
Dilution Factor: 2
Injection Volume: 1(uL)
GC Column: AS22 ID:
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 24920
Units: ug/Sample

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
7647-01-0	Hydrogen Chloride	ND		20.6	8.64

TestAmerica Knoxville
Target Compound Quantitation Report

Data File:	\\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\17140-0009818-007.d				
Lims ID:	140-13157-A-1-A				
Client ID:	M26-REAGENT BLANK				
Sample Type:	Client				
Inject. Date:	29-Oct-2018 10:55:00	ALS Bottle#:	0	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	2.0000		
Sample Info:	140-0009818-007				
Misc. Info.:	17 140-13157-a-1-a				
Operator ID:		Instrument ID:	1500		
Method:	\\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\0050_26A_1500.m				
Limit Group:	IC 0050_26A ICAL				
Last Update:	30-Oct-2018 09:14:46	Calib Date:	01-Aug-2018 11:43:00		
Integrator:	Falcon				
Quant Method:	External Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d				
Column 1 :			Det: IC		
Process Host:	XAWRK003				
First Level Reviewer: humphreyj		Date:	30-Oct-2018 09:02:16		

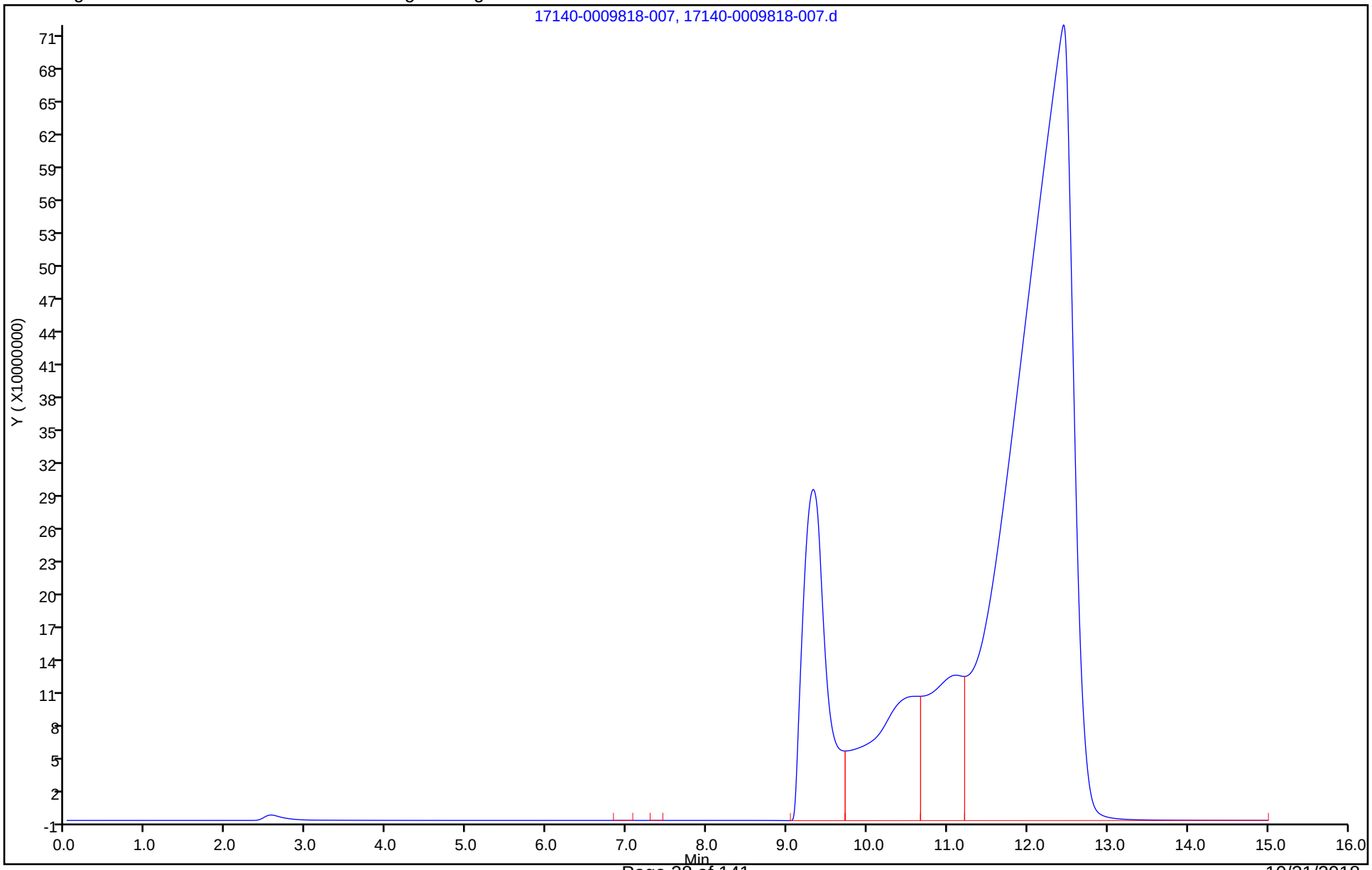
	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	OnCol Amt ug/ml	Flags
	1 Fluoride		3.333			ND	
	2 Chloride		4.742			ND	
S	7 Hydrogen Chloride		0.000			ND	
S	8 Hydro Fluoric Acid		0.000			ND	

Report Date: 30-Oct-2018 09:14:55 Chrom Revision: 2.3 16-Oct-2018 09:58:52

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\17140-0009818-007.d				
Injection Date:	29-Oct-2018 10:55:00	Instrument ID:	1500	Operator ID:	
Lims ID:	140-13157-A-1-A	Lab Sample ID:	140-13157-1	Worklist Smp#:	7
Client ID:	M26-REAGENT BLANK				
Injection Vol:	1.0 ul	Dil. Factor:	2.0000	ALS Bottle#:	0
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville
Job No.: 140-13157-1
SDG No.:
Client Sample ID: M26-1
Lab Sample ID: 140-13157-2
Matrix: Air
Lab File ID: 20140-0009818-010.d
Analysis Method: 0050/26A
Date Collected: 09/18/2018 00:00
Extraction Method: 0050/26A
Date Extracted: 10/29/2018 00:00
Sample wt/vol: 1(Sample)
Date Analyzed: 10/29/2018 11:54
Con. Extract Vol.: 370(mL)
Dilution Factor: 1000
Injection Volume: 1(uL)
GC Column: AS22 ID:
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 24920
Units: ug/Sample

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
7647-01-0	Hydrogen Chloride	360000	H	38100	16000

TestAmerica Knoxville
Target Compound Quantitation Report

Data File:	\\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\20140-0009818-010.d				
Lims ID:	140-13157-A-2-A				
Client ID:	M26-1				
Sample Type:	Client				
Inject. Date:	29-Oct-2018 11:54:00	ALS Bottle#:	0	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1000.0000		
Sample Info:	140-0009818-010				
Misc. Info.:	20 140-13157-a-2-a				
Operator ID:		Instrument ID:	1500		
Method:	\\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\0050_26A_1500.m				
Limit Group:	IC 0050_26A ICAL				
Last Update:	30-Oct-2018 09:14:46	Calib Date:	01-Aug-2018 11:43:00		
Integrator:	Falcon				
Quant Method:	External Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d				
Column 1 :			Det: IC		
Process Host:	XAWRK003				
First Level Reviewer: humphreyj		Date:	30-Oct-2018 09:08:31		

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	OnCol Amt ug/ml	Flags
	1 Fluoride	3.350	3.333	0.017	501080	0.0171	M
	2 Chloride	4.758	4.742	0.016	18536536	0.9463	M
S	7 Hydrogen Chloride					0.9731	
S	8 Hydro Fluoric Acid					0.0180	

QC Flag Legend

Review Flags

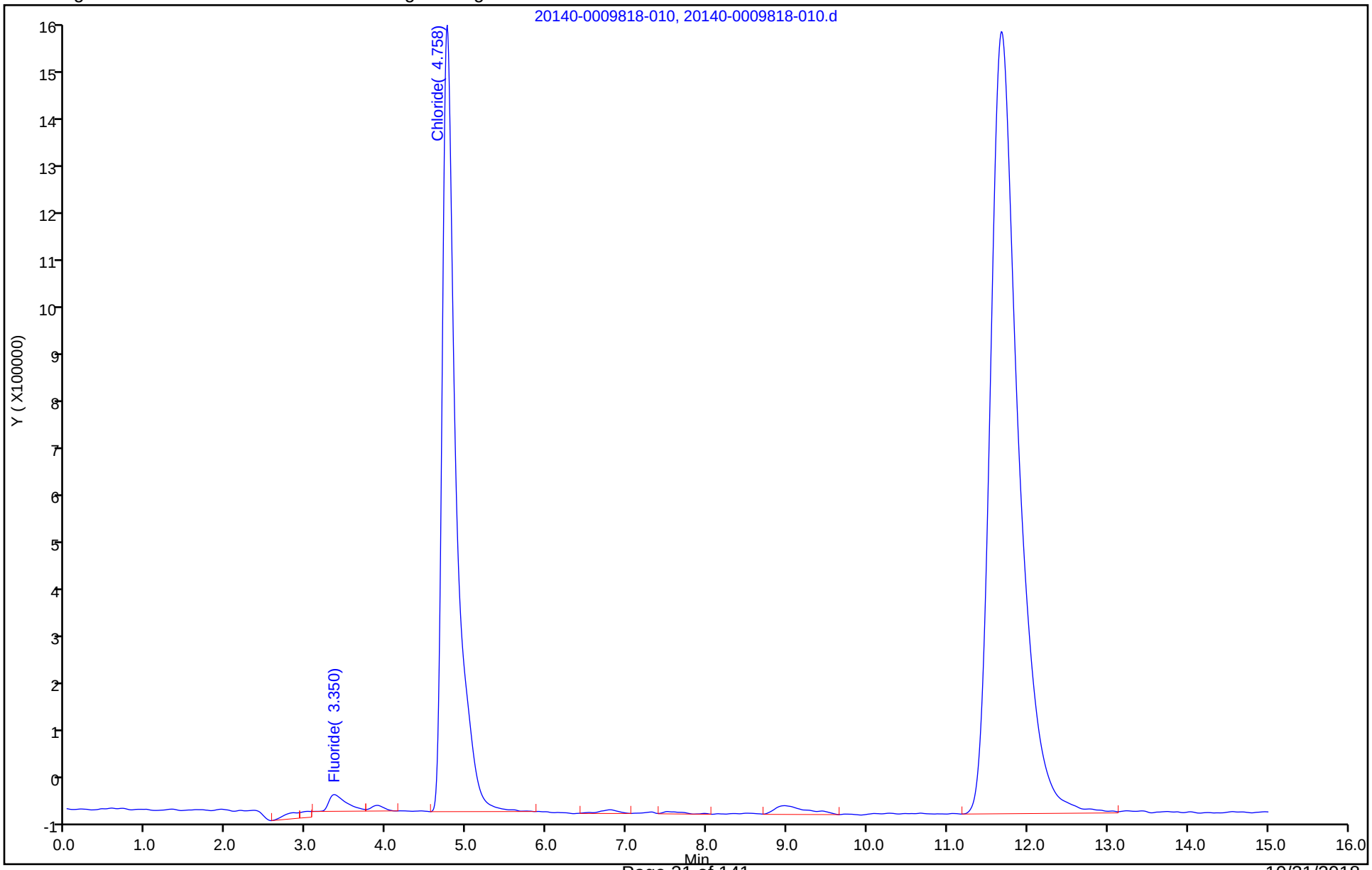
M - Manually Integrated

Report Date: 30-Oct-2018 09:14:59 Chrom Revision: 2.3 16-Oct-2018 09:58:52

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\20140-0009818-010.d				
Injection Date:	29-Oct-2018 11:54:00	Instrument ID:	1500	Operator ID:	
Lims ID:	140-13157-A-2-A	Lab Sample ID:	140-13157-2	Worklist Smp#:	10
Client ID:	M26-1				
Injection Vol:	1.0 ul	Dil. Factor:	1000.0000	ALS Bottle#:	0
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville
Job No.: 140-13157-1
SDG No.:
Client Sample ID: M26-2
Lab Sample ID: 140-13157-3
Matrix: Air
Lab File ID: 22140-0009818-012.d
Analysis Method: 0050/26A
Date Collected: 09/18/2018 00:00
Extraction Method: 0050/26A
Date Extracted: 10/29/2018 00:00
Sample wt/vol: 1(Sample)
Date Analyzed: 10/29/2018 12:29
Con. Extract Vol.: 380(mL)
Dilution Factor: 1000
Injection Volume: 1(uL)
GC Column: AS22 ID:
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 24920
Units: ug/Sample

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
7647-01-0	Hydrogen Chloride	295000	H	39100	16400

TestAmerica Knoxville
Target Compound Quantitation Report

Data File:	\\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\22140-0009818-012.d				
Lims ID:	140-13157-A-3-A				
Client ID:	M26-2				
Sample Type:	Client				
Inject. Date:	29-Oct-2018 12:29:00	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	1.0 ul	Dil. Factor:	1000.0000		
Sample Info:	140-0009818-012				
Misc. Info.:	22 140-13157-a-3-a				
Operator ID:		Instrument ID:	1500		
Method:	\\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\0050_26A_1500.m				
Limit Group:	IC 0050_26A ICAL				
Last Update:	30-Oct-2018 09:14:46	Calib Date:	01-Aug-2018 11:43:00		
Integrator:	Falcon				
Quant Method:	External Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d				
Column 1 :			Det: IC		
Process Host:	XAWRK003				
First Level Reviewer: humphreyj		Date:	30-Oct-2018 09:10:25		

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	OnCol Amt ug/ml	Flags
	1 Fluoride	3.367	3.333	0.034	535795	0.0183	M
	2 Chloride	4.758	4.742	0.016	14739182	0.7548	M
S	7 Hydrogen Chloride					0.7763	
S	8 Hydro Fluoric Acid					0.0193	

QC Flag Legend

Review Flags

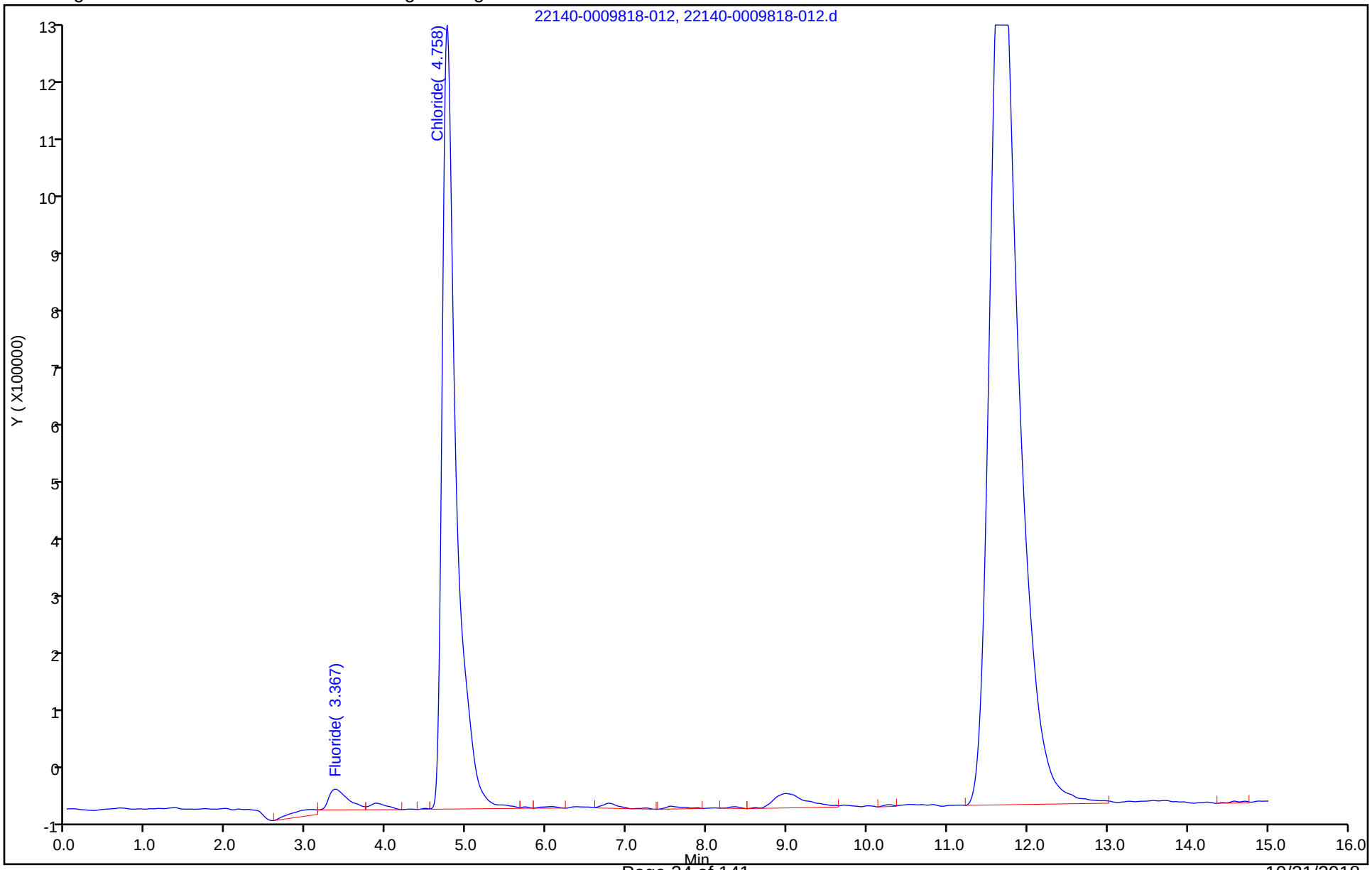
M - Manually Integrated

Report Date: 30-Oct-2018 09:15:02 Chrom Revision: 2.3 16-Oct-2018 09:58:52

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\22140-0009818-012.d				
Injection Date:	29-Oct-2018 12:29:00	Instrument ID:	1500	Operator ID:	
Lims ID:	140-13157-A-3-A	Lab Sample ID:	140-13157-3	Worklist Smp#:	12
Client ID:	M26-2				
Injection Vol:	1.0 ul	Dil. Factor:	1000.0000	ALS Bottle#:	0
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville | Job No.: 140-13157-1

SDG No.:

Client Sample ID: M26-3 | Lab Sample ID: 140-13157-4

Matrix: Air | Lab File ID: 29140-0009818-019.d

Analysis Method: 0050/26A | Date Collected: 09/18/2018 00:00

Extraction Method: 0050/26A | Date Extracted: 10/29/2018 00:00

Sample wt/vol: 1(Sample) | Date Analyzed: 10/29/2018 14:31

Con. Extract Vol.: 325(mL) | Dilution Factor: 2500

Injection Volume: 1(uL) | GC Column: AS22 ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 24920 | Units: ug/Sample

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
7647-01-0	Hydrogen Chloride	268000	H	83600	35100

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\29140-0009818-019.d
Lims ID: 140-13157-A-4-A
Client ID: M26-3
Sample Type: Client
Inject. Date: 29-Oct-2018 14:31:00 ALS Bottle#: 0 Worklist Smp#: 19
Injection Vol: 1.0 ul Dil. Factor: 2500.0000
Sample Info: 140-0009818-019
Misc. Info.: 29 140-13157-a-4-a
Operator ID: Instrument ID: 1500

Method: \\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 30-Oct-2018 09:15:03 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK003

First Level Reviewer: humphreyj Date: 30-Oct-2018 09:13:14

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	OnCol Amt ug/ml	Flags
	1 Fluoride	3.350	3.333	0.017	301326	0.0103	Ma
	2 Chloride	4.750	4.742	0.008	6209169	0.3203	Ma
	3 Nitrite as N		5.683			ND	
	4 Bromide	6.933	6.750	0.183	13277	0.001551	
	5 Nitrate as N	7.592	7.583	0.009	1341176	0.0280	
	6 Iodide		14.800			ND	
S	7 Hydrogen Chloride					0.3294	
S	8 Hydro Fluoric Acid					0.0108	
S	9 Hydrobromic Acid					0.001571	
S	10 Nitric acid					0.1260	
S	11 Nitrous Acid		0.000			ND	
S	12 Br					0.001551	
S	13 Chlorine					0.3203	

QC Flag Legend

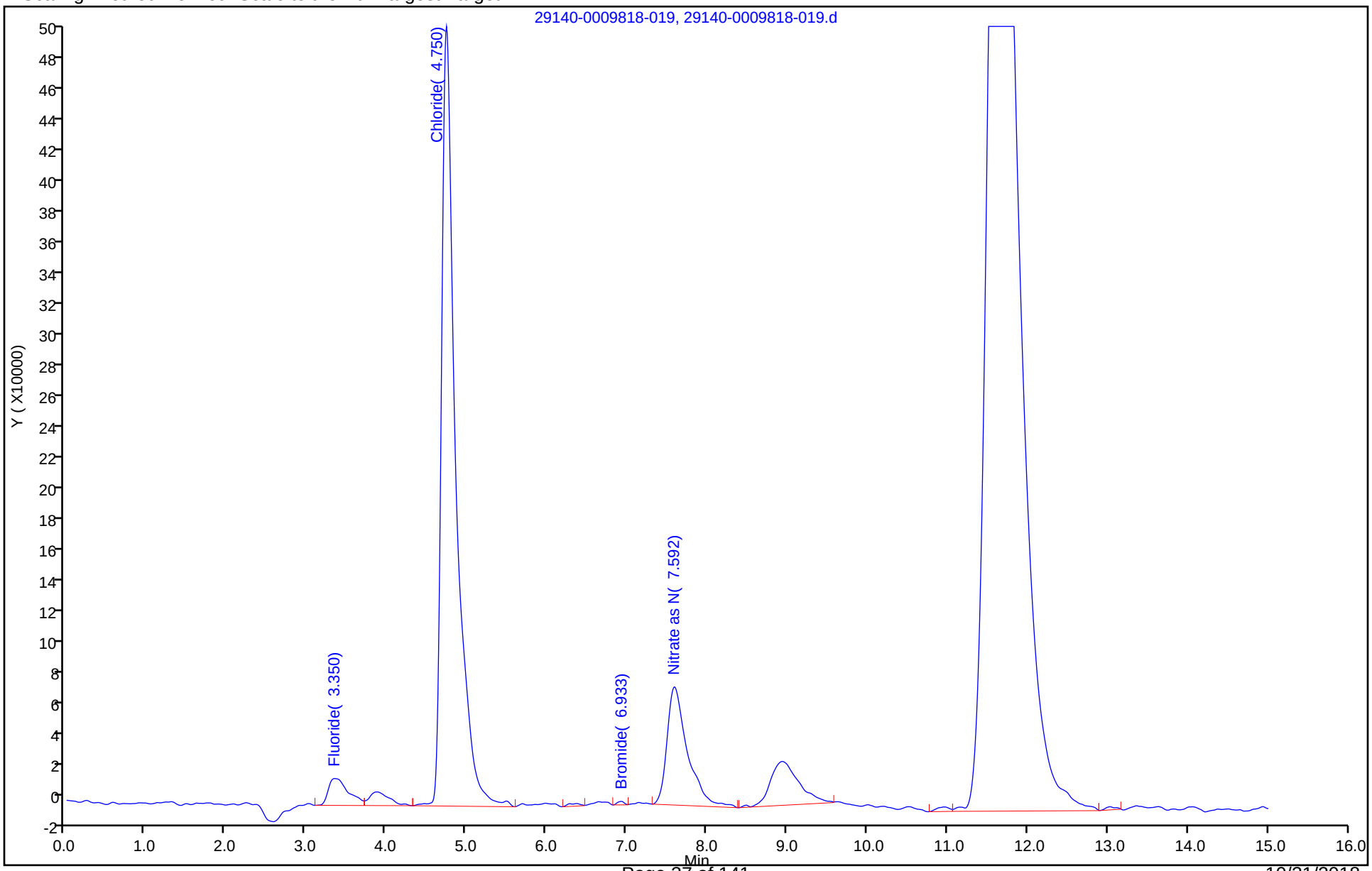
Review Flags
M - Manually Integrated
a - User Assigned ID

Report Date: 30-Oct-2018 09:15:14 Chrom Revision: 2.3 16-Oct-2018 09:58:52

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\29140-0009818-019.d				
Injection Date:	29-Oct-2018 14:31:00	Instrument ID:	1500	Operator ID:	
Lims ID:	140-13157-A-4-A	Lab Sample ID:	140-13157-4	Worklist Smp#:	19
Client ID:	M26-3				
Injection Vol:	1.0 ul	Dil. Factor:	2500.0000	ALS Bottle#:	0
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



FORM VI
HPLC/IC BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RETENTION TIME SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-13157-1 Analy Batch No.: 22408

SDG No.:

Instrument ID: 1500 GC Column: AS22 ID: Heated Purge: (Y/N) N

Calibration Start Date: 08/01/2018 09:59 Calibration End Date: 08/01/2018 11:43 Calibration ID: 1574

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 140-22408/1	1140-0008938-001.d
Level 2	IC 140-22408/2	2140-0008938-002.d
Level 3	IC 140-22408/3	3140-0008938-003.d
Level 4	IC 140-22408/4	4140-0008938-004.d
Level 5	IC 140-22408/5	5140-0008938-005.d
Level 6	IC 140-22408/6	6140-0008938-006.d
Level 7	IC 140-22408/7	7140-0008938-007.d

ANALYTE	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7				RT WINDOW	AVG RT
Fluoride	3.350	3.358	3.350	3.350	3.358	3.358	3.358				3.100 - 3.600	3.355
Chloride	4.792	4.792	4.783	4.792	4.792	4.792	4.792				4.542 - 5.042	4.791
Nitrite as N	5.742	5.742	5.742	5.742	5.750	5.750	5.750				5.492 - 5.992	5.745
Bromide	6.842	6.842	6.833	6.833	6.842	6.833	6.833				6.583 - 7.083	6.837
Nitrate as N	7.700	7.700	7.700	7.700	7.700	7.700	7.692				7.450 - 7.950	7.699

FORM VI
HPLC/IC BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Knoxville Job No.: 140-13157-1 Analy Batch No.: 22408

SDG No.:

Instrument ID: 1500 GC Column: AS22 ID: Heated Purge: (Y/N) N

Calibration Start Date: 08/01/2018 09:59 Calibration End Date: 08/01/2018 11:43 Calibration ID: 1574

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 140-22408/1	1140-0008938-001.d
Level 2	IC 140-22408/2	2140-0008938-002.d
Level 3	IC 140-22408/3	3140-0008938-003.d
Level 4	IC 140-22408/4	4140-0008938-004.d
Level 5	IC 140-22408/5	5140-0008938-005.d
Level 6	IC 140-22408/6	6140-0008938-006.d
Level 7	IC 140-22408/7	7140-0008938-007.d

ANALYTE	CF				CURVE TYPE	COEFFICIENT			#	MIN CF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 5	LVL 2 LVL 6	LVL 3 LVL 7	LVL 4		B	M1	M2								
Fluoride	28194100 29765896	30583920 30197187	28128890 30922296	28371136	QuaF		29257766.4	838167.186						1.0000		0.9900
Chloride	21952980 19204754	22868907 19568582	19891950 19942220	19950328	QuaF		19278073.5	328565.772						1.0000		0.9900
Nitrite as N	42885420 42385794	41188280 43274191	42565770 44413132	41378168	QuaF		41868360.4	1278616.29						1.0000		0.9900
Bromide	8823960 8467822	8586813 8688407	8435780 8693807	8470672	QuaF		8558463.68	70307.7554						1.0000		0.9900
Nitrate as N	51703920 48511614	49121120 49767455	49069780 51581081	48249644	QuaF		47840529.8	1871724.06						1.0000		0.9900

Note: The M1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI
HPLC/IC BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Knoxville Job No.: 140-13157-1 Analy Batch No.: 22408

SDG No.:

Instrument ID: 1500 GC Column: AS22 ID: Heated Purge: (Y/N) N

Calibration Start Date: 08/01/2018 09:59 Calibration End Date: 08/01/2018 11:43 Calibration ID: 1574

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 140-22408/1	1140-0008938-001.d
Level 2	IC 140-22408/2	2140-0008938-002.d
Level 3	IC 140-22408/3	3140-0008938-003.d
Level 4	IC 140-22408/4	4140-0008938-004.d
Level 5	IC 140-22408/5	5140-0008938-005.d
Level 6	IC 140-22408/6	6140-0008938-006.d
Level 7	IC 140-22408/7	7140-0008938-007.d

ANALYTE	CURVE TYPE	RESPONSE					CONCENTRATION (UG/ML)				
		LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Fluoride	QuaF	1409705 30197187	2293794 61844592	2812889	7092784	14882948	0.0500 1.00	0.0750 2.00	0.100	0.250	0.500
Chloride	QuaF	1097649 19568582	1715168 39884440	1989195	4987582	9602377	0.0500 1.00	0.0750 2.00	0.100	0.250	0.500
Nitrite as N	QuaF	2144271 43274191	3089121 88826264	4256577	10344542	21192897	0.0500 1.00	0.0750 2.00	0.100	0.250	0.500
Bromide	QuaF	441198 8688407	644011 17387614	843578	2117668	4233911	0.0500 1.00	0.0750 2.00	0.100	0.250	0.500
Nitrate as N	QuaF	2585196 49767455	3684084 103162161	4906978	12062411	24255807	0.0500 1.00	0.0750 2.00	0.100	0.250	0.500

Curve Type Legend:

QuaF = Quadratic forced zero

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\1140-0008938-001.d
Lims ID: IC 1
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 01-Aug-2018 09:59:00 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0008938-001
Misc. Info.: 1 ic 1
Operator ID: Instrument ID: 1500
Sublist: chrom-0050_26A_1500*sub3

Method: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 20-Aug-2018 14:08:39 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK048

First Level Reviewer: wasmundd Date: 20-Aug-2018 14:02:27

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 Fluoride	3.350	3.350	0.000	1409705	0.0500	0.0481	
2 Chloride	4.792	4.792	0.000	1097649	0.0500	0.0569	
3 Nitrite as N	5.742	5.742	0.000	2144271	0.0500	0.0511	
4 Bromide	6.842	6.833	0.009	441198	0.0500	0.0515	
5 Nitrate as N	7.700	7.700	0.000	2585196	0.0500	0.0539	
S 7 Hydrogen Chloride					0.0514	0.0585	
S 8 Hydro Fluoric Acid					0.0527	0.0507	
S 9 Hydrobromic Acid					0.0506	0.0522	
S 10 Nitric acid					0.2249	0.2426	
S 11 Nitrous Acid					0.1678	0.1716	
S 12 Br					0.0500	0.0515	
S 13 Chlorine					0.0500	0.0569	

Reagents:

85L1M26AP_00020 Amount Added: 10.00 Units: mL

Report Date: 20-Aug-2018 14:08:40 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\1140-0008938-001.d

Injection Date: 01-Aug-2018 09:59:00 Instrument ID: 1500 Operator ID:

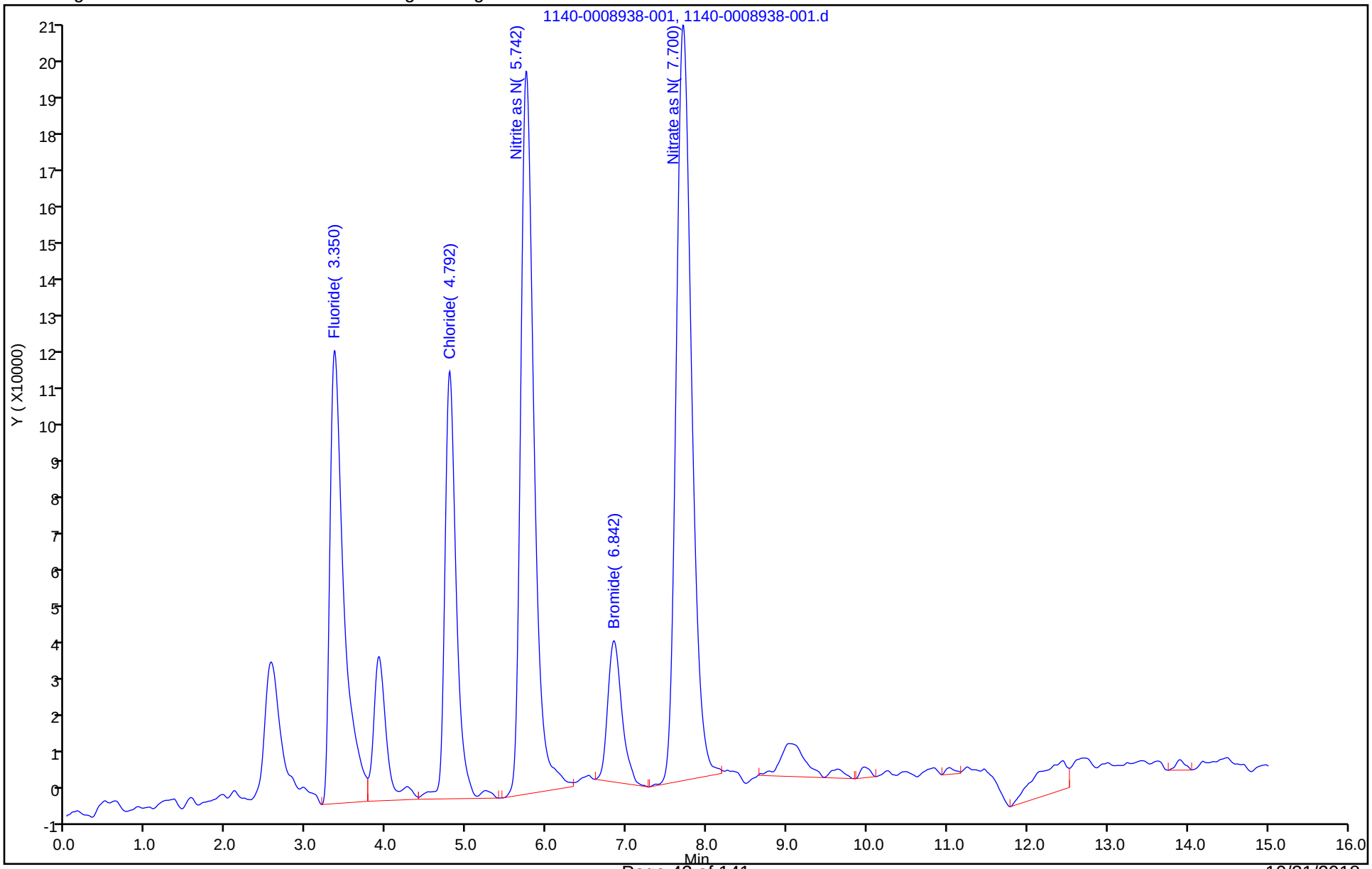
Lims ID: IC 1 Worklist Smp#: 1

Client ID:

Injection Vol: 1.0 ul Dil. Factor: 1.0000 ALS Bottle#: 0

Method: 0050_26A_1500 Limit Group: IC 0050_26A ICAL

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\2140-0008938-002.d
Lims ID: IC 2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 01-Aug-2018 10:16:00 ALS Bottle#: 0 Worklist Smp#: 2
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0008938-002
Misc. Info.: 2 ic 2
Operator ID: Instrument ID: 1500
Sublist: chrom-0050_26A_1500*sub3

Method: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 20-Aug-2018 14:08:40 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK048

First Level Reviewer: humphreyj Date: 01-Aug-2018 12:59:42

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride	3.358	3.350	0.008	2293794	0.0750	0.0782	M
	2 Chloride	4.792	4.792	0.000	1715168	0.0750	0.0888	M
	3 Nitrite as N	5.742	5.742	0.000	3089121	0.0750	0.0736	M
	4 Bromide	6.842	6.833	0.009	644011	0.0750	0.0752	M
	5 Nitrate as N	7.700	7.700	0.000	3684084	0.0750	0.0768	M
S	7 Hydrogen Chloride					0.0771	0.0914	
S	8 Hydro Fluoric Acid					0.0790	0.0824	
S	9 Hydrobromic Acid					0.0759	0.0761	
S	10 Nitric acid					0.3374	0.3454	
S	11 Nitrous Acid					0.2517	0.2471	
S	12 Br					0.0750	0.0752	
S	13 Chlorine					0.0750	0.0888	

QC Flag Legend

Review Flags
M - Manually Integrated

Reagents:

85L2M26AP_00018 Amount Added: 10.00 Units: mL

Report Date: 20-Aug-2018 14:08:41 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\2140-0008938-002.d

Injection Date: 01-Aug-2018 10:16:00 Instrument ID: 1500 Operator ID:

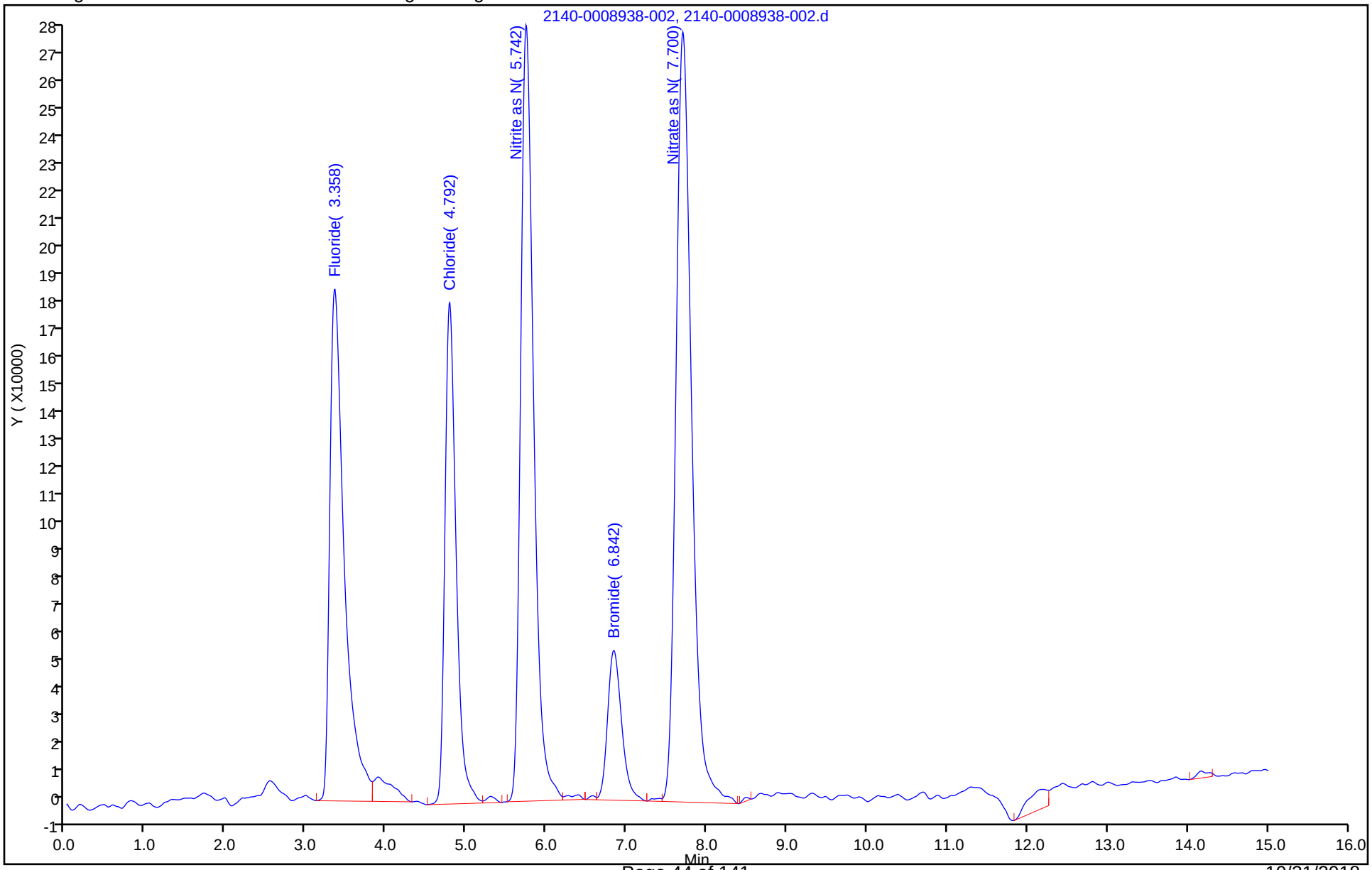
Lims ID: IC 2 Worklist Smp#: 2

Client ID:

Injection Vol: 1.0 ul Dil. Factor: 1.0000 ALS Bottle#: 0

Method: 0050_26A_1500 Limit Group: IC 0050_26A ICAL

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



Manual Integration/User Assign Peak Report

TestAmerica Knoxville

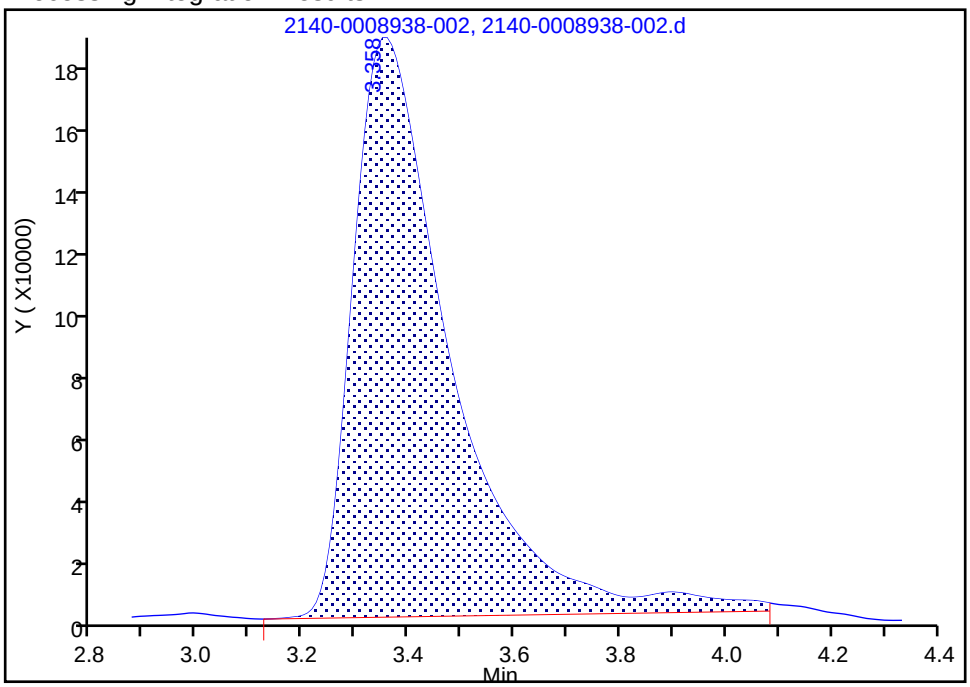
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\2140-0008938-002.d				
Injection Date:	01-Aug-2018 10:16:00	Instrument ID:	1500		
Lims ID:	IC 2				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	2
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

1 Fluoride, CAS: 16984-48-8

Signal: 1

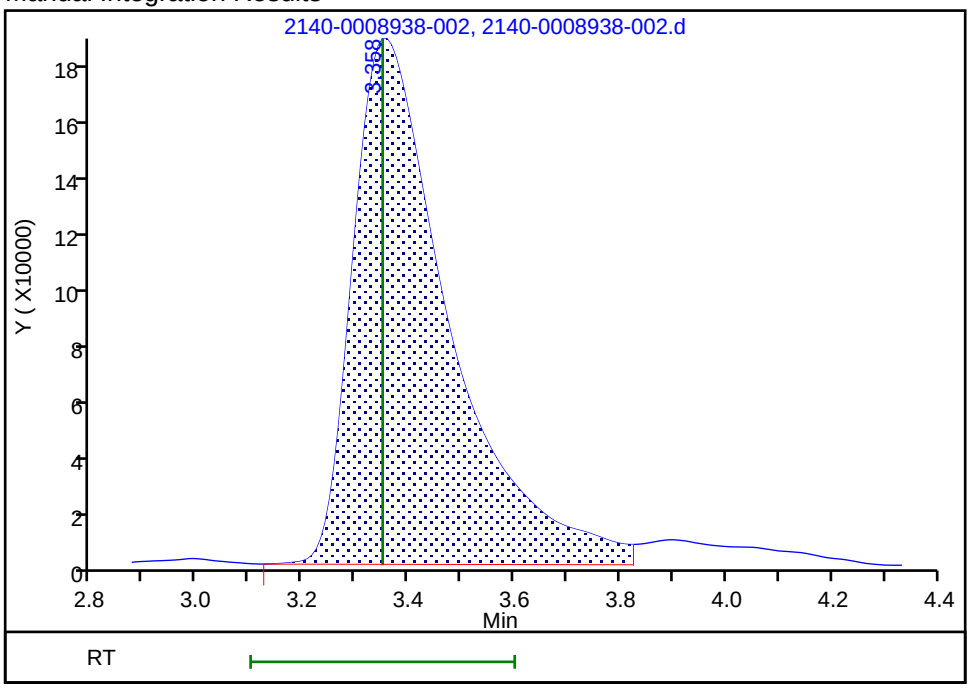
Processing Integration Results

RT: 3.36
Area: 2322695
Amount: 0.078735
Amount Units: ug/ml



Manual Integration Results

RT: 3.36
Area: 2293794
Amount: 0.078224
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 12:59:35

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

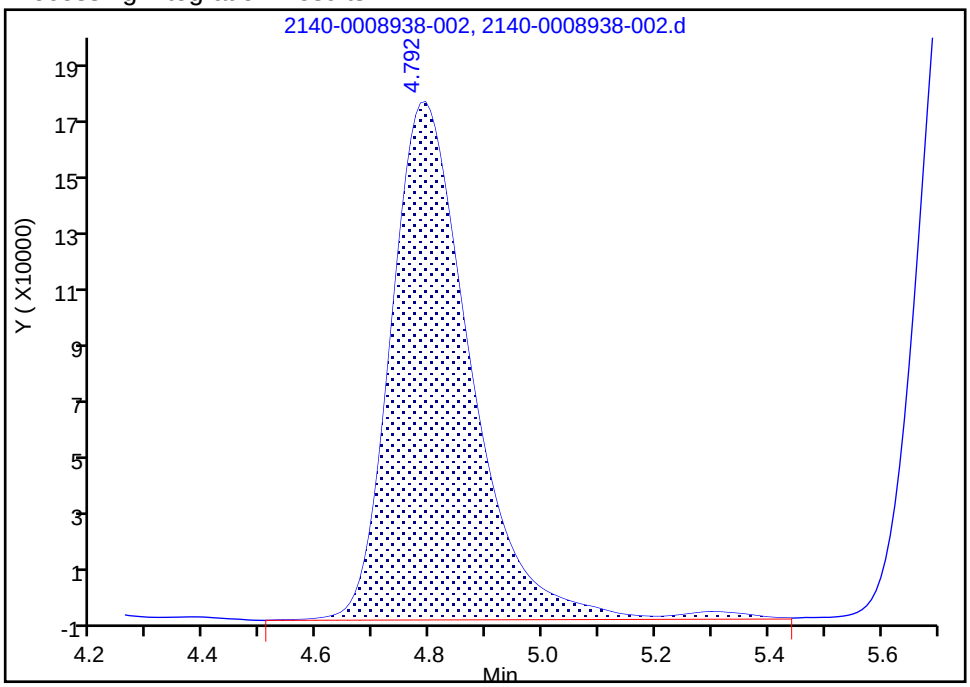
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\2140-0008938-002.d				
Injection Date:	01-Aug-2018 10:16:00	Instrument ID:	1500		
Lims ID:	IC 2				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	2
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

2 Chloride, CAS: 16887-00-6

Signal: 1

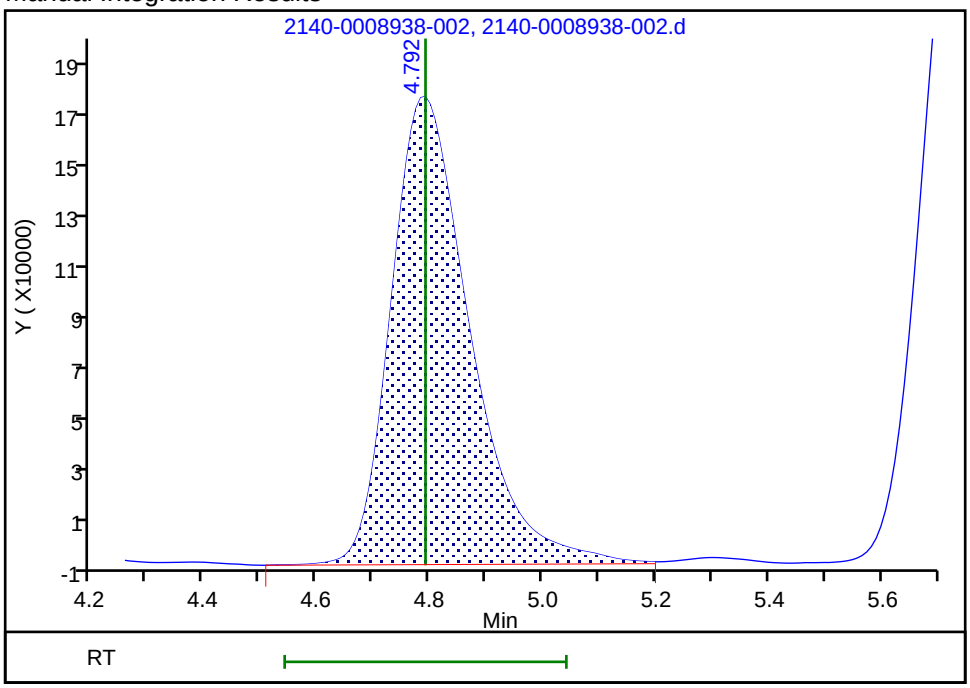
Processing Integration Results

RT: 4.79
Area: 1742088
Amount: 0.090074
Amount Units: ug/ml



Manual Integration Results

RT: 4.79
Area: 1715168
Amount: 0.088835
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 12:59:28

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

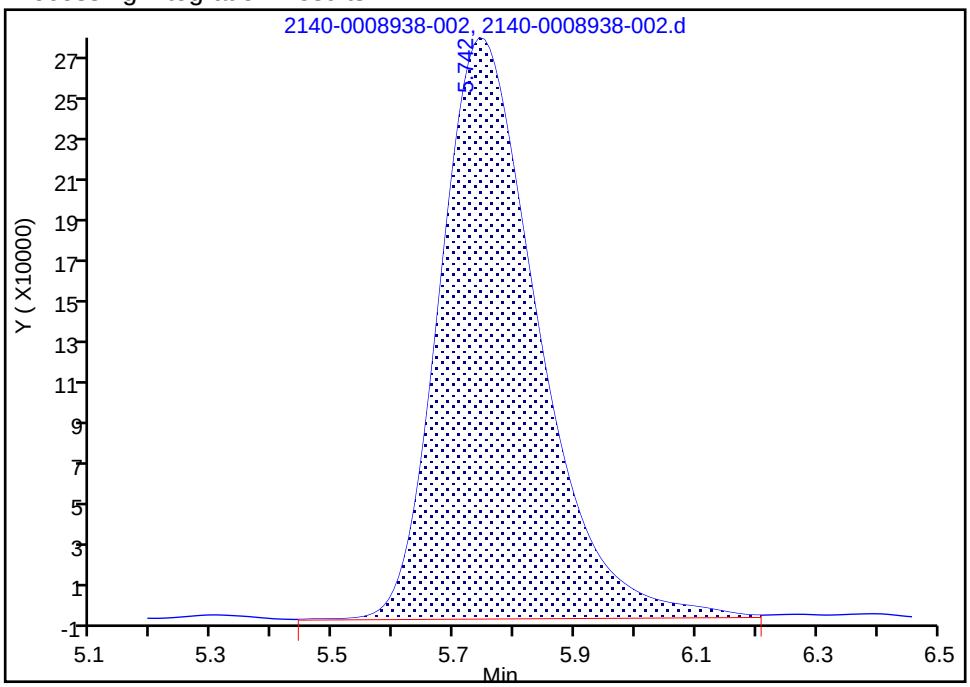
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\2140-0008938-002.d				
Injection Date:	01-Aug-2018 10:16:00	Instrument ID:	1500		
Lims ID:	IC 2				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	2
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

3 Nitrite as N, CAS: 14797-65-0

Signal: 1

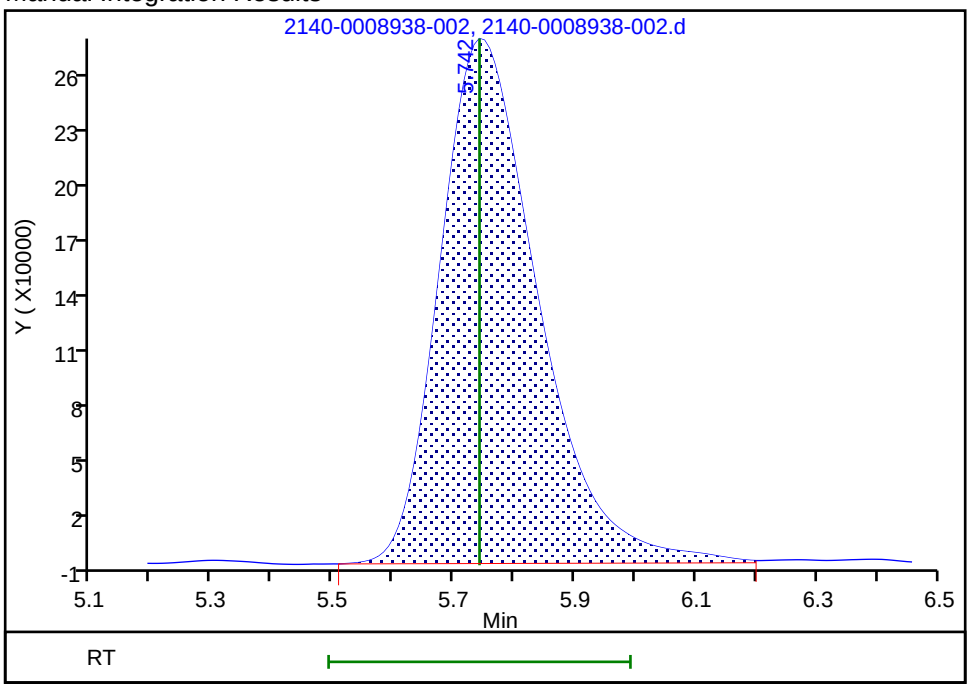
Processing Integration Results

RT: 5.74
Area: 3099703
Amount: 0.073882
Amount Units: ug/ml



Manual Integration Results

RT: 5.74
Area: 3089121
Amount: 0.073616
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 12:59:21

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

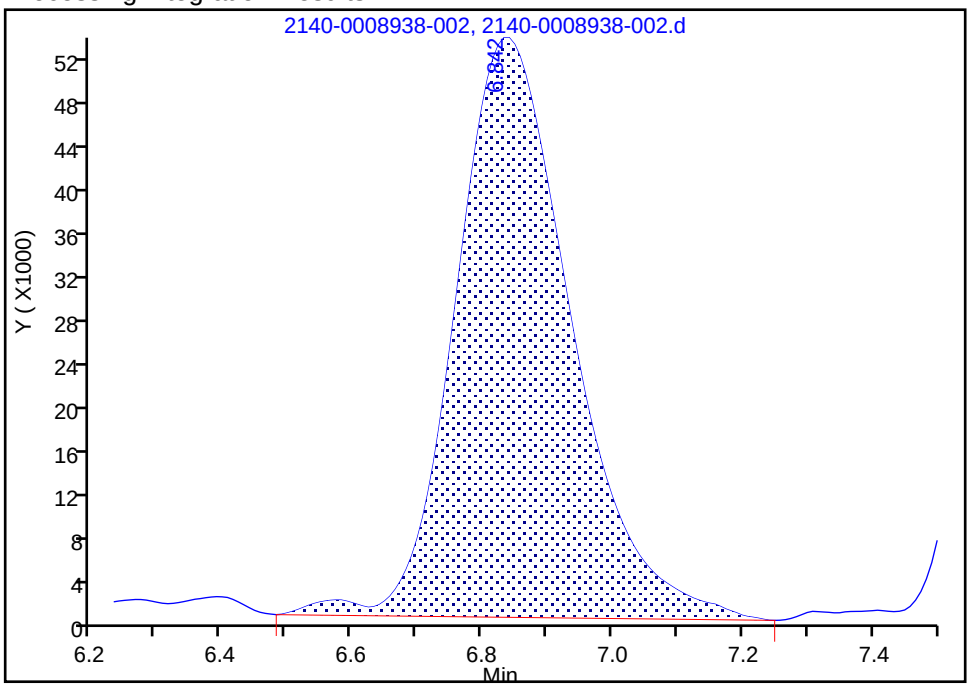
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\2140-0008938-002.d				
Injection Date:	01-Aug-2018 10:16:00	Instrument ID:	1500		
Lims ID:	IC 2				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	2
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

4 Bromide, CAS: 24959-67-9

Signal: 1

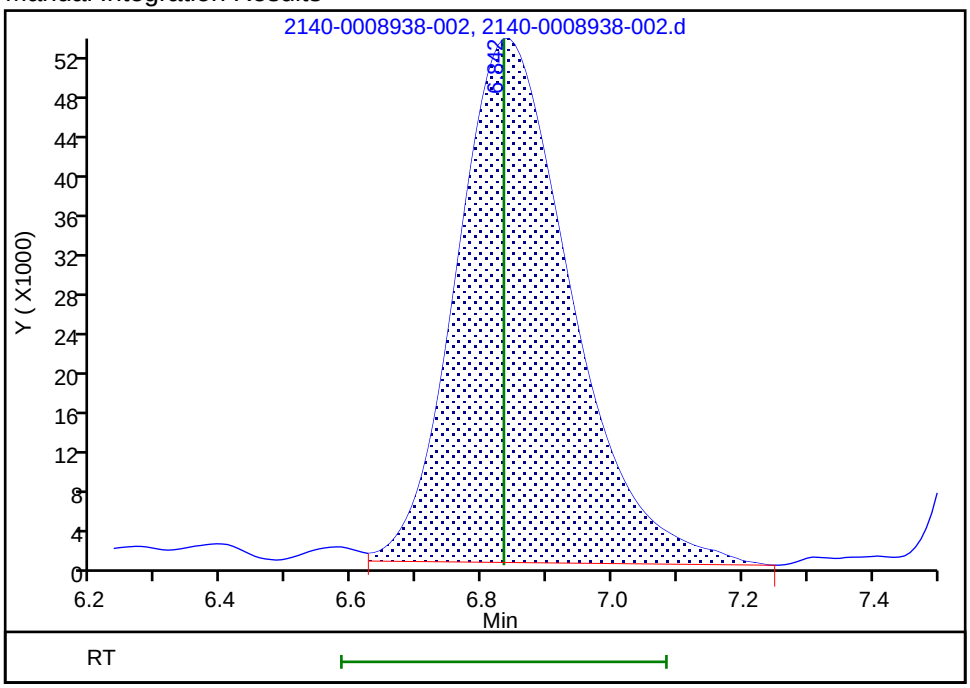
Processing Integration Results

RT: 6.84
Area: 651407
Amount: 0.076017
Amount Units: ug/ml



Manual Integration Results

RT: 6.84
Area: 644011
Amount: 0.075202
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 12:59:14

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

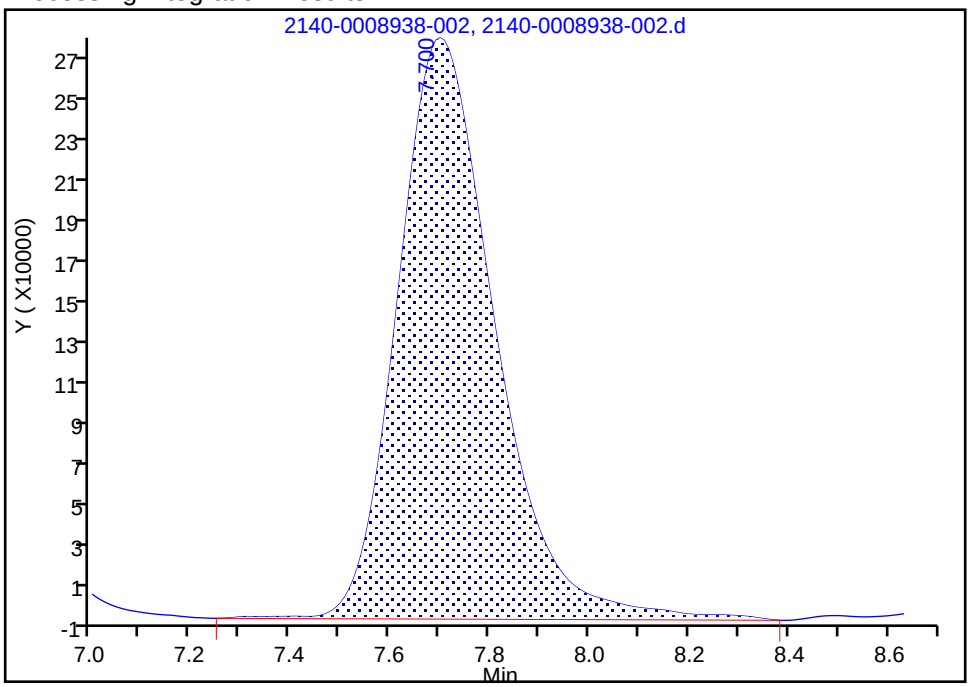
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\2140-0008938-002.d				
Injection Date:	01-Aug-2018 10:16:00	Instrument ID:	1500		
Lims ID:	IC 2				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	2
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

5 Nitrate as N, CAS: 14797-55-8

Signal: 1

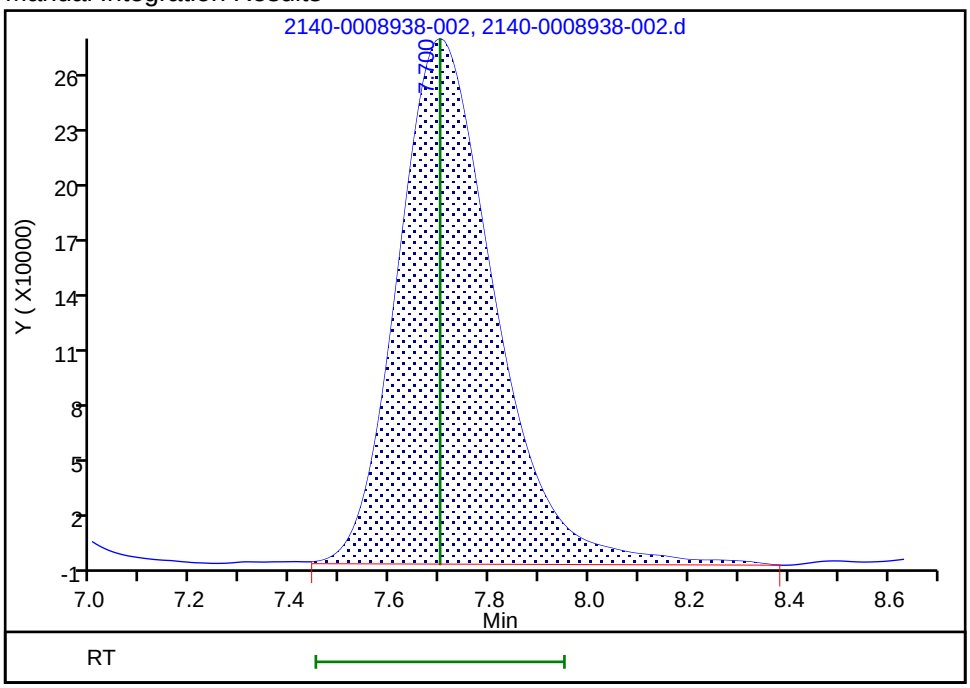
Processing Integration Results

RT: 7.70
Area: 3692558
Amount: 0.099813
Amount Units: ug/ml



Manual Integration Results

RT: 7.70
Area: 3684084
Amount: 0.076777
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 12:59:06

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\3140-0008938-003.d
Lims ID: IC 3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 01-Aug-2018 10:34:00 ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0008938-003
Misc. Info.: 3 ic 3
Operator ID: Instrument ID: 1500
Sublist: chrom-0050_26A_1500*sub3

Method: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 20-Aug-2018 14:08:42 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK048

First Level Reviewer: humphreyj Date: 01-Aug-2018 13:01:16

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride	3.350	3.350	0.000	2812889	0.1000	0.0959	M
	2 Chloride	4.783	4.792	-0.009	1989195	0.1000	0.1030	M
	3 Nitrite as N	5.742	5.742	0.000	4256577	0.1000	0.1014	M
	4 Bromide	6.833	6.833	0.000	843578	0.1000	0.0985	M
	5 Nitrate as N	7.700	7.700	0.000	4906978	0.1000	0.1022	M
S	7 Hydrogen Chloride					0.1028	0.1059	
S	8 Hydro Fluoric Acid					0.1053	0.1010	
S	9 Hydrobromic Acid					0.1013	0.0997	
S	10 Nitric acid					0.4499	0.4596	
S	11 Nitrous Acid					0.3357	0.3402	
S	12 Br					0.1000	0.0985	
S	13 Chlorine					0.1000	0.1030	

QC Flag Legend

Review Flags
M - Manually Integrated

Reagents:

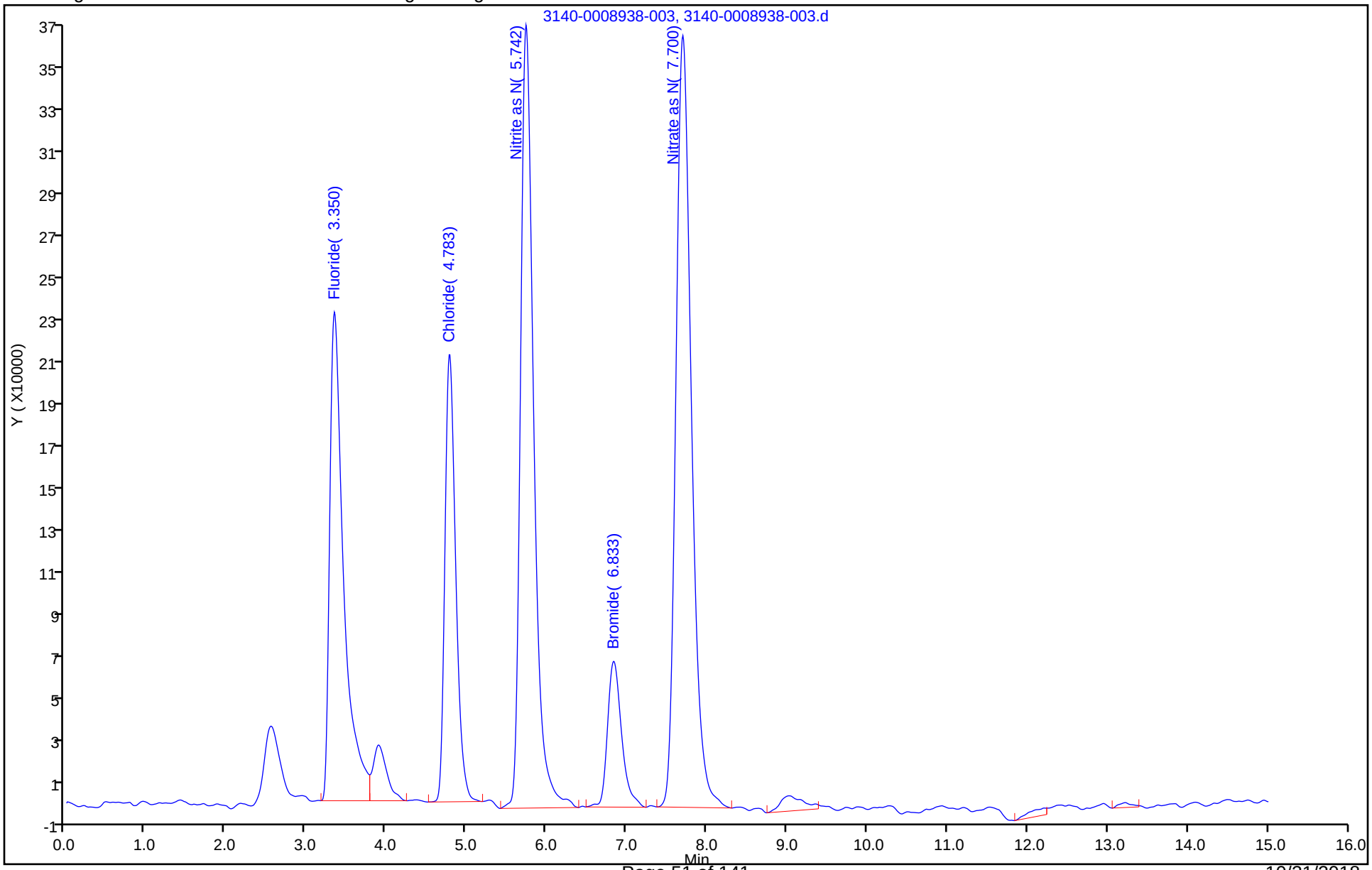
85L3M26AP_00019 Amount Added: 10.00 Units: mL

Report Date: 20-Aug-2018 14:08:43 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\3140-0008938-003.d				
Injection Date:	01-Aug-2018 10:34:00	Instrument ID:	1500	Operator ID:	
Lims ID:	IC 3			Worklist Smp#:	3
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



Manual Integration/User Assign Peak Report

TestAmerica Knoxville

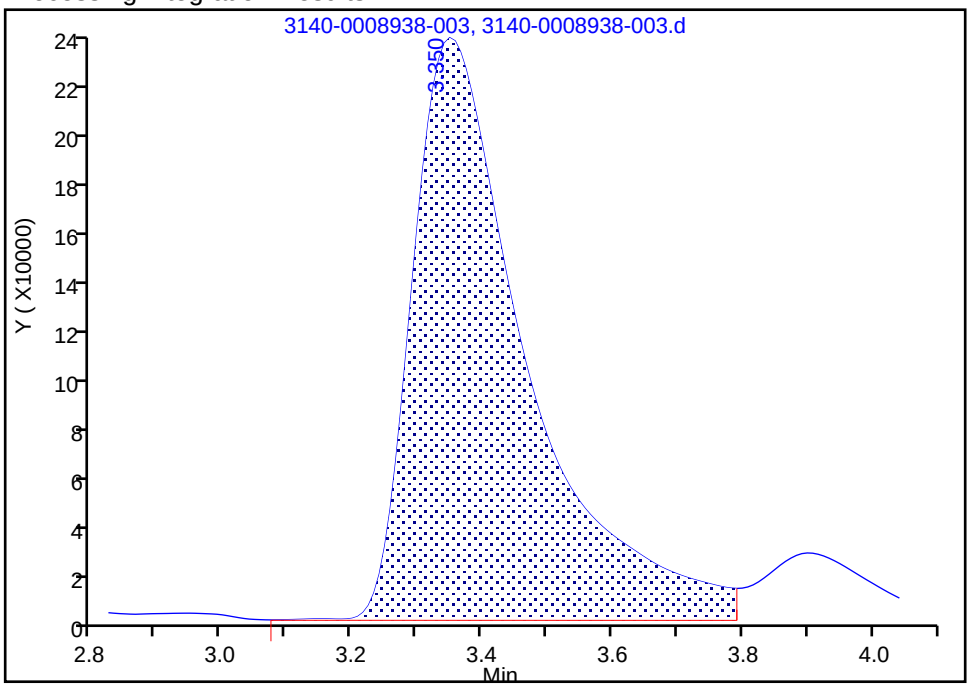
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\3140-0008938-003.d				
Injection Date:	01-Aug-2018 10:34:00	Instrument ID:	1500		
Lims ID:	IC 3				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	3
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

1 Fluoride, CAS: 16984-48-8

Signal: 1

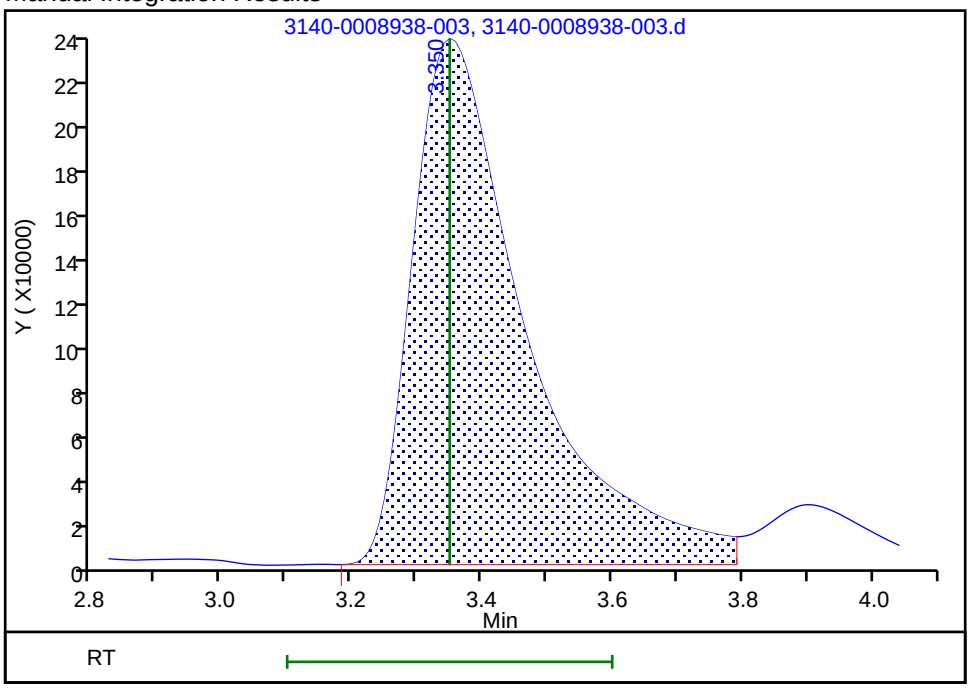
Processing Integration Results

RT: 3.35
Area: 2831252
Amount: 0.095947
Amount Units: ug/ml



Manual Integration Results

RT: 3.35
Area: 2812889
Amount: 0.095878
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 13:01:12
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

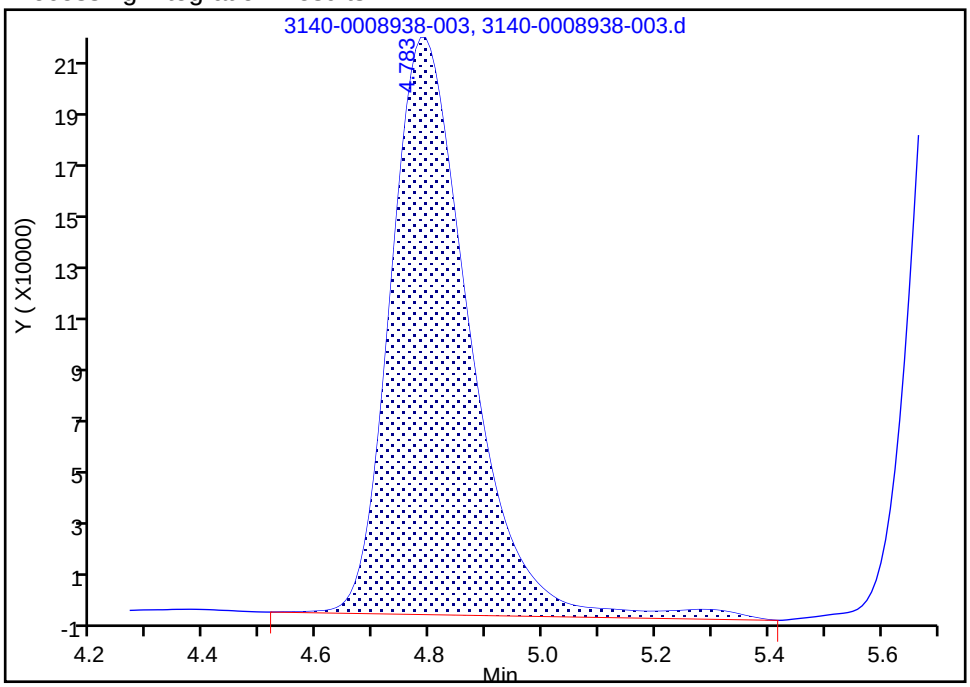
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\3140-0008938-003.d				
Injection Date:	01-Aug-2018 10:34:00	Instrument ID:	1500		
Lims ID:	IC 3				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	3
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

2 Chloride, CAS: 16887-00-6

Signal: 1

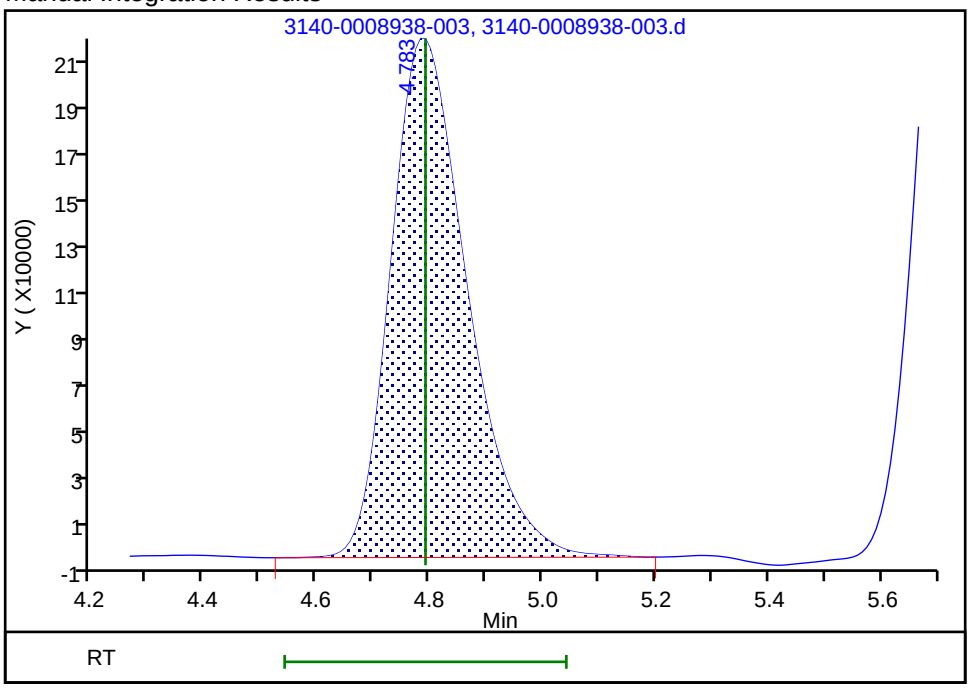
Processing Integration Results

RT: 4.78
Area: 2072417
Amount: 0.107148
Amount Units: ug/ml



Manual Integration Results

RT: 4.78
Area: 1989195
Amount: 0.103003
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 13:00:15

Audit Action: Manually Integrated Audit Reason: Baseline Smoothing

TestAmerica Knoxville

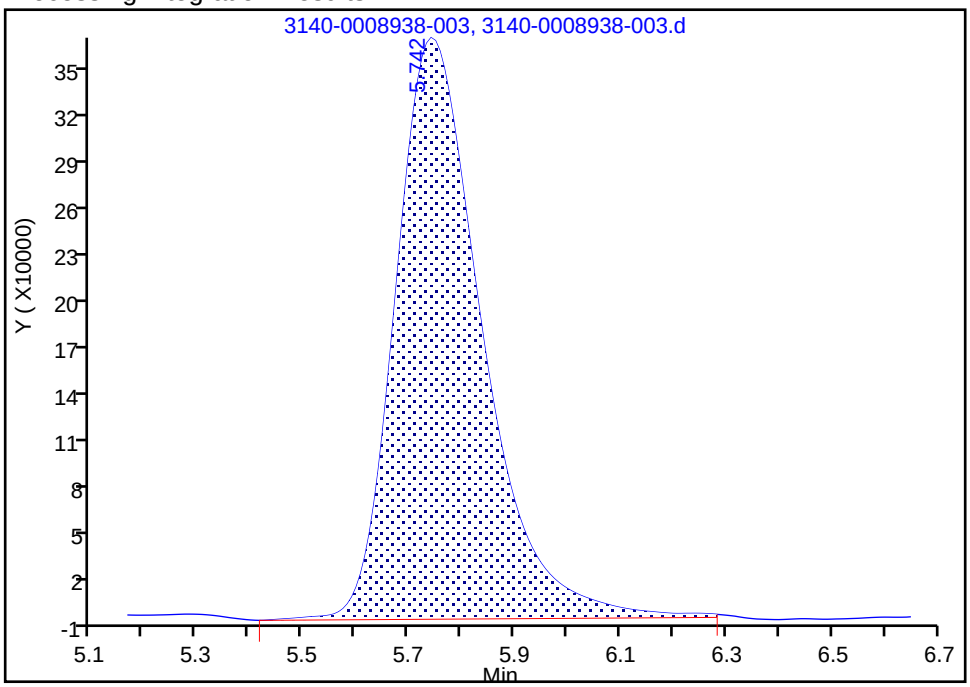
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\3140-0008938-003.d				
Injection Date:	01-Aug-2018 10:34:00	Instrument ID:	1500		
Lims ID:	IC 3				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	3
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

3 Nitrite as N, CAS: 14797-65-0

Signal: 1

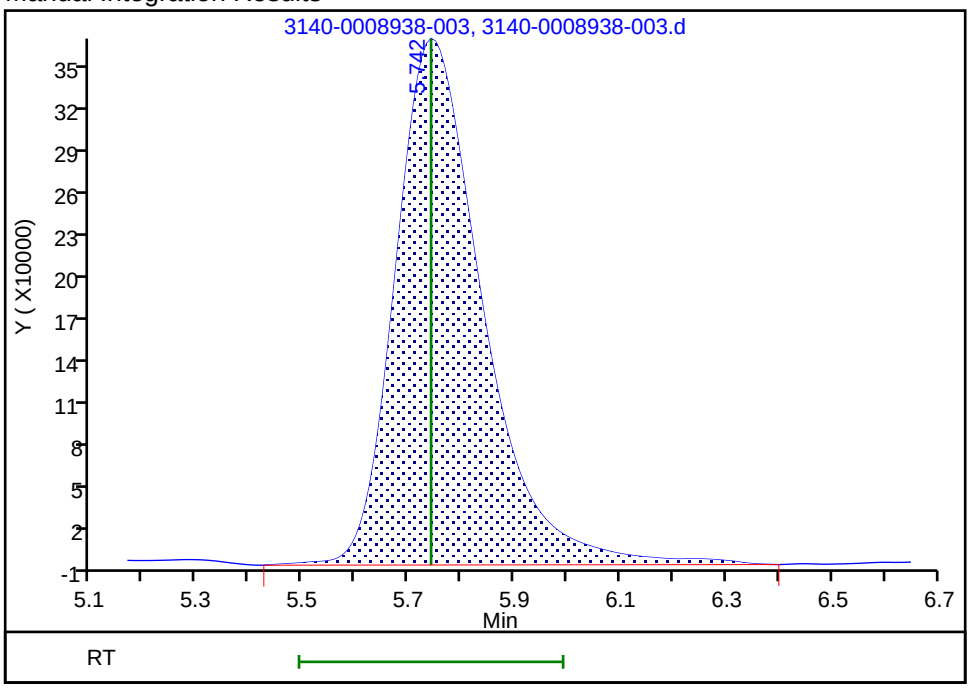
Processing Integration Results

RT: 5.74
Area: 4210345
Amount: 0.100277
Amount Units: ug/ml



Manual Integration Results

RT: 5.74
Area: 4256577
Amount: 0.101352
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 13:00:24
Audit Action: Manually Integrated Audit Reason: Baseline Smoothing

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

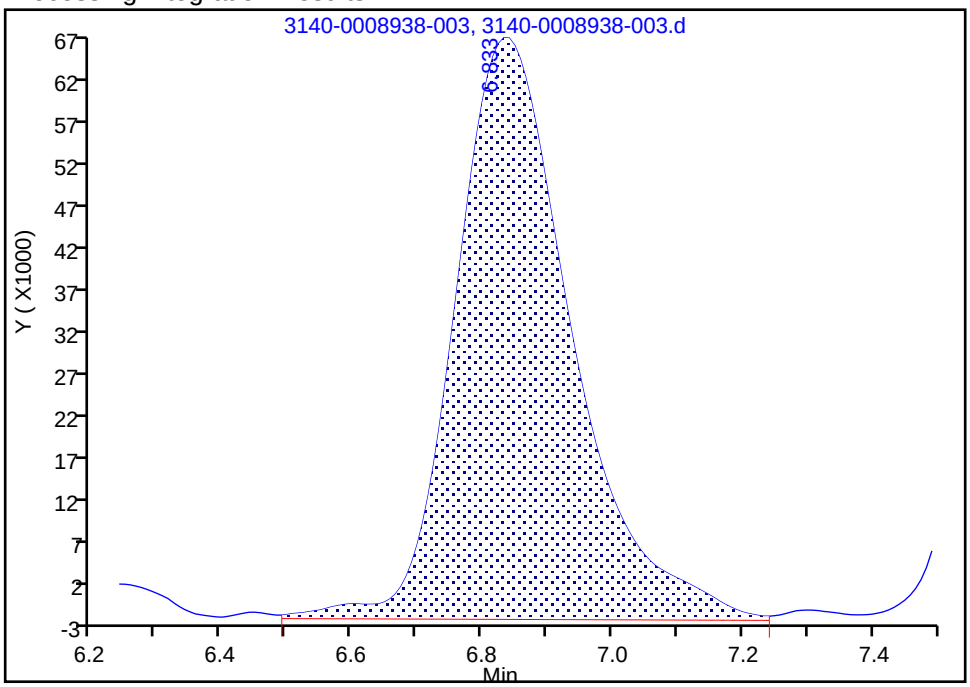
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\3140-0008938-003.d				
Injection Date:	01-Aug-2018 10:34:00	Instrument ID:	1500		
Lims ID:	IC 3				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	3
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

4 Bromide, CAS: 24959-67-9

Signal: 1

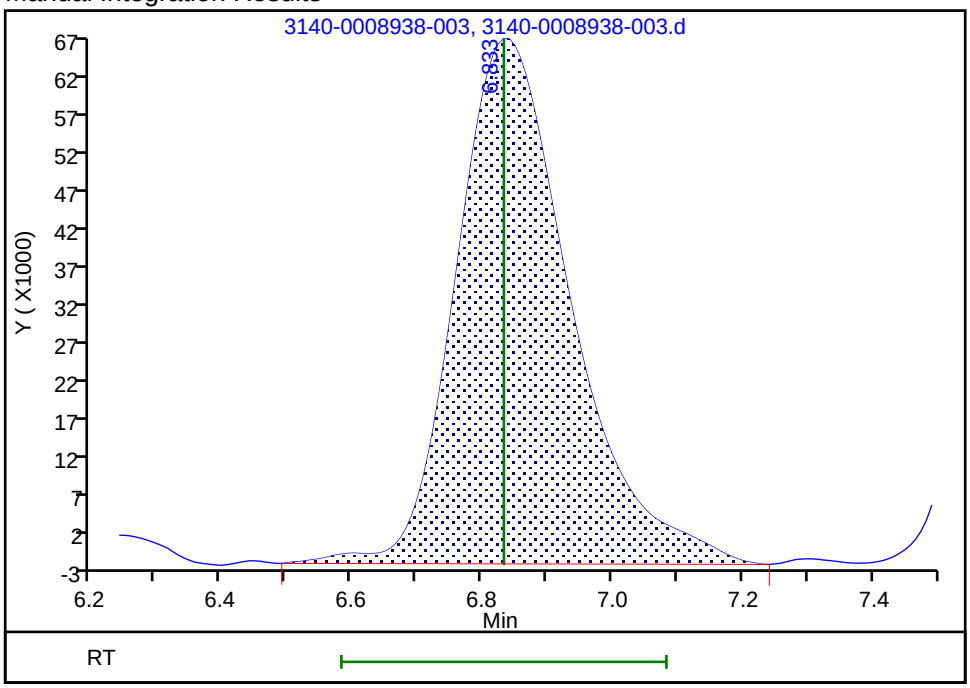
Processing Integration Results

RT: 6.83
Area: 864008
Amount: 0.100820
Amount Units: ug/ml



Manual Integration Results

RT: 6.83
Area: 843578
Amount: 0.098487
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 13:00:36

Audit Action: Manually Integrated Audit Reason: Baseline Smoothing

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

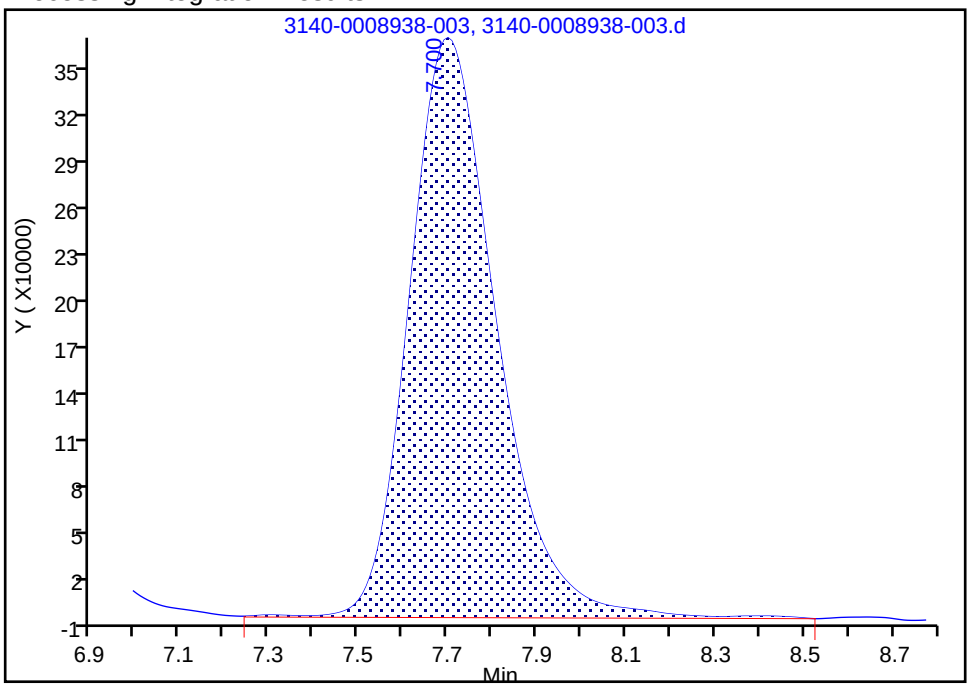
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\3140-0008938-003.d				
Injection Date:	01-Aug-2018 10:34:00	Instrument ID:	1500		
Lims ID:	IC 3				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	3
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

5 Nitrate as N, CAS: 14797-55-8

Signal: 1

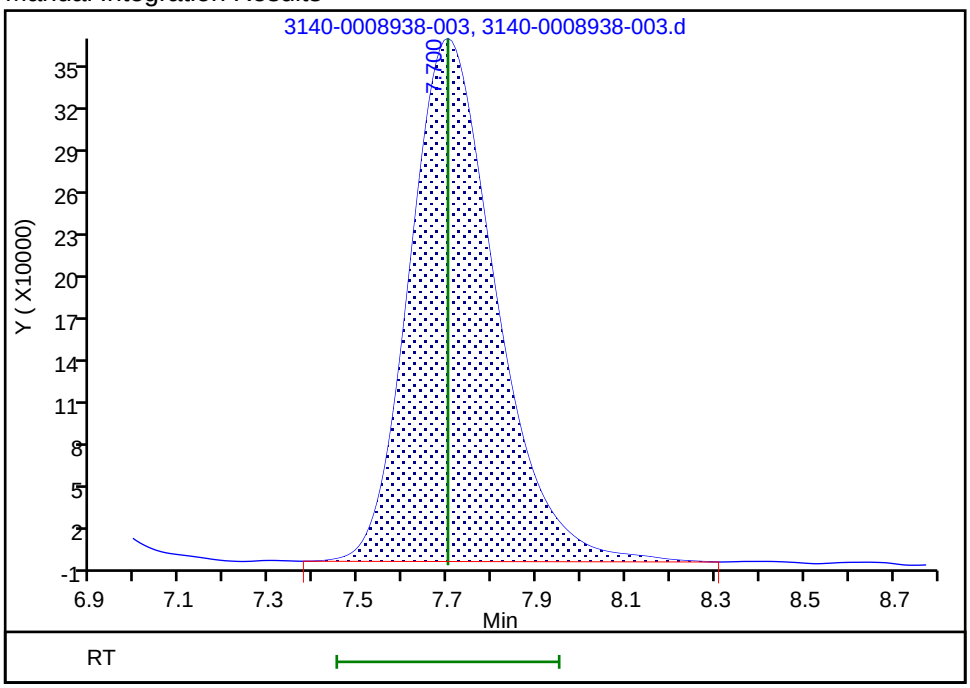
Processing Integration Results

RT: 7.70
Area: 4979328
Amount: 0.133635
Amount Units: ug/ml



Manual Integration Results

RT: 7.70
Area: 4906978
Amount: 0.102161
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 13:00:46

Audit Action: Manually Integrated Audit Reason: Baseline Smoothing

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\4140-0008938-004.d
Lims ID: IC 4
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 01-Aug-2018 10:51:00 ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0008938-004
Misc. Info.: 4 ic 4
Operator ID: Instrument ID: 1500
Sublist: chrom-0050_26A_1500*sub3

Method: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 20-Aug-2018 14:08:38 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK048

First Level Reviewer: wasmundd Date: 20-Aug-2018 14:08:38

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride	3.350	3.350	0.000	7092784	0.2500	0.2408	M
	2 Chloride	4.792	4.792	0.000	4987582	0.2500	0.2576	M
	3 Nitrite as N	5.742	5.742	0.000	10344542	0.2500	0.2452	
	4 Bromide	6.833	6.833	0.000	2117668	0.2500	0.2469	
	5 Nitrate as N	7.700	7.700	0.000	12062411	0.2500	0.2497	M
S	11 Nitrous Acid					0.8391	0.8231	
S	12 Br					0.2500	0.2469	
S	13 Chlorine					0.2500	0.2576	
S	10 Nitric acid					1.12	1.12	
S	7 Hydrogen Chloride					0.2571	0.2649	
S	8 Hydro Fluoric Acid					0.2633	0.2536	
S	9 Hydrobromic Acid					0.2532	0.2500	

QC Flag Legend

Review Flags
M - Manually Integrated

Reagents:

85L4M26AP_00019 Amount Added: 10.00 Units: mL

Report Date: 20-Aug-2018 14:08:38 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\4140-0008938-004.d

Injection Date: 01-Aug-2018 10:51:00 Instrument ID: 1500 Operator ID:

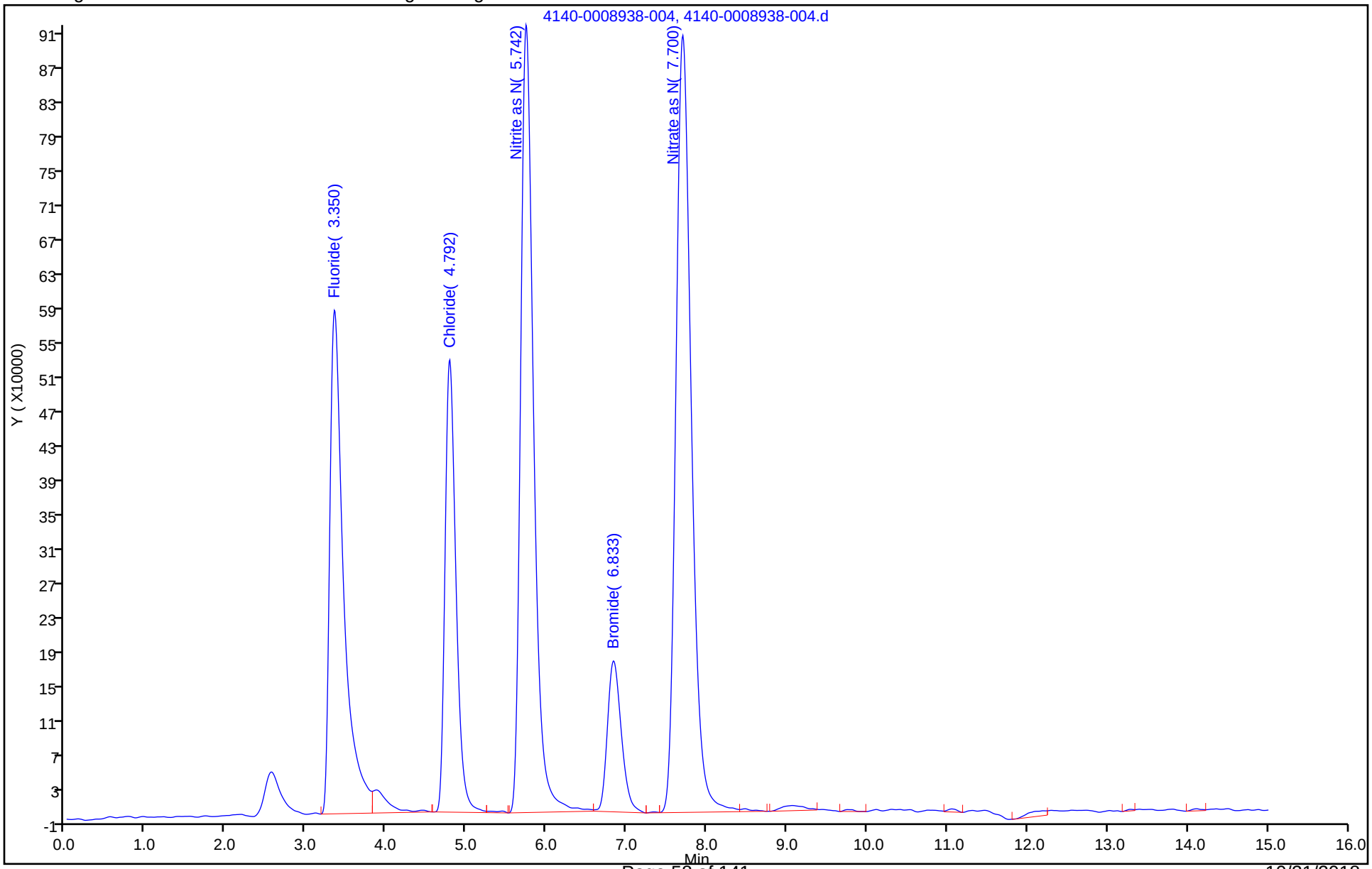
Lims ID: IC 4 Worklist Smp#: 4

Client ID:

Injection Vol: 1.0 ul Dil. Factor: 1.0000 ALS Bottle#: 0

Method: 0050_26A_1500 Limit Group: IC 0050_26A ICAL

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



Manual Integration/User Assign Peak Report

TestAmerica Knoxville

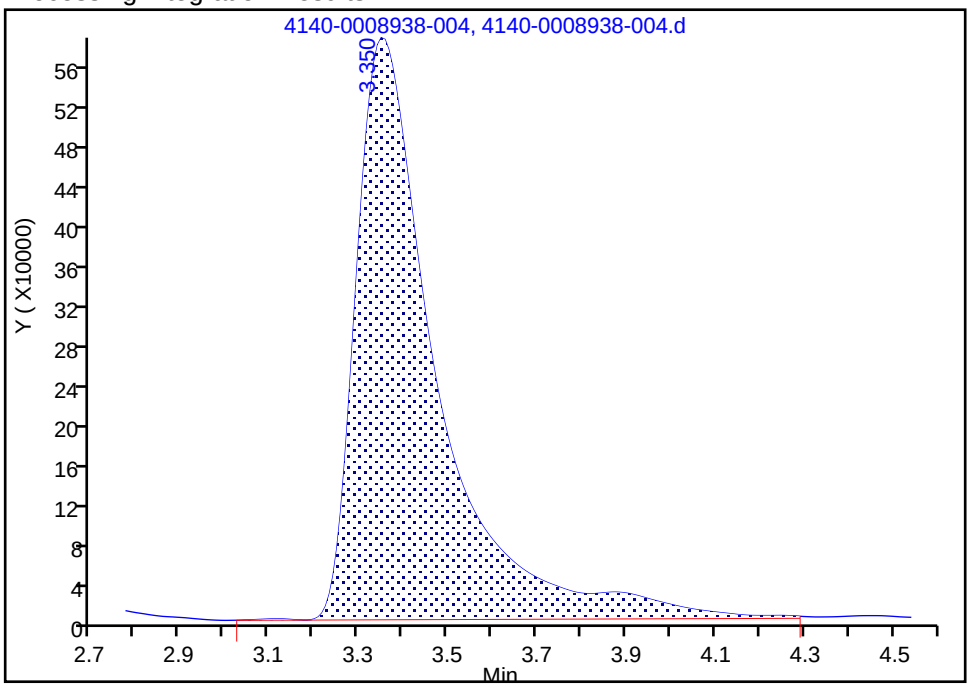
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\4140-0008938-004.d				
Injection Date:	01-Aug-2018 10:51:00	Instrument ID:	1500		
Lims ID:	IC 4				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	4
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

1 Fluoride, CAS: 16984-48-8

Signal: 1

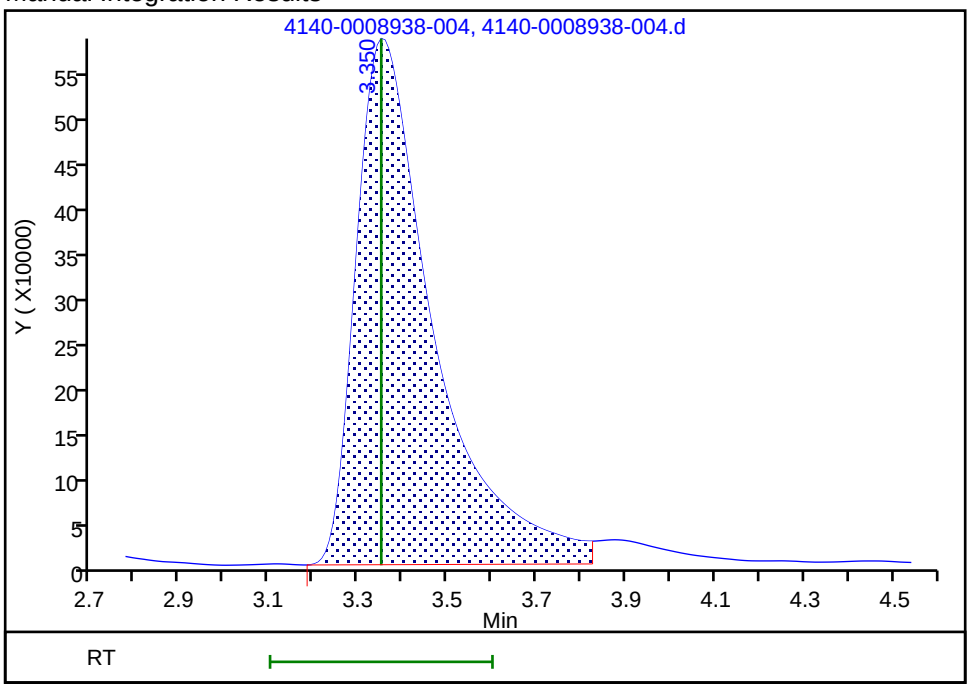
Processing Integration Results

RT: 3.35
Area: 7443582
Amount: 0.251299
Amount Units: ug/ml



Manual Integration Results

RT: 3.35
Area: 7092784
Amount: 0.240763
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 13:02:31
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

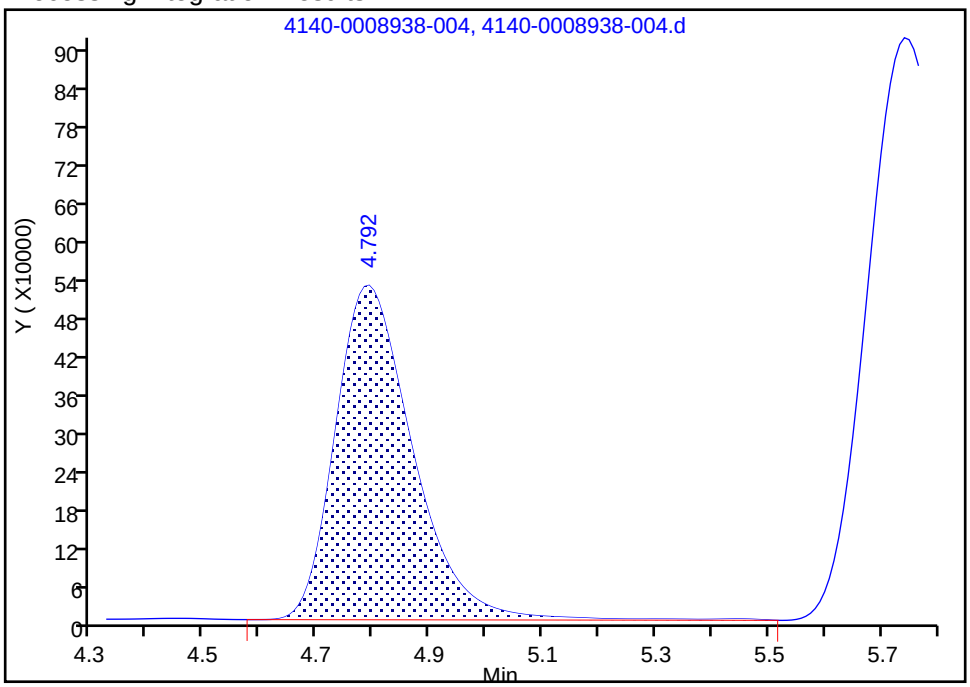
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\4140-0008938-004.d				
Injection Date:	01-Aug-2018 10:51:00	Instrument ID:	1500		
Lims ID:	IC 4				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	4
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

2 Chloride, CAS: 16887-00-6

Signal: 1

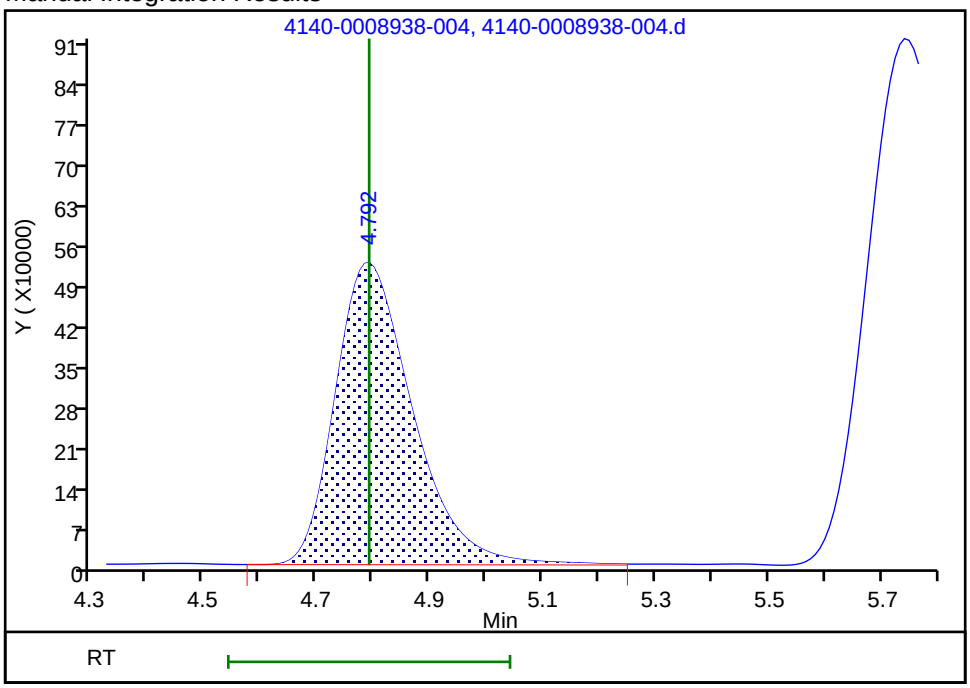
Processing Integration Results

RT: 4.79
Area: 5011323
Amount: 0.258672
Amount Units: ug/ml



Manual Integration Results

RT: 4.79
Area: 4987582
Amount: 0.257587
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 13:02:23
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

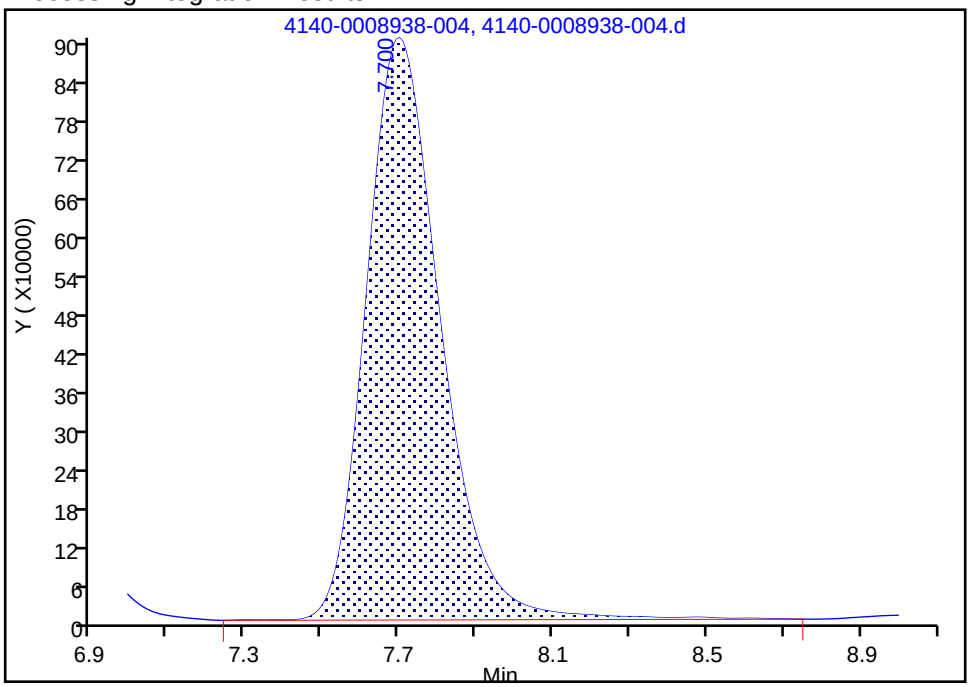
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\4140-0008938-004.d				
Injection Date:	01-Aug-2018 10:51:00	Instrument ID:	1500		
Lims ID:	IC 4				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	4
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

5 Nitrate as N, CAS: 14797-55-8

Signal: 1

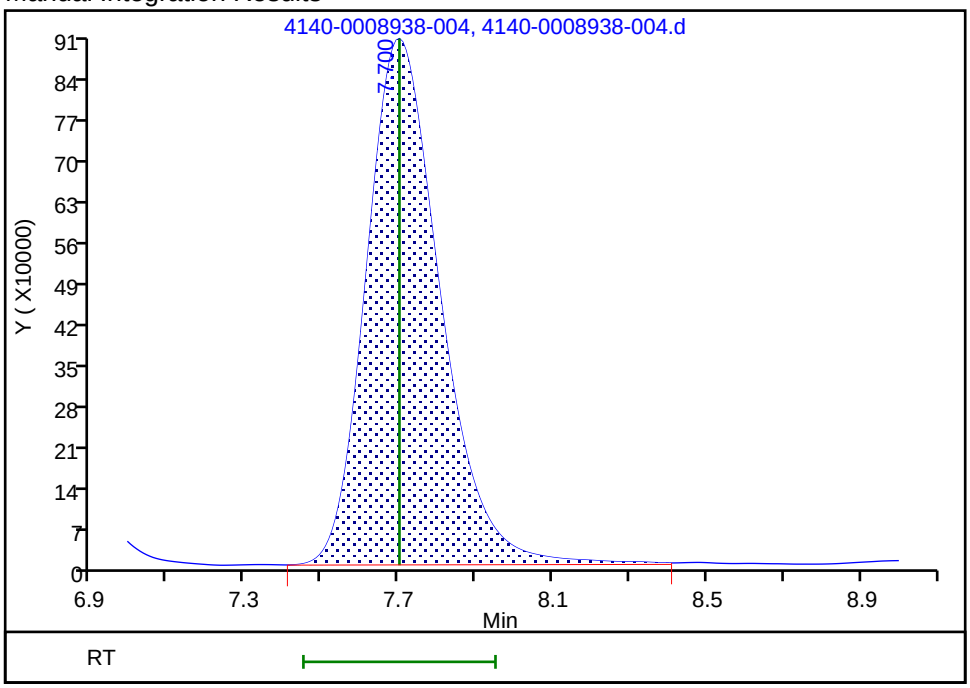
Processing Integration Results

RT: 7.70
Area: 12101453
Amount: 0.312983
Amount Units: ug/ml



Manual Integration Results

RT: 7.70
Area: 12062411
Amount: 0.249699
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 13:02:07

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\5140-0008938-005.d
Lims ID: IC 5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 01-Aug-2018 11:09:00 ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0008938-005
Misc. Info.: 5 ic 5
Operator ID: Instrument ID: 1500
Sublist: chrom-0050_26A_1500*sub3

Method: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 20-Aug-2018 14:08:44 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK048

First Level Reviewer: humphreyj Date: 01-Aug-2018 13:03:16

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride	3.358	3.350	0.008	14882948	0.5000	0.5015	
	2 Chloride	4.792	4.792	0.000	9602377	0.5000	0.4939	
	3 Nitrite as N	5.750	5.742	0.008	21192897	0.5000	0.4986	
	4 Bromide	6.842	6.833	0.009	4233911	0.5000	0.4927	
	5 Nitrate as N	7.700	7.700	0.000	24255807	0.5000	0.4973	M
S	7 Hydrogen Chloride					0.5142	0.5080	
S	8 Hydro Fluoric Acid					0.5266	0.5282	
S	9 Hydrobromic Acid					0.5063	0.4989	
S	10 Nitric acid					2.25	2.24	
S	11 Nitrous Acid					1.68	1.67	
S	12 Br					0.5000	0.4927	
S	13 Chlorine					0.5000	0.4939	

QC Flag Legend

Review Flags
M - Manually Integrated

Reagents:

85L5M26AP_00019 Amount Added: 10.00 Units: mL

Report Date: 20-Aug-2018 14:08:45 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\5140-0008938-005.d

Injection Date: 01-Aug-2018 11:09:00 Instrument ID: 1500 Operator ID:

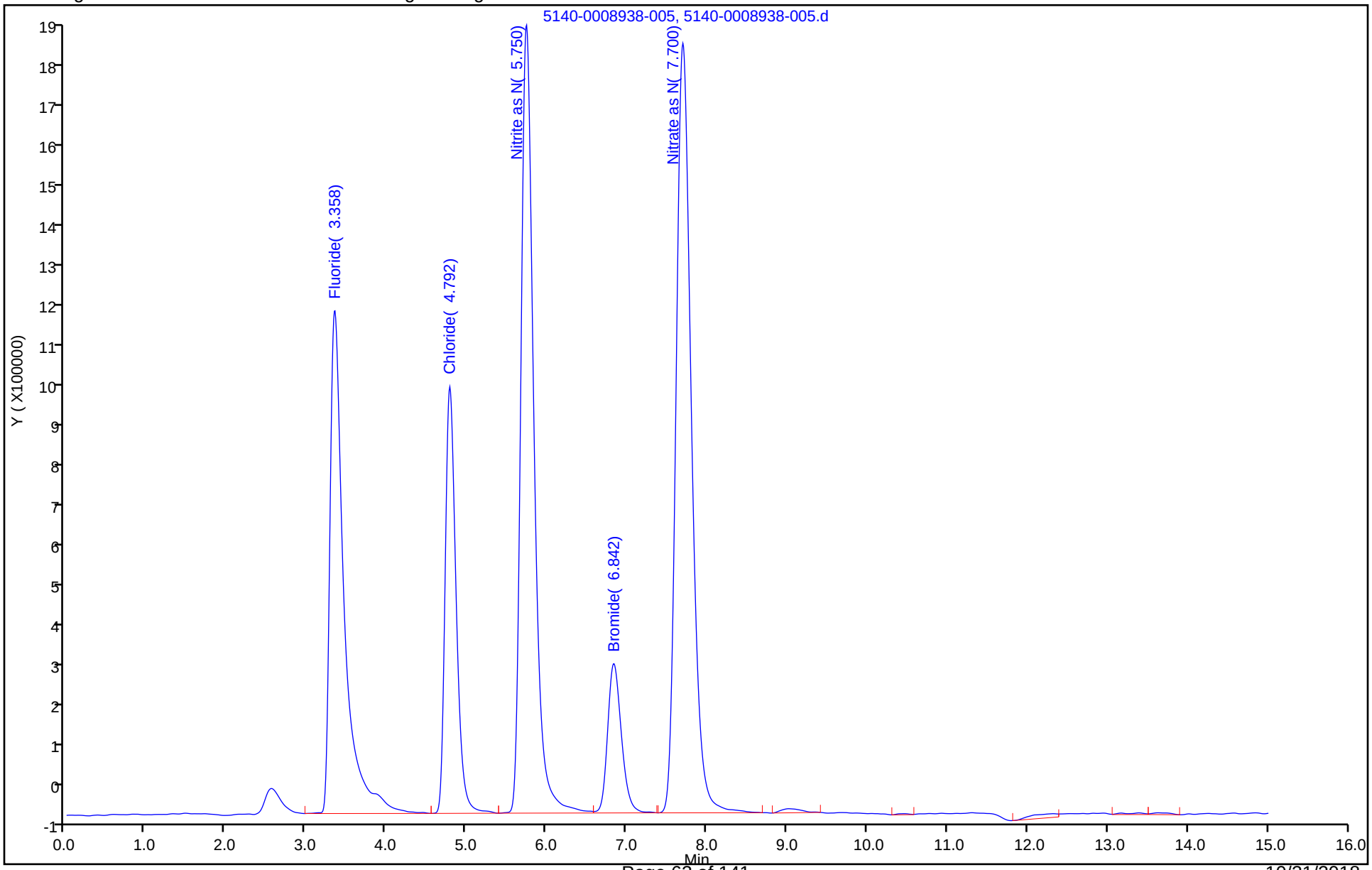
Lims ID: IC 5 Worklist Smp#: 5

Client ID:

Injection Vol: 1.0 ul Dil. Factor: 1.0000 ALS Bottle#: 0

Method: 0050_26A_1500 Limit Group: IC 0050_26A ICAL

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



Manual Integration/User Assign Peak Report

TestAmerica Knoxville

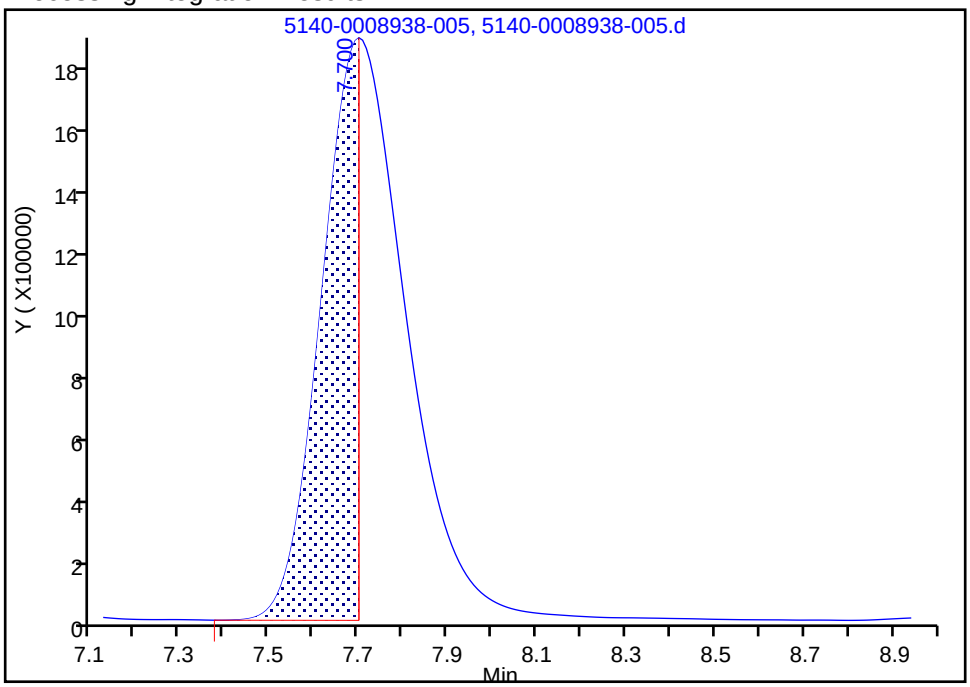
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\5140-0008938-005.d				
Injection Date:	01-Aug-2018 11:09:00	Instrument ID:	1500		
Lims ID:	IC 5				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	5
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

5 Nitrate as N, CAS: 14797-55-8

Signal: 1

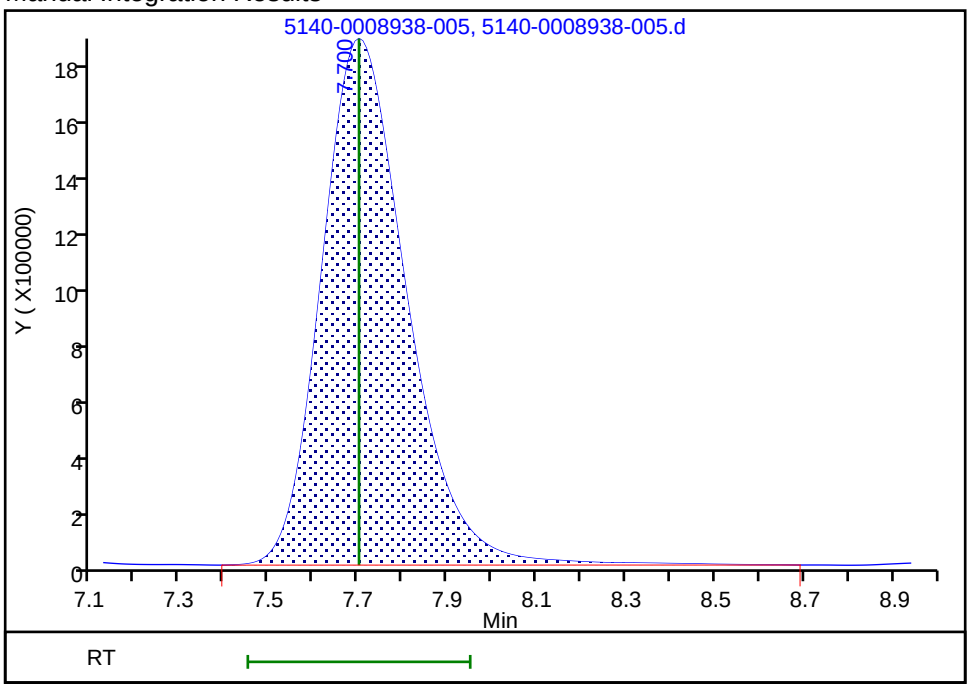
Processing Integration Results

RT: 7.70
Area: 10439500
Amount: 0.272380
Amount Units: ug/ml



Manual Integration Results

RT: 7.70
Area: 24255807
Amount: 0.497337
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 13:03:10

Audit Action: Manually Integrated Audit Reason: Baseline Smoothing

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\6140-0008938-006.d
Lims ID: IC 6
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 01-Aug-2018 11:26:00 ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0008938-006
Misc. Info.: 6 ic 6
Operator ID: Instrument ID: 1500
Sublist: chrom-0050_26A_1500*sub3

Method: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 20-Aug-2018 14:08:46 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK048

First Level Reviewer: humphreyj Date: 01-Aug-2018 13:03:46

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 Fluoride	3.358	3.350	0.008	30197187	1.00	1.00	
2 Chloride	4.792	4.792	0.000	19568582	1.00	1.00	
3 Nitrite as N	5.750	5.742	0.008	43274191	1.00	1.00	
4 Bromide	6.833	6.833	0.000	8688407	1.00	1.01	
5 Nitrate as N	7.700	7.700	0.000	49767455	1.00	1.00	
S 7 Hydrogen Chloride					1.03	1.03	
S 8 Hydro Fluoric Acid					1.05	1.06	
S 9 Hydrobromic Acid					1.01	1.02	
S 10 Nitric acid					4.50	4.50	
S 11 Nitrous Acid					3.36	3.37	
S 12 Br					1.00	1.01	
S 13 Chlorine					1.00	1.00	

Reagents:

85L6M26AP_00019 Amount Added: 10.00 Units: mL

Report Date: 20-Aug-2018 14:08:46 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\6140-0008938-006.d

Injection Date: 01-Aug-2018 11:26:00 Instrument ID: 1500 Operator ID:

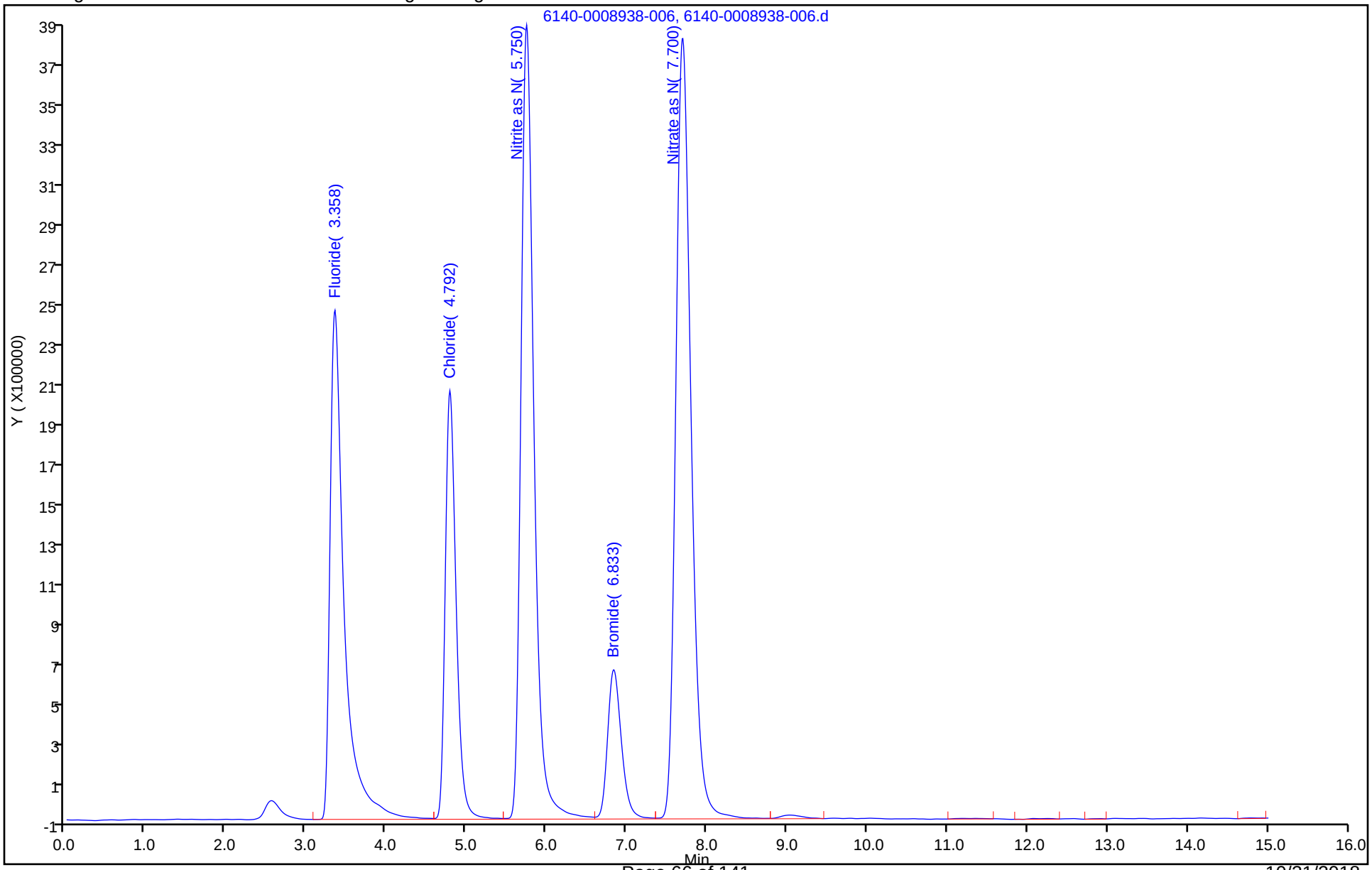
Lims ID: IC 6 Worklist Smp#: 6

Client ID:

Injection Vol: 1.0 ul Dil. Factor: 1.0000 ALS Bottle#: 0

Method: 0050_26A_1500 Limit Group: IC 0050_26A ICAL

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d
Lims ID: IC 7
Client ID:
Sample Type: IC Calib Level: 7
Inject. Date: 01-Aug-2018 11:43:00 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0008938-007
Misc. Info.: 7 ic 7
Operator ID: Instrument ID: 1500
Sublist: chrom-0050_26A_1500*sub3

Method: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 20-Aug-2018 14:08:48 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK048

First Level Reviewer: humphreyj Date: 01-Aug-2018 13:04:16

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 Fluoride	3.358	3.350	0.008	61844592	2.00	2.00	
2 Chloride	4.792	4.792	0.000	39884440	2.00	2.00	
3 Nitrite as N	5.750	5.742	0.008	88826264	2.00	2.00	
4 Bromide	6.833	6.833	0.000	17387614	2.00	2.00	
5 Nitrate as N	7.692	7.700	-0.008	103162161	2.00	2.00	
S 7 Hydrogen Chloride					2.06	2.06	
S 8 Hydro Fluoric Acid					2.11	2.11	
S 9 Hydrobromic Acid					2.03	2.02	
S 10 Nitric acid					9.00	9.00	
S 11 Nitrous Acid					6.71	6.71	
S 12 Br					2.00	2.00	
S 13 Chlorine					2.00	2.00	

Reagents:

85L7M26AP_00020 Amount Added: 10.00 Units: mL

Report Date: 20-Aug-2018 14:08:49 Chrom Revision: 2.3 09-Aug-2018 15:33:44

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Injection Date: 01-Aug-2018 11:43:00 Instrument ID: 1500 Operator ID:

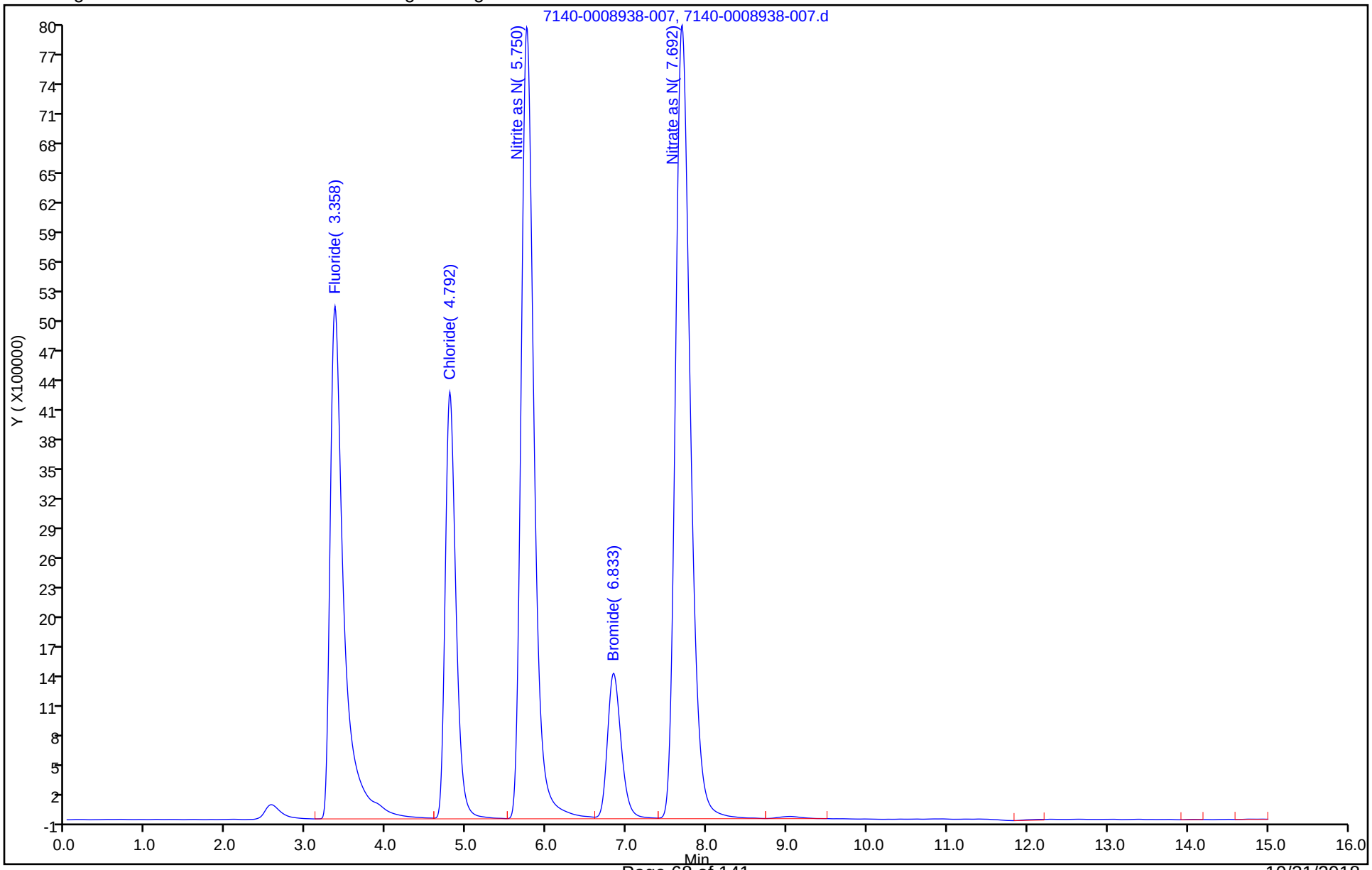
Lims ID: IC 7 Worklist Smp#: 7

Client ID:

Injection Vol: 1.0 ul Dil. Factor: 1.0000 ALS Bottle#: 0

Method: 0050_26A_1500 Limit Group: IC 0050_26A ICAL

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



FORM VII
HPLC/IC CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Knoxville Job No.: 140-13157-1

SDG No.:

Lab Sample ID: ICV 140-22408/8 Calibration Date: 08/01/2018 12:03

Instrument ID: 1500 Calib Start Date: 08/01/2018 09:59

GC Column: AS22 ID: Calib End Date: 08/01/2018 11:43

Lab File ID: 8140-0008938-008.d Conc. Units: mg/L

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Fluoride	QuaF		29827308		0.749	0.750	-0.2	10.0
Chloride	QuaF		19614412		0.753	0.750	0.5	10.0
Nitrite as N	QuaF		43234148		0.757	0.750	0.9	10.0
Bromide	QuaF		8703693		0.758	0.750	1.1	10.0
Nitrate as N	QuaF		47230312		0.720	0.750	-4.0	10.0

FORM VII
HPLC/IC CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-13157-1

SDG No.:

Lab Sample ID: ICV 140-22408/8 Calibration Date: 08/01/2018 12:03

Instrument ID: 1500 Calib Start Date: 08/01/2018 09:59

GC Column: AS22 ID: Calib End Date: 08/01/2018 11:43

Lab File ID: 8140-0008938-008.d

Analyte	RT	RT WINDOW	
		FROM	TO
Fluoride	3.36	3.10	3.60
Chloride	4.80	4.54	5.04
Nitrite as N	5.76	5.49	5.99
Bromide	6.86	6.58	7.08
Nitrate as N	7.73	7.45	7.95

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\8140-0008938-008.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 01-Aug-2018 12:03:00 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0008938-008
Misc. Info.: 8 icv
Operator ID: Instrument ID: 1500
Sublist:

Method: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 01-Aug-2018 13:07:51 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK022

First Level Reviewer: humphreyj Date: 01-Aug-2018 13:06:26

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride	3.358	3.350	0.008	22370481	0.7500	0.7485	Ma
	2 Chloride	4.800	4.792	0.008	14710809	0.7500	0.7534	Ma
	3 Nitrite as N	5.758	5.742	0.016	32425611	0.7500	0.7570	Ma
	4 Bromide	6.858	6.833	0.025	6527770	0.7500	0.7580	Ma
	5 Nitrate as N	7.725	7.700	0.025	35422734	0.7500	0.7201	Ma
S	7 Hydrogen Chloride					0.7710	0.7748	
S	8 Hydro Fluoric Acid					0.7898	0.7884	
S	9 Hydrobromic Acid					0.7595	0.7676	
S	10 Nitric acid					3.37	3.24	
S	11 Nitrous Acid					2.52	2.54	
S	12 Br					0.7500	0.7580	
S	13 Chlorine					0.7500	0.7534	

QC Flag Legend

Review Flags
M - Manually Integrated
a - User Assigned ID

Reagents:

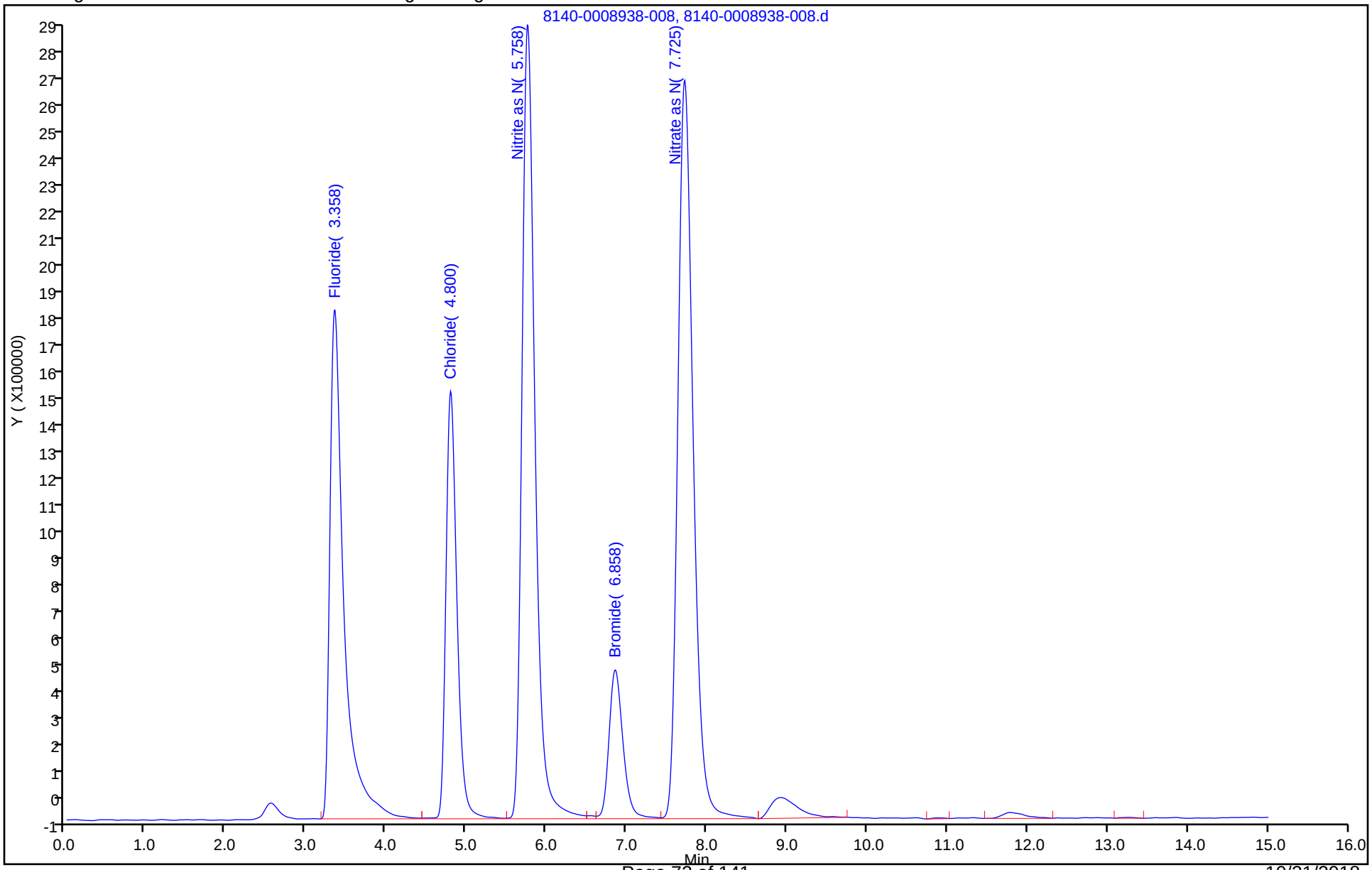
85SPICVLCSS_00071 Amount Added: 10.00 Units: mL

Report Date: 01-Aug-2018 13:07:52 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\8140-0008938-008.d				
Injection Date:	01-Aug-2018 12:03:00	Instrument ID:	1500	Operator ID:	
Lims ID:	ICV			Worklist Smp#:	8
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



Manual Integration/User Assign Peak Report

TestAmerica Knoxville

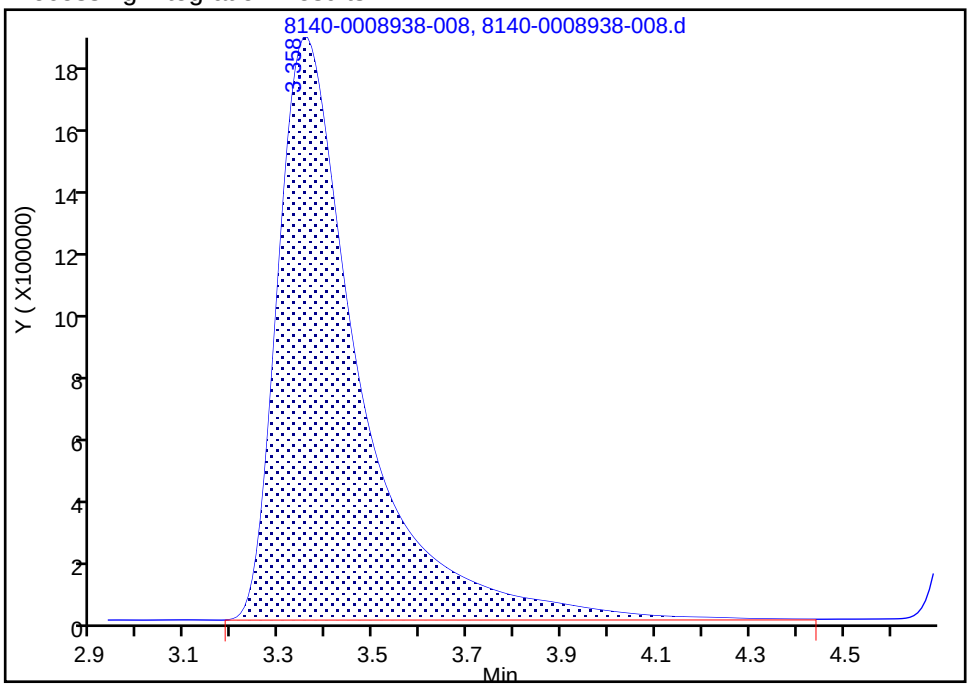
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\8140-0008938-008.d				
Injection Date:	01-Aug-2018 12:03:00	Instrument ID:	1500		
Lims ID:	ICV				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

1 Fluoride, CAS: 16984-48-8

Signal: 1

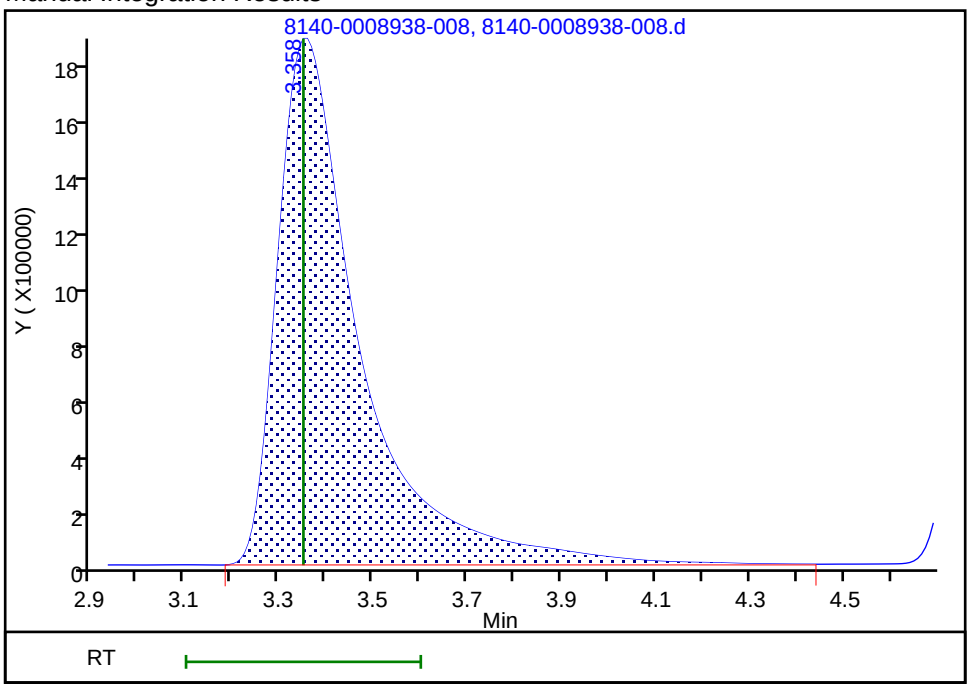
Processing Integration Results

RT: 3.36
Area: 22370481
Amount: 0.748548
Amount Units: ug/ml



Manual Integration Results

RT: 3.36
Area: 22370481
Amount: 0.748548
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 13:06:18
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

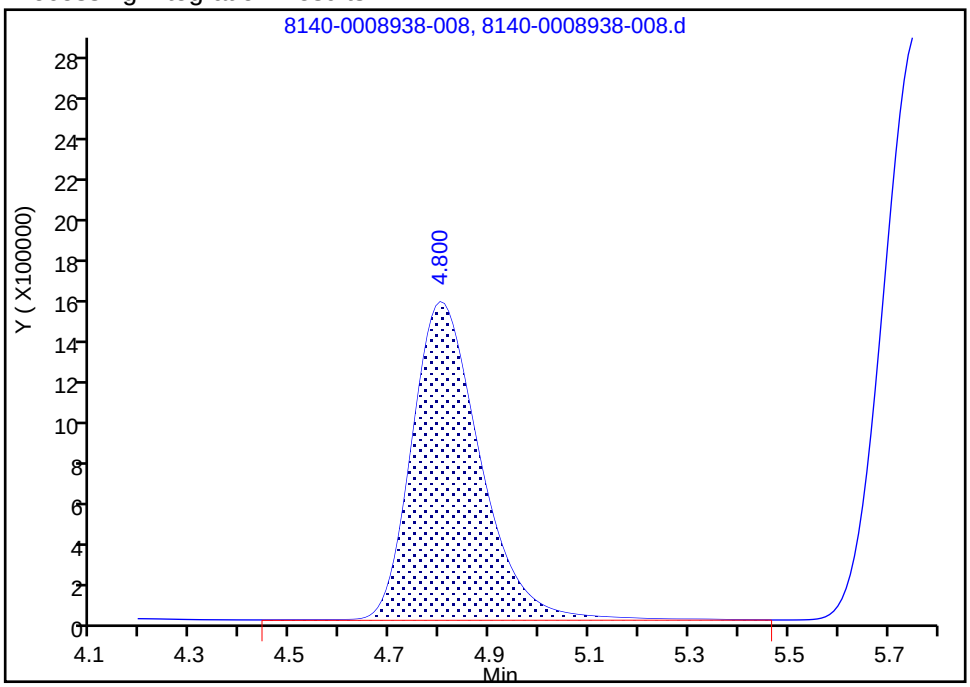
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\8140-0008938-008.d				
Injection Date:	01-Aug-2018 12:03:00	Instrument ID:	1500		
Lims ID:	ICV				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

2 Chloride, CAS: 16887-00-6

Signal: 1

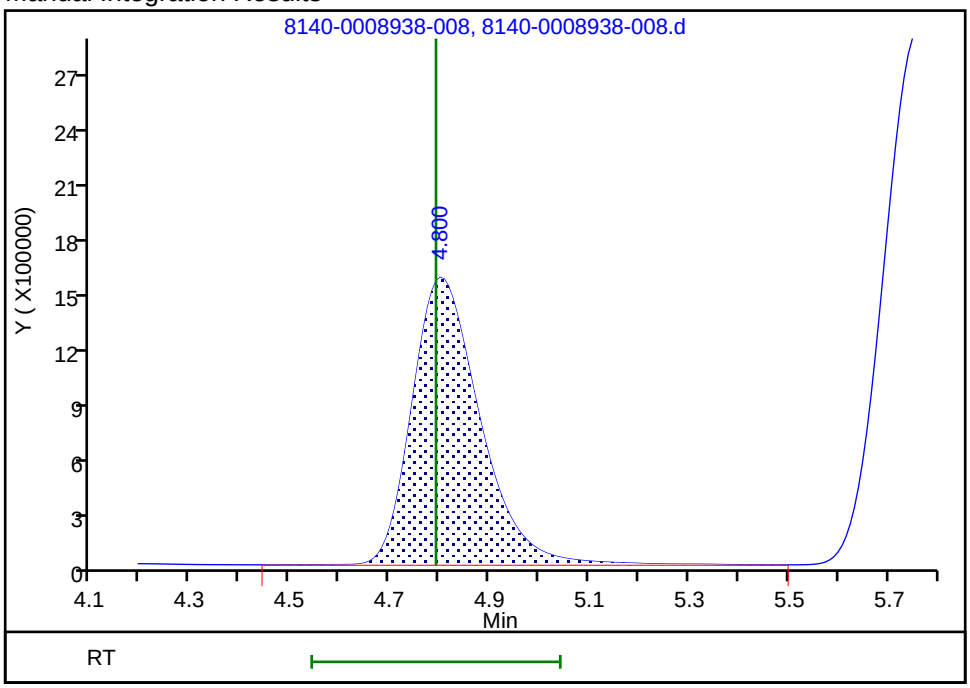
Processing Integration Results

RT: 4.80
Area: 14663354
Amount: 0.751011
Amount Units: ug/ml



Manual Integration Results

RT: 4.80
Area: 14710809
Amount: 0.753411
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 13:06:13
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

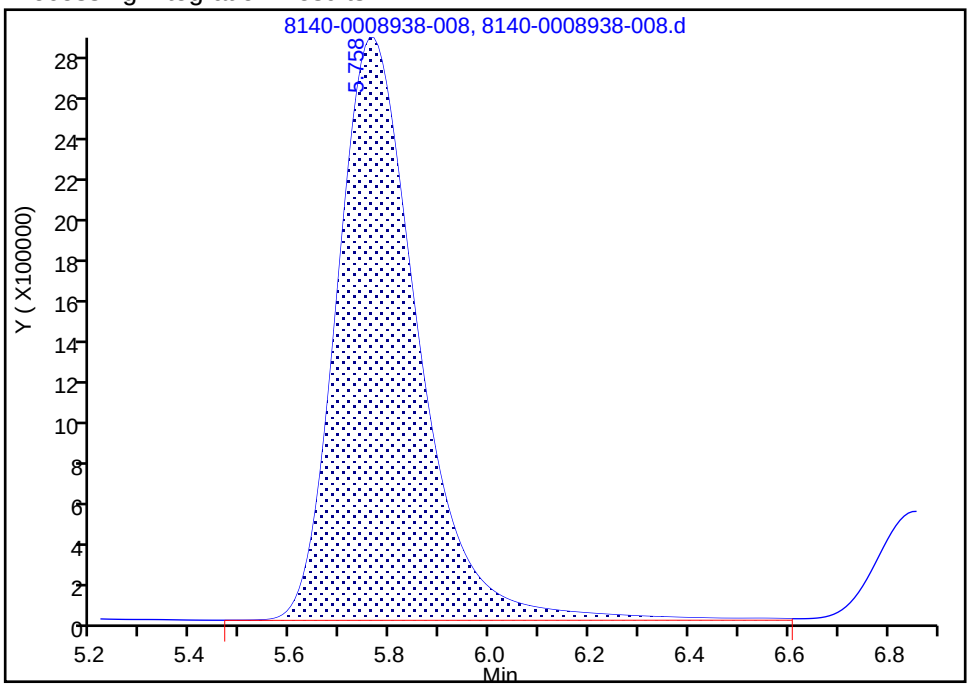
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\8140-0008938-008.d				
Injection Date:	01-Aug-2018 12:03:00	Instrument ID:	1500		
Lims ID:	ICV				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

3 Nitrite as N, CAS: 14797-65-0

Signal: 1

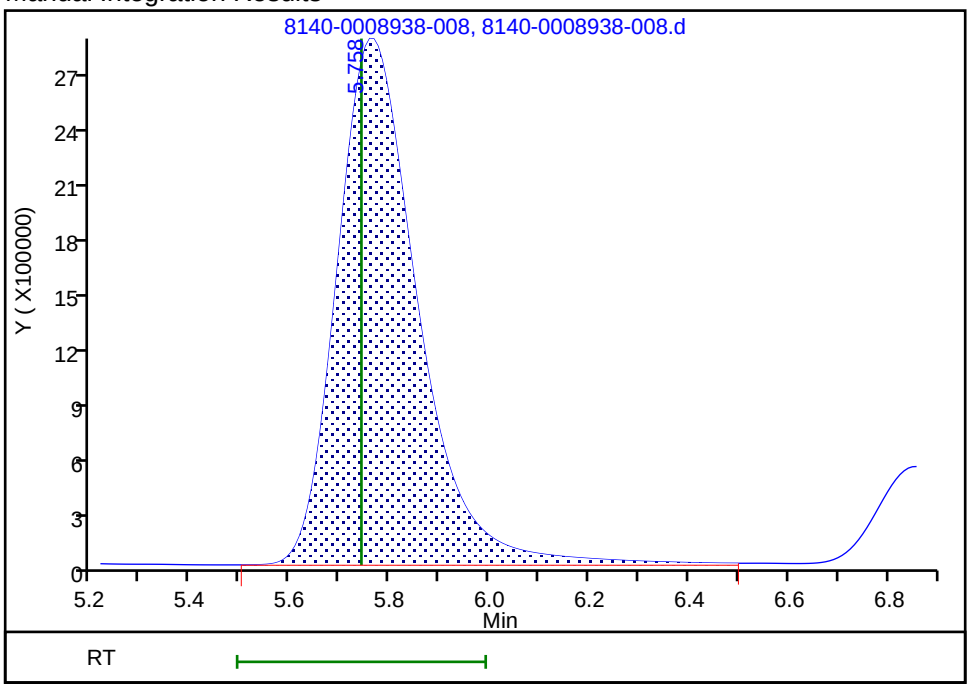
Processing Integration Results

RT: 5.76
Area: 32388396
Amount: 0.756117
Amount Units: ug/ml



Manual Integration Results

RT: 5.76
Area: 32425611
Amount: 0.756967
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 13:06:08

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

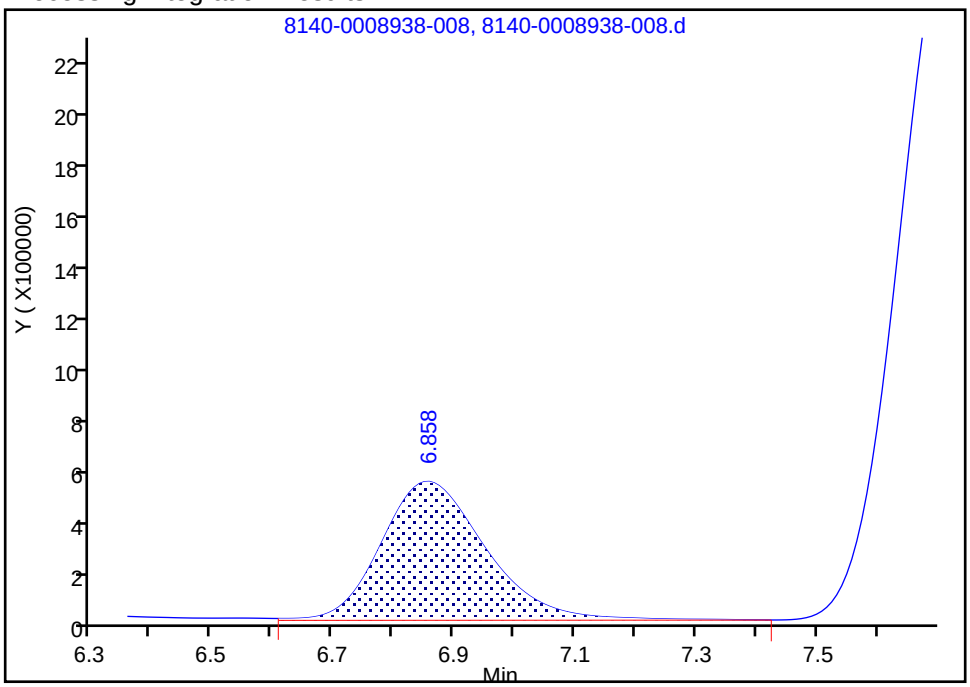
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\8140-0008938-008.d				
Injection Date:	01-Aug-2018 12:03:00	Instrument ID:	1500		
Lims ID:	ICV				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

4 Bromide, CAS: 24959-67-9

Signal: 1

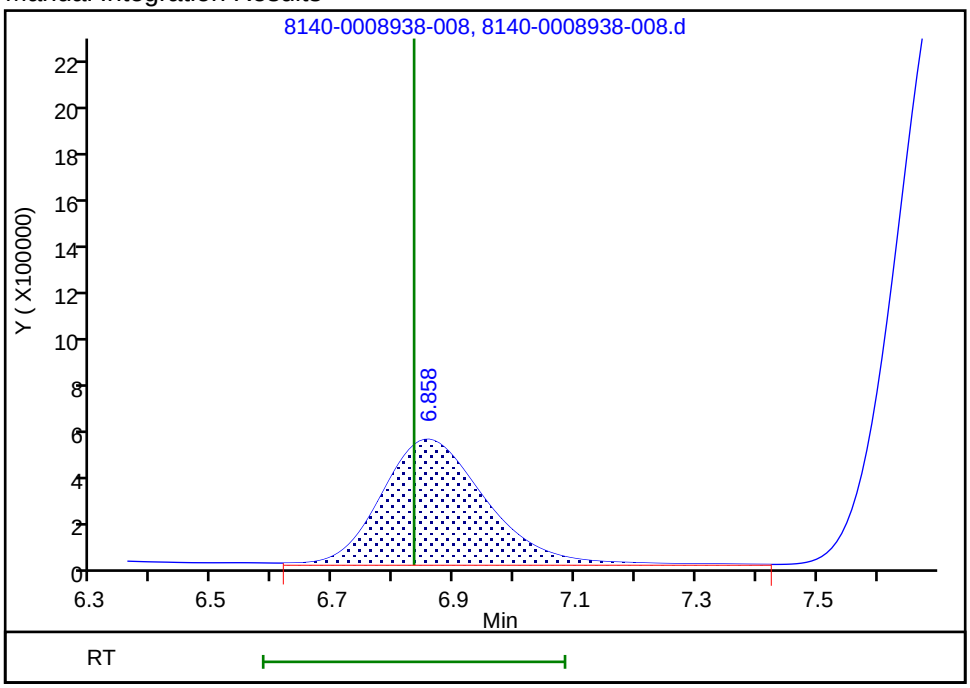
Processing Integration Results

RT: 6.86
Area: 6412040
Amount: 0.744649
Amount Units: ug/ml



Manual Integration Results

RT: 6.86
Area: 6527770
Amount: 0.758007
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 13:06:03
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

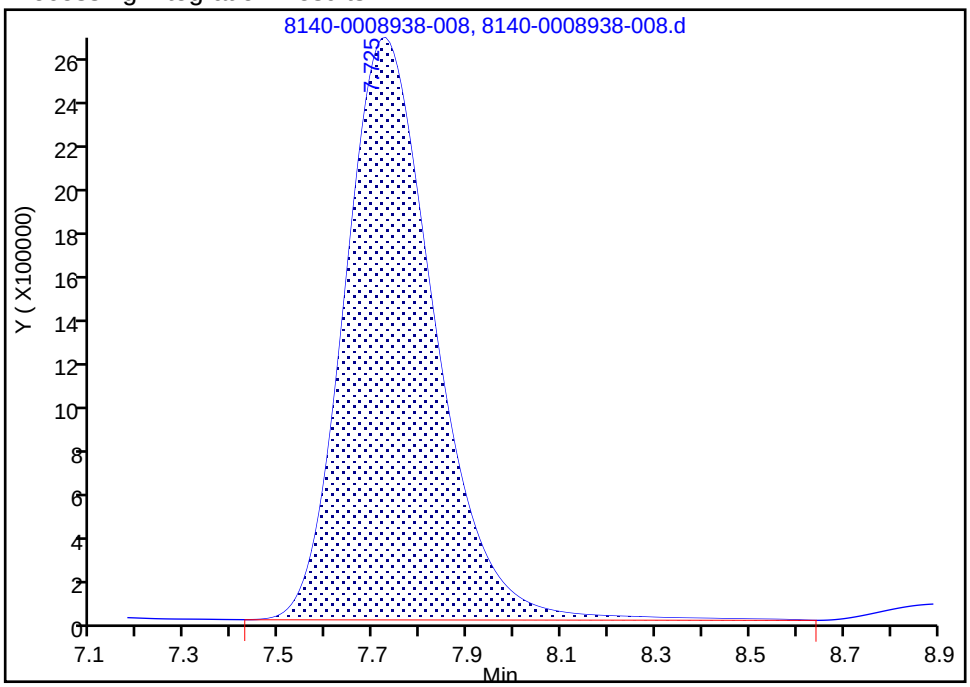
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\8140-0008938-008.d				
Injection Date:	01-Aug-2018 12:03:00	Instrument ID:	1500		
Lims ID:	ICV				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

5 Nitrate as N, CAS: 14797-55-8

Signal: 1

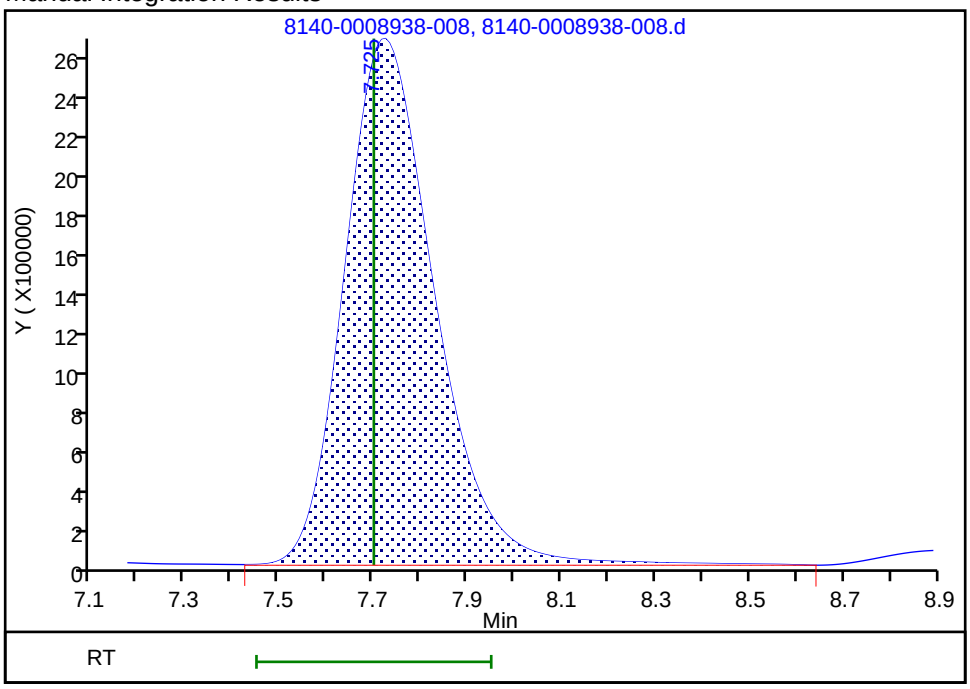
Processing Integration Results

RT: 7.73
Area: 35315205
Amount: 0.718016
Amount Units: ug/ml



Manual Integration Results

RT: 7.73
Area: 35422734
Amount: 0.720143
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 13:05:57
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Split Peak

FORM VII
HPLC/IC CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Knoxville Job No.: 140-13157-1

SDG No.:

Lab Sample ID: CCV 140-24920/1 Calibration Date: 10/29/2018 08:53

Instrument ID: 1500 Calib Start Date: 08/01/2018 09:59

GC Column: AS22 ID: Calib End Date: 08/01/2018 11:43

Lab File ID: 11140-0009818-001.d Conc. Units: mg/L

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Fluoride	QuaF		29766367		0.989	1.00	-1.1	10.0
Chloride	QuaF		19620800		1.00	1.00	0.0	10.0
Nitrite as N	QuaF		42883852		0.994	1.00	-0.6	10.0
Bromide	QuaF		8648947		1.00	1.00	0.2	10.0
Nitrate as N	QuaF		49043229		0.987	1.00	-1.3	10.0

FORM VII
HPLC/IC CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-13157-1

SDG No.:

Lab Sample ID: CCV 140-24920/1 Calibration Date: 10/29/2018 08:53

Instrument ID: 1500 Calib Start Date: 08/01/2018 09:59

GC Column: AS22 ID: Calib End Date: 08/01/2018 11:43

Lab File ID: 11140-0009818-001.d

Analyte	RT	RT WINDOW	
		FROM	TO
Fluoride	3.33	3.08	3.58
Chloride	4.74	4.49	4.99
Nitrite as N	5.68	5.43	5.93
Bromide	6.75	6.50	7.00
Nitrate as N	7.58	7.33	7.83

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\11140-0009818-001.d
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 29-Oct-2018 08:53:00 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0009818-001
Misc. Info.: 11 ccv
Operator ID: Instrument ID: 1500
Sublist: chrom-0050_26A_1500*sub3

Method: \\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 30-Oct-2018 09:14:46 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK003

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride	3.333	3.333	0.000	29766367	1.00	0.9893	
	2 Chloride	4.742	4.742	0.000	19620800	1.00	1.00	
	3 Nitrite as N	5.683	5.683	0.000	42883852	1.00	0.99	
	4 Bromide	6.750	6.750	0.000	8648947	1.00	1.00	
	5 Nitrate as N	7.583	7.583	0.000	49043229	1.00	0.9870	
S	7 Hydrogen Chloride					1.03	1.03	
S	8 Hydro Fluoric Acid					1.05	1.04	
S	9 Hydrobromic Acid					1.01	1.01	
S	10 Nitric acid					4.50	4.44	
S	11 Nitrous Acid					3.36	3.34	
S	12 Br					1.00	1.00	
S	13 Chlorine					1.00	1.00	

Reagents:

85CVM26AP_00083 Amount Added: 10.00 Units: mL

Report Date: 30-Oct-2018 09:14:47 Chrom Revision: 2.3 16-Oct-2018 09:58:52

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\11140-0009818-001.d

Injection Date: 29-Oct-2018 08:53:00 Instrument ID: 1500 Operator ID:

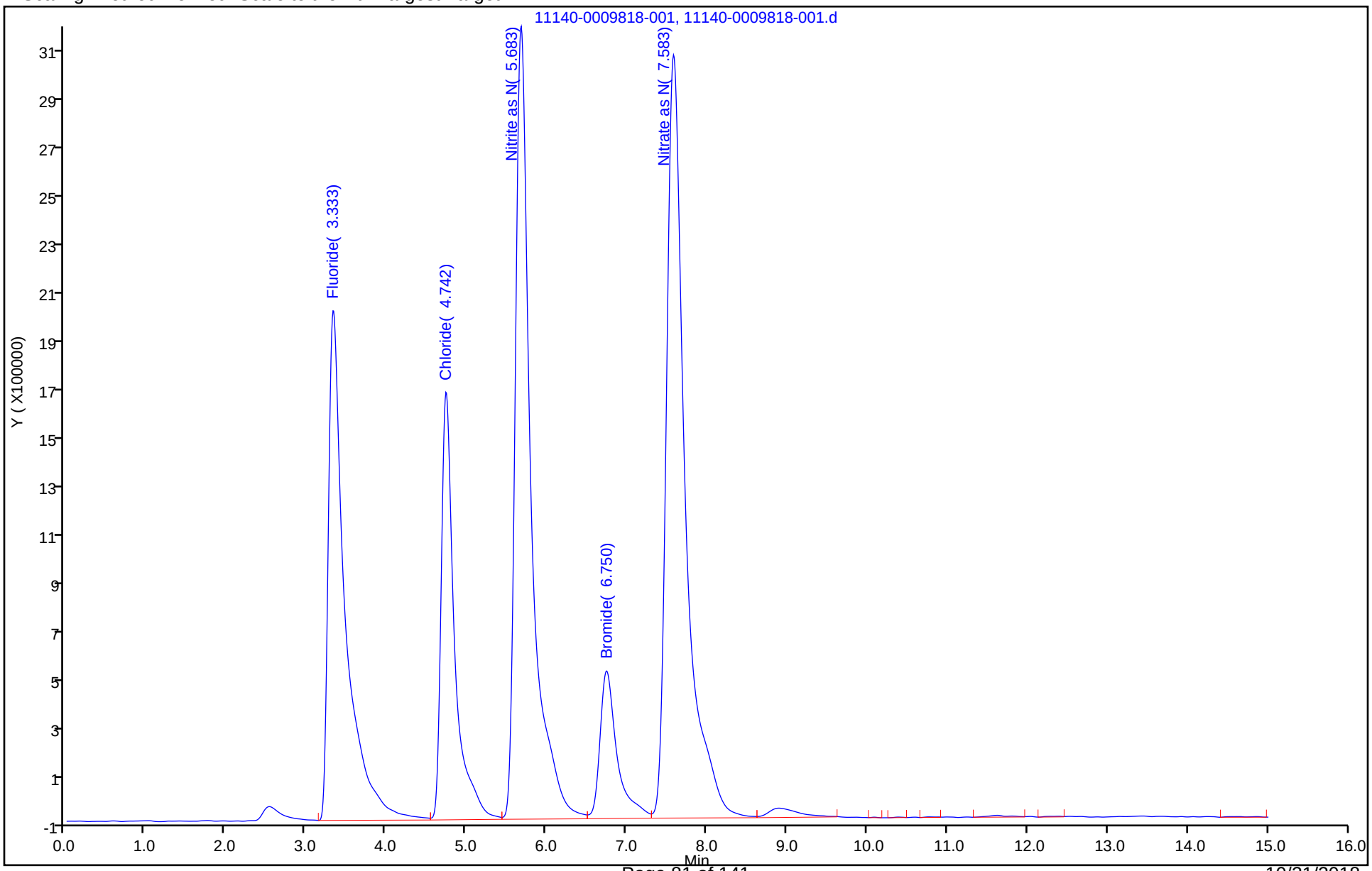
Lims ID: CCV Worklist Smp#: 1

Client ID:

Injection Vol: 1.0 ul Dil. Factor: 1.0000 ALS Bottle#: 0

Method: 0050_26A_1500 Limit Group: IC 0050_26A ICAL

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



FORM VII
HPLC/IC CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Knoxville Job No.: 140-13157-1

SDG No.:

Lab Sample ID: CCV 140-24920/13 Calibration Date: 10/29/2018 12:46

Instrument ID: 1500 Calib Start Date: 08/01/2018 09:59

GC Column: AS22 ID: Calib End Date: 08/01/2018 11:43

Lab File ID: 23140-0009818-013.d Conc. Units: mg/L

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Fluoride	QuaF		30397372		1.01	1.00	1.0	10.0
Chloride	QuaF		20087014		1.02	1.00	2.4	10.0
Nitrite as N	QuaF		43685216		1.01	1.00	1.2	10.0
Bromide	QuaF		8885210		1.03	1.00	2.9	10.0
Nitrate as N	QuaF		50081813		1.01	1.00	0.7	10.0

FORM VII 0050/26A

FORM VII
HPLC/IC CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-13157-1

SDG No.:

Lab Sample ID: CCV 140-24920/13 Calibration Date: 10/29/2018 12:46

Instrument ID: 1500 Calib Start Date: 08/01/2018 09:59

GC Column: AS22 ID: Calib End Date: 08/01/2018 11:43

Lab File ID: 23140-0009818-013.d

Analyte	RT	RT WINDOW	
		FROM	TO
Fluoride	3.34	3.08	3.58
Chloride	4.75	4.49	4.99
Nitrite as N	5.69	5.43	5.93
Bromide	6.76	6.50	7.00
Nitrate as N	7.59	7.33	7.83

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\23140-0009818-013.d
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 29-Oct-2018 12:46:00 ALS Bottle#: 0 Worklist Smp#: 13
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0009818-013
Misc. Info.: 23 ccv
Operator ID: Instrument ID: 1500
Sublist: chrom-0050_26A_1500*sub3

Method: \\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 30-Oct-2018 09:15:03 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK003

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride	3.342	3.333	0.009	30397372	1.00	1.01	
	2 Chloride	4.750	4.742	0.008	20087014	1.00	1.02	
	3 Nitrite as N	5.692	5.683	0.009	43685216	1.00	1.01	
	4 Bromide	6.758	6.750	0.008	8885210	1.00	1.03	
	5 Nitrate as N	7.592	7.583	0.009	50081813	1.00	1.01	
S	7 Hydrogen Chloride					1.03	1.05	
S	8 Hydro Fluoric Acid					1.05	1.06	
S	9 Hydrobromic Acid					1.01	1.04	
S	10 Nitric acid					4.50	4.53	
S	11 Nitrous Acid					3.36	3.40	
S	12 Br					1.00	1.03	
S	13 Chlorine					1.00	1.02	

Reagents:

85CVM26AP_00083 Amount Added: 10.00 Units: mL

Report Date: 30-Oct-2018 09:15:03 Chrom Revision: 2.3 16-Oct-2018 09:58:52

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\23140-0009818-013.d

Injection Date: 29-Oct-2018 12:46:00 Instrument ID: 1500 Operator ID:

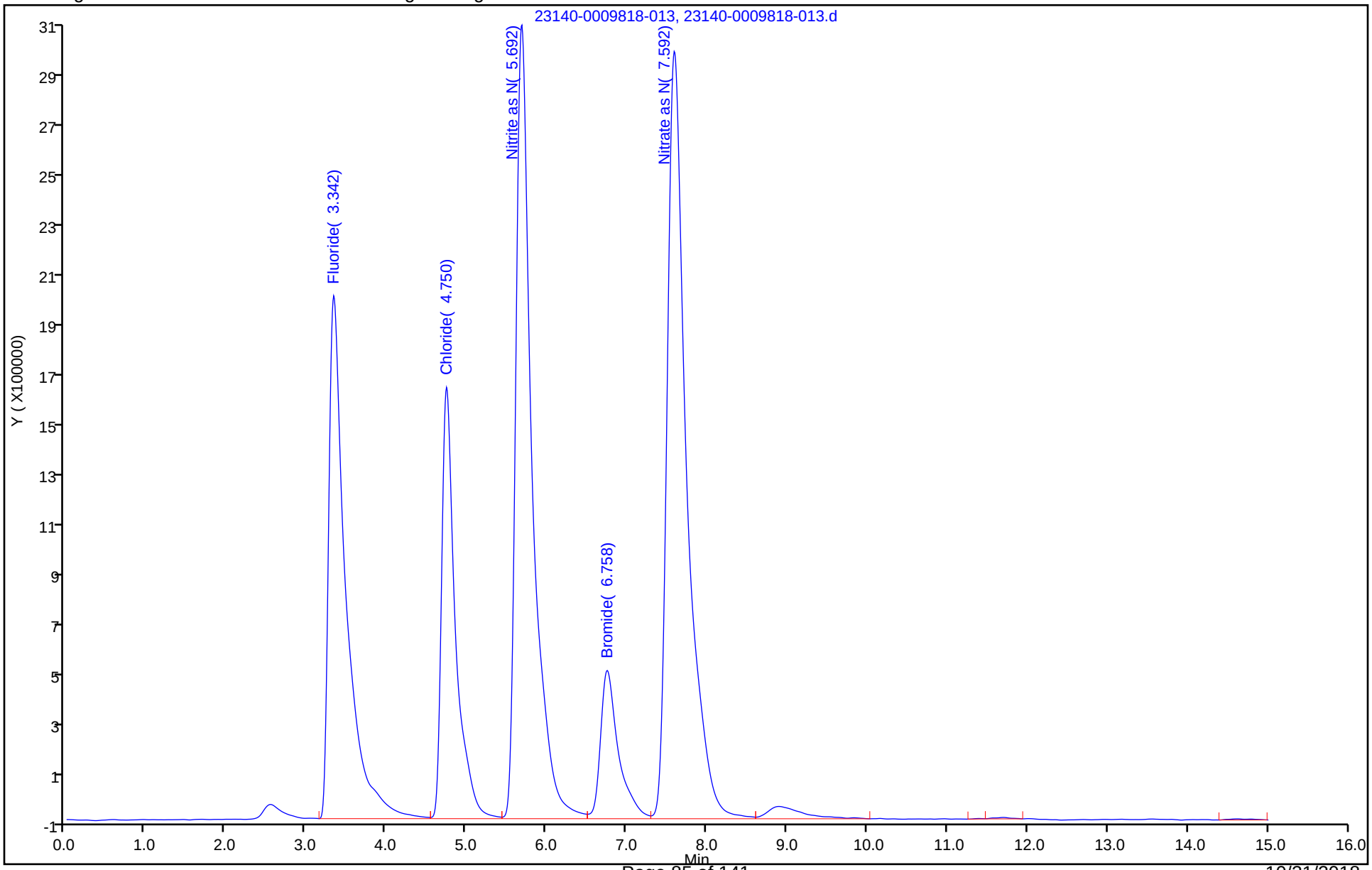
Lims ID: CCV Worklist Smp#: 13

Client ID:

Injection Vol: 1.0 ul Dil. Factor: 1.0000 ALS Bottle#: 0

Method: 0050_26A_1500 Limit Group: IC 0050_26A ICAL

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



FORM VII
HPLC/IC CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Knoxville Job No.: 140-13157-1

SDG No.:

Lab Sample ID: CCV 140-24920/22 Calibration Date: 10/29/2018 15:23

Instrument ID: 1500 Calib Start Date: 08/01/2018 09:59

GC Column: AS22 ID: Calib End Date: 08/01/2018 11:43

Lab File ID: 32140-0009818-022.d Conc. Units: mg/L

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Fluoride	QuaF		30485627		1.01	1.00	1.3	10.0
Chloride	QuaF		20004153		1.02	1.00	2.0	10.0
Nitrite as N	QuaF		43634013		1.01	1.00	1.1	10.0
Bromide	QuaF		8738722		1.01	1.00	1.3	10.0
Nitrate as N	QuaF		49998192		1.01	1.00	0.6	10.0

FORM VII 0050/26A

FORM VII
HPLC/IC CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-13157-1

SDG No.:

Lab Sample ID: CCV 140-24920/22 Calibration Date: 10/29/2018 15:23

Instrument ID: 1500 Calib Start Date: 08/01/2018 09:59

GC Column: AS22 ID: Calib End Date: 08/01/2018 11:43

Lab File ID: 32140-0009818-022.d

Analyte	RT	RT WINDOW	
		FROM	TO
Fluoride	3.34	3.08	3.58
Chloride	4.75	4.49	4.99
Nitrite as N	5.68	5.43	5.93
Bromide	6.75	6.50	7.00
Nitrate as N	7.59	7.33	7.83

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\32140-0009818-022.d
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 29-Oct-2018 15:23:00 ALS Bottle#: 0 Worklist Smp#: 22
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0009818-022
Misc. Info.: 32 ccv
Operator ID: Instrument ID: 1500
Sublist: chrom-0050_26A_1500*sub3

Method: \\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 30-Oct-2018 09:15:17 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK003

First Level Reviewer: humphreyj Date: 30-Oct-2018 09:14:15

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 Fluoride	3.342	3.333	0.009	30485627	1.00	1.01	
2 Chloride	4.750	4.742	0.008	20004153	1.00	1.02	
3 Nitrite as N	5.683	5.683	0.000	43634013	1.00	1.01	
4 Bromide	6.750	6.750	0.000	8738722	1.00	1.01	
5 Nitrate as N	7.592	7.583	0.009	49998192	1.00	1.01	
S 7 Hydrogen Chloride					1.03	1.05	
S 8 Hydro Fluoric Acid					1.05	1.07	
S 9 Hydrobromic Acid					1.01	1.03	
S 10 Nitric acid					4.50	4.52	
S 11 Nitrous Acid					3.36	3.39	
S 12 Br					1.00	1.01	
S 13 Chlorine					1.00	1.02	

Reagents:

85CVM26AP_00083 Amount Added: 10.00 Units: mL

Report Date: 30-Oct-2018 09:15:17 Chrom Revision: 2.3 16-Oct-2018 09:58:52

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\32140-0009818-022.d

Injection Date: 29-Oct-2018 15:23:00 Instrument ID: 1500 Operator ID:

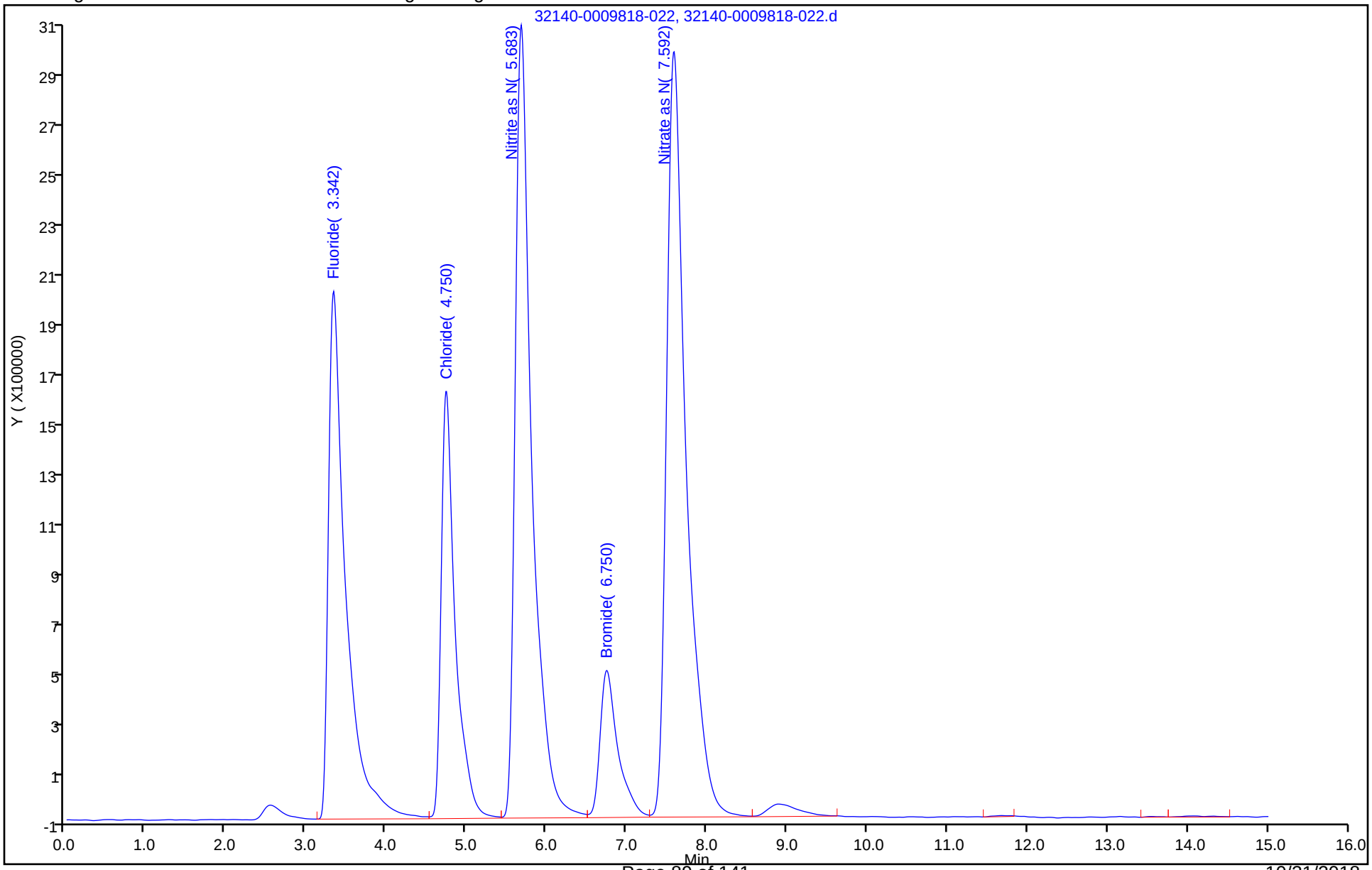
Lims ID: CCV Worklist Smp#: 22

Client ID:

Injection Vol: 1.0 ul Dil. Factor: 1.0000 ALS Bottle#: 0

Method: 0050_26A_1500 Limit Group: IC 0050_26A ICAL

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville
Job No.: 140-13157-1
SDG No.:
Client Sample ID:
Lab Sample ID: MB 140-24919/3-A
Matrix: Air
Lab File ID: 15140-0009818-005.d
Analysis Method: 0050/26A
Date Collected:
Extraction Method: 0050/26A
Date Extracted: 10/29/2018 00:00
Sample wt/vol: 1(Sample)
Date Analyzed: 10/29/2018 10:20
Con. Extract Vol.: 100(mL)
Dilution Factor: 1
Injection Volume: 1(uL)
GC Column: AS22 ID:
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 24920
Units: ug/Sample

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
7647-01-0	Hydrogen Chloride	ND		10.3	4.32

TestAmerica Knoxville
Target Compound Quantitation Report

Data File:	\\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\15140-0009818-005.d				
Lims ID:	MB 140-24919/3-A				
Client ID:					
Sample Type:	MB				
Inject. Date:	29-Oct-2018 10:20:00	ALS Bottle#:	0	Worklist Smp#:	5
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Sample Info:	140-0009818-005				
Misc. Info.:	15 mb 140-24919/3-a				
Operator ID:		Instrument ID:	1500		
Method:	\\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\0050_26A_1500.m				
Limit Group:	IC 0050_26A ICAL				
Last Update:	30-Oct-2018 09:14:46	Calib Date:	01-Aug-2018 11:43:00		
Integrator:	Falcon				
Quant Method:	External Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d				
Column 1 :			Det: IC		
Process Host:	XAWRK003				
First Level Reviewer: humphreyj		Date:	30-Oct-2018 09:01:04		

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride		3.333				ND	
	2 Chloride		4.742				ND	
	3 Nitrite as N		5.683				ND	
	4 Bromide		6.750				ND	U
	5 Nitrate as N		7.583				ND	
	6 Iodide		14.800				ND	
S	7 Hydrogen Chloride		0.000				ND	
S	8 Hydro Fluoric Acid		0.000				ND	
S	9 Hydrobromic Acid		0.000				ND	
S	10 Nitric acid		0.000				ND	
S	11 Nitrous Acid		0.000				ND	
S	12 Br		0.000				ND	
S	13 Chlorine		0.000				ND	

QC Flag Legend

Review Flags

U - Marked Undetected

Report Date: 30-Oct-2018 09:14:53 Chrom Revision: 2.3 16-Oct-2018 09:58:52

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\15140-0009818-005.d

Injection Date: 29-Oct-2018 10:20:00 Instrument ID: 1500 Operator ID:

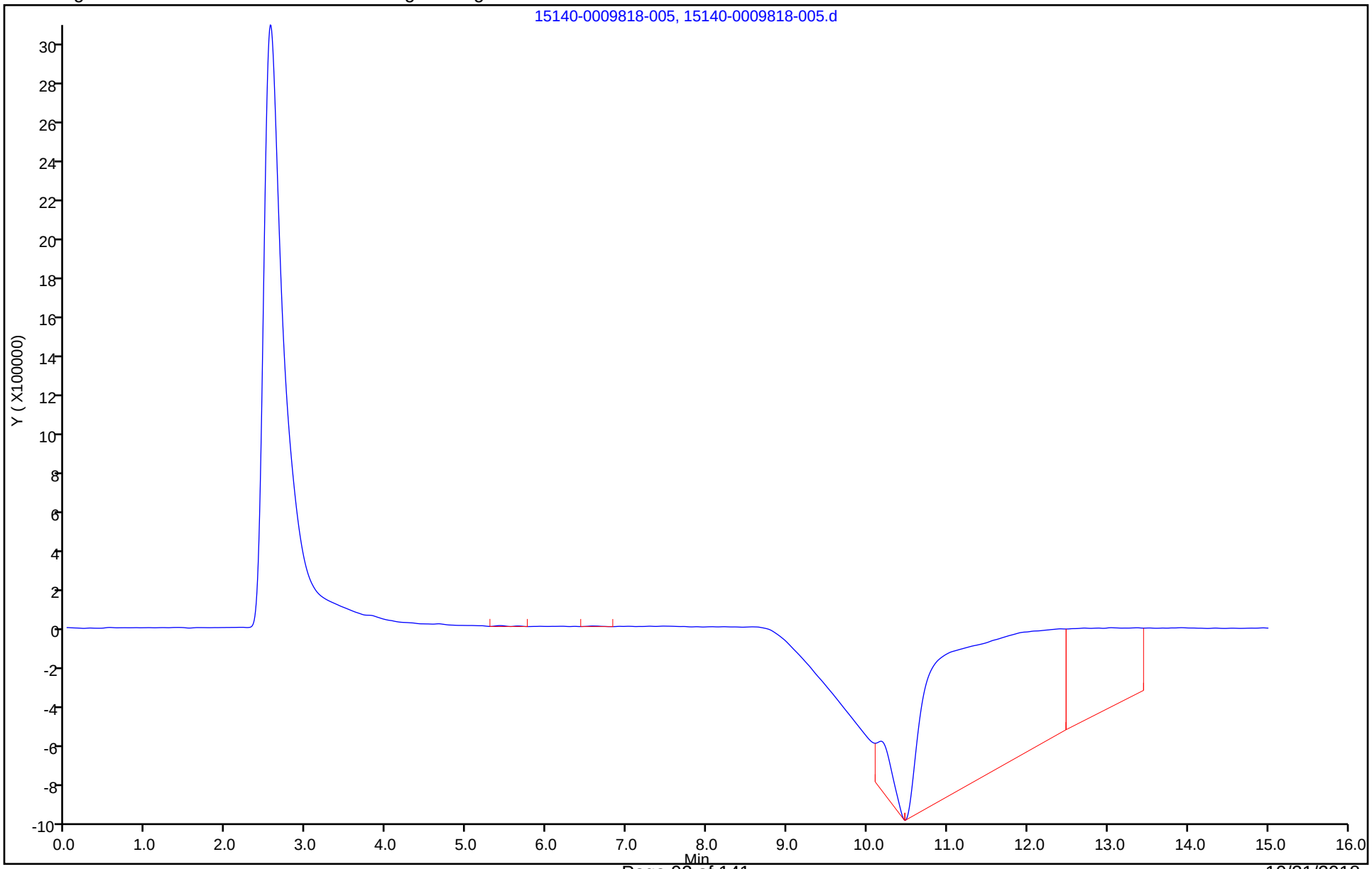
Lims ID: MB 140-24919/3-A Worklist Smp#: 5

Client ID:

Injection Vol: 1.0 ul Dil. Factor: 1.0000 ALS Bottle#: 0

Method: 0050_26A_1500 Limit Group: IC 0050_26A ICAL

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville
Job No.: 140-13157-1
SDG No.:
Client Sample ID:
Lab Sample ID: CCB 140-24920/2
Matrix: Air
Lab File ID: 12140-0009818-002.d
Analysis Method: 0050/26A
Date Collected:
Extraction Method:
Date Extracted:
Sample wt/vol: 10(mL)
Date Analyzed: 10/29/2018 09:28
Con. Extract Vol.: 10(mL)
Dilution Factor: 1
Injection Volume: 1(uL)
GC Column: AS22 ID:
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 24920
Units: mg/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
7647-01-0	Hydrogen Chloride	0.01211	J	0.0500	0.0100

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\12140-0009818-002.d
Lims ID: CCB
Client ID:
Sample Type: CCB
Inject. Date: 29-Oct-2018 09:28:00 ALS Bottle#: 0 Worklist Smp#: 2
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0009818-002
Misc. Info.: 12 ccb
Operator ID: Instrument ID: 1500

Method: \\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 30-Oct-2018 09:14:46 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK003

First Level Reviewer: humphreyj Date: 30-Oct-2018 08:59:47

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride	3.417	3.333	0.084	53502		0.001829	M
	2 Chloride	4.742	4.742	0.000	227066		0.0118	M
	3 Nitrite as N		5.683				ND	U
	4 Bromide		6.750				ND	
	5 Nitrate as N		7.583				ND	
	6 Iodide		14.800				ND	
S	7 Hydrogen Chloride						0.0121	
S	8 Hydro Fluoric Acid						0.001926	
S	9 Hydrobromic Acid		0.000				ND	
S	10 Nitric acid		0.000				ND	
S	11 Nitrous Acid		0.000				ND	
S	12 Br		0.000				ND	
S	13 Chlorine						0.0118	

QC Flag Legend

Review Flags
M - Manually Integrated
U - Marked Undetected

Report Date: 30-Oct-2018 09:14:50 Chrom Revision: 2.3 16-Oct-2018 09:58:52

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\12140-0009818-002.d

Injection Date: 29-Oct-2018 09:28:00 Instrument ID: 1500 Operator ID:

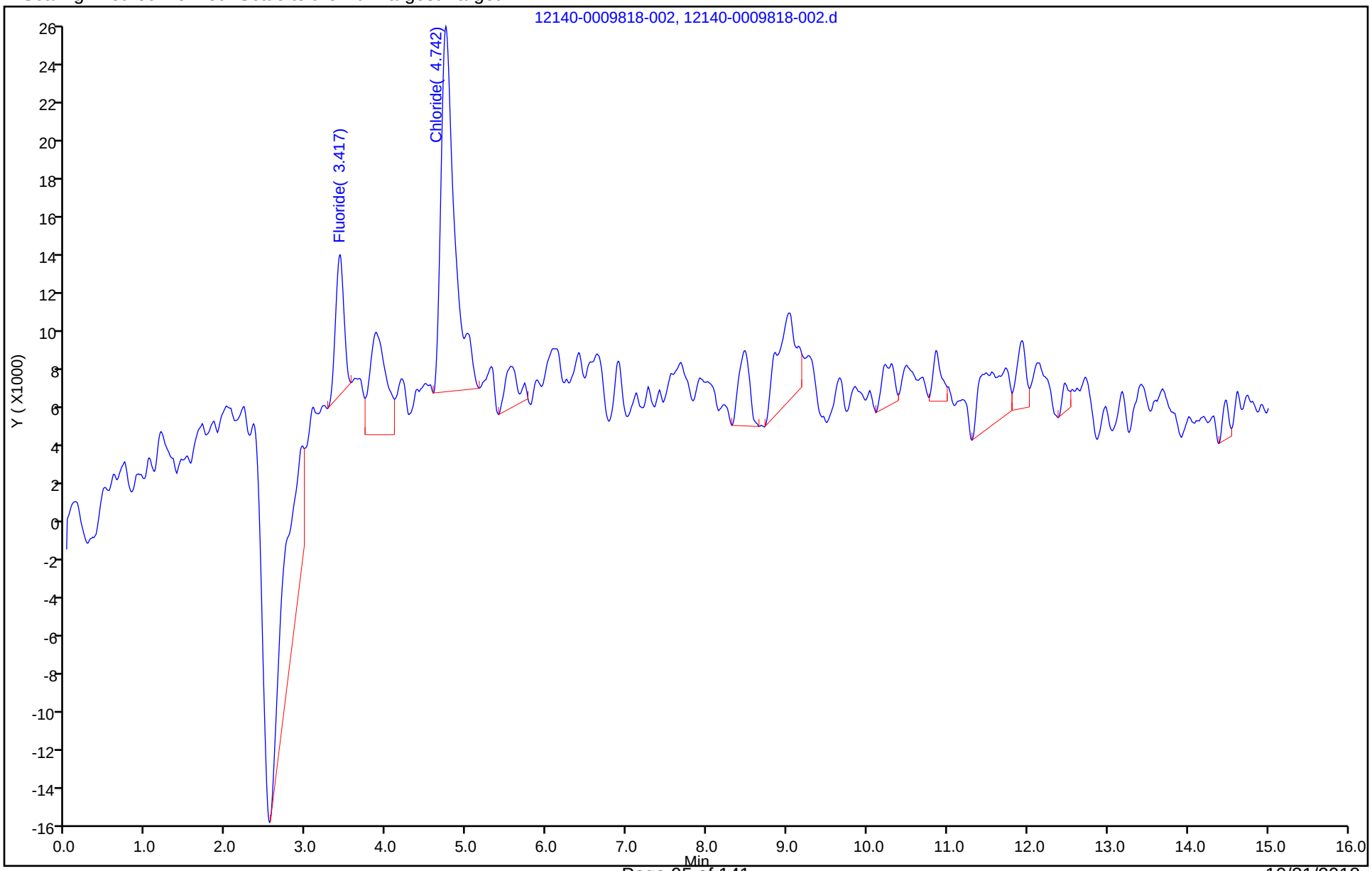
Lims ID: CCB Worklist Smp#: 2

Client ID:

Injection Vol: 1.0 ul Dil. Factor: 1.0000 ALS Bottle#: 0

Method: 0050_26A_1500 Limit Group: IC 0050_26A ICAL

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



Manual Integration/User Assign Peak Report

TestAmerica Knoxville

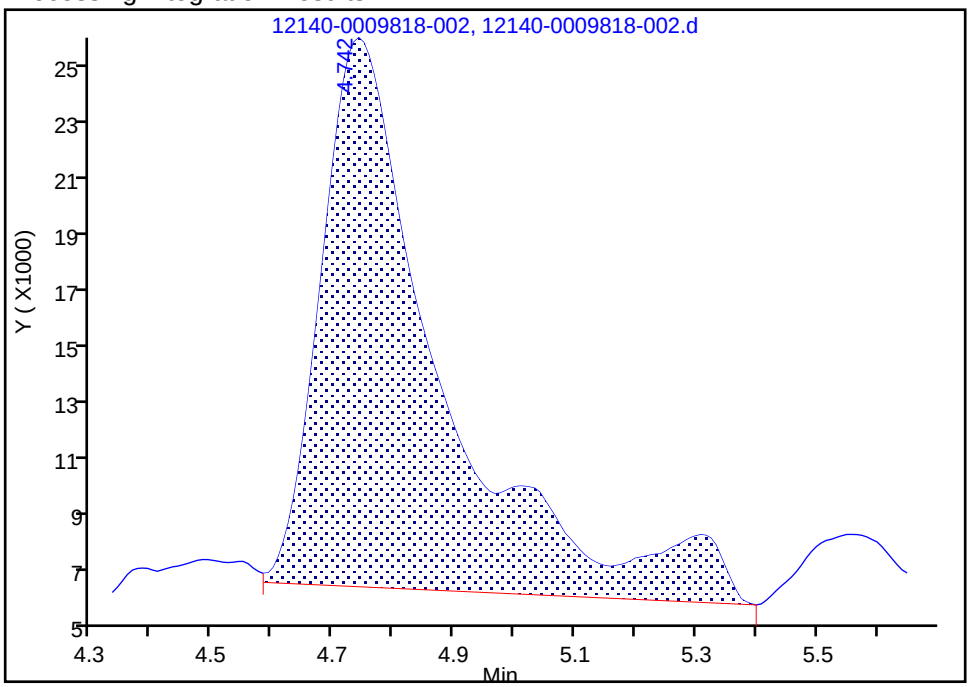
Data File:	\\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\12140-0009818-002.d				
Injection Date:	29-Oct-2018 09:28:00	Instrument ID:	1500		
Lims ID:	CCB				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	2
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

2 Chloride, CAS: 16887-00-6

Signal: 1

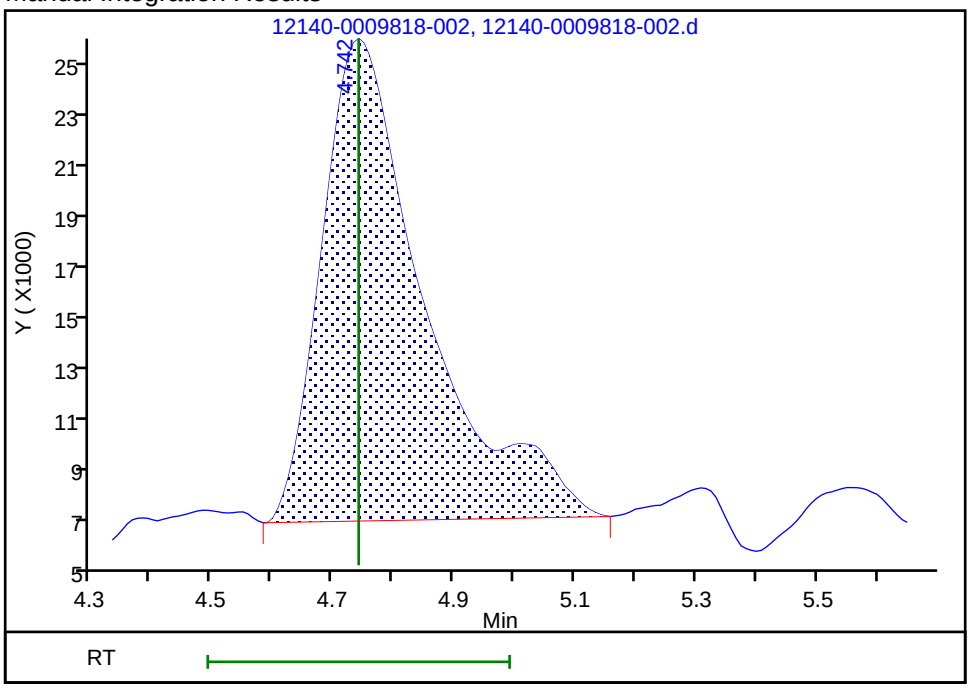
Processing Integration Results

RT: 4.74
Area: 274028
Amount: 0.014211
Amount Units: ug/ml



Manual Integration Results

RT: 4.74
Area: 227066
Amount: 0.011776
Amount Units: ug/ml



Reviewer: humphreyj, 30-Oct-2018 08:59:34

Audit Action: Manually Integrated Audit Reason: Baseline Smoothing

Manual Integration/User Assign Peak Report

TestAmerica Knoxville

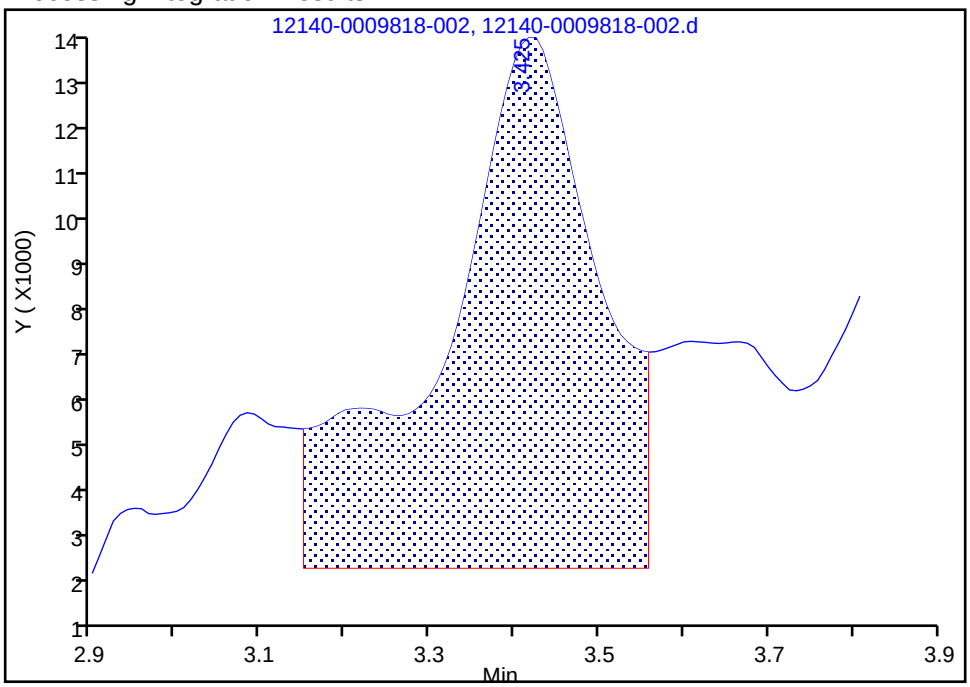
Data File:	\\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\12140-0009818-002.d				
Injection Date:	29-Oct-2018 09:28:00	Instrument ID:	1500		
Lims ID:	CCB				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	2
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

1 Fluoride, CAS: 16984-48-8

Signal: 1

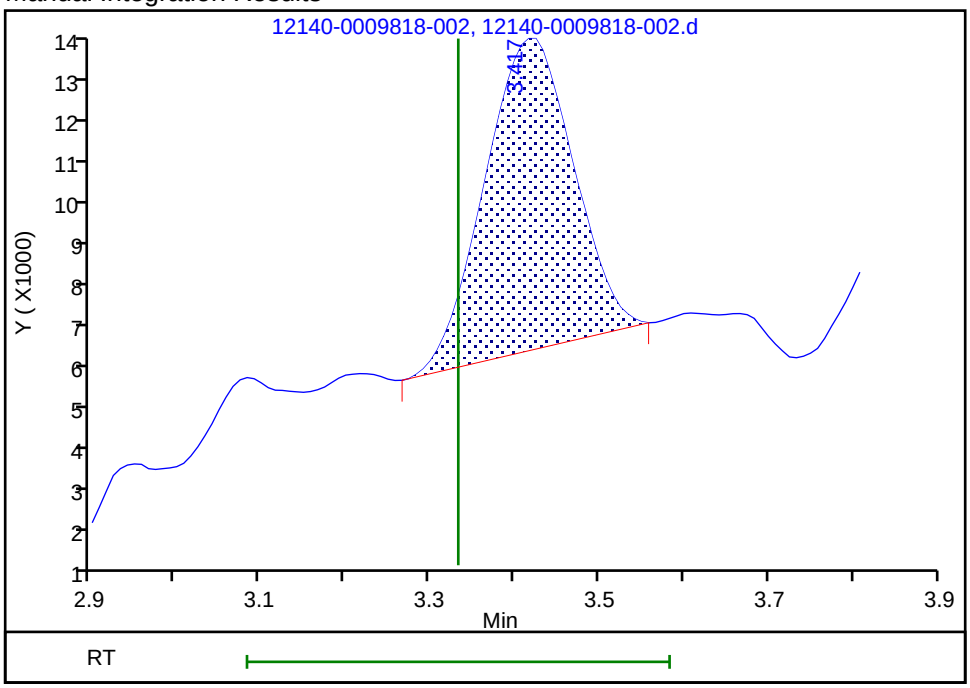
Processing Integration Results

RT: 3.43
Area: 144892
Amount: 0.004952
Amount Units: ug/ml



Manual Integration Results

RT: 3.42
Area: 53502
Amount: 0.001829
Amount Units: ug/ml



Reviewer: humphreyj, 30-Oct-2018 08:59:22

Audit Action: Manually Integrated Audit Reason: Baseline Smoothing

FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville
Job No.: 140-13157-1
SDG No.:
Client Sample ID:
Lab Sample ID: CCB 140-24920/14
Matrix: Air
Lab File ID: 24140-0009818-014.d
Analysis Method: 0050/26A
Date Collected:
Extraction Method:
Date Extracted:
Sample wt/vol: 10(mL)
Date Analyzed: 10/29/2018 13:04
Con. Extract Vol.: 10(mL)
Dilution Factor: 1
Injection Volume: 1(uL)
GC Column: AS22 ID:
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 24920
Units: mg/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
7647-01-0	Hydrogen Chloride	ND		0.0500	0.0100

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\24140-0009818-014.d
Lims ID: CCB
Client ID:
Sample Type: CCB
Inject. Date: 29-Oct-2018 13:04:00 ALS Bottle#: 0 Worklist Smp#: 14
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0009818-014
Misc. Info.: 24 ccb
Operator ID: Instrument ID: 1500

Method: \\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 30-Oct-2018 09:15:03 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK003

First Level Reviewer: humphreyj Date: 30-Oct-2018 09:11:11

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride		3.333				ND	
	2 Chloride	4.758	4.742	0.016	139197		0.007220	M
	3 Nitrite as N		5.683				ND	
	4 Bromide		6.750				ND	U
	5 Nitrate as N		7.583				ND	U
	6 Iodide		14.800				ND	
S	7 Hydrogen Chloride						0.007425	
S	8 Hydro Fluoric Acid		0.000				ND	
S	9 Hydrobromic Acid		0.000				ND	
S	10 Nitric acid		0.000				ND	
S	11 Nitrous Acid		0.000				ND	
S	12 Br		0.000				ND	
S	13 Chlorine						0.007220	

QC Flag Legend

Review Flags
M - Manually Integrated
U - Marked Undetected

Report Date: 30-Oct-2018 09:15:05 Chrom Revision: 2.3 16-Oct-2018 09:58:52

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\24140-0009818-014.d

Injection Date: 29-Oct-2018 13:04:00 Instrument ID: 1500 Operator ID:

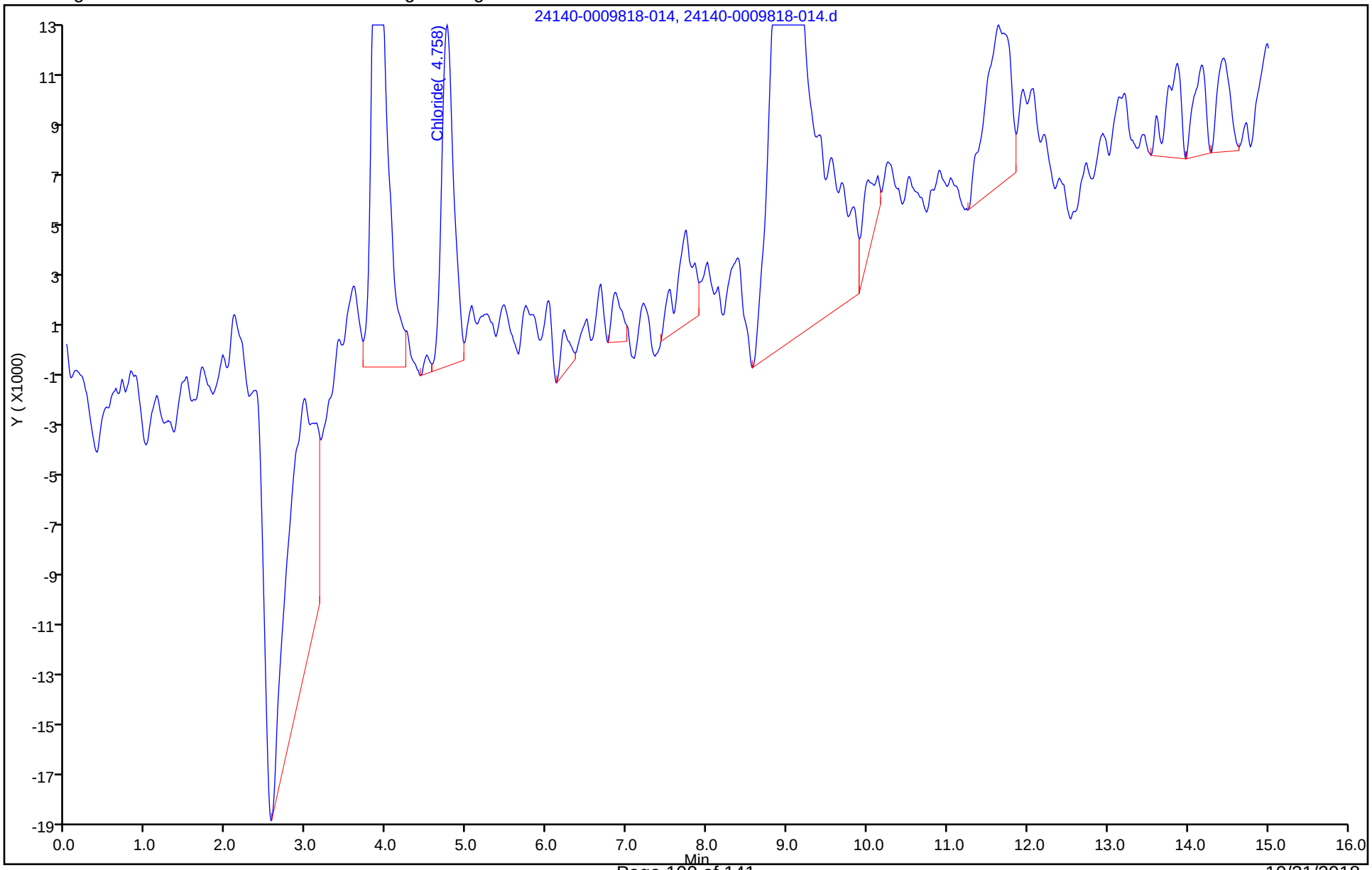
Lims ID: CCB Worklist Smp#: 14

Client ID:

Injection Vol: 1.0 ul Dil. Factor: 1.0000 ALS Bottle#: 0

Method: 0050_26A_1500 Limit Group: IC 0050_26A ICAL

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



Manual Integration/User Assign Peak Report

TestAmerica Knoxville

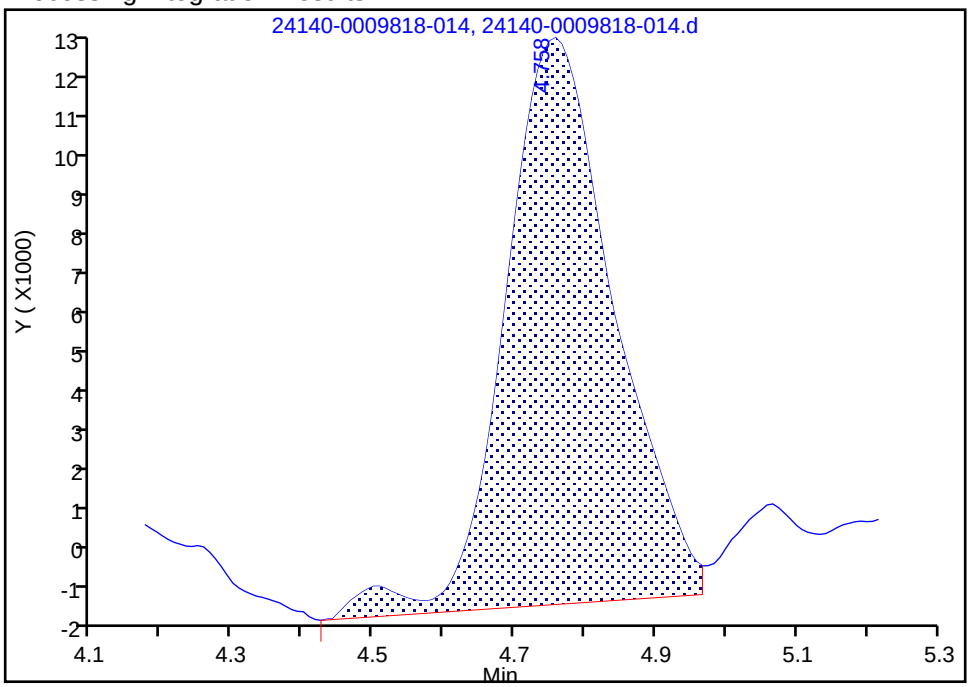
Data File:	\\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\24140-0009818-014.d				
Injection Date:	29-Oct-2018 13:04:00	Instrument ID:	1500		
Lims ID:	CCB				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

2 Chloride, CAS: 16887-00-6

Signal: 1

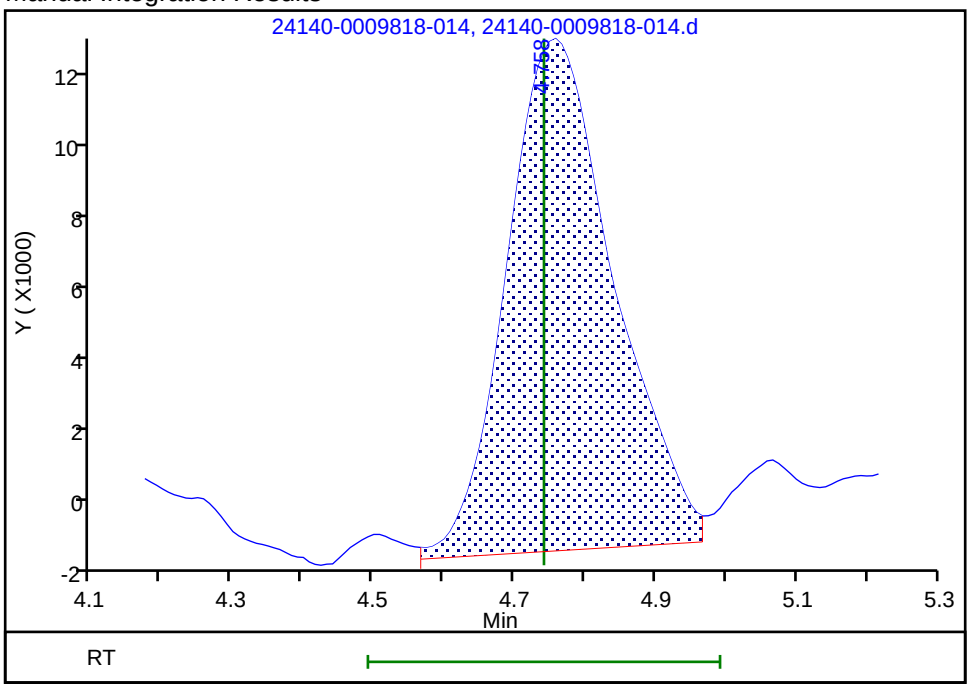
Processing Integration Results

RT: 4.76
Area: 142677
Amount: 0.007400
Amount Units: ug/ml



Manual Integration Results

RT: 4.76
Area: 139197
Amount: 0.007220
Amount Units: ug/ml



Reviewer: humphreyj, 30-Oct-2018 09:10:48

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville
Job No.: 140-13157-1
SDG No.:
Client Sample ID:
Lab Sample ID: CCB 140-24920/23
Matrix: Air
Lab File ID: 33140-0009818-023.d
Analysis Method: 0050/26A
Date Collected:
Extraction Method:
Date Extracted:
Sample wt/vol: 10(mL)
Date Analyzed: 10/29/2018 15:40
Con. Extract Vol.: 10(mL)
Dilution Factor: 1
Injection Volume: 1(uL)
GC Column: AS22 ID:
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 24920
Units: mg/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
7647-01-0	Hydrogen Chloride	ND		0.0500	0.0100

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\33140-0009818-023.d
Lims ID: CCB
Client ID:
Sample Type: CCB
Inject. Date: 29-Oct-2018 15:40:00 ALS Bottle#: 0 Worklist Smp#: 23
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0009818-023
Misc. Info.: 33 ccb
Operator ID: Instrument ID: 1500

Method: \\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 30-Oct-2018 09:15:17 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK003

First Level Reviewer: humphreyj Date: 30-Oct-2018 09:14:11

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride		3.333				ND	
	2 Chloride	4.758	4.742	0.016	51483		0.002670	M
	3 Nitrite as N		5.683				ND	
	4 Bromide		6.750				ND	
	5 Nitrate as N	7.625	7.583	0.042	38971		0.000815	
	6 Iodide		14.800				ND	
S	7 Hydrogen Chloride						0.002746	
S	8 Hydro Fluoric Acid		0.000				ND	
S	9 Hydrobromic Acid		0.000				ND	
S	10 Nitric acid						0.003665	
S	11 Nitrous Acid		0.000				ND	
S	12 Br		0.000				ND	
S	13 Chlorine						0.002670	

QC Flag Legend

Review Flags
M - Manually Integrated

Report Date: 30-Oct-2018 09:15:18 Chrom Revision: 2.3 16-Oct-2018 09:58:52

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\33140-0009818-023.d

Injection Date: 29-Oct-2018 15:40:00 Instrument ID: 1500 Operator ID:

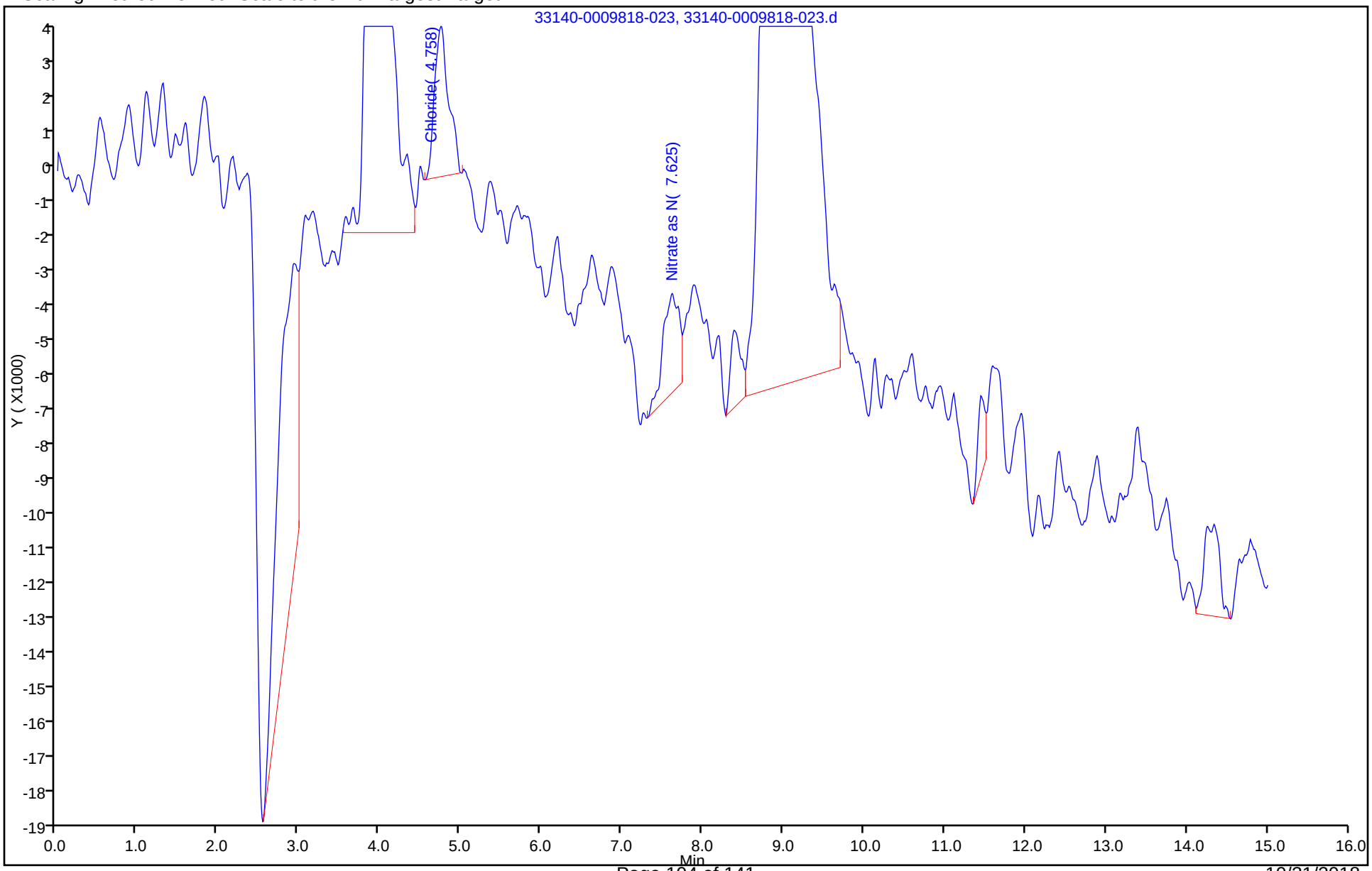
Lims ID: CCB Worklist Smp#: 23

Client ID:

Injection Vol: 1.0 ul Dil. Factor: 1.0000 ALS Bottle#: 0

Method: 0050_26A_1500 Limit Group: IC 0050_26A ICAL

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



Manual Integration/User Assign Peak Report

TestAmerica Knoxville

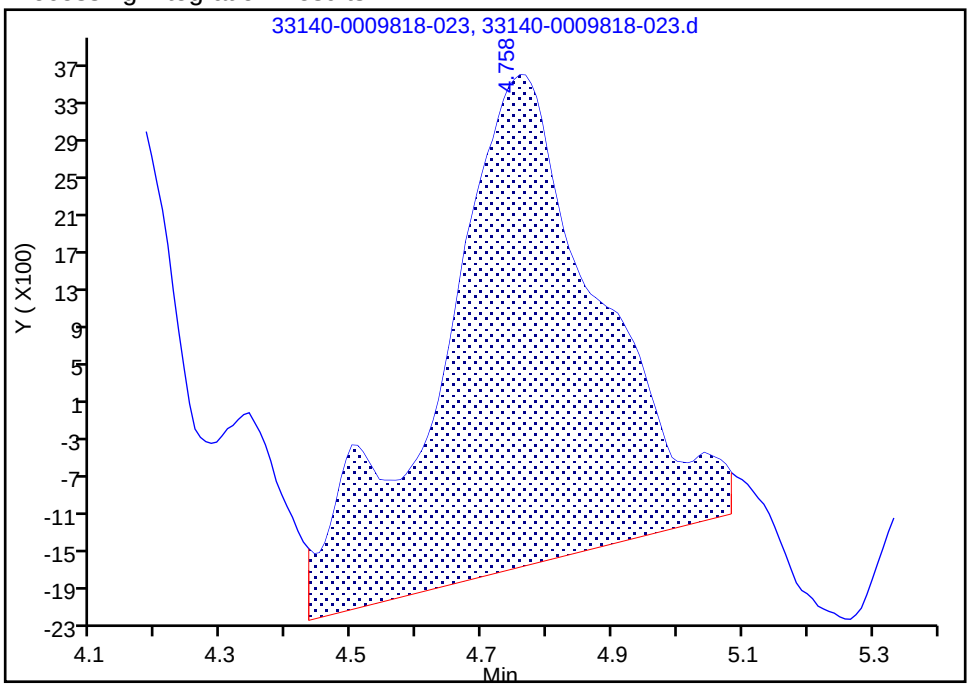
Data File:	\\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\33140-0009818-023.d				
Injection Date:	29-Oct-2018 15:40:00	Instrument ID:	1500		
Lims ID:	CCB				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	23
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

2 Chloride, CAS: 16887-00-6

Signal: 1

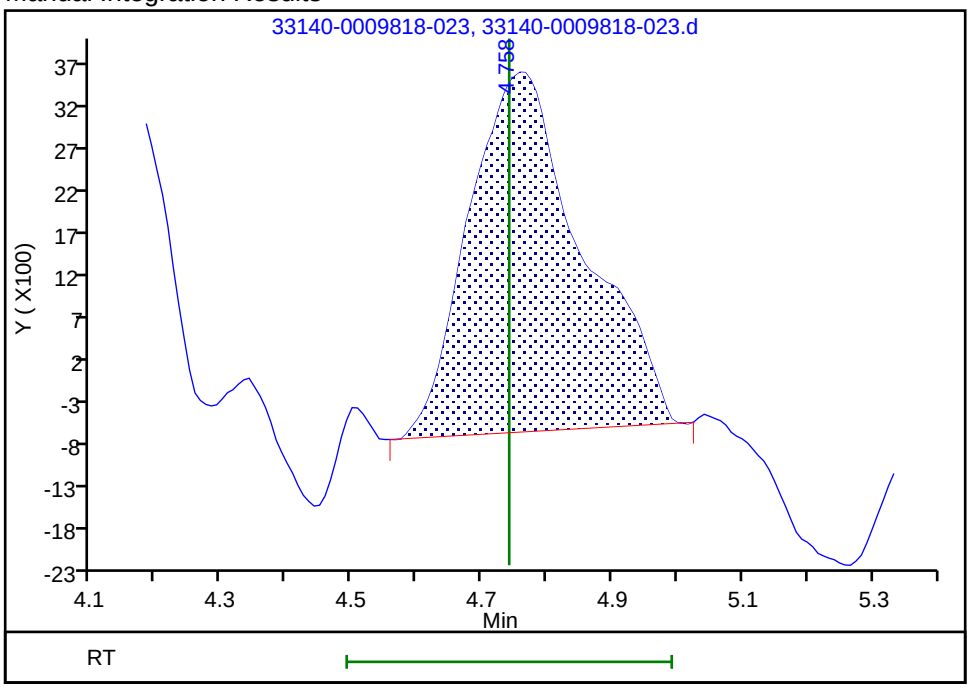
Processing Integration Results

RT: 4.76
Area: 90322
Amount: 0.004685
Amount Units: ug/ml



Manual Integration Results

RT: 4.76
Area: 51483
Amount: 0.002670
Amount Units: ug/ml



Reviewer: humphreyj, 30-Oct-2018 09:13:55

Audit Action: Manually Integrated Audit Reason: Baseline Smoothing

FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville
Job No.: 140-13157-1
SDG No.:
Client Sample ID:
Lab Sample ID: ICB 140-22408/9
Matrix: Air
Lab File ID: 9140-0008938-009.d
Analysis Method: 0050/26A
Date Collected:
Extraction Method:
Date Extracted:
Sample wt/vol: 10(mL)
Date Analyzed: 08/01/2018 12:21
Con. Extract Vol.: 10(mL)
Dilution Factor: 1
Injection Volume: 1(uL)
GC Column: AS22 ID:
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 22408
Units: mg/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
7647-01-0	Hydrogen Chloride	ND		0.0500	0.0100

TestAmerica Knoxville
Target Compound Quantitation Report

Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\9140-0008938-009.d				
Lims ID:	ICB				
Client ID:					
Sample Type:	ICB				
Inject. Date:	01-Aug-2018 12:21:00	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Sample Info:	140-0008938-009				
Misc. Info.:	9 icb				
Operator ID:		Instrument ID:	1500		
Method:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\0050_26A_1500.m				
Limit Group:	IC 0050_26A ICAL				
Last Update:	01-Aug-2018 13:07:51	Calib Date:	01-Aug-2018 11:43:00		
Integrator:	Falcon				
Quant Method:	External Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d				
Column 1 :			Det: IC		
Process Host:	XAWRK022				
First Level Reviewer: humphreyj		Date:	01-Aug-2018 13:07:16		

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride		3.350				ND	U
	2 Chloride	4.800	4.792	0.008	71598		0.003714	M
	3 Nitrite as N		5.742				ND	
	4 Bromide		6.833				ND	U
	5 Nitrate as N		7.700				ND	
	6 Iodide		14.800				ND	
S	7 Hydrogen Chloride						0.003819	
S	8 Hydro Fluoric Acid		0.000				ND	
S	9 Hydrobromic Acid		0.000				ND	
S	10 Nitric acid		0.000				ND	
S	11 Nitrous Acid		0.000				ND	
S	12 Br		0.000				ND	
S	13 Chlorine						0.003714	

QC Flag Legend

Review Flags

M - Manually Integrated

U - Marked Undetected

Report Date: 01-Aug-2018 13:07:53 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\9140-0008938-009.d

Injection Date: 01-Aug-2018 12:21:00 Instrument ID: 1500 Operator ID:

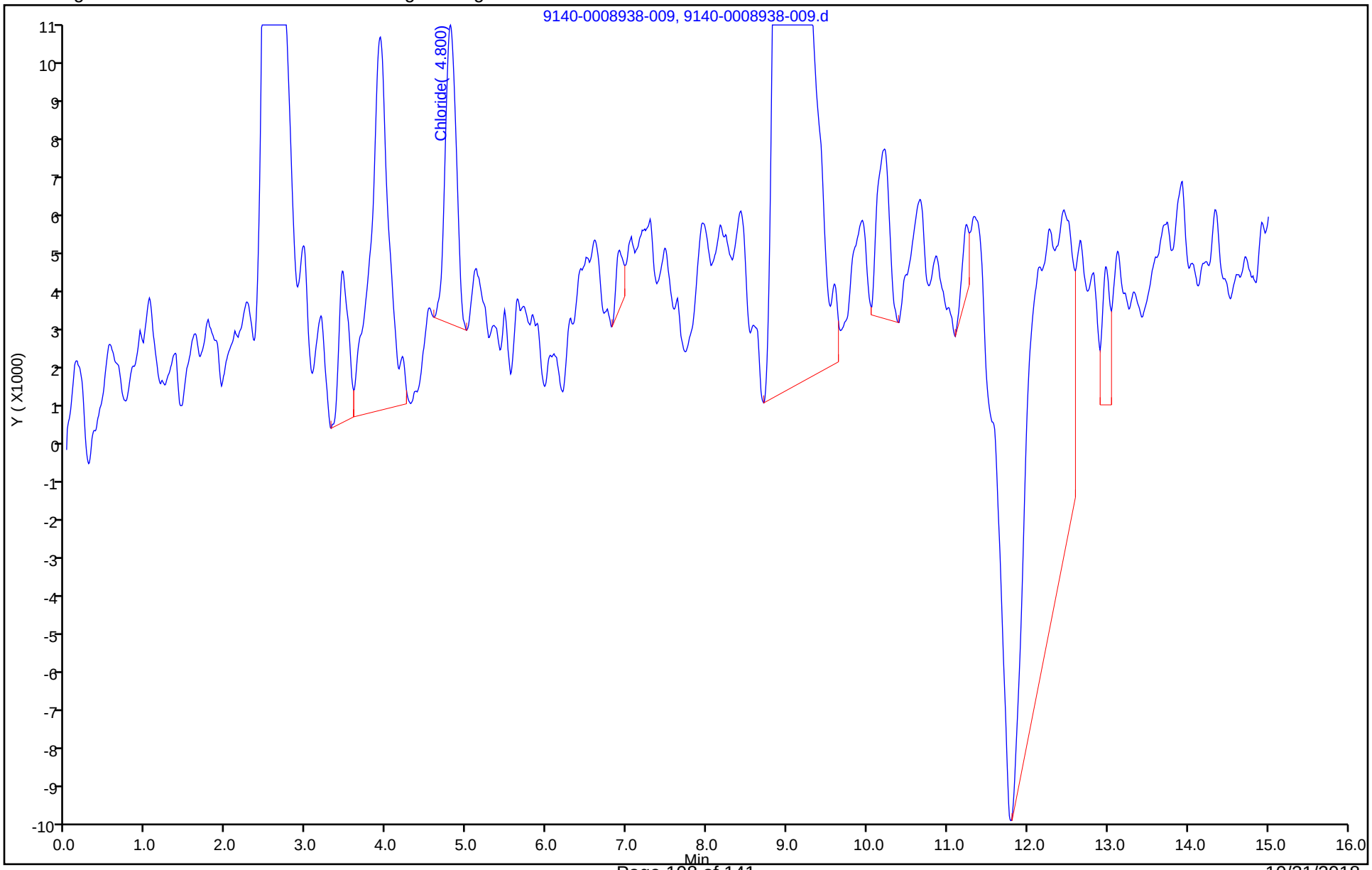
Lims ID: ICB Worklist Smp#: 9

Client ID:

Injection Vol: 1.0 ul Dil. Factor: 1.0000 ALS Bottle#: 0

Method: 0050_26A_1500 Limit Group: IC 0050_26A ICAL

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



Manual Integration/User Assign Peak Report

TestAmerica Knoxville

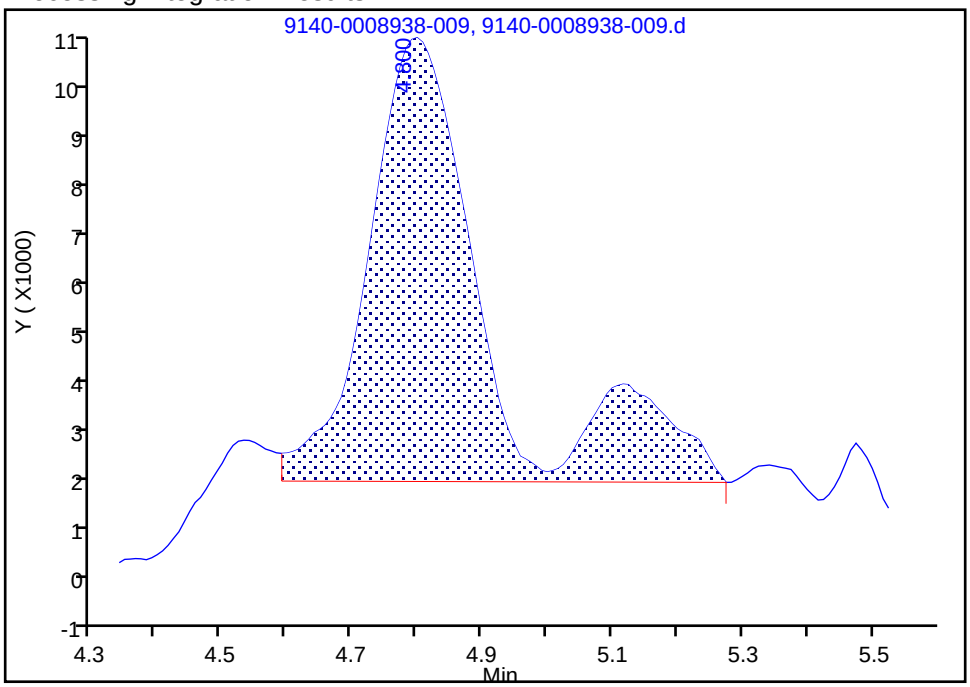
Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\9140-0008938-009.d				
Injection Date:	01-Aug-2018 12:21:00	Instrument ID:	1500		
Lims ID:	ICB				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

2 Chloride, CAS: 16887-00-6

Signal: 1

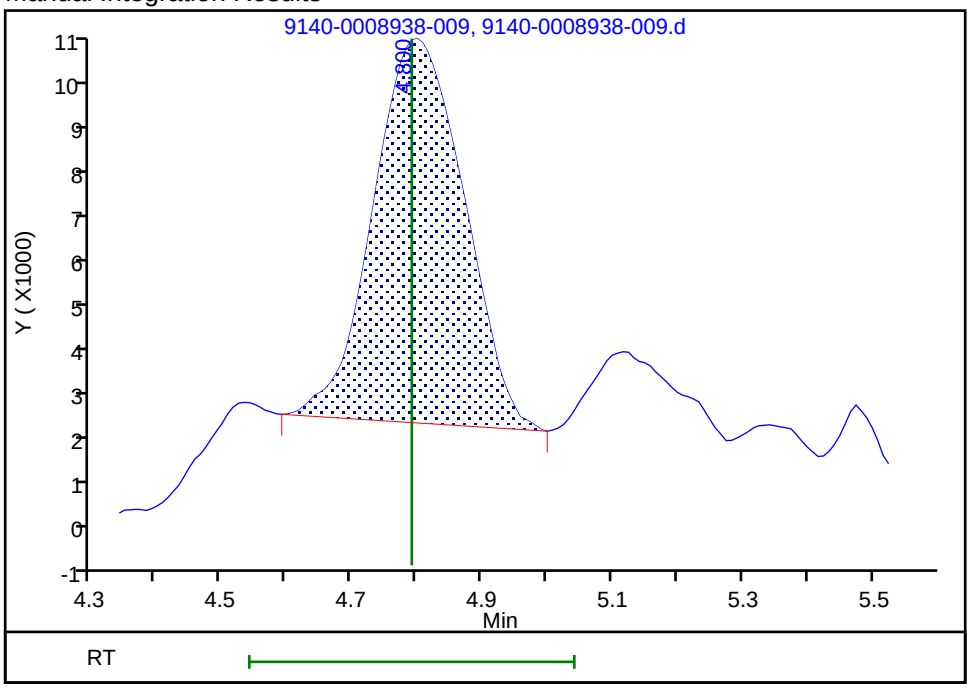
Processing Integration Results

RT: 4.80
Area: 95264
Amount: 0.004941
Amount Units: ug/ml



Manual Integration Results

RT: 4.80
Area: 71598
Amount: 0.003714
Amount Units: ug/ml



Reviewer: humphreyj, 01-Aug-2018 13:06:53

Audit Action: Manually Integrated Audit Reason: Baseline Smoothing

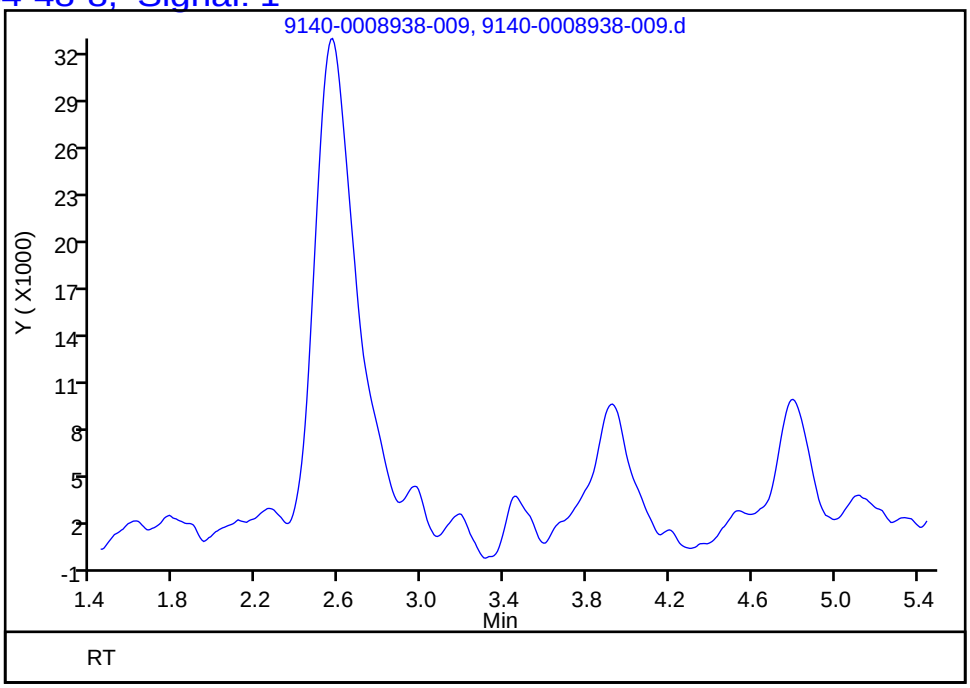
User Disabled Compound Report

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\9140-0008938-009.d				
Injection Date:	01-Aug-2018 12:21:00	Instrument ID:	1500		
Lims ID:	ICB				
Client ID:					
Operator ID:		ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		
Column:		Detector	IC		

1 Fluoride, CAS: 16984-48-8, Signal: 1

RT: 3.45
Response: 30794
Amount: 0.001052



Reviewer: humphreyj, 01-Aug-2018 13:07:16
Audit Action: Manually Integrated Audit Reason:

FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville
Job No.: 140-13157-1
SDG No.:
Client Sample ID:
Lab Sample ID: LCS 140-24919/1-A
Matrix: Air
Lab File ID: 13140-0009818-003.d
Analysis Method: 0050/26A
Date Collected:
Extraction Method: 0050/26A
Date Extracted: 10/29/2018 00:00
Sample wt/vol: 1(Sample)
Date Analyzed: 10/29/2018 09:45
Con. Extract Vol.: 100(mL)
Dilution Factor: 1
Injection Volume: 1(uL)
GC Column: AS22 ID:
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 24920
Units: ug/Sample

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
7647-01-0	Hydrogen Chloride	76.95		10.3	4.32

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\13140-0009818-003.d
Lims ID: LCS 140-24919/1-A
Client ID:
Sample Type: LCS
Inject. Date: 29-Oct-2018 09:45:00 ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0009818-003
Misc. Info.: 13 lcs 140-24919/1-a
Operator ID: Instrument ID: 1500

Method: \\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 30-Oct-2018 09:14:46 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK003

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride	3.333	3.333	0.000	22573558	0.7500	0.7552	
	2 Chloride	4.750	4.742	0.008	14608958	0.7500	0.7483	
	3 Nitrite as N	5.683	5.683	0.000	32261170	0.7500	0.7532	
	4 Bromide	6.758	6.750	0.008	6368735	0.7500	0.7397	
	5 Nitrate as N	7.600	7.583	0.017	36526093	0.7500	0.7420	
S	7 Hydrogen Chloride					0.7710	0.7695	
S	8 Hydro Fluoric Acid					0.7898	0.7954	
S	9 Hydrobromic Acid					0.7595	0.7490	
S	10 Nitric acid					3.37	3.34	
S	11 Nitrous Acid					2.52	2.53	
S	12 Br					0.7500	0.7397	
S	13 Chlorine					0.7500	0.7483	

Reagents:

85SPICVLCSS_00072 Amount Added: 10.00 Units: mL

Report Date: 30-Oct-2018 09:14:51 Chrom Revision: 2.3 16-Oct-2018 09:58:52

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\13140-0009818-003.d

Injection Date: 29-Oct-2018 09:45:00 Instrument ID: 1500 Operator ID:

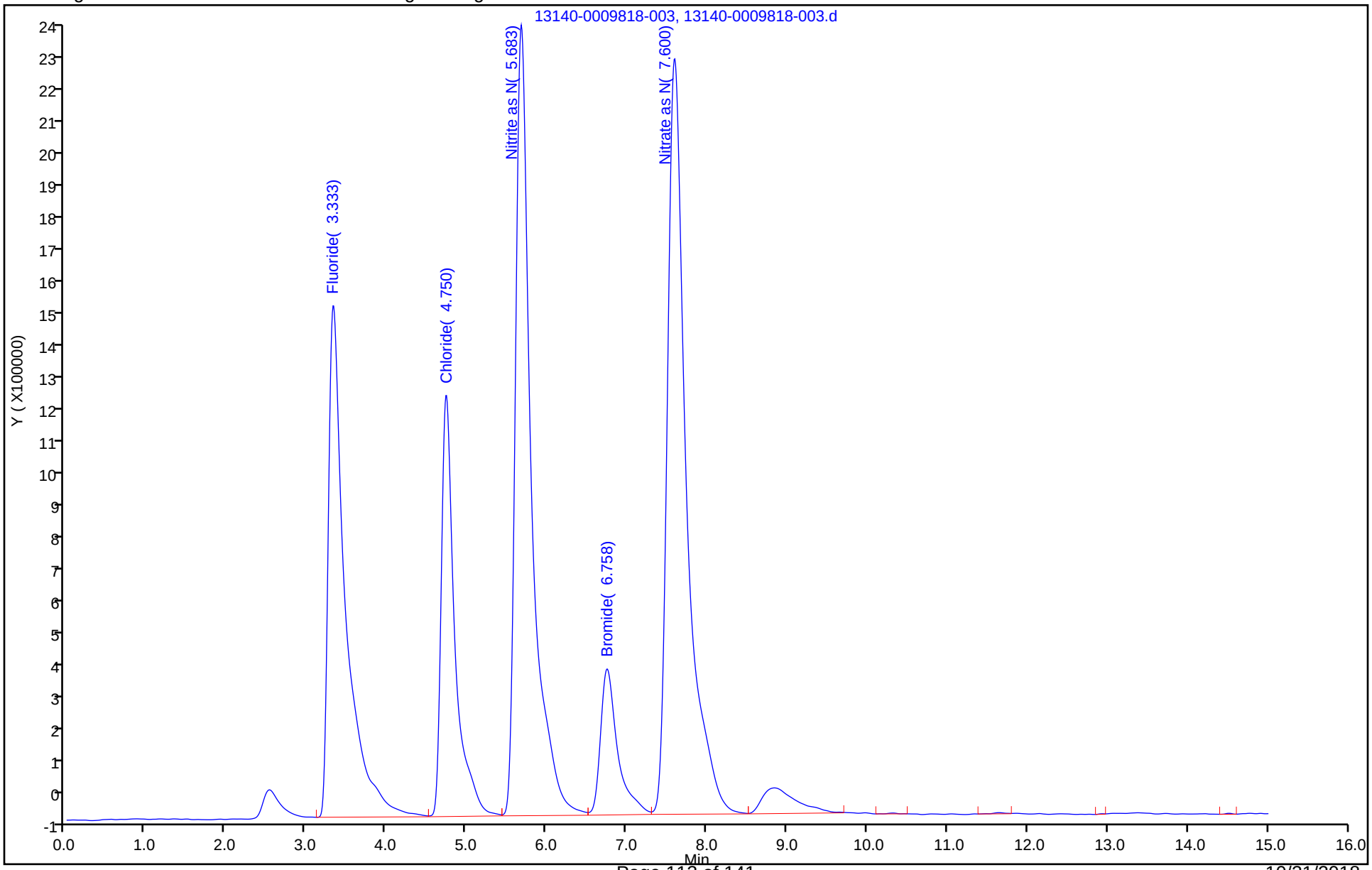
Lims ID: LCS 140-24919/1-A Worklist Smp#: 3

Client ID:

Injection Vol: 1.0 ul Dil. Factor: 1.0000 ALS Bottle#: 0

Method: 0050_26A_1500 Limit Group: IC 0050_26A ICAL

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville
Job No.: 140-13157-1
SDG No.:
Client Sample ID:
Lab Sample ID: LCSD 140-24919/2-A
Matrix: Air
Lab File ID: 14140-0009818-004.d
Analysis Method: 0050/26A
Date Collected:
Extraction Method: 0050/26A
Date Extracted: 10/29/2018 00:00
Sample wt/vol: 1(Sample)
Date Analyzed: 10/29/2018 10:02
Con. Extract Vol.: 100(mL)
Dilution Factor: 1
Injection Volume: 1(uL)
GC Column: AS22 ID:
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 24920
Units: ug/Sample

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
7647-01-0	Hydrogen Chloride	76.90		10.3	4.32

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\14140-0009818-004.d
Lims ID: LCSD 140-24919/2-A
Client ID:
Sample Type: LCSD
Inject. Date: 29-Oct-2018 10:02:00 ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 140-0009818-004
Misc. Info.: 14 lcsd 140-24919/2-a
Operator ID: Instrument ID: 1500

Method: \\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 30-Oct-2018 09:14:46 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK003

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride	3.342	3.333	0.009	22403059	0.7500	0.7496	
	2 Chloride	4.750	4.742	0.008	14598397	0.7500	0.7477	
	3 Nitrite as N	5.683	5.683	0.000	32235771	0.7500	0.7526	
	4 Bromide	6.758	6.750	0.008	6360931	0.7500	0.7387	
	5 Nitrate as N	7.600	7.583	0.017	36402847	0.7500	0.7395	
S	7 Hydrogen Chloride					0.7710	0.7690	
S	8 Hydro Fluoric Acid					0.7898	0.7895	
S	9 Hydrobromic Acid					0.7595	0.7481	
S	10 Nitric acid					3.37	3.33	
S	11 Nitrous Acid					2.52	2.53	
S	12 Br					0.7500	0.7387	
S	13 Chlorine					0.7500	0.7477	

Reagents:

85SPLCSDS_00071 Amount Added: 10.00 Units: mL

Report Date: 30-Oct-2018 09:14:52 Chrom Revision: 2.3 16-Oct-2018 09:58:52

TestAmerica Knoxville

Data File: \\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\14140-0009818-004.d

Injection Date: 29-Oct-2018 10:02:00 Instrument ID: 1500 Operator ID:

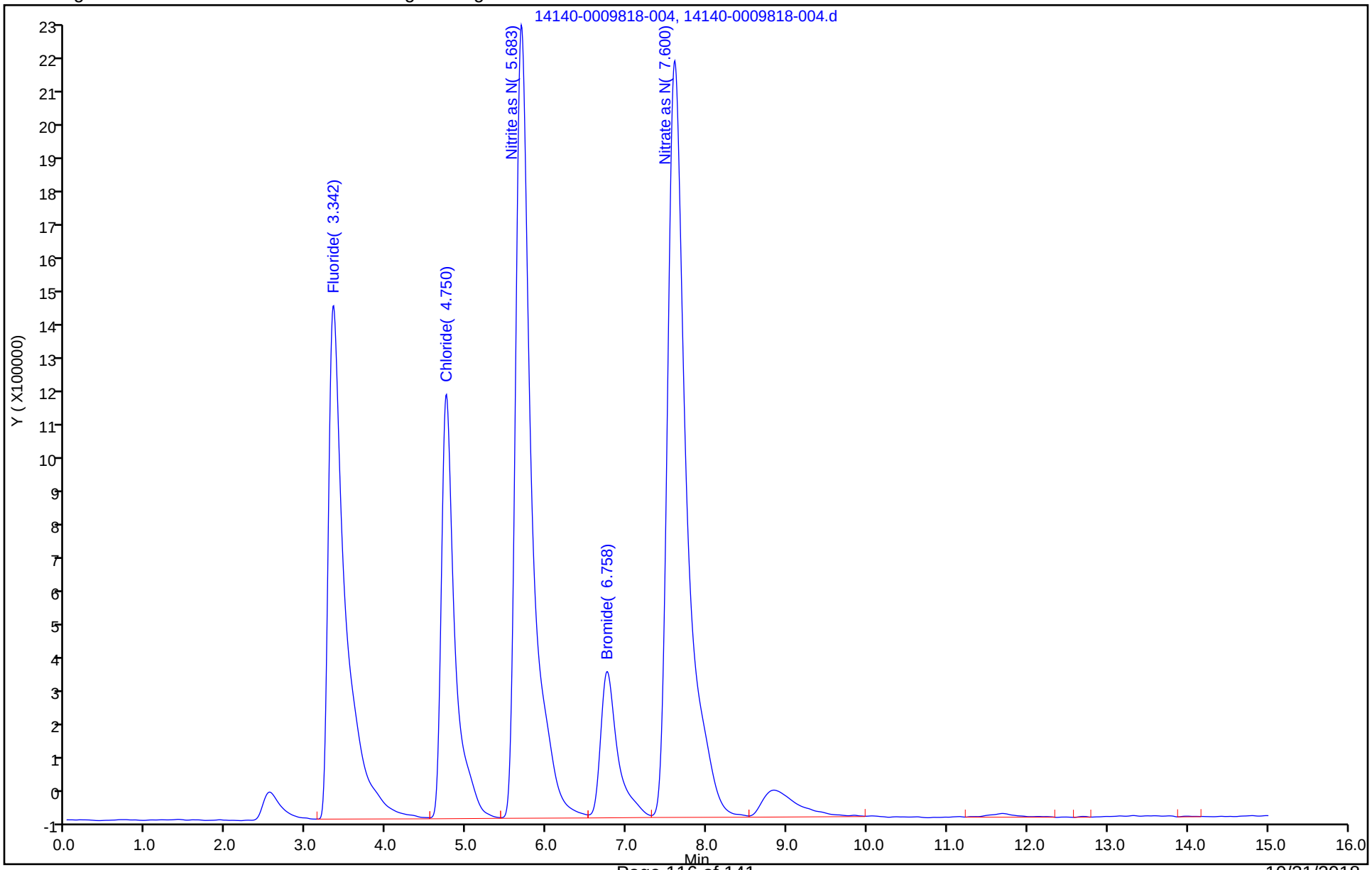
Lims ID: LCSD 140-24919/2-A Worklist Smp#: 4

Client ID:

Injection Vol: 1.0 ul Dil. Factor: 1.0000 ALS Bottle#: 0

Method: 0050_26A_1500 Limit Group: IC 0050_26A ICAL

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\27140-0009818-017.d
Lims ID: 140-13157-A-4-B MS
Client ID: M26-3
Sample Type: MS
Inject. Date: 29-Oct-2018 13:56:00 ALS Bottle#: 0 Worklist Smp#: 17
Injection Vol: 1.0 ul Dil. Factor: 40.0000
Sample Info: 140-0009818-017
Misc. Info.: 27 140-13155-a-4-b ms
Operator ID: Instrument ID: 1500

Method: \\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 30-Oct-2018 09:15:03 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK003

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride	3.342	3.333	0.009	44136893	0.0250	1.45	
	2 Chloride	4.758	4.742	0.016	491289421	0.0250	19.2	E
	3 Nitrite as N	5.675	5.683	-0.008	43607019	0.0250	1.01	
	4 Bromide	6.742	6.750	-0.008	11419327	0.0250	1.32	
	5 Nitrate as N	7.567	7.583	-0.016	143244902	0.0250	2.71	E
	6 Iodide		14.800				ND	
S	7 Hydrogen Chloride					0.0257	19.7	
S	8 Hydro Fluoric Acid					0.0263	1.53	
S	9 Hydrobromic Acid					0.0253	1.34	
S	10 Nitric acid					0.1125	12.2	
S	11 Nitrous Acid					0.0839	3.39	
S	12 Br					0.0250	1.32	
S	13 Chlorine					0.0250	19.2	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Reagents:

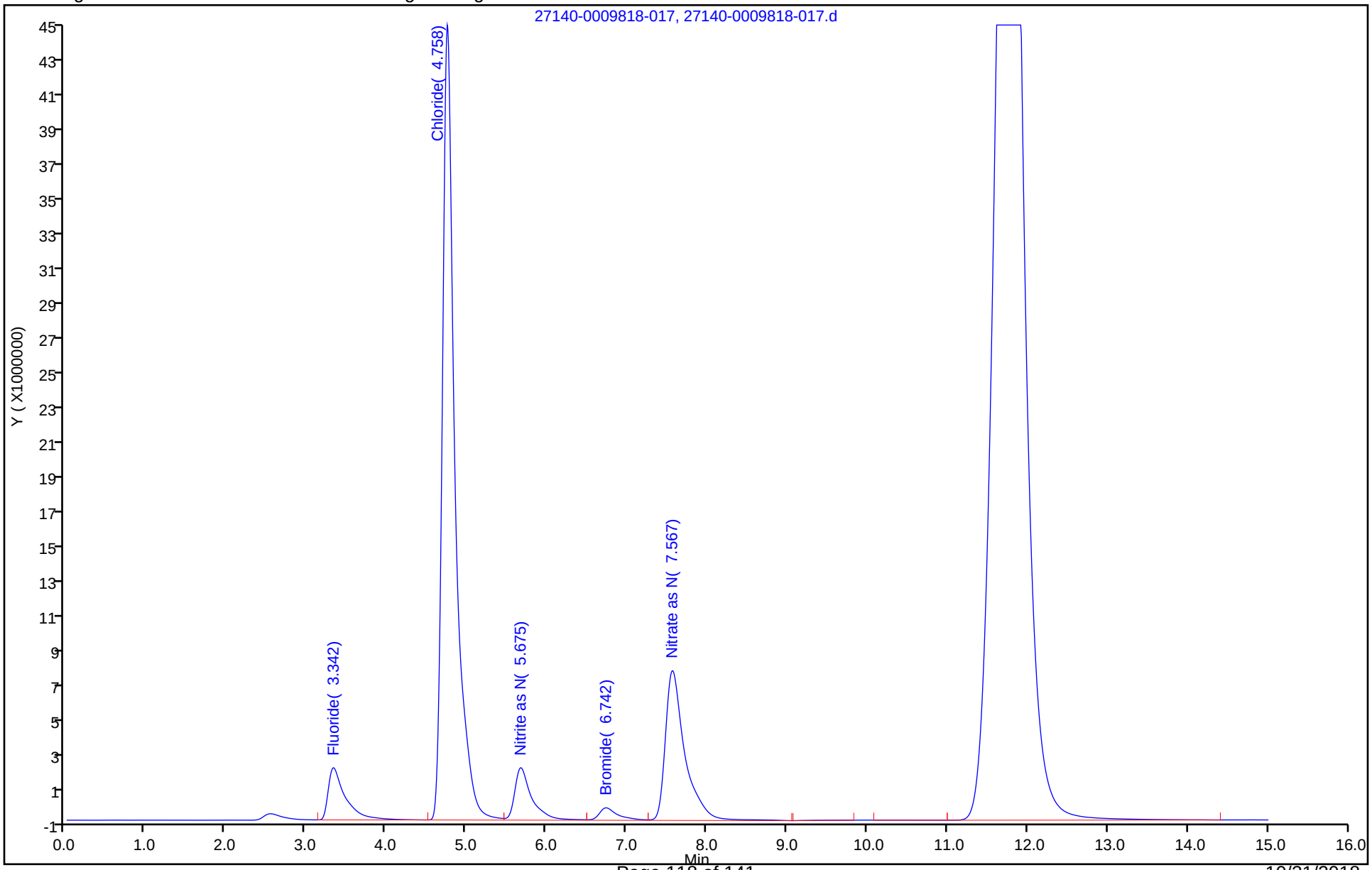
85XXICWI8579S_00020 Amount Added: 0.10 Units: mL

Report Date: 30-Oct-2018 09:15:11 Chrom Revision: 2.3 16-Oct-2018 09:58:52

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\27140-0009818-017.d				
Injection Date:	29-Oct-2018 13:56:00	Instrument ID:	1500	Operator ID:	
Lims ID:	140-13157-A-4-B MS			Worklist Smp#:	17
Client ID:	M26-3				
Injection Vol:	1.0 ul	Dil. Factor:	40.0000	ALS Bottle#:	0
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville
Job No.: 140-13157-1
SDG No.:
Client Sample ID: M26-3 MS
Lab Sample ID: 140-13157-4 MS
Matrix: Air
Lab File ID: 30140-0009818-020.d
Analysis Method: 0050/26A
Date Collected: 09/18/2018 00:00
Extraction Method: 0050/26A
Date Extracted: 10/29/2018 00:00
Sample wt/vol: 1(Sample)
Date Analyzed: 10/29/2018 14:48
Con. Extract Vol.: 325(mL)
Dilution Factor: 2500
Injection Volume: 1(uL)
GC Column: AS22 ID:
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 24920
Units: ug/Sample

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
7647-01-0	Hydrogen Chloride	1098000		83600	35100

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\30140-0009818-020.d
Lims ID: 140-13157-A-4-B MS
Client ID: M26-3
Sample Type: MS
Inject. Date: 29-Oct-2018 14:48:00 ALS Bottle#: 0 Worklist Smp#: 20
Injection Vol: 1.0 ul Dil. Factor: 2500.0000
Sample Info: 140-0009818-020
Misc. Info.: 30 140-13157-a-4-b ms
Operator ID: Instrument ID: 1500

Method: \\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 30-Oct-2018 09:15:03 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK003

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride	3.342	3.333	0.009	30463619	0.000400	1.01	
	2 Chloride	4.750	4.742	0.008	25889718	0.000400	1.31	
	3 Nitrite as N	5.683	5.683	0.000	43838802	0.000400	1.02	
	4 Bromide	6.750	6.750	0.000	8779280	0.000400	1.02	
	5 Nitrate as N	7.592	7.583	0.009	50965966	0.000400	1.02	
	6 Iodide		14.800				ND	
S	7 Hydrogen Chloride					0.000411	1.35	
S	8 Hydro Fluoric Acid					0.000421	1.07	
S	9 Hydrobromic Acid					0.000405	1.03	
S	10 Nitric acid					0.001800	4.61	
S	11 Nitrous Acid					0.001343	3.41	
S	12 Br					0.000400	1.02	
S	13 Chlorine					0.000400	1.31	

Reagents:

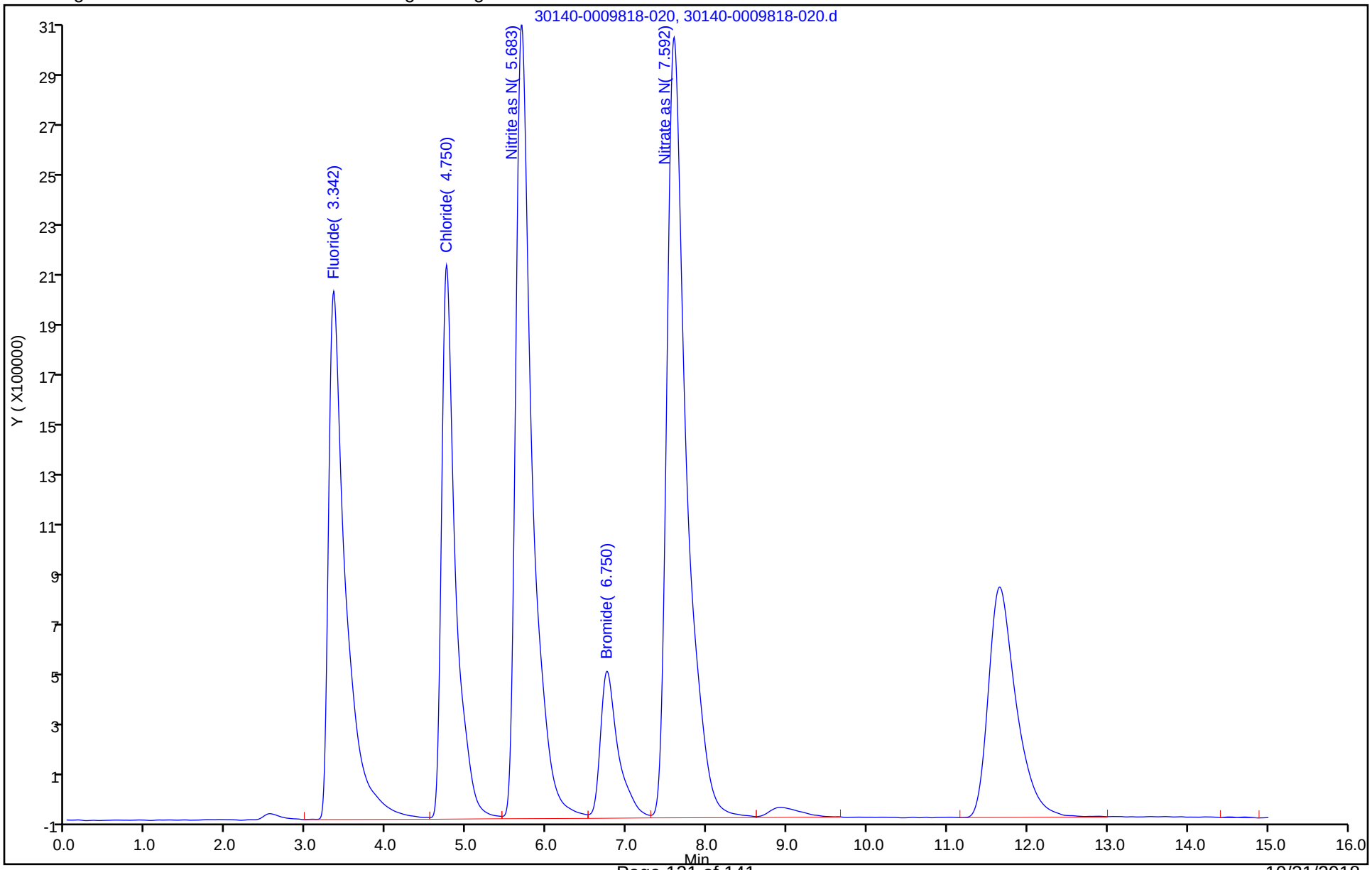
85XXICWI8579S_00020 Amount Added: 0.10 Units: mL

Report Date: 30-Oct-2018 09:15:15 Chrom Revision: 2.3 16-Oct-2018 09:58:52

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\30140-0009818-020.d				
Injection Date:	29-Oct-2018 14:48:00	Instrument ID:	1500	Operator ID:	
Lims ID:	140-13157-A-4-B MS			Worklist Smp#:	20
Client ID:	M26-3				
Injection Vol:	1.0 ul	Dil. Factor:	2500.0000	ALS Bottle#:	0
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\28140-0009818-018.d
Lims ID: 140-13157-A-4-C MSD
Client ID: M26-3
Sample Type: MSD
Inject. Date: 29-Oct-2018 14:13:00 ALS Bottle#: 0 Worklist Smp#: 18
Injection Vol: 1.0 ul Dil. Factor: 40.0000
Sample Info: 140-0009818-018
Misc. Info.: 28 140-13155-a-4-c msd
Operator ID: Instrument ID: 1500

Method: \\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 30-Oct-2018 09:15:03 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK003

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride	3.333	3.333	0.000	43816023	0.0250	1.44	
	2 Chloride	4.758	4.742	0.016	493681488	0.0250	19.3	E
	3 Nitrite as N	5.675	5.683	-0.008	44560872	0.0250	1.03	
	4 Bromide	6.742	6.750	-0.008	12566876	0.0250	1.45	
	5 Nitrate as N	7.567	7.583	-0.016	147316104	0.0250	2.78	E
	6 Iodide	14.567	14.800	-0.233	699380		NC	
S	7 Hydrogen Chloride					0.0257	19.8	
S	8 Hydro Fluoric Acid					0.0263	1.51	
S	9 Hydrobromic Acid					0.0253	1.47	
S	10 Nitric acid					0.1125	12.5	
S	11 Nitrous Acid					0.0839	3.46	
S	12 Br					0.0250	1.45	
S	13 Chlorine					0.0250	19.3	

QC Flag Legend

Processing Flags
NC - Not Calibrated
E - Exceeded Maximum Amount

Reagents:

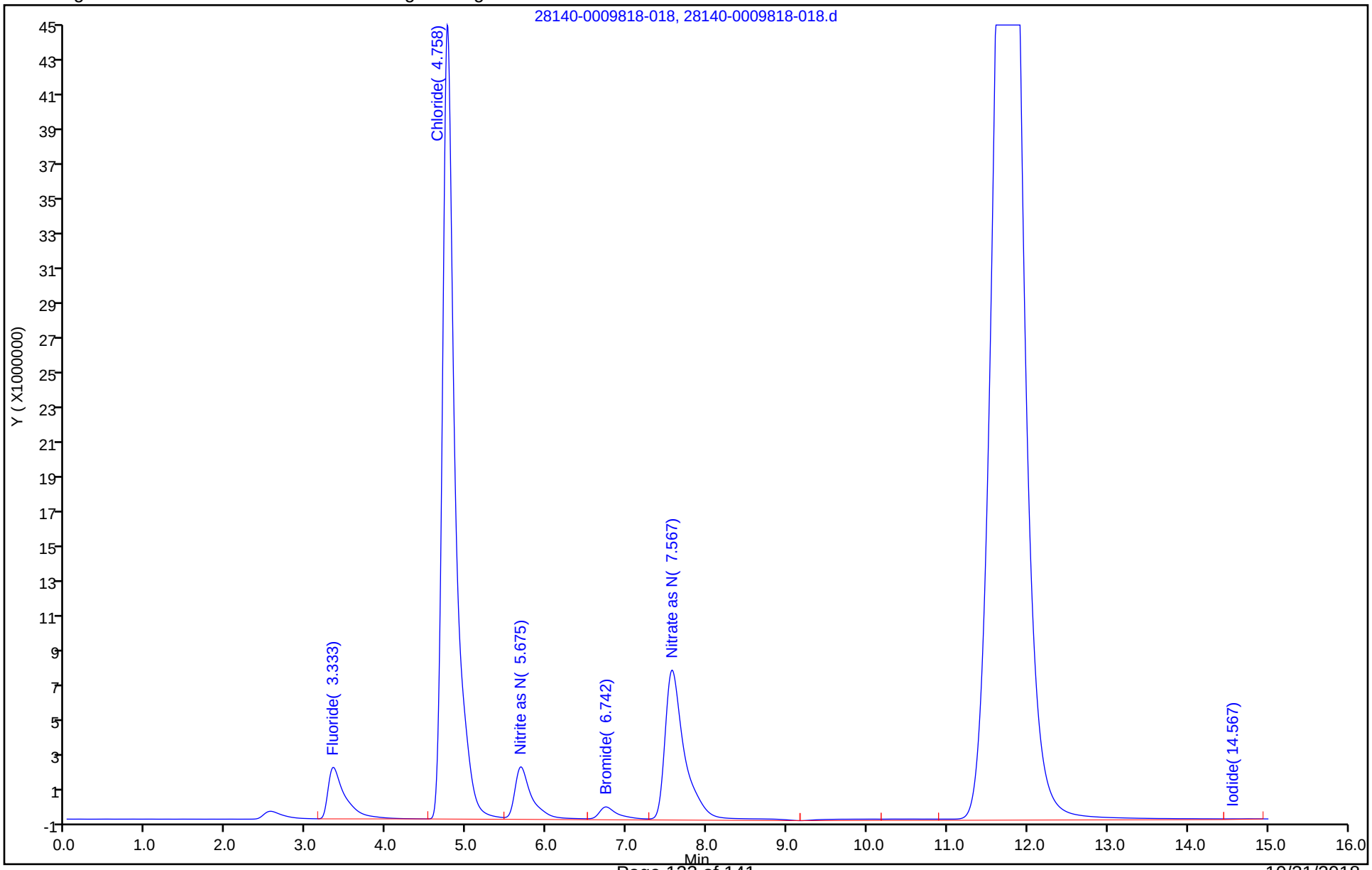
85XXICWI8579S_00020 Amount Added: 0.10 Units: mL

Report Date: 30-Oct-2018 09:15:13 Chrom Revision: 2.3 16-Oct-2018 09:58:52

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\28140-0009818-018.d				
Injection Date:	29-Oct-2018 14:13:00	Instrument ID:	1500	Operator ID:	
Lims ID:	140-13157-A-4-C MSD			Worklist Smp#:	18
Client ID:	M26-3				
Injection Vol:	1.0 ul	Dil. Factor:	40.0000	ALS Bottle#:	0
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville
Job No.: 140-13157-1
SDG No.:
Client Sample ID: M26-3 MSD
Lab Sample ID: 140-13157-4 MSD
Matrix: Air
Lab File ID: 31140-0009818-021.d
Analysis Method: 0050/26A
Date Collected: 09/18/2018 00:00
Extraction Method: 0050/26A
Date Extracted: 10/29/2018 00:00
Sample wt/vol: 1(Sample)
Date Analyzed: 10/29/2018 15:06
Con. Extract Vol.: 325(mL)
Dilution Factor: 2500
Injection Volume: 1(uL)
GC Column: AS22 ID:
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 24920
Units: ug/Sample

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
7647-01-0	Hydrogen Chloride	1096000		83600	35100

TestAmerica Knoxville
Target Compound Quantitation Report

Data File: \\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\31140-0009818-021.d
Lims ID: 140-13157-A-4-C MSD
Client ID: M26-3
Sample Type: MSD
Inject. Date: 29-Oct-2018 15:06:00 ALS Bottle#: 0 Worklist Smp#: 21
Injection Vol: 1.0 ul Dil. Factor: 2500.0000
Sample Info: 140-0009818-021
Misc. Info.: 31 140-13157-a-4-c msd
Operator ID: Instrument ID: 1500

Method: \\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\0050_26A_1500.m
Limit Group: IC 0050_26A ICAL
Last Update: 30-Oct-2018 09:15:03 Calib Date: 01-Aug-2018 11:43:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Knoxville\ChromData\1500\20180731-8938.b\7140-0008938-007.d

Column 1 : Det: IC
Process Host: XAWRK003

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
	1 Fluoride	3.342	3.333	0.009	30536089	0.000400	1.01	
	2 Chloride	4.750	4.742	0.008	25861866	0.000400	1.31	
	3 Nitrite as N	5.683	5.683	0.000	43855070	0.000400	1.02	
	4 Bromide	6.750	6.750	0.000	8762618	0.000400	1.02	
	5 Nitrate as N	7.592	7.583	0.009	50931353	0.000400	1.02	
	6 Iodide		14.800				ND	
S	7 Hydrogen Chloride					0.000411	1.35	
S	8 Hydro Fluoric Acid					0.000421	1.07	
S	9 Hydrobromic Acid					0.000405	1.03	
S	10 Nitric acid					0.001800	4.61	
S	11 Nitrous Acid					0.001343	3.41	
S	12 Br					0.000400	1.02	
S	13 Chlorine					0.000400	1.31	

Reagents:

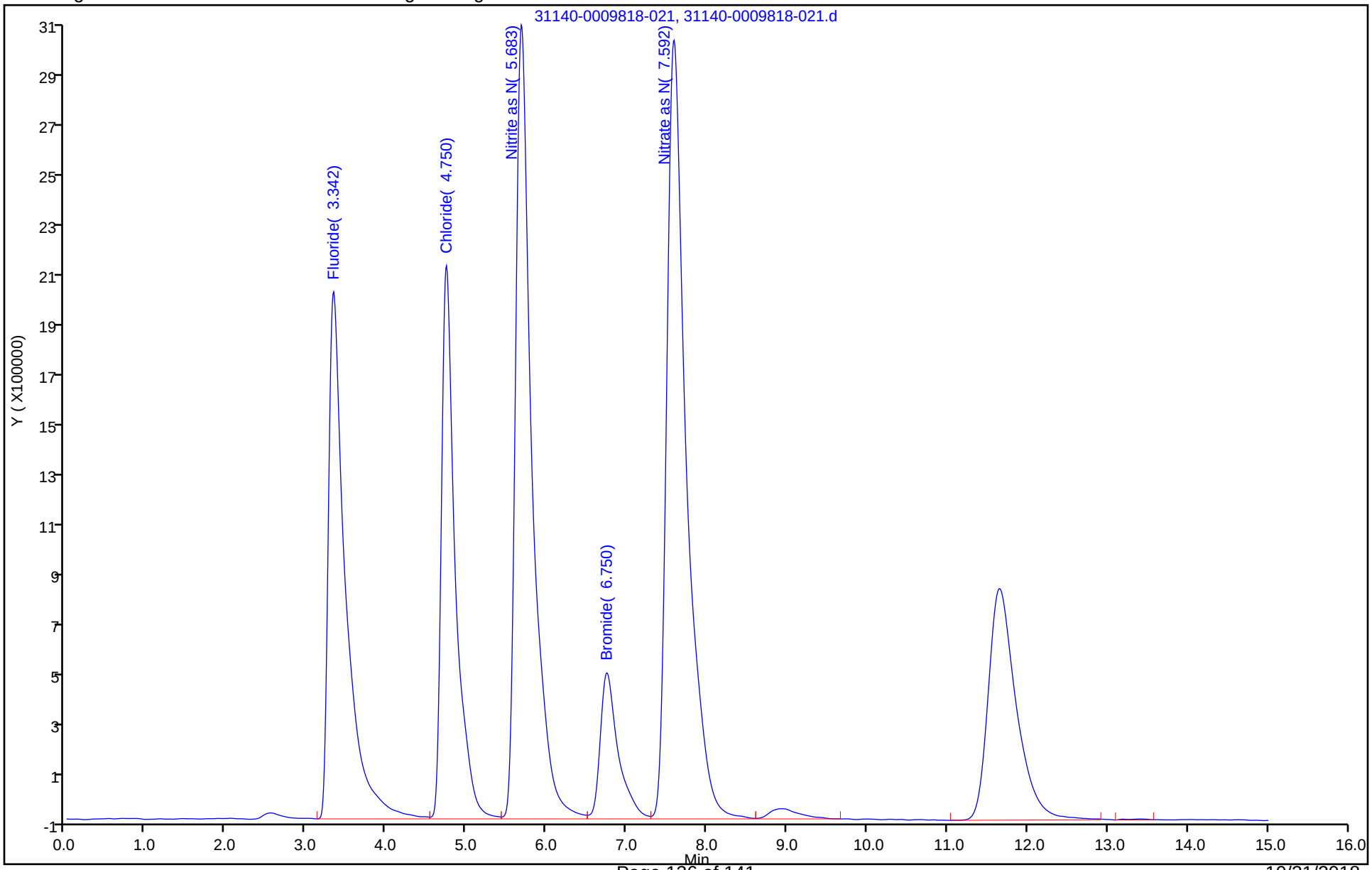
85XXICWI8579S_00020 Amount Added: 0.10 Units: mL

Report Date: 30-Oct-2018 09:15:16 Chrom Revision: 2.3 16-Oct-2018 09:58:52

TestAmerica Knoxville

Data File:	\\ChromNA\Knoxville\ChromData\1500\20181030-9818.b\31140-0009818-021.d				
Injection Date:	29-Oct-2018 15:06:00	Instrument ID:	1500	Operator ID:	
Lims ID:	140-13157-A-4-C MSD			Worklist Smp#:	21
Client ID:	M26-3				
Injection Vol:	1.0 ul	Dil. Factor:	2500.0000	ALS Bottle#:	0
Method:	0050_26A_1500	Limit Group:	IC 0050_26A ICAL		

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



HPLC/IC ANALYSIS RUN LOG

Lab Name: TestAmerica Knoxville Job No.: 140-13157-1

SDG No.:

Instrument ID: 1500 Start Date: 08/01/2018 09:59

Analysis Batch Number: 22408 End Date: 08/01/2018 12:21

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 140-22408/1		08/01/2018 09:59	1	1140-0008938-001.d	AS22
IC 140-22408/2		08/01/2018 10:16	1	2140-0008938-002.d	AS22
IC 140-22408/3		08/01/2018 10:34	1	3140-0008938-003.d	AS22
IC 140-22408/4		08/01/2018 10:51	1	4140-0008938-004.d	AS22
IC 140-22408/5		08/01/2018 11:09	1	5140-0008938-005.d	AS22
IC 140-22408/6		08/01/2018 11:26	1	6140-0008938-006.d	AS22
IC 140-22408/7		08/01/2018 11:43	1	7140-0008938-007.d	AS22
ICV 140-22408/8		08/01/2018 12:03	1	8140-0008938-008.d	AS22
ICB 140-22408/9		08/01/2018 12:21	1	9140-0008938-009.d	AS22

0050/26A

TestAmerica Knoxville
Dionex IC Runlog Cover Page

Analyst:	JMH	Date:	8-1-18	Sequence ID:	H01_AIR ANIONS_080118

Instrument:	☐ DX-600	Method:	☐ KNOX-WC-0003, SW-846 0061/7199
	☑ ICS-1500		☐ KNOX-WC-0005, ☐ SW-846 9056 ☐ EPA 300.0 ☐ SW-846 9057-Mod ☑ EPA 26A-Mod
	☐ DX-320		☐ KNOX-WC-0014, EPA 314.0

Preventive Maintenance	Instrument Conditions		
Daily:	Flow Rate =	1.20	mL/min
☑ Check pump and gas pressure	Pressure =	1845	psi
☑ Check all lines for crimping, leaks and discoloration	Conductance =	13.49	µS
As Needed:	Suppressor Current =	31	mA
☐ Change column and guard column	Eluent Generator =	NA	mM KOH
☐ Change column and/or guard column bed support	Analytical Column:	AS22 / AG22	
☐ Clean conductivity cell	WORKING ELUENT & DILUTIONS: 85ELUENTAS22_90014 / 100		
☐ De-gas pump head when flow is erratic			
☐ Check/replace eluant end line filter			

MS/MSD Spike Information

WO #	Compound	Spike ID	Parent Conc.	Spike Added (mL)	Final Volume (mL)	Final Conc.
				JMH		
				8-1-18		

Comments: ICAL 080118

☐ Sodium Thiosulfate added to NaOH impinger samples.

Sequence: H01_AIR ANIONS_080118a
Operator: KnxUser
Printed: 8/1/2018 12:45:33 PM

Title:
Datasource: ICS_1500_net
Location: ICS1500
Timebase: ICS1500
#Samples: 74

Created: 8/1/2018 12:45:16 PM by KnxUser
Last Update: 8/1/2018 12:45:16 PM by KnxUser

No.	Name	Comment	Inj. Vol.	Inj. Date/Time	Dil. Factor	*Multiplier [Liters]	Weight	Type	Status
1	140-0008938-001	ic 1	50.0	8/1/2018 9:59:28 AM	1.0000		1.0000	Standard	Finished
2	140-0008938-002	ic 2	50.0	8/1/2018 10:16:52 AM	1.0000		1.0000	Standard	Finished
3	140-0008938-003	ic 3	50.0	8/1/2018 10:34:16 AM	1.0000		1.0000	Standard	Finished
4	140-0008938-004	ic 4	50.0	8/1/2018 10:51:40 AM	1.0000		1.0000	Standard	Finished
5	140-0008938-005	ic 5	50.0	8/1/2018 11:09:04 AM	1.0000		1.0000	Standard	Finished
6	140-0008938-006	ic 6	50.0	8/1/2018 11:26:28 AM	1.0000		1.0000	Standard	Finished
7	140-0008938-007	ic 7	50.0	8/1/2018 11:43:52 AM	1.0000		1.0000	Standard	Finished
8	140-0008938-008	icv	50.0	8/1/2018 12:03:07 PM	1.0000		1.0000	Unknown	Finished
9	140-0008938-009	icb	50.0	8/1/2018 12:21:02 PM	1.0000		1.0000	Unknown	Finished
10	beaker check 2017 04 10	beaker check	50.0	7/31/2018 12:41:57 PM	1.0000		1.0000	Unknown	Finished
11	CCV	ccv	50.0	7/26/2018 10:08:29 AM	1.0000		1.0000	Unknown	Finished
12	CCB	ccb	50.0	7/26/2018 10:25:54 AM	1.0000		1.0000	Unknown	Finished
13			50.0	7/26/2018 10:43:49 AM	1.0000		1.0000	Unknown	Finished
14			50.0	7/26/2018 11:01:14 AM	1.0000		1.0000	Unknown	Finished
15			50.0	7/26/2018 11:18:38 AM	1.0000		1.0000	Unknown	Finished
16			50.0	7/26/2018 11:36:02 AM	1.0000		1.0000	Unknown	Finished
17			50.0	7/26/2018 11:53:26 AM	1.0000		1.0000	Unknown	Finished
18			50.0	7/26/2018 12:10:51 PM	1.0000		1.0000	Unknown	Finished
19			50.0	7/26/2018 12:28:16 PM	1.0000		1.0000	Unknown	Finished
20			50.0	7/26/2018 12:45:40 PM	1.0000		1.0000	Unknown	Finished
21			50.0	7/26/2018 1:03:05 PM	1.0000		1.0000	Unknown	Finished
22			50.0	7/26/2018 1:20:30 PM	1.0000		1.0000	Unknown	Finished
23			50.0	7/26/2018 1:37:54 PM	1.0000		1.0000	Unknown	Finished
24			50.0	7/26/2018 1:55:18 PM	1.0000		1.0000	Unknown	Finished
25			50.0	7/26/2018 2:12:42 PM	1.0000		1.0000	Unknown	Finished
26			50.0	7/26/2018 2:45:06 PM	1.0000		1.0000	Unknown	Finished
27			50.0	7/26/2018 3:17:30 PM	1.0000		1.0000	Unknown	Finished
28			50.0	7/26/2018 3:49:55 PM	1.0000		1.0000	Unknown	Finished
29			50.0	7/26/2018 4:22:19 PM	1.0000		1.0000	Unknown	Finished
30			50.0	7/26/2018 4:54:43 PM	1.0000		1.0000	Unknown	Finished
31			50.0	7/26/2018 5:27:07 PM	1.0000		1.0000	Unknown	Finished
32			50.0	7/26/2018 5:44:32 PM	1.0000		1.0000	Unknown	Finished
33			50.0	7/26/2018 6:40:44 PM	1.0000		1.0000	Unknown	Finished
34			50.0	7/27/2018 6:37:58 AM	1.0000		1.0000	Unknown	Finished
35			50.0	7/27/2018 6:55:22 AM	1.0000		1.0000	Unknown	Finished
36			50.0	7/27/2018 7:12:47 AM	1.0000		1.0000	Unknown	Finished
37			50.0	7/27/2018 7:45:11 AM	1.0000		1.0000	Unknown	Finished
38			50.0	7/27/2018 8:17:35 AM	1.0000		1.0000	Unknown	Finished
39			50.0	7/27/2018 8:49:59 AM	1.0000		1.0000	Unknown	Finished
40			50.0	7/27/2018 9:07:24 AM	1.0000		1.0000	Unknown	Finished
41			50.0	7/11/2018 7:26:54 AM	1.0000		1.0000	Unknown	Finished
42			50.0	7/5/2018 8:26:13 PM	1.0000		1.0000	Unknown	Finished
43			50.0	7/5/2018 8:43:38 PM	1.0000		1.0000	Unknown	Finished
44			50.0	7/5/2018 9:01:02 PM	1.0000		1.0000	Unknown	Finished
45			50.0	7/5/2018 9:18:27 PM	1.0000		1.0000	Unknown	Finished
46			50.0	7/5/2018 9:35:51 PM	1.0000		1.0000	Unknown	Finished
47			50.0	7/5/2018 9:53:15 PM	1.0000		1.0000	Unknown	Finished
48			50.0	7/5/2018 10:10:39 PM	1.0000		1.0000	Unknown	Finished

Chromeleon © Dionex Corporation, Version 6.50 SP10a Build 1065

TestAmerica Knoxville IC Initial Calibration Data Review Checklist
Methods: 300.0, 9056, 9057 and 26A, SOP: KNOX-WC-0005, Rev. 15

Analysis Date:	08-01-2018	ICAL File ID:	H01_AIR ANIONS_080118	Instrument/Work List:	1500 / 8938

Method Limit Group	ICAL Number	ICAL Batch
☑ IC 0050_26A ICAL	1574	22408
☐ IC 0050_9056 ICAL	NA	NA
☐ IC 300_9056_48HR ICAL		
☐ IC 300_9056_28Day ICAL		
☐ IC 9056_TotHAL ICAL		
☐ IC D129_OF & D3177_OF ICAL		
☐ IC 8A ICAL ICAL		

Review Items	NA	Y	N	If No, why is data reportable?	2nd ✓
Section 1: Calibration/Instrument Run QC					
1. Calibrated with minimum 5 standards (6 for quad)?		✓			✓
2. $r \geq 0.995$, or $r^2 \geq 0.990$		✓			✓
3. Intercept < low standard response?		✓			✓
4. Read back error ≤ 40%, at LLOQ ≤ 50%		✓			✓
5. Was the ICV within 90-110%R?		✓			✓
6. ICB < 1/2 RL? ICB ≤10% LLOQ for 9056A?		✓			✓
Section 2: Raw Data & Chrom/TALS Data Review					
1. Was Worklist Sample Number used as the sample ID in the Chromeleon sequence before upload?		✓			✓
2. Was Worklist Sample ID listed in the comment field of the Chromeleon sequence before upload?		✓			✓
3. Any unexplained triangles in the TALS lists after upload from Chrom?			✓		
4. Raw Data					✓
• Chrom reagents entered correctly?		✓			✓
• Is manual integration complete and correct?		✓			✓
5. TALS Worksheet Tab is complete and correct?		✓			✓
6. TALS Reagent Tab is complete and correct?		✓			✓
7. TALS Batch Information Screen documentation is complete?		✓			✓
8. TALS Status set to appropriate review level?		✓			✓
9. Is Run Log cover sheet and Chromeleon sequence scanned and attached to batch?		✓			✓

1st Level Review by: Jm Humphrey 8-1-2018

2nd Level Review by: MSP 8-1-2018

HPLC/IC ANALYSIS RUN LOG

Lab Name: TestAmerica Knoxville Job No.: 140-13157-1

SDG No.:

Instrument ID: 1500 Start Date: 10/29/2018 08:53

Analysis Batch Number: 24920 End Date: 10/29/2018 15:40

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 140-24920/1		10/29/2018 08:53	1	11140-0009818-001.d	AS22
CCB 140-24920/2		10/29/2018 09:28	1	12140-0009818-002.d	AS22
LCS 140-24919/1-A		10/29/2018 09:45	1	13140-0009818-003.d	AS22
LCSD 140-24919/2-A		10/29/2018 10:02	1	14140-0009818-004.d	AS22
MB 140-24919/3-A		10/29/2018 10:20	1	15140-0009818-005.d	AS22
140-13157-1		10/29/2018 10:37	10	16140-0009818-006.d	AS22
140-13157-1		10/29/2018 10:55	2	17140-0009818-007.d	AS22
140-13157-2		10/29/2018 11:15	40	18140-0009818-008.d	AS22
140-13157-2		10/29/2018 11:32	2000	19140-0009818-009.d	AS22
140-13157-2		10/29/2018 11:54	1000	20140-0009818-010.d	AS22
140-13157-3		10/29/2018 12:12	10	21140-0009818-011.d	AS22
140-13157-3		10/29/2018 12:29	1000	22140-0009818-012.d	AS22
CCV 140-24920/13		10/29/2018 12:46	1	23140-0009818-013.d	AS22
CCB 140-24920/14		10/29/2018 13:04	1	24140-0009818-014.d	AS22
140-13157-4		10/29/2018 13:21	10	25140-0009818-015.d	AS22
140-13157-4		10/29/2018 13:39	40	26140-0009818-016.d	AS22
140-13157-4 MS		10/29/2018 13:56	40	27140-0009818-017.d	AS22
140-13157-4 MSD		10/29/2018 14:13	40	28140-0009818-018.d	AS22
140-13157-4		10/29/2018 14:31	2500	29140-0009818-019.d	AS22
140-13157-4 MS		10/29/2018 14:48	2500	30140-0009818-020.d	AS22
140-13157-4 MSD		10/29/2018 15:06	2500	31140-0009818-021.d	AS22
CCV 140-24920/22		10/29/2018 15:23	1	32140-0009818-022.d	AS22
CCB 140-24920/23		10/29/2018 15:40	1	33140-0009818-023.d	AS22

0050/26A

TestAmerica Knoxville
Dionex IC Runlog Cover Page

Analyst:	JMH	Date:	10-29-18	Sequence ID:	JZ9-AIR ANIONS_102918

Instrument:	☐ DX-600	Method:	☐ KNOX-WC-0003, SW-846 0061/7199
	☑ ICS-1500		☐ KNOX-WC-0005, ☐ SW-846 9056 ☐ EPA 300.0 ☐ SW-846 9057-Mod ☑ EPA 26A-Mod
	☐ DX-320		☐ KNOX-WC-0014, EPA 314.0

Preventive Maintenance	Instrument Conditions		
Daily:	Flow Rate =	1.20	mL/min
☑ Check pump and gas pressure	Pressure =	1919	psi
☑ Check all lines for crimping, leaks and discoloration	Conductance =	20.15	µS
As Needed:	Suppressor Current =	31	mA
☐ Change column and guard column	Eluent Generator =	NA	mM KOH
☐ Change column and/or guard column bed support	Analytical Column:	AS22 / AG22	
☐ Clean conductivity cell	WORKING ELUENT & DILUTIONS : 85ELUENTAS22-00015/100		
☐ De-gas pump head when flow is erratic			
☐ Check/replace eluant end line filter			

MS/MSD Spike Information

WO #	Compound	Spike ID	Parent Conc.	Spike Added (mL)	Final Volume (mL)	Final Conc.
140-13157-A-4	Fluoride	85XXICW185795.00020	100 mg/L	0.100	10	1 mg/L
↓	Chloride	↓	↓	↓	↓	↓
			JMH			
			10-29-18			

Comments: 140-13157 (HF, HCL)

☐ Sodium Thiosulfate added to NaOH impinger samples.

Sequence: J29_AIR ANIONS_102918
Operator: KnxUser
Printed: 10/30/2018 8:35:24 AM

Title:
Datasource: ICS_1500_net
Location: ICS1500
Timebase: ICS1500
#Samples: 74

Created: 10/29/2018 8:21:03 AM by KnxUser
Last Update: 10/30/2018 8:35:15 AM by KnxUser

No.	Name	Comment	Inj. Vol.	Inj. Date/Time	Dil. Factor	*Multiplier [Liters]	Weight	Type
1	IC 1 0.050 mg/L	ic 1	50.0	8/1/2018 9:59:28 AM	1.0000		1.0000	Standard
2	IC 2 0.075 mg/L	ic 2	50.0	8/1/2018 10:16:52 AM	1.0000		1.0000	Standard
3	IC 3 0.100 mg/L	ic 3	50.0	8/1/2018 10:34:16 AM	1.0000		1.0000	Standard
4	IC 4 0.250 mg/L	ic 4	50.0	8/1/2018 10:51:40 AM	1.0000		1.0000	Standard
5	IC 5 0.500 mg/L	ic 5	50.0	8/1/2018 11:09:04 AM	1.0000		1.0000	Standard
6	IC 6 1.000 mg/L	ic 6	50.0	8/1/2018 11:26:28 AM	1.0000		1.0000	Standard
7	IC 7 2.000 mg/L	ic 7	50.0	8/1/2018 11:43:52 AM	1.0000		1.0000	Standard
8	ICV	icv	50.0	8/1/2018 12:03:07 PM	1.0000		1.0000	Unknown
9	ICB	icb	50.0	8/1/2018 12:21:02 PM	1.0000		1.0000	Unknown
10	beaker check 2017 05 18	beaker check	50.0	10/29/2018 8:35:53 AM	1.0000		1.0000	Unknown
11	140-0009818-001	ccv	50.0	10/29/2018 8:53:17 AM	1.0000		1.0000	Unknown
12	140-0009818-002	ccb	50.0	10/29/2018 9:28:11 AM	1.0000		1.0000	Unknown
13	140-0009818-003	lcs 140-24919/1-a	50.0	10/29/2018 9:45:35 AM	1.0000		1.0000	Unknown
14	140-0009818-004	lcsd 140-24919/2-a	50.0	10/29/2018 10:02:59 AM	1.0000		1.0000	Unknown
15	140-0009818-005	mb 140-24919/3-a	50.0	10/29/2018 10:20:23 AM	1.0000		1.0000	Unknown
16	140-0009818-006	140-13157-a-1-a	50.0	10/29/2018 10:37:47 AM	10.0000		1.0000	Unknown
17	140-0009818-007	140-13157-a-1-a	50.0	10/29/2018 10:55:11 AM	2.0000		1.0000	Unknown
18	140-0009818-008	140-13157-a-2-a	50.0	10/29/2018 11:15:21 AM	40.0000		1.0000	Unknown
19	140-0009818-009	140-13157-a-2-a	50.0	10/29/2018 11:32:45 AM	2000.0000		1.0000	Unknown
20	140-0009818-010	140-13157-a-2-a	50.0	10/29/2018 11:54:37 AM	1000.0000		1.0000	Unknown
21	140-0009818-011	140-13157-a-3-a	50.0	10/29/2018 12:12:01 PM	10.0000		1.0000	Unknown
22	140-0009818-012	140-13157-a-3-a	50.0	10/29/2018 12:29:25 PM	1000.0000		1.0000	Unknown
23	140-0009818-013	ccv	50.0	10/29/2018 12:46:50 PM	1.0000		1.0000	Unknown
24	140-0009818-014	ccb	50.0	10/29/2018 1:04:13 PM	1.0000		1.0000	Unknown
25	140-0009818-015	140-13157-a-4-a	50.0	10/29/2018 1:21:38 PM	10.0000		1.0000	Unknown
26	140-0009818-016	140-13155-a-4-a	50.0	10/29/2018 1:39:02 PM	40.0000		1.0000	Unknown
27	140-0009818-017	140-13155-a-4-b ms	50.0	10/29/2018 1:56:27 PM	40.0000		1.0000	Unknown
28	140-0009818-018	140-13155-a-4-c msd	50.0	10/29/2018 2:13:52 PM	40.0000		1.0000	Unknown
29	140-0009818-019	140-13157-a-4-a	50.0	10/29/2018 2:31:16 PM	2500.0000		1.0000	Unknown
30	140-0009818-020	140-13157-a-4-b ms	50.0	10/29/2018 2:48:40 PM	2500.0000		1.0000	Unknown
31	140-0009818-021	140-13157-a-4-c msd	50.0	10/29/2018 3:06:04 PM	2500.0000		1.0000	Unknown
32	140-0009818-022	ccv	50.0	10/29/2018 3:23:29 PM	1.0000		1.0000	Unknown
33	140-0009818-023	ccb	50.0	10/29/2018 3:40:53 PM	1.0000		1.0000	Unknown
34	SHUTDOWN	off	50.0	10/29/2018 3:58:17 PM	1.0000		1.0000	Unknown
35			50.0	10/19/2018 4:19:33 PM	1.0000		1.0000	Unknown
36			50.0	10/16/2018 3:43:55 PM	1.0000		1.0000	Unknown
37			50.0	10/16/2018 4:01:20 PM	1.0000		1.0000	Unknown
38			50.0	10/16/2018 4:33:44 PM	1.0000		1.0000	Unknown
39			50.0	10/16/2018 5:06:08 PM	1.0000		1.0000	Unknown
40			50.0	10/16/2018 5:38:33 PM	1.0000		1.0000	Unknown
41			50.0	10/16/2018 6:10:57 PM	1.0000		1.0000	Unknown
42			50.0	10/16/2018 6:43:21 PM	1.0000		1.0000	Unknown
43			50.0	10/16/2018 7:15:45 PM	1.0000		1.0000	Unknown
44			50.0	10/16/2018 7:48:41 PM	1.0000		1.0000	Unknown
45			50.0	10/16/2018 8:06:05 PM	1.0000		1.0000	Unknown
46			50.0	10/16/2018 8:23:30 PM	1.0000		1.0000	Unknown
47			50.0	10/16/2018 8:55:54 PM	1.0000		1.0000	Unknown
48			50.0	10/16/2018 9:28:18 PM	1.0000		1.0000	Unknown

Chromeleon © Dionex Corporation, Version 6.50 SP10a Build 1065

TestAmerica Knoxville Anions by IC Batch Data Review Checklist
Methods: 300.0, 9056 & 9056A; Air Anions by 0050/26A; SOP: KNOX-WC-0005, Rev. 15

Analytical Batch:	24920	**Prep Batch(s):**	24919	**Instrument/Work List:**	1500 / 9818
Analysis Date:	10-29-18	**Job(s):**	140-13157		
ICAL File ID:	H01-AIR ANIONS-080118	**ICAL Batch:**	22408	**ICAL Number:**	1574
Method Limit Group:	☑ IC 0050_26A ICAL ☐ IC 0050_9056 ICAL ☐ IC 300_9056_48HR ICAL ☐ IC 300_9056_28Day ICAL ☐ IC 9056_TotHAL ICAL ☐ IC D129_OF & D3177_OF ICAL ☐ IC 8A ICAL				

Review Items	NA	Y	N	If No, why is data reportable?	2nd ✓
Section 1: Calibration/Instrument Run QC					
1. Calibrated with minimum 5 standards (6 for quad)?		✓			✓
2. $r \geq 0.995$, or $r^2 \geq 0.990$		✓			✓
3. Intercept < low standard response?		✓			✓
4. Read back error ≤ 40%, at LLOQ ≤ 50%		✓			✓
5. Was the ICV within 90-110%R?		✓			✓
6. ICB < 1/2 RL? ICB ≤10% LLOQ for 9056A?		✓			✓
7. Were CCVs/CCBs run after every 10 samples, and at end of sequence?		✓			✓
8. Is %D <10% for each CCV?		✓		☐ **CCV - %D, High, Sample ND** (NCM#_____)	✓
9. If CCV failed, was it rerun only once?	✓			☐ CCV reanalyzed one time; reanalysis within limits	NA
10. CCB < 1/2 RL? CCB ≤10% LLOQ for 9056A?		✓		☐ **CCB-Out, Samples ND or 10x** (NCM#_____)	✓
Section 2: Prep Data					
1. Appropriate prep batches created for prep chain?		✓			✓
2. Batch information complete?		✓			✓
3. Correct analyst identified?		✓			✓
4. Worksheet complete?		✓			✓
5. Reagents tab complete and correct?		✓			✓
6. Was pH adjustment required for Back Half samples?	✓				NA
7. External prep data attached to batch as external prep worksheet?		✓			✓
Section 3: Sample Analysis/Prep QC					
1. LCS/LCSD analytes within 90-110%R?		✓		☐ **LCS/LCSD –Insufficient Sample** (NCM#_____) ☐ **LCS/LCSD - %R High** (NCM#_____)	✓
2. MB < 1/2 RL? MB ≤10% LLOQ for 9056A		✓		☐ **Method Blank–Report, ND** (NCM#_____) ☐ **Method Blank – Report, 10X** (NCM#_____) ☐ **Method Blank–Insufficient Sample** (NCM#_____)	✓
3. MS/MSD/DUP run at required frequency?		✓		☐ **MS/MSD/DUP-Insufficient Vol** (NCM#_____)	✓
4. MS/MSD/DUP within QC limits?		✓		☐ **MS/MSD-%R, LCS Pass** (NCM#_____-optional) ☐ **MS/MSD/DUP-%RPD** (NCM#_____-optional)	✓
5. Are OR, MS, MSD, & DU linked correctly?		✓			✓
6. Sample analyses done within holding time (HT)? NCM 14922 JMH 10-30-18		✓	✓	☐ **Holding Time-Receipt** (NCM# _____) ☐ **Holding Time- Insufficient Time** (NCM# _____) ☒ [Option-narrate] Analysis requested after HT expired.	✓
7. Are positive results within the calibration range?		✓			✓
8. Are ND derived from undiluted runs? DF 2	NA	✓		☐ **RL-Dilution, Matrix** (NCM# _____) ☐ **RL-Dilution, Interferents** (NCM# _____)	NA ✓
Section 4: Raw Data & Chrom/TALS Data Review					
1. Does 1st prep in the chain have original Sample ID as starting point?		✓			✓
2. Does each additional step in the chain use the output ID of the previous step as the starting point?		✓			✓
3. Was Worklist built with final prep output ID?		✓			✓
4. Was Worklist Sample Number used as the sample ID in the Chromeleon sequence before upload?		✓			✓
5. Was Worklist Sample ID listed in the comment field of the Chromeleon sequence before upload?		✓			✓
6. Any unexplained triangles in the TALS lists after upload from Chrom?		✓	✓	JMH 10-30-18	✓
7. Raw Data					
• Chrom sample information complete and correct? Are any samples linked to unnecessary Method Limit Groups in sample information?		✓			✓
• Chrom reagents entered correctly?		✓			✓
• Is manual integration complete and correct?		✓			✓
• Are unused data clearly identified?		✓			✓
• Is out of control QC clearly identified?		✓			✓
• Data with a qualifier or flag is repaired with appropriate action taken?		✓			✓
Section 4: Raw Data & Chrom/TALS Data Review (continued)					

TestAmerica Knoxville Anions by IC Batch Data Review Checklist
Methods: 300.0, 9056 & 9056A; Air Anions by 0050/26A; SOP: KNOX-WC-0005, Rev. 15

Review Items	NA	Y	N	If No, why is data reportable?	2nd ✓
8. TALS Samples Tab:					
• LIMS Sample IDs / Containers are correct?		✓			✓
• Method and matrix are correct?		✓			✓
• Date and time match raw data?		✓			✓
• Dilutions are correct?		✓			✓
• Correct suffix designated (where applicable)?		✓			✓
9. TALS Worksheet Tab is complete and correct?		✓			✓
10. TALS Reagent Tab is complete and correct?		✓			✓
11. TALS QC Links Tab is correct?		✓			✓
12. TALS Sample Results Tab					
• All unused data are marked Rejected or Accepted?		✓			✓
• All reported analytes are marked Primary or Secondary?		✓			✓
13. TALS Batch Information Screen documentation is complete?		✓			✓
14. TALS Status set to appropriate review level?		✓			✓
15. Calculations checked for error? *(Document manual calculation checks in worksheet notes. Include all prep factor information from prep batch worksheets and the analytical batch.)*		✓			✓
16. Are any prep factor data (input-output volumes, etc.) duplicated in prep batches and analytical batches?			✓	If yes, re-check calculations and repair the data.	✓
17. Is Run Log cover sheet and Chromeleon sequence scanned and attached to batch?		✓			✓
18. Correct Narrative NCM chosen?					✓
• Anions in Water	NA			☐ [5909]	NA
• Anions in DI Leachates	↓			☐ [5910]	↓
• Anions in Soils	↓			☐ [5912]	↓
• Anions in Waste	↓			☐ [6307]	↓
• HCl, Cl2 in Air	↓			☐ [5819]	↓
• HCl in Air	↓			☐ [5820]	↓
• HF, HCl, Cl2 in Air	↓			☐ [6057]	↓
• HF, HCl, HBr, Cl2, Br2 in Air	↓			☐ [6058]	↓
• HF, HCl, HNO2,HNO3, Cl2 in Air	↓			☐ [6059]	↓
• HF,HCl, HBr,Cl2, Br2, I- in Air	↓			☐ [6060]	↓
• Cl-, F-, NO2-, NO3- in Air	↓			☐ [6077]	↓
• HF, HCl in Air		✓		☑ [6078]	✓
• H2SO4 in Air	NA			☐ [6109]	NA
• HF, HCl, HNO3 in Air	↓			☐ [6779]	↓
• Sulfate in Air	↓			☐ [6111]	↓

1st Level Review by: JM Humphrey 10-30-18	2nd Level Review by: [signature] 10-30-18

HPLC/IC BATCH WORKSHEET

Lab Name: TestAmerica Knoxville Job No.: 140-13157-1

SDG No.:

Batch Number: 24919 Batch Start Date: 10/29/18 00:00 Batch Analyst: Humphrey, Jon M

Batch Method: 0050/26A Batch End Date: 10/29/18 00:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	ReceivedpH			
LCS 140-24919/1		0050/26A, 0050/26A		1 Sample	100 mL				
LCSD 140-24919/2		0050/26A, 0050/26A		1 Sample	100 mL				
MB 140-24919/3		0050/26A, 0050/26A		1 Sample	100 mL				
140-13157-A-1	M26-REAGENT BLANK	0050/26A, 0050/26A	T	1 Sample	100 mL	< 2 SU			
140-13157-A-2	M26-1	0050/26A, 0050/26A	T	1 Sample	370 mL	< 2 SU			
140-13157-A-3	M26-2	0050/26A, 0050/26A	T	1 Sample	380 mL	< 2 SU			
140-13157-A-4	M26-3	0050/26A, 0050/26A	T	1 Sample	325 mL	< 2 SU			
140-13157-A-4 MS	M26-3	0050/26A, 0050/26A	T	1 Sample	325 mL	< 2 SU			
140-13157-A-4 MSD	M26-3	0050/26A, 0050/26A	T	1 Sample	325 mL	< 2 SU			

Batch Notes	
Batch Comment	R7NA81995
NaOH Lot #	85INNaOH 10NP_00001
pH Paper ID	HC849161

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

24919-epw

TestAmerica Knoxville
Source Air Analysis Sample Information

Analyst	Date	Lot #	Work Order #	FH or BH	Impinger Volume (mL)	Impinger pH as received	Impinger pH after adjustment	Amount added to adjust pH
JMH	10-29-18	140-13157	A-1	FH (RB)	240 (100)	≤2		
			A-2	FH	370	≤2		
			A-3	FH	380	≤2		
			A-4	FH	325	≤2		

JMH 10-29-18

JMH 10-29-18

Comments: 140-13157 (HF, HCL)

WC076r1.doc, 011708

Shipping and Receiving Documents

AECOM

Chain of Custody Record

Project	Granite City Operations
Site	Bypass Vent Stack No. 5
Purchase Order	60582380.4
Prepared by:	

Test America
5815 Middlebrook Pike
Knoxville, TN 37921

Sample ID	Sample Matrix	Date/Time	HCl by by Method 26A						Comments
M26-reagent blank	0.1N H2SO4	10/25/2018	X						

140-13157 Chain of Custody

Contact: John Carson 865.425.7014; john.r.carson@aecom.com; Courtney Adkins 865.291.3019

Relinquished by:	Date	Time	Received by:	Date	Time	Relinquished by:	Date	Time
[signature]	10/25	1650						
Received by:	Date 10/18	Time	Relinquished by:	Date	Time			

Received for Laboratory by:	Date	Time	Air bill No.	Opened by:	Seal #	Date	Time	Temp (C)
[signature]	10-25-18	16:50						

Seal #	Condition

Remarks HAND DELIVERED
NO CUSTODY SEALS
RECEIVED AMBIENT AT 20.2/CT 20.3°C
BKD 10-25-18

AECOM

Chain of Custody Record

Page 2 of 19

Project	Granite City Operations
Site	Bypass Vent Stack No. 6
Purchase Order	60582380.4
Prepared by:	

Test America
5815 Middlebrook Pike
Knoxville, TN 37921

Sample ID	Sample Matrix	Date/Time	HCl by by Method 26A	Method CTM-13 (SO4 by IC)					Comments
M26-1	0.1N H2SO4		X						
M26-2	0.1N H2SO4		X						
M26-3	0.1N H2SO4		X						
~~M26-reagent blank~~	~~0.1N H2SO4~~		~~X~~						
~~CCM-1~~	~~Water~~	~~9/18/2018~~		~~X~~					
~~CCM-2~~	~~Water~~	~~9/18/2018~~		~~X~~					
~~CCM-3~~	~~Water~~	~~9/19/2018~~		~~X~~					
~~CCM-reagent blank~~	~~Water~~	~~9/19/2018~~		~~X~~					

Contact: John Carson 865.425.7014; john.r.carson@aecom.com; Courtney Adkins 865.291.3019

Relinquished by:	Date	Time	Received by:	Date	Time	Relinquished by:	Date	Time
[signature]	9/25/18	16:50	[signature] TA-KNX	9-25-18	16:50			
Received by:	Date	Time	Relinquished by:	Date	Time			

Received for Laboratory by:	Date	Time	Air bill No.	Opened by:	Seal #	Date	Time	Temp (C)

Seal #	Condition

Remarks

HAND DELIVERED
NO CUSTODY SEALS
RECEIVED AMBIENT RT 20.6/CT 20.50
DJD 9-25-18

Loc: 140
13157

TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Log In Number:

Review Items	Yes	No	NA	If No, what was the problem?
1. Are the shipping containers intact?	✓			☐ **Containers, Broken**
2. Were ambient air containers received intact?			✓	☐ Checked in lab
3. The coolers/containers custody seal if present, is it intact?			✓	☐ Yes ☐ NA
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID :_____ Correction factor: _____			✓	☐ **Cooler Out of Temp, Client Contacted, Proceed/Cancel** ☐ **Cooler Out of Temp, Same Day Receipt**
5. Were all of the sample containers received intact?	✓			☐ **Containers, Broken**
6. Were samples received in appropriate containers?	✓			☐ **Containers, Improper; Client Contacted; Proceed/Cancel**
7. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ **COC & Samples Do Not Match** ☐ **COC Incorrect/Incomplete** ☐ **COC Not Received**
8. Were all of the samples listed on the COC received?	✓			☐ **Sample Received, Not on COC** ☐ **Sample on COC, Not Received**
9. Is the date/time of sample collection noted?	✓			☐ **COC; No Date/Time; Client Contacted**
10. Was the sampler identified on the COC?			✓	☐ **Sampler Not Listed on COC**
11. Is the client and project name/# identified?	✓			☐ **COC Incorrect/Incomplete**
12. Are tests/parameters listed for each sample?	✓			☐ **COC No tests on COC**
13. Is the matrix of the samples noted?	✓			☐ **COC Incorrect/Incomplete**
14. Was COC relinquished? (Signed/Dated/Timed)	✓			☐ **COC Incorrect/Incomplete**
15. Were samples received within holding time?	✓			☐ **Holding Time - Receipt**
16. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ **pH Adjusted, pH Included (See box 16A)** ☐ **Incorrect Preservative**
17. Were VOA samples received without headspace?			✓	☐ **Headspace (VOA only)**
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number: _____			✓	☐ **Residual Chlorine**
19. For 1613B water samples is pH<9?			✓	☐ If no, lab will adjust
20. For rad samples was sample activity info. Provided?			✓	☐ Project missing info

Comments/Actions Taken

9 No Collection date for M-2U Samples, Will log using 9/18/18

Labeling Verified by: **Date:**

pH test strip lot number:

Box 16A: pH Preservation	Box 18A: Residual Chlorine
Preservative:	
Lot Number:	
Exp Date:	
Analyst:	
Date:	
Time:	

Project #: _____ PM Instructions: _____

Sample Receiving Associate: [signature] Date: 10-25-18

QA026R30.doc, 080916

Appendix F
CALIBRATION INFORMATION

CDS-04S
5 Point Console Dry Gas Meter Calibration

Console ID
URS-001

		Initials	Date
Calibrated by		CS	2/21/18
Reviewed by		WCT	3/11/18
Console Sticker	Prepared		
	Reviewed		
	Affixed		
MCL-01 or MCL-33 Prepared		CS	2/21/18

Console Calibration Expiration Date
21-Feb-2019

Orifice ID:	IX-40		IX-48		IX-55		IX-63		IX-73	
Orifice K':	0.2378		0.3467		0.4564		0.5840		0.8042	
Dry Gas Meter	Run #1a	Run #1b	Run #2a	Run #2b	Run #3a	Run #3b	Run #4a	Run #4b	Run #5a	Run #5b
Initial Reading, (ft^3)	527.500	532.855	559.945	566.002	572.058	578.200	584.351	592.242	538.237	549.060
Final Reading, (ft^3)	532.855	538.237	566.002	572.058	578.200	584.351	592.242	600.138	549.060	559.945
Difference, (ft^3)	5.355	5.382	6.057	6.056	6.142	6.151	7.891	7.896	10.823	10.885
Initial Meter Temp., (°F)	70	72	76	76	75	75	76	76	73	75
Final Meter Temp., (°F)	72	73	76	76	75	76	76	77	75	76
Average Meter Temp., (°F)	71.0	72.5	76.0	76.0	75.0	75.5	76.0	76.5	74.0	75.5
Test Time (min.)	17	17	13	13	10	10	10	10	10	10
Orifice Manometer Reading, ("H_2O)	0.34	0.34	0.70	0.70	1.20	1.20	1.90	1.90	3.60	3.60
Barometric Pressure, ("Hg)	29.43		29.43		29.43		29.43		29.43	
Ambient Temperature, (°F)	71		71		71		71		71	
Pump Vacuum, ("Hg)	24	24	22.5	22.5	21	21	19.5	19.5	17	17
Standard Volume of the Meter, (V_{mstd})	5.240	5.251	5.877	5.876	5.978	5.981	7.679	7.677	10.617	10.647
Standard Volume of Critical Orifice, (V_{crstd})	5.163	5.163	5.756	5.756	5.829	5.829	7.459	7.459	10.271	10.271
Flow Rate (cfm)	0.308	0.309	0.452	0.452	0.598	0.598	0.768	0.768	1.062	1.065
DGM Calibration Factor, (Y)	0.985	0.983	0.979	0.980	0.975	0.975	0.971	0.972	0.967	0.965
Average DGM Calibration Factor (Y)	0.984		0.980		0.975		0.971		0.966	
Delta H@, ("H_2O)	2.031	2.026	1.953	1.953	1.940	1.938	1.879	1.877	1.901	1.895
Average ΔH@, ("H_2O)	2.029		1.953		1.939		1.878		1.898	

Current Average Y	0.975
All Individual Y within 2% of mean?	TRUE
Average Delta $H_@$	1.939
All individual $\Delta H_@$ within 0.20"H_2O of mean	TRUE

CDS-04S DGM 5 point against orifice
Per EM SOP-002
Issued: January 2018

MCL-01

Console Inspection Checklist

Performed with Calibration Activities

Console ID	URS-001
Operator	CS
Date	2/21/18

	Things to do Before Calibration
NA	Clean pump oil from the muffler in the back of the console (wipe out with a paper towel is fine)
✓	Check to make sure manometer fluid levels are OK, and try to not have the adjustment valves close to one extreme or the other
✓	Check integrity of ΔH lines running from manometer to dry gas meter orifice (especially where these lines connect to DGM exit).
✓	Make sure console has 4 rubber feet. These sometimes fall off with field use.
✓	Inspect power cord for nicks, rubs or separated plug. Replace cord or plug as necessary.
✓	Inspect female 120V receptacles (pump, aux) for signs of melting, charring or other issues. Replace as necessary.
✓	Inspect rotary thermocouple selection switch. If it is old or worn, replace it.
✓	Inspect fuse connectors for signs of melting, charring or other issues. Replace as necessary.

	Things to do During Calibration:
✓	General cleanliness of the console. We have degreaser in a spray bottle for this purpose.
NA	Make sure spare fuses are readily available for when the console is in the field.
NA	Check that fuses are of the correct size.
✓	Make sure console has spare manometer fluid.
✓	Check readout selector switch for operation on all channels (1-7). First try to clean with aerosol spray. If this doesn't work easily, replace the switch. Make sure selector knob is fastened securely.
✓	Check that Amphenol connector is tight to the console front panel. If not, tighten it.
✓	Check for power from Amphenol connection for probe and filter box (make sure aux is switched for Chrome VI ready consoles). We have handy Amphenol to outlet converters we can use for this, just test with a work light)
✓	Verify all places where there should be a screw, have a screw. If not, put one in. (especially the handles and the shell, we frequently use these to hoist).
✓	Check that manometer valves are complete and that set screws are tightened.
NA	If performing a 3-pt. cal, check condition of the 5-pt. cal label. If it is faded or torn, replace it.
✓	Check console ID label. If it is illegible, replace it.
✓	Check that the timer works properly. If not, replace it.

Notes:

Temperature Readout Calibration
Isokinetic Sampling Consoles

Calibrated by	Initials	CS
	Date	2/20/18
Reviewed by	Initials	WCT
	Date	3/11/18

Readout ID Number
URS-001

Reference Thermometer	ID Number	2490
	Calibration Exp Date	5/22/18
Reference Thermocouple	ID Number	SR 2
	Calibration Exp Date	2/9/19
Voltage Generator	ID Number	T-311348
	Calibration Exp Date	

Temperature Readout Calibration		
Reference Thermometer (°F)	70	
Temperature Readout (°F)	70	
Was readout adjusted?	N	Y / (N)
Do these agree within 2°F	Y	(Y) / N

Temperature Readout Linearity Check

Channel	Voltage (mV)	Temperature (°F) Theoretical	Observed	Difference [1]
1 STACK	-0.0	32	32	0
	-1.0	-10	-8	2
	0.0	32	32	0
	1.0	77	77	0
	3.0	165	165	0
	5.0	251	252	1
	7.0	341	342	1
	10.0	475	474	-1
	15.0	692	693	1
	20.0	905	906	1
	30.0	1329	1328	-1
	40.0	1772	1770	-2

Channel	Voltage (mV)	Temperature (°F) Theoretical	Observed	Difference [1]
2 PROBE	0.0	32	33	1
	5.0	251	253	2
3 FILTER	0.0	32	33	1
	5.0	251	253	2
4 EXIT	0.0	32	32	0
	1.0	77	77	0
5	0.0	32		
	1.0	77		
6 AUX	0.0	32	32	0
	2.0	121	121	0
7	0.0	32		
	2.0	121		

[1] Difference is calculated as follows: **Difference = Observed - Theoretical**	*Acceptable difference is ±5 °F for temperatures below 1000 °F and ±10 °F for temperatures above 1000 °F*	*Are these met?* (Y) / N

Pre/Post Test Console Calibration Check

Console ID	URS-001	
Calibrated by	Initials	WCT
	Date	9/26/18
Reviewed by	Initials	CS
	Date	9/27/18

Orifice ID:	IX-48		IX-55		IX-63	
Orifice K':	0.3480		0.4592		0.5885	
Dry Gas Meter	Run #1a	Run #1b	Run #2a	Run #2b	Run #3a	Run #3b
Initial Reading, (ft^3)	316.511	322.064	327.618	333.738	339.875	347.758
Final Reading, (ft^3)	322.064	327.618	333.738	339.875	347.758	355.677
Difference, (ft^3)	5.553	5.554	6.120	6.137	7.883	7.919
Initial Meter Temp., (°F)	71	72	74	75	77	78
Final Meter Temp., (°F)	72	74	75	77	78	79
Average Meter Temp., (°F)	71.5	73.0	74.5	76.0	77.5	78.5
Test Time (min.)	12	12	10	10	10	10
Orifice Manometer Reading, ("H_2O)	0.68	0.68	1.20	1.20	1.90	1.90
Barometric Pressure, ("Hg)	29.21		29.21		29.21	
Ambient Temperature, (°F)	70		70		70	
Pump Vacuum, ("Hg)	20	20	18	18	15	15
Standard Volume of the Meter, (V_{mstd})	5.393	5.378	5.918	5.917	7.593	7.614
Standard Volume of Critical Orifice, (V_{crstd})	5.299	5.299	5.826	5.826	7.467	7.467
DGM Calibration Factor, (Y)	0.983	0.985	0.985	0.985	0.983	0.981
Delta H@	1.91	1.90	1.93	1.92	1.86	1.85

Average Y =	0.984
Reference Y_d =	0.975
Percent Difference =	0.8
Is Measured Y within 5% of Reference Y_d?	TRUE
Average Delta H@ =	1.896

CDS-0455: DGM 3 point cal check against orifice
Per EM SOP-003
Issued: August 2017

Pre/Post Test Console Calibration Check

Console ID		URS-001
Calibrated by	Initials	WCT
	Date	10/18/18
Reviewed by	Initials	CS
	Date	10/22/18

Orifice ID:	IX-48		IX-55		IX-63	
Orifice K':	0.3480		0.4592		0.5885	
Dry Gas Meter	Run #1a	Run #1b	Run #2a	Run #2b	Run #3a	Run #3b
Initial Reading, (ft^3)	556.908	562.440	567.981	574.063	580.164	587.942
Final Reading, (ft^3)	562.440	567.981	574.063	580.164	587.942	595.743
Difference, (ft^3)	5.532	5.541	6.082	6.101	7.778	7.801
Initial Meter Temp., (°F)	66	67	69	70	71	71
Final Meter Temp., (°F)	67	69	70	71	71	72
Average Meter Temp., (°F)	66.5	68.0	69.5	70.5	71.0	71.5
Test Time (min.)	12	12	10	10	10	10
Orifice Manometer Reading, ("H_2O)	0.69	0.69	1.20	1.20	1.90	1.90
Barometric Pressure, ("Hg)	29.55		29.55		29.55	
Ambient Temperature, (°F)	70		70		70	
Pump Vacuum, ("Hg)	17	17	15	15	14	14
Standard Volume of the Meter, (V_{mstd})	5.486	5.480	6.005	6.013	7.671	7.687
Standard Volume of Critical Orifice, (V_{crstd})	5.360	5.360	5.894	5.894	7.554	7.554
DGM Calibration Factor, (Y)	0.977	0.978	0.981	0.980	0.985	0.983
Delta H@	1.93	1.93	1.92	1.92	1.86	1.86

Average Y =	0.981
Reference Y_d =	0.975
Percent Difference =	0.6
Is Measured Y within 5% of Reference Y_d?	TRUE
Average Delta H@ =	1.903

CDS-0456: DGM 3 point cal check against orifice
Per EM SOP-003
Issued: August 2017

CDS-04S
5 Point Console Dry Gas Meter Calibration

Console ID
URS-002

		Initials	Date
Calibrated by		CS	2/21/18
Reviewed by		WCT	3/11/18
Console Sticker	Prepared		
	Reviewed		
	Affixed		
MCL-01 or MCL-33 Prepared		CS	2/21/18

Console Calibration Expiration Date
21-Feb-2019

Orifice ID:	IX-40		IX-48		IX-55		IX-63		IX-73	
Orifice K':	0.2378		0.3467		0.4564		0.5840		0.8042	
Dry Gas Meter	Run #1a	Run #1b	Run #2a	Run #2b	Run #3a	Run #3b	Run #4a	Run #4b	Run #5a	Run #5b
Initial Reading, (ft^3)	839.970	845.432	778.000	784.035	790.094	796.242	802.393	810.270	818.150	829.040
Final Reading, (ft^3)	845.432	850.890	784.035	790.094	796.242	802.393	810.270	818.150	829.040	839.970
Difference, (ft^3)	5.462	5.458	6.035	6.059	6.148	6.151	7.877	7.880	10.890	10.930
Initial Meter Temp., (°F)	77	77	70	72	73	74	74	75	75	76
Final Meter Temp., (°F)	77	77	72	73	74	74	75	75	76	77
Average Meter Temp., (°F)	77.0	77.0	71.0	72.5	73.5	74.0	74.5	75.0	75.5	76.5
Test Time (min.)	17	17	13	13	10	10	10	10	10	10
Orifice Manometer Reading, ("H_2O)	0.34	0.34	0.69	0.69	1.10	1.10	1.90	1.90	3.60	3.60
Barometric Pressure, ("Hg)	29.43		29.43		29.43		29.43		29.43	
Ambient Temperature, (°F)	71		71		71		71		71	
Pump Vacuum, ("Hg)	22.5	22.5	21	21	19.5	19.5	17.5	17.5	14.5	14.5
Standard Volume of the Meter, (V_{mstd})	5.285	5.281	5.910	5.917	5.999	5.996	7.687	7.683	10.652	10.672
Standard Volume of Critical Orifice, (V_{crstd})	5.163	5.163	5.756	5.756	5.829	5.829	7.459	7.459	10.271	10.271
Flow Rate (cfm)	0.311	0.311	0.455	0.455	0.600	0.600	0.769	0.768	1.065	1.067
DGM Calibration Factor, (Y)	0.977	0.978	0.974	0.973	0.972	0.972	0.970	0.971	0.964	0.962
Average DGM Calibration Factor (Y)	0.977		0.973		0.972		0.971		0.963	
Delta H@, ("H_2O)	2.009	2.009	1.943	1.937	1.783	1.781	1.884	1.883	1.895	1.892
Average ΔH@, ("H_2O)	2.009		1.940		1.782		1.884		1.894	

Current Average Y	0.971
All Individual Y within 2% of mean?	TRUE
Average Delta $H_@$	1.902
All individual $\Delta H_@$ within 0.20"H_2O of mean	TRUE

CDS-04S DGM 5 point against orifice
Per EM SOP-002
Issued: January 2018

MCL-01

Console Inspection Checklist

Performed with Calibration Activities

Console ID	URS-002
Operator	CS
Date	2/21/18

	Things to do Before Calibration
NA	Clean pump oil from the muffler in the back of the console (wipe out with a paper towel is fine)
✓	Check to make sure manometer fluid levels are OK, and try to not have the adjustment valves close to one extreme or the other
✓	Check integrity of ΔH lines running from manometer to dry gas meter orifice (especially where these lines connect to DGM exit).
✓	Make sure console has 4 rubber feet. These sometimes fall off with field use.
✓	Inspect power cord for nicks, rubs or separated plug. Replace cord or plug as necessary.
✓	Inspect female 120V receptacles (pump, aux) for signs of melting, charring or other issues. Replace as necessary.
✓	Inspect rotary thermocouple selection switch. If it is old or worn, replace it.
✓	Inspect fuse connectors for signs of melting, charring or other issues. Replace as necessary.

	Things to do During Calibration:
✓	General cleanliness of the console. We have degreaser in a spray bottle for this purpose.
NA	Make sure spare fuses are readily available for when the console is in the field.
NA	Check that fuses are of the correct size.
✓	Make sure console has spare manometer fluid.
✓	Check readout selector switch for operation on all channels (1-7). First try to clean with aerosol spray. If this doesn't work easily, replace the switch. Make sure selector knob is fastened securely.
✓	Check that Amphenol connector is tight to the console front panel. If not, tighten it.
✓	Check for power from Amphenol connection for probe and filter box (make sure aux is switched for Chrome VI ready consoles). We have handy Amphenol to outlet converters we can use for this, just test with a work light)
✓	Verify all places where there should be a screw, have a screw. If not, put one in. (especially the handles and the shell, we frequently use these to hoist).
✓	Check that manometer valves are complete and that set screws are tightened.
NA	If performing a 3-pt. cal, check condition of the 5-pt. cal label. If it is faded or torn, replace it.
✓	Check console ID label. If it is illegible, replace it.
✓	Check that the timer works properly. If not, replace it.

Notes:

Temperature Readout Calibration
Isokinetic Sampling Consoles

Calibrated by	Initials	CS
	Date	2/20/18
Reviewed by	Initials	WCT
	Date	3/11/18

Readout ID Number
URS-002

Reference Thermometer	ID Number	2490
	Calibration Exp Date	5/22/18
Reference Thermocouple	ID Number	SR 2
	Calibration Exp Date	2/9/19
Voltage Generator	ID Number	T-311348
	Calibration Exp Date	

Temperature Readout Calibration		
Reference Thermometer (°F)	70	
Temperature Readout (°F)	69	
Was readout adjusted?	N	Y/(N)
Do these agree within 2°F	Y	(Y)/N

Temperature Readout Linearity Check

Channel	Voltage (mV)	Temperature (°F) Theoretical	Observed	Difference [1]
1 STACK	-0.0	32	31	-1
	-1.0	-10	-9	1
	0.0	32	31	-1
	1.0	77	75	-2
	3.0	165	164	-1
	5.0	251	251	0
	7.0	341	341	0
	10.0	475	473	-2
	15.0	692	693	1
	20.0	905	905	0
	30.0	1329	1328	-1
	40.0	1772	1772	0

Channel	Voltage (mV)	Temperature (°F) Theoretical	Observed	Difference [1]
2 PROBE	0.0	32	31	-1
	5.0	251	252	+1 WCT
3 FILTER	0.0	32	31	-1
	5.0	251	251	0
4 EXIT	0.0	32	31	-1
	1.0	77	75	-2
5	0.0	32		
	1.0	77		
6 AUX	0.0	32	32	0
	2.0	121	120	-1
7	0.0	32		
	2.0	121		

[1] Difference is calculated as follows: **Difference = Observed - Theoretical**	*Acceptable difference is ±5 °F for temperatures below 1000 °F and ±10 °F for temperatures above 1000 °F*	*Are these met?* (Y)/ N

Pre/Post Test Console Calibration Check

Console ID		URS-002
Calibrated by	Initials	WCT
	Date	9/26/18
Reviewed by	Initials	CS
	Date	9/27/18

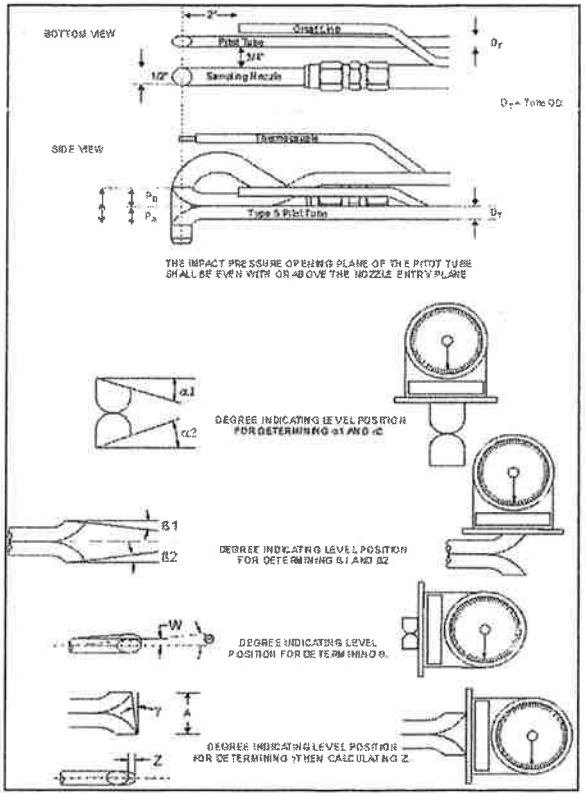
Orifice ID:	IX-48		IX-55		IX-63	
Orifice K':	0.3480		0.4592		0.5885	
Dry Gas Meter	Run #1a	Run #1b	Run #2a	Run #2b	Run #3a	Run #3b
Initial Reading, (ft^3)	973.879	979.447	985.017	991.141	958.206	966.037
Final Reading, (ft^3)	979.447	985.017	991.141	997.281	966.037	973.879
Difference, (ft^3)	5.568	5.570	6.124	6.140	7.831	7.842
Initial Meter Temp., (°F)	73	74	75	76	71	72
Final Meter Temp., (°F)	74	75	76	77	72	73
Average Meter Temp., (°F)	73.5	74.5	75.5	76.5	71.5	72.5
Test Time (min.)	12	12	10	10	10	10
Orifice Manometer Reading, ("H_2O)	0.67	0.67	1.15	1.15	1.90	1.90
Barometric Pressure, ("Hg)	29.21		29.21		29.21	
Ambient Temperature, (°F)	70		70		70	
Pump Vacuum, ("Hg)	18	18	16.5	16.5	15	15
Standard Volume of the Meter, (V_{mstd})	5.387	5.379	5.910	5.914	7.628	7.624
Standard Volume of Critical Orifice, (V_{crstd})	5.299	5.299	5.826	5.826	7.467	7.467
DGM Calibration Factor, (Y)	0.984	0.985	0.986	0.985	0.979	0.979
Delta H@	1.87	1.87	1.84	1.84	1.88	1.87

Average Y =	0.983
Reference Y_d =	0.971
Percent Difference =	1.2
Is Measured Y within 5% of Reference Y_d?	TRUE
Average Delta H@ =	1.864

CDS-0457: DGM 3 point cal check against orifice
Per EM SOP-003
Issued: August 2017

APEX INSTRUMENTS SOURCE TESTING EQUIPMENT

Type S Pitot Tube Inspection Form



Probe to 1808981

PITOT TUBE/PROBE # 8349

Parameter	Value	Allowable Range	Check
Assembly Level?	yes	Yes	OK
Ports Damaged?	no	No	OK
$\alpha 1$	0	$-10° < \alpha 1 < +10°$	OK
$\alpha 2$	0	$-10° < \alpha 2 < +10°$	OK
1	0	$-5° < b1 < +5°$	OK
1	0	$-5° < \beta 2 < +5°$	OK
γ	1		
0	0		
$Z = A \tan \gamma$	0.000	$Z \leq .125"$	OK
$W = A \tan \theta$	0.000	$W \leq .031"$	OK
Dt	0.375	.188" to .375"	OK
A/2Dt	1.256	$1.05 \leq P_A/D_t \leq 1.5$	OK
A	0.942	$2.1D_t \leq A \leq 3D_t$	OK

Certification

I certify that pitot tube/probe number 8349 meets or exceeds all specifications, criteria and/or applicable design features and is hereby assigned a pitot tube certification factor of 0.84. See 40 CFR Pt. 60, App. A, EPA Method 2.

Certified by: 9-5-18

Personnel (Signature/Date)

Temperature Sensor Calibration

Readout ID Number	HH308
Thermometer ID Number	2490
Thermometer Cal Date	5/22/2017 (NIST)
Sensor ID Number	Probe 180898-1 (11' air cooled)

Calibrated by	Initials	JC
	Date	11/16/18
Reviewed by	Initials	
	Date	

Thermometer Reading (°F)	Temperature Readout and Sensor Reading (°F)	Error
66	65	-0.2
180	179	-0.2
294	290	-0.5

Error is calculated according to the following equation:

$$\text{Error} = \frac{T_{Sens} - T_{Ref}}{T_{Ref} + 460} \times 100\%$$

CDS-09: Temperature Sensor
Per: EM SOP-001
Revised: April 2018
Document reviewed biennially

Where

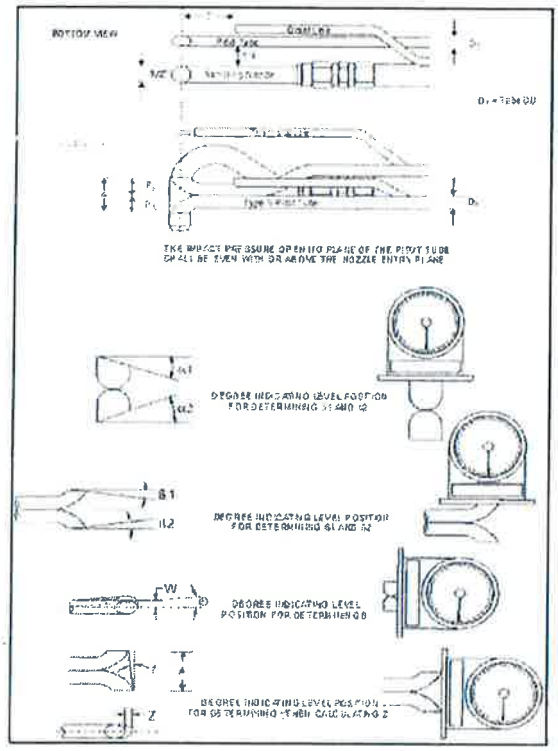
T_{sens} is the temperature reading from the sensor and

T_{ref} is the temperature reading from the reference thermometer

Acceptance criteria: Error is less than ±1.5%, absolute

APEX INSTRUMENTS SOURCE TESTING EQUIPMENT

Type S Pitot Tube Inspection Form



PITOT TUBE/PROBE # 180170

Parameter	Value	Allowable Range	Check
Assembly Level?	yes	Yes	OK
Ports Damaged?	no	No	OK
α1	0	-10° < α1 < +10°	OK
α2	0	-10° < α2 < +10°	OK
1	0	-5° < b1 < +5°	OK
1	1	-5° < β2 < +5°	OK
γ	1		
0	1		
Z = A tan γ	0.000	Z ≤ .125"	OK
W = A tan θ	0.016	W ≤ .031"	OK
Dt	0.375	.188" to .375"	OK
A/2Dt	1.237333	$1.05 \le P_A/D_t \le 1.5$	OK
A	0.928	$2.1D_t \le A \le 3D_t$	OK

Certification

I certify that pitot tube/probe number 170 meets or exceeds all specifications, criteria and/or applicable design features and is hereby assigned a pitot tube certification factor of 0.84. See 40 CFR Pt. 60, App. A, EPA Method 2.

Certified by: JP 2-22-18

Personnel (Signature/Date)

CDS-09

Temperature Sensor Calibration

Readout ID Number	HH308
Thermometer ID Number	2490
Thermometer Cal Date	5/22/2017 (NIST)
Sensor ID Number	AC probe 1801770

Calibrated by	Initials	JC
	Date	8/7/18
Reviewed by	Initials	
	Date	

Thermometer Reading (°F)	Temperature Readout and Sensor Reading (°F)	Error
72	72	0.0%
144	141	-0.7%
282	278	-0.9%
364	361	-0.7%
480	475	-1.1%

Error is calculated according to the following equation:

CDS-09: Temperature Sensor
Per: EM SOP-001
Revised: April 2018

$$\text{Error} = \frac{T_{Sens} - T_{Ref}}{T_{Ref} + 460} \times 100\%$$

Where

T_{sens} is the temperature reading from the sensor and
T_{ref} is the temperature reading from the reference thermometer

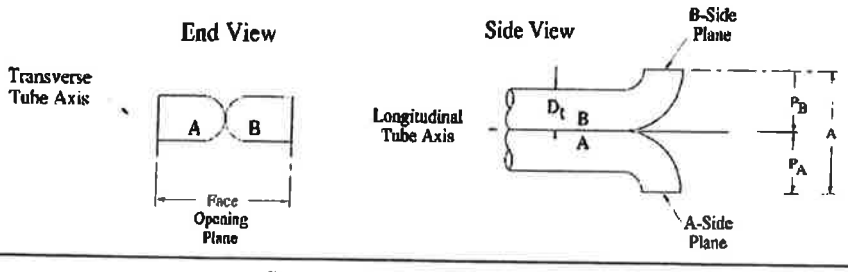
Acceptance criteria: Error is less than ±1.5%, absolute

S-Type Pitot Tube Inspection

Pitot ID	AC6-004 / 1205705
Caliper ID	HK23407
Caliper Calibration Expiration Date	

Calibrated by	Initials	CS
	Date	2/15/18
Reviewed by	Initials	WCT
	Date	3/11/18

General Pitot Tube Alignment



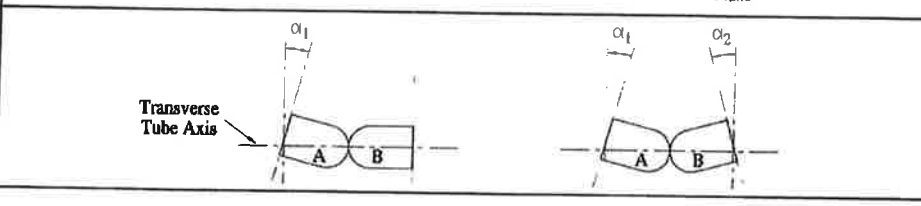
A = 0.925"

D_t = 0.375"

0.188" ≤ D_t ≤ 0.375"? Y (y/n)

$1.05 \le A/2D_t \le 1.50$? Y (y/n)

Misalignment

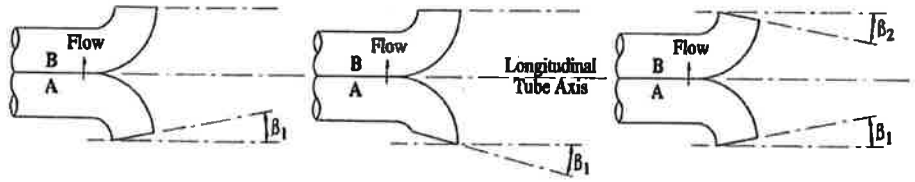


α_1 = 1.5 °

α_2 = 1 °

$\alpha_1 \le 10°$? Y (y/n)

$\alpha_2 \le 10°$? Y (y/n)

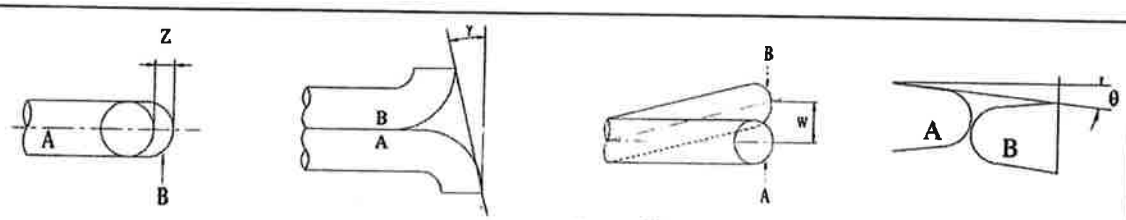


β_1 = 1

β_2 = 0

$\beta_1 \le 5°$? Y (y/n)

$\beta_2 \le 5°$? Y (y/n)



γ = 3 °

θ = 0.5 °

Z = A tan(γ) = 0.05

W = A tan(θ) = 0.008

Z ≤ 0.125"? Y (y/n)

W ≤ 0.031"? Y (y/n)

Acceptability for Use (Circle Selection)	If all answers are "Y", this pitot tube is available for use, and may be assigned a correction factor of 0.84	If all answers except the first (D_t) are "Y", this pitot tube is available for use, but needs to be calibrated using a wind tunnel.	Any other situation, the pitot tube must be removed from service.

CDS-15: Pitot Tube Inspection
Per: EM SOP-009
Revised: March 2016

Temperature Sensor Calibration

Readout ID Number	T-311348
Thermometer ID Number	2490
Thermometer Expiration Date	5/22/18
Sensor ID Number	AC 6-004 / 1205705

Calibrated by	Initials	CS
	Date	2/15/18
Reviewed by	Initials	WCT
	Date	3/11/18

Thermometer Reading (°F)	Temperature Readout and Sensor Reading (°F)	Error
54	54.7	0.14%
212	210.0	0.30%

Error is calculated according to the following equation:

CDS-09: Temperature Sensor
Per: EM SOP-001
Revised: March 2016

$$\text{Error} = \frac{T_{Sens} - T_{Ref}}{T_{Ref} + 460} \times 100\%$$

Where

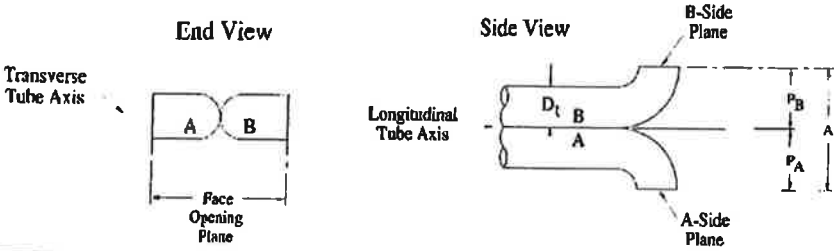
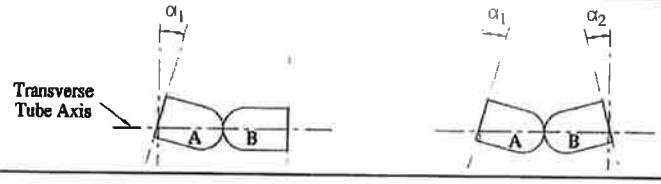
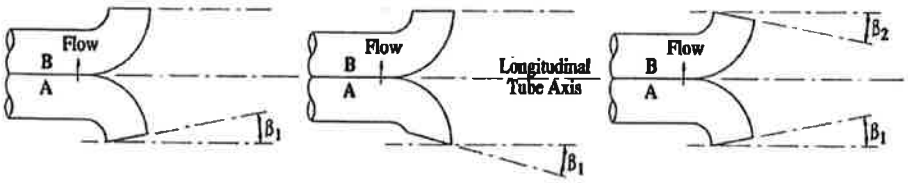
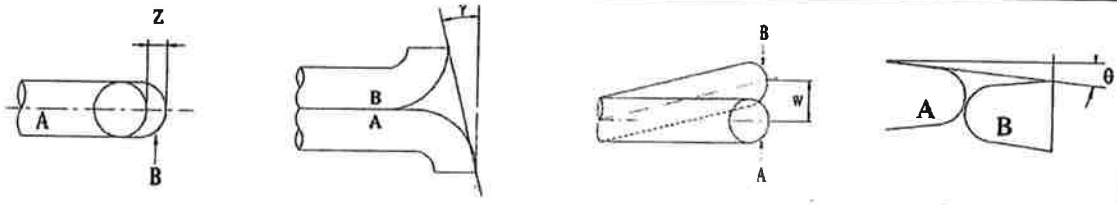
T_{sens} is the temperature reading from the sensor and
T_{ref} is the temperature reading from the reference thermometer

Acceptance criteria: Error is less than ±1.5%, absolute

S-Type Pitot Tube Inspection

Pitot ID	AQS INC 6-4
Caliper ID	HK23407
Caliper Calibration Expiration Date	

Calibrated by	Initials	CS
	Date	2/8/18
Reviewed by	Initials	WCT
	Date	3/11/18

General Pitot Tube Alignment		A = 0.928" D_t = 0.370" 0.188" ≤ D_t ≤ 0.375"? Y (y/n) 1.05 ≤ A/2D_t ≤ 1.50? Y (y/n)
Misalignment		α_1 = 0 ° α_2 = 0 ° α_1≤10°? Y (y/n) α_2≤10°? Y (y/n)
		β_1 = 0 β_2 = 0 β_1≤5°? Y (y/n) β_2≤5°? Y (y/n)
		γ = 0 ° θ = 0 ° Z = A tan(γ) = 0 W = A tan(θ) = 0 Z ≤ 0.125"? Y (y/n) W ≤ 0.031"? Y (y/n)
Acceptability for Use (Circle Selection)	If all answers are "Y", this pitot tube is available for use, and may be assigned a correction factor of 0.84	If all answers except the first (D_t) are "Y", this pitot tube is available for use, but needs to be calibrated using a wind tunnel. / Any other situation, the pitot tube must be removed from service.

CDS-15: Pitot Tube Inspection
Per: EM SOP-009
Revised: March 2016

Temperature Sensor Calibration

Readout ID Number	T-311348
Thermometer ID Number	2490
Thermometer Expiration Date	5/22/18
Sensor ID Number	AQS INC 6-4

Calibrated by	Initials	CS
	Date	2/9/18
Reviewed by	Initials	WCT
	Date	3/11/18

Thermometer Reading (°F)	Temperature Readout and Sensor Reading (°F)	Error
50	52.0	0.39%
212	202.3	1.44%

Error is calculated according to the following equation:

CDS-09: Temperature Sensor
Per: EM SOP-001
Revised: March 2016

$$\text{Error} = \frac{T_{Sens} - T_{Ref}}{T_{Ref} + 460} \times 100\%$$

Where

T_{sens} is the temperature reading from the sensor and
T_{ref} is the temperature reading from the reference thermometer

Acceptance criteria: Error is less than ±1.5%, absolute

CDS-31

Temperature Readout Calibration

Isokinetic Sampling Consoles (using a Simulated Thermometer)

Readout ID Number	Omega HH308

Calibrated by:	Initials	JC
	Date	6/11/18
Reviewed by	Initials	
	Date	

Reference Thermometer	ID Number	
	Calibration Exp Date	
Reference Thermocouple	ID Number	
	Calibration Exp Date	
Thermometer Simulator	ID Number	CL23A
	Calibration Exp Date	

Temperature Readout Calibration	
Reference Thermometer (°F)	
Temperature Readout (°F)	
Was Readout adjusted?	Y / N
Do these agree within 2°F	Y / N

Temperature Readout Linearity Check

Channel	Temperature (°F)		
	Theoretical	Observed	Difference [1]
1	-10		
	0		
	~~100~~ 68.0	68.5	0.5
	100	100.5	0.5
	175		
	250		
	350		
	500	500	0
	750		
	1000	1000	0
	1500	1498	2
	1900		

Channel	Temperature (°F)		
	Theoretical	Observed	Difference [1]
2	40		
	250		
3	40		
	250		
4	40		
	100		
5	40		
	100		
6	40		
	100		
7	40		
	100		

[1] Difference is calculated as follows: **Difference = Observed - Theoretical**	*Acceptable difference is ±5 °F for temperatures below 1000 °F and ±10 °F for temperatures above 1000 °F*	*Are these met?* Y / N

Field Balance Calibration Check

Project Name	GCO FGD Outage
Project Number	60582380
Balance ID	i 5500
Calibration Weight ID	Troemner - 92945

Date	Actual Mass (g)	Balance Reading (g)	Difference [a] (g)	Initials
9/18/18	500.0	500.2	0.2	JC
9/19/18	500.0	500.1	0.1	JC
9/20/18	500.0	500.0	0.0	JC

[a] The acceptance criteria for difference is ±0.5 grams.

CDS-08D: *Field Balance Calibration*
Per: *EM SOP-010*
Issued: *May 2018*
Document reviewed biennially

Airgas

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Airgas Specialty Gases
630 United Drive
Durham , NC 27713
919-544-3773 Fax: 919-544-3774
Airgas.com

Part Number:	E02AI99E15A1704	Reference Number:	122-124532724-1
Cylinder Number:	CC504828	Cylinder Volume:	146.2 Cubic Feet
Laboratory:	ASG - Durham - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22016	Valve Outlet:	660
Gas Code:	NO2,BALA	Certification Date:	Feb 02, 2016

Expiration Date: Feb 02, 2019

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
NITROGEN DIOXIDE	50.00 PPM	50.19 PPM	G1	+/- 2.1%	01/18/2016, 02/02/2016
AIR	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
GMIS	415201401	CC345255	50.06 PPM NITROGEN DIOXIDE/NITROGEN	+/- 2.0%	Jul 25, 2017
PRM	12325	APEX1099251	50.00 PPM NITROGEN DIOXIDE/NITROGEN	+/- 2.0%	Jul 26, 2014

The SRM, PRM or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
TECO NO 42CHL-63965-341	Chemiluminescence	Jan 07, 2016

Triad Data Available Upon Request

Approved for Release

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
12722 S. Wentworth Ave.
Chicago, IL 60628
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E02NI99E15A3576	Reference Number:	54-124602191-5
Cylinder Number:	CC199922	Cylinder Volume:	144.3 CF
Laboratory:	124 - Chicago - IL	Cylinder Pressure:	2015 PSIG
PGVP Number:	B12017	Valve Outlet:	660
Gas Code:	NO,NOX,BALN	Certification Date:	Mar 01, 2017

Expiration Date: Mar 01, 2025

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
NOX	90.00 PPM	90.90 PPM	G1	+/- 1.0% NIST Traceable	02/21/2017, 03/01/2017
NITRIC OXIDE	90.00 PPM	90.90 PPM	G1	+/- 1.0% NIST Traceable	02/21/2017, 03/01/2017
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	030212	KAL004026	97.60 PPM NITRIC OXIDE/NITROGEN	+/- 0.8%	May 09, 2019
PRM	12312	680179	10.01 PPM NITROGEN DIOXIDE/NITROGEN	+/- 2.0%	Oct 15, 2014
GMIS	812201405	CC502159	4.861 PPM NITROGEN DIOXIDE/NITROGEN	+/- 2.0%	Aug 12, 2017

The SRM, PRM or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 AMP0900100	FTIR	Feb 21, 2017
Nicolet 6700 AMP0900100	FTIR	Feb 21, 2017

Triad Data Available Upon Request

Approved for Release

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
12722 S. Wentworth Ave.
Chicago, IL 60628
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E02NI99E15A0163	Reference Number:	54-401115674-1
Cylinder Number:	CC415347	Cylinder Volume:	144.3 CF
Laboratory:	124 - Chicago (SAP) - IL	Cylinder Pressure:	2015 PSIG
PGVP Number:	B12018	Valve Outlet:	660
Gas Code:	NO,NOX,BALN	Certification Date:	Feb 13, 2018

Expiration Date: Feb 13, 2021

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
NOX	45.00 PPM	45.78 PPM	G1	+/- 1.0% NIST Traceable	02/05/2018, 02/13/2018
NITRIC OXIDE	45.00 PPM	45.77 PPM	G1	+/- 1.0% NIST Traceable	02/05/2018, 02/13/2018
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	16060606	CC442563	50.42 PPM NITRIC OXIDE/NITROGEN	+/- 0.8%	Jun 27, 2020
PRM	12367	APEX1099237	10.0 PPM NITROGEN DIOXIDE/AIR	+/- 1.5%	Jun 02, 2017
GMIS	1114201605	CC506716	4.995 PPM NITROGEN DIOXIDE/NITROGEN	+/- 2.0%	Nov 14, 2019

The SRM, PRM or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 AMP0900100	FTIR	Jan 21, 2018
Nicolet 6700 AMP0900100	FTIR	Jan 21, 2018

Triad Data Available Upon Request

Approved for Release

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
12722 S. Wentworth Ave.
Chicago, IL 60628
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E03NI80E15A0138	Reference Number:	54-400998373-1
Cylinder Number:	EB0088246	Cylinder Volume:	150.9 CF
Laboratory:	124 - Chicago (SAP) - IL	Cylinder Pressure:	2015 PSIG
PGVP Number:	B12017	Valve Outlet:	590
Gas Code:	CO2,O2,BALN	Certification Date:	Sep 22, 2017

Expiration Date: Sep 22, 2025

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE	10.00 %	9.958 %	G1	+/- 1.0% NIST Traceable	09/22/2017
OXYGEN	10.00 %	10.13 %	G1	+/- 1% NIST Traceable	09/22/2017
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	13060635	CC413759	13.359 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	May 09, 2019
NTRM	06120102	CC195613	9.898 % OXYGEN/NITROGEN	+/- 0.7%	Jul 26, 2018

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 AHR0801332	FTIR	Sep 22, 2017
O2-1 HORIBA MPA-510 3VUYL9NR	Paramagnetic	Sep 13, 2017

Triad Data Available Upon Request

Approved for Release

Airgas

Airgas Specialty Gases
12722 South Wentworth Avenue
Chicago, IL 60628
(773) 785-3000 Fax: (773) 785-1928
www.airgas.com

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E03NI58E15A02X7	Reference Number:	54-124417638-2
Cylinder Number:	CC126166	Cylinder Volume:	160.6 CF
Laboratory:	ASG - Chicago - IL	Cylinder Pressure:	2014 PSIG
PGVP Number:	B12014	Valve Outlet:	590
Gas Code:	CO2,O2,BALN	Certification Date:	Feb 10, 2014

Expiration Date: Feb 10, 2022

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE	21.00 %	20.67 %	G2	+/- 2% NIST Traceable	02/10/2014
OXYGEN	21.00 %	20.99 %	G1	+/- 1.0% NIST Traceable	02/08/2014
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	08061321	CC255428	20.09 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	Jun 28, 2018
NTRM	06120210	CC195743	20.90 % OXYGEN/NITROGEN	+/- 0.4%	Dec 01, 2015

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
CO2-1 HORIBA VIA-510 V1E3H7P5	NDIR	Feb 10, 2014
O2-1 HORIBA MPA-510 3VUYL9NR	Paramagnetic	Jan 21, 2014

Triad Data Available Upon Request

Notes:

Approved for Release