LSASD Project ID: 19-0457

Final Report

Assessment of Resuspended Sediments as a Source of PFAS to the Upper Coosa River Basin

Conasauga, Oostanaula, & Coosa Rivers

Georgia

Project Dates: September 16th – September 18th, 2019

Final Report Approval Date: December 5th, 2019

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The activities depicted in this Final Report are accredited under the US EPA Region 4 Laboratory Services & Applied Science Division ISO/IEC 17025 accreditation issued by the ANSI-ASQ National Accreditation Board. Refer to certificate and scope of accreditation AT-1644.

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SECTION B: Project Overview & Design

B1. Introduction

The headwaters of the Coosa River Basin begin in Tennessee and the North Georgia Mountains as the Conasauga, Coosawattee, and Etowah Rivers. The confluence of the Conasauga and the Coosawattee Rivers form the Oostanaula River south of Dalton Georgia before converging with the Etowah River forming the Coosa River in Rome Georgia. The Coosa River flows west across the Alabama-Georgia state line and is then impounded in Leesburg Alabama to form Weiss Lake.

The Conasauga, Oostanaula, and Coosa Rivers have historically tested positive for the presence of per- and polyfluoroalkyl substances (PFAS) via monitoring studies conducted by the Georgia Environmental Protection Division (GAEPD). PFAS have also been detected in the receiving waters of Alabama on the Coosa River and Weiss Lake by the Alabama Department of Environmental Management (ADEM), and the U.S. EPA Region 4's Laboratory Services & Applied Science Division (LSASD).

PFAS are man-made chemicals that do not occur in nature and have been found to be persistent and accumulate in both the environment and the human body via exposure pathways such as consumption of contaminated food and drinking water. PFAS have been extensively used in industry, manufacturing of commercial products, and as a component in aqueous film forming foams (AFFF) used for firefighting. There is evidence that suggests exposure to PFAS can lead to adverse health effects and are an emerging concern to public health. PFAS is a generic nomenclature encompassing a broader array of chemicals, with the most studied being perfluorooctanoic acid (PFOA) and perfluorooctanesulfonate (PFOS). The U.S. EPA has issued a Recommended Health Advisory for drinking water of 70 ng/L (ppt) for combined concentrations of PFOA and PFOS compounds. Extensive information regarding PFAS can be found at http://www.epa.gov/pfas.

Exceedances of the U.S. EPA's Recommended Health Advisory for PFOA and PFOS have been observed at both the drinking water intakes for the City of Centre Alabama in Weiss Lake and further downstream on the Coosa River in the City of Gadsden Alabama. Data collected by ADEM from 2016 through 2019 observed elevated detections of both PFOA and PFOS in Weiss Lake and on the Coosa River (both downstream and upstream of the lake). In 2012 and 2016, elevated levels of PFOA and PFOS were detected in the receiving waters of the Oostanaula and Coosa Rivers in studies conducted by GAEPD.

The Looper's Bend land application site (LAS) operated by Dalton Utilities is located along the main stem of the Conasauga River in Dalton Georgia. Surface water samples collected by GAEPD in both 2012 and 2016 in the Conasauga River and associated tributaries draining the Looper's Bend LAS contained elevated concentrations of both PFOA and PFOS. In 2009, an analytical data report was submitted to the U.S. EPA by Dalton Utilities showing elevated levels of PFOA, PFOS, and other PFAS related compounds in groundwater, wastewater effluent, soil, and compost samples collected at the Looper's Bend LAS (MPI, 2009). Research indicates some PFAS compounds may adsorb to soils and sediments and is influenced by the presence of solid organic

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carbon, and that the sorption potential tends to increase with carbon chain length and is elevated for PFOS relative to PFOA (ITRC, 2018; Anderson et al., 2016; CONCAWE, 2016). Furthermore, the adsorption of certain PFAS such as perfluoroalkyl carboxylic acids (PFCAs) (e.g. PFOA) and perfluoroalkyl sulphonic acids (PFSAs) (e.g. PFOS) to positively charged suspended particles may be an important transport pathway in surface water (CONCAWE, 2016). Background concentrations of PFAS in sediments in the Coosa River Basin downstream of Looper's Bend LAS and the potential of sediment as a source of PFOA and PFOS via resuspension and transport to receiving waters is currently unknown. The purpose of this study was to observe background concentrations and composition of PFAS in sediments and co-located surface water samples collected at spatially stratified scales in the Upper Coosa River Basin stemming from the Conasauga at Looper's Bend LAS.

B2. Methodology

Unless noted otherwise, all field activities described below were conducted in accordance with the approved Assessment of Resuspended Sediments as a Source of PFAS to the Upper Coosa River Basin Sample and Analysis Plan (SAP) (USEPA, 2019*a*), standard operating procedures and policies outlined in the Applied Science Branch Quality Assurance Project Plan (USEPA, 2018*a*), and LSASD's ISO/IEC 17025 accreditation issued by the ANSI-ASQ National Accreditation Board.

Study Area:

The study area for this project included the main stem of the Conasauga River adjacent to the Looper's Bend LAS in Dalton Georgia, the Oostanaula River from Resaca to Rome Georgia, and the receiving waters of the Coosa River from Rome Georgia to the Alabama – Georgia state line (Figure 1). A total of eight sites were assessed, which included four sites on the Conasauga River, three sites on the Oostanaula River, and one site on the Coosa River near the Alabama – Georgia state line. See Table 1 for a description and coordinates of all sites sampled in this study.

Surface water and sediment samples were collected at CRI, OOST3, and OOST2 on Monday September 16th, 2019. The remaining sites (OOST1, CONA1, CONA2, CONA3, and CONA4) were sampled on Tuesday September 17th, 2019. A new location relative to the SAP (USEPA, 2019*a*) was substituted for CONA2 due to limited access and extremely low water depths causing significant portions of the Conasauga River to be unnavigable by boat during the time of the study. The alternative location for CONA2 was sampled after significant effort by the field personnel to reach the proposed sampling location for this site at Looper's Bridge Road by boating in from downstream. The alternative sampling location for CONA2 was located approximately 6.7 river miles downstream of Looper's Bridge Road and 3.7 miles upstream from CONA3. All references to CONA2 in this report refer to the alternative location listed in Table 1.

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Surface Water Sample Collection:

Surface water samples were collected at all sites in 15 mL polypropylene vials and analyzed for the 25 PFAS analytes listed in Table 2. Additional surface water samples were collected in 1-liter polyethylene containers at CONA1, CONA3, OOST3, and CRI and analyzed for total organic carbon (TOC) and total suspended solids (TSS) (Table 3). The sample container, preservation, and holding time requirements for all analytes are listed in Table 4. All surface water analyses were conducted at the Region 4 LSASD Laboratory in Athens Georgia.

An additional surface water sample was also collected at CONA1, CONA3, OOST3, and CRI and filtered through a 1.2 µm GF/C glass micro-fiber filter loaded into a polypropylene gravimetric filter to remove suspended particulate matter and analyzed for the dissolved fraction of PFAS analytes listed in Table 2. *This experimental procedure was performed outside of LSASD's ISO/IEC 17025 accreditation to provide preliminary insight into the downstream transport of PFAS associated with suspended particles and the resulting data should be used for screening purposes only.*

All surface water samples were collected in accordance with LSASD's Standard Operating Procedure for Surface Water Sampling (USEPA, 2016). Surface water samples collected at CONA1, CONA3, OOST1, OOST3, and CRI were collected via stainless-steel buckets lowered over the bridge crossings at each site, mid-stream, to a depth approximately 6-inches below the water surface and samples were then transferred into the appropriate containers for the corresponding analyses listed in Table 4. Surface water samples collected at both CONA2 and OOST2 were collected directly into the containers approximately 6-inches below the water surface from the edge of the boat while anchored at the coordinates listed in Table 1. At CONA4, the surface water sample was collected directly into the container at a depth approximately 6-inches below the water surface by wading in along the streambank facing upstream into the flow. Deviations between sampling methods conducted at the sites were due to both access and safety considerations for field personnel.

Sediment Sample Collection:

Sediment samples were collected at all sites in 50 mL polypropylene vials and analyzed for the 25 PFAS analytes listed in Table 2. Additional sediment samples were also collected in 8-oz glass containers at all sites and analyzed for total organic carbon (TOC) (Table 3). The sample container, preservation, and holding time requirements for all analytes are listed in Table 4. All sediment analyses were conducted at the Region 4 LSASD Laboratory in Athens, Georgia.

All sediment samples were collected in accordance with LSASD's Standard Operating Procedure for Sediment Sampling (USEPA, 2014). Sediment samples collected at CONA1, CONA3, OOST1, OOST3, and CRI were first collected via stainless-steel petite Ponar sediment grabs lowered over the bridge crossings at each site. Sediment samples collected at CONA2 and OOST2 were retrieved via stainless-steel petite Ponar sediment grabs from the side of a boat while anchored at the coordinates listed in Table 1. The sediment sample for CONA4 was collected by

hand with a stainless-steel spoon due to the significant presence of bedrock formations and unsafe traffic conditions on the bridge overhead. All sediment samples consisted of a composite of 3 separate grabs or a spoon full that were first homogenized in a stainless-steel bowl with a stainless-steel spoon before being transferred into the appropriate containers for the corresponding analyses listed in Table 4.

In-Situ Water Quality Field Measurements:

Surface water quality measurements of temperature, dissolved oxygen, specific conductance, turbidity, and pH were collected *in-situ* via YSI EXO1 multi-parameter data sondes at each site in accordance with LSASD's Standard Operating Procedure for *In-Situ* Water Quality Monitoring (USEPA, 2018*b*). See Table 5 for a detailed list of *in-situ* water quality parameters. Multi-parameter data sondes used to collect in-situ water quality measurements were maintained, calibrated, and verified in accordance with the LSASD Standard Operating Procedures for *In-Situ* Water Quality Monitoring (USEPA, 2018b).

Stream Flow Data & Mass Loading:

This study targeted near base-flow conditions. The maximum threshold for approximate base-flow conditions was defined as the 30-year monthly mean flow for September computed from USGS stream gage data on the Coosa River (USGS 02397000), Oostanaula River (USGS 02388500) and the Conasauga River (USGS 02387000). These threshold values were 3,145 ft^3/s, 1,447 ft^3/s, and 562 ft^3/s for the Coosa, Oostanaula, and Conasauga Rivers, respectively. These gages were monitored before and during the study to ensure flows were below the computed thresholds during sample collection.

Streamflow data was retrieved from 4 USGS gages located at or within relative proximity to CONA3 (USGS 02387000), OOST1 (USGS 02387500), OOST3 (USGS 02388500), and CRI (USGS 02397000) during the time of sample collection. USGS streamflow data associated with the sampling time was used in conjunction with detected PFAS concentrations in surface water samples collected at these 4 sites to compute instantaneous mass loading rates in units of grams per day.

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SECTION C: Results & Discussion

C1: Analytical Data

Per- and Poly-Fluoroalkyl Substances (PFAS) in Surface Waters:

Surface water samples were collected at all sites listed in Table 1 and analyzed for the 25 PFAS target analytes listed in Table 2. A summary of detected PFAS in surface water samples are listed in Table 6. A total of 9 distinct PFAS compounds were detected in surface water samples collected throughout the watershed. The 9 compounds detected in surface waters in this study belong to 3 separate classes which include perfluoroalkyl carboxylic acids (PFCAs), perfluoroalkane sulfonic acids (PFSAs), and fluorotelomer sulfonates (FTS). The PFCAs detected in surface waters included the following compounds in decreasing order of carbon chain length; perfluorooctanoic acid (PFOA, C8), perfluoroheptanoic acid (PFHpA, C7), perfluorohexanoic acid (PFHxA, C6), perfluoropentanoic acid (PFPeA, C5), and perfluorobutyric acid (PFBA, C4). The PFSAs detected in surface water samples included perfluorooctanesulfonate (PFOS, C8), perfluorohexanesulfonate (PFHxS, C6) and perfluorobutanesulfonate (PFBS, C4). Additionally, the 8 carbon fluorotelomer sulfonate 6:2 FTS was detected in surface water collected on the Conasauga River at CONA3. 6:2 FTS is a transient environmental degradation product and precursor compound known to undergo aerobic biotransformation into shorter carbon chain PFCAs, primarily in the form of PFHxA and PFPeA (ITRC, 2018; Buck *et al.*, 2011). Long-chain compounds of both PFCAs and PFSAs are considered public health priorities due to their increased residence times in humans and wildlife (CONCAWE, 2016). Both PFCAs and PFSAs have been used by industry as wetting, dispersing, emulsifying, and foaming agents to produce industrial and consumer products ranging from protective coatings for fabrics, carpets, textiles, and paper; as well as formulations of insecticides and surfactants (Wang et al., 2017). The composition and classifications of PFAS detected in surface water samples are outlined in Figures 2 and 3.

There are currently no maximum contaminant levels (MCLs) established for PFAS nationally or for the state of Georgia. The U.S. EPA has issued a Lifetime Health Advisory (LHA) level of 70 ng/L or parts-per-trillion (ppt) for combined and chemical-specific concentrations of the long-chain compounds PFOA and PFOS in drinking water. Combined concentrations of PFOA and PFOS were detected in surface waters at significantly elevated levels 3 times greater than the LHA at sites located downstream of the Looper's Bend land application site on the Conasauga River (CONA1, CONA2, and CONA3) ranging from 250 – 280 ng/L. Residual combined concentrations of PFOA and PFOS above the LHA were also observed downstream in surface waters along the Oostanaula River (OOST1, OOST2, and OOST3) ranging from 72 – 153 ng/L. Neither PFOA or PFOS were detected at or above the minimum reporting limit (MRL) upstream of Looper's Bend on the Conasauga River (CONA1) or in the receiving waters of the Coosa River (CRI) near the Alabama-Georgia state line during the time of this study. The distribution and concentrations of PFOA and PFOS relative to the LHA in surface water samples are shown in Figures 4 and 5.

Surface water samples on the Conasauga River downstream of Looper's Bend (CONA2, CONA3, and CONA4) had the highest diversity of detected compounds with 8 distinct PFAS observed at

each site and ∑PFAS concentrations ranging from 931 – 1,110 ng/L. The diversity of PFAS compounds was also high in the Oostanaula River with 6 distinct PFAS detected at each site and ∑PFAS ranging from 361 – 463 ng/L. The short-chain compounds PFBS and PFPeA were the most prevalent PFAS detected throughout the watershed and were the only two compounds detected on the Conasauga River upstream of Looper's Bend (CONA1) and on the Coosa River (CRI). The prevalence of PFBS and PFPeA was also observed in a previous investigation of the receiving waters of Weiss Lake in Alabama (USEPA, 2019*b*). PFBS and PFPeA are short-chain replacements of PFOS and PFOA, respectively.

Surface water samples filtered through a 1.2µm GF/C glass microfiber filter in order to remove suspended sediments are summarized in Table 7. The percent recoveries of long-chain PFCAs, PFSAs, FTSs, and FASAs were significantly low after passing through the GF/C glass microfiber filter with an average loss of ∑PFAS of approximately 37%. This observation is consistent with recently published research from Sörengård *et al* (*in press*) which analyzed the effects of multiple filter materials on the recoveries of the 21 PFAS analyzed in their study. Due to the low recoveries and high variability between pre- and post-filter PFAS concentrations the results were deemed inconclusive. Thus, the contribution of PFAS transport associated with resuspended sediment was not quantified at this time. The filter analysis is being duplicated by LSASD personnel in order to verify the percent recoveries of PFAS analytes observed.

The "U" qualifier on tables and figures denotes that the analyte was not detected at or above the reporting limit. The "J" qualifier on tables and figures denotes that the identification of the analyte was deemed acceptable by the laboratory, but the reported value is an estimate. An accompanying "Q-2" qualifier denotes that the result was greater than the Minimum Detection Limit (MDL) but less than the MRL. The complete analytical results, MRLs, and associated qualifiers for all analyses of PFAS in surface water samples are listed in Appendix A of this report.

Per- and Poly-Fluoroalkyl Substances (PFAS) in Sediments:

Sediment samples were collected at all sites listed in Table 1 and analyzed for the 25 PFAS target analytes listed in Table 2. A summary of detected PFAS in sediment samples are listed in Table 8 and shown in Figure 6. A total of 16 distinct PFAS were detected in sediment samples collected throughout the watershed. The 16 compounds detected in sediments belong to 3 separate classes which include perfluoroalkyl carboxylic acids (PFCAs), perfluoroalkane sulfonic acids (PFSAs), and perfluoroalkane sulfonamides (FASAs). The PFCAs detected in sediments included the following compounds in decreasing order of carbon chain length; perfluorotetradecanoic acid (PFTeDA, C14), perfluorotridecanoic acid (PFTrDA, C13), perfluorododecanoic acid (PFDoA, C12), perfluoroundecanoic acid (PFUDA, C11), perfluorodecanoic acid (PFDA, C10), perfluorononanoic acid (PFNA, C9), perfluorooctanoic acid (PFOA, C8), perfluoroheptanoic acid (PFHpA, C7), perfluorohexanoic acid (PFHxA, C6), perfluoropentanoic acid (PFPeA, C5), and perfluorobutyric acid (PFBA, C4). The PFSAs detected in sediment samples included perfluorooctanesulfonate (PFOS, C8) and perfluorobutanesulfonate (PFBS, C4). Additionally, 3 FASAs were detected in sediment samples collected throughout the watershed which included perfluorooctanesulfonamide (FOSA), N-methyl perfluorooctane sulfonamido acetic acid (N-

MeFOSAA), and N-ethyl perfluorooctane sulfonamido acetic acid (N-EtFOSAA). FOSA, N-MeFOSAA, and N-EtFOSAA are transient biotransformation products of perfluorooctane sulfonamido ethanols (e.g. N-MeFOSE and N-EtFOSE) used in the production of surfactants and surface treatment products (ITRC, 2018), which have been shown to be potential precursors of both PFOS (Rhoads *et al.*, 2008) and PFOA (Plumlee *et al.*, 2009) depending on the transformation pathway. The composition and distribution of PFAS detected in sediment samples are outlined in Figures 7 and 8.

The concentrations of PFAS detected in sediment samples are summarized in Table 8. PFOS was detected at elevated levels in all sediment samples ranging from 410 – 15,000 ng/kg (dry). PFOA was detected in sediments collected on the Conasauga River (CONA1, CONA2, CONA3, and CONA4) and the Oostanaula River (OOST1, OOST2, and OOST3) ranging from 91 – 1,100 ng/kg (dry). PFOA was not detected at or above the MRL in sediments collected on the Coosa River (CRI). There are currently no federal standards or criteria established for PFAS in sediments or in the state of Georgia. In April of 2019, the U.S. EPA issued draft interim recommendations for public comment to address groundwater contamination from PFOA and PFOS (USEPA, 2019*c*). The U.S. EPA's draft interim recommendations propose that a target hazard quotient (THQ) of 0.1 and target cancer risk (TR) of one-in-a-million be used to calculate Regional Screening Levels (RSLs) for soil protective of groundwater yielding values of 40 ppt for each compound (USEPA, 2019*c*). In order to determine a potential risk posed by contaminated sediments to the overlying surface waters, generic RSLs for soil protective of groundwater of 3.78E-02 µg/kg for PFOS and 1.72E-02 µg/kg for PFOA were derived from the U.S. EPA's RSL calculator (https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search) using the proposed HQ=0.1 and TR=1.00E-06 (Appendix D). In general, the combined concentration of PFOA and PFOS as well as ∑PFAS increased with the presence of total organic carbon (TOC) outlined in Figures 9 and 10 and discussed in further detail in the following section of this report. Thus, RSLs were standardized by the site-specific fraction of organic carbon content based on the total organic carbon concentration measured in the sediment at each site in units of grams organic carbon per grams sediment (dry) (Appendix E). The concentrations of PFOA and PFOS detected in sediments with respect to both the generic and site-specific RSLs are outlined in Table 8 and Figure 11. All sediment samples with detected concentrations of PFOA were between 2 – 13 times greater than the site-specific RSLs and 5 – 64 times greater than the generic RSLs computed for this study. All sediments samples had concentrations of PFOS between 6 – 33 times greater than the site-specific RSLs and 11 – 397 times greater than the generic RSLs computed for this study. The RSLs presented in this report were calculated with the purpose of placing measured PFAS concentrations detected in sediments within a theoretical context for this study only. These RSLs are not enforceable and do not represent official policy of the U.S. EPA at the time this report was generated. The concentrations of PFOA and PFOS relative to both the generic and site-specific RSLs in sediment samples are shown in Figure 11.

Sediments collected on the Conasauga River had a diversity of detected PFAS ranging from 14 – 15 distinct compounds with a ∑PFAS ranging from 3,386 – 34,770 ng/kg (dry). The significantly elevated levels of PFAS detected at CONA4 relative to the other sites can be attributed to a substantial presence of TOC in the sample and the sediment sampling approach used at CONA4

which differed from the other sites in this study. Due to the prevalence of in-stream bedrock outcroppings and unsafe sampling conditions on the nearby bridge, sediment grabs were collected by hand with a stainless-steel spoon in areas of noticeable deposition. This method inherently biased the composite sample towards finer particles compared to the Ponar grabs used to collect sediment samples at all other sites. The diversity of PFAS detected on the Oostanaula River ranged from 12 – 15 distinct compounds with ∑PFAS ranging from 2,840 – 4,260 ng/kg (dry). A slight decrease in both the diversity of PFAS (ranging 8 – 9 distinct compounds) and ∑PFAS (ranging 1,067 – 2,020 ng/kg (dry)) was observed in sediment samples collected on the Coosa River. With the exception of CONA4, the average concentration of ∑PFAS in sediments on the Conasauga River was approximately 3,605 ng/kg (dry), only slightly higher than the average ∑PFAS of sediments collected downstream on the Oostanaula River (average ∑PFAS = 3,363 ng/kg (dry)). Generally, PFOS was the most abundant compound detected in sediments followed by the long-chain perfluorinated carboxylic acid PFDoA (C12), as seen in Figure 7.

The "U" qualifier on tables and figures denotes that the analyte was not detected at or above the reporting limit. The "J" qualifier on tables and figures denotes that the identification of the analyte was deemed acceptable by the laboratory, but the reported value is an estimate. An accompanying "Q-2" qualifier denotes that the result was greater than the Minimum Detection Limit (MDL) but less than the MRL. The "QR-2" qualifier indicates that MRL verification recovery was greater than upper control limits. The "Y-2" qualifier should accompany all data for N-EtFOSAA and PFTeDA as these analytes should be used for screening purposes only. The complete analytical results, MRLs, and associated qualifiers for all analyses of PFAS in sediment samples are listed in Appendix B of this report.

Analysis of Solids (TOC and TSS):

Sediment samples were collected at all sites and analyzed for TOC (Tables 1 and 3). A summary of solids in both surface water and sediment samples are listed in Tables 9 and 10. Sediment TOC ranged from 2,200 – 30,000 mg/kg (dry) across all sites. The resulting TOC concentrations at CONA4 were significantly higher than the rest of the samples due to a difference in sampling techniques. Sediment grabs were collected at CONA4 using a stainless-steel spoon in depositional areas causing the composite sample to be biased towards finer particulates and detritus. With the exclusion of CONA4, the computed average TOC for the Conasauga, Oostanaula, and Coosa Rivers were 4,200 mg/kg (dry), 6,133 mg/kg (dry), and 3,550 mg/kg (dry), respectively. An increase in combined concentrations of PFOA and PFOS as well as ∑PFAS in sediments with respect to the presence of TOC was observed both with and without the treatment of CONA4 as an outlier (Figures 9 and 10). The presence of organic carbon has been indicated as a significant factor in the retention of PFAS in both sediment and soil with increasing effects for long-chain PFCAs and PFSAs (ITRC, 2018; CONCAWE, 2016) and should be considered when comparing concentrations of PFAS in sediment across sites.

Additional surface water samples were collected at CONA1, CONA3, OOST3, and CRI and analyzed for both TOC and TSS (Table 9). The concentration of TOC in surface water samples

remained relatively consistent throughout the watershed, ranging from 1.5 – 2.8 mg/L across all sites. The concentration of TSS ranged from 9.1 – 29 mg/L throughout the watershed. On average, a slight increase in TSS was observed moving downstream (Table 9). Significant variability in TSS concentrations was observed on the Coosa River between duplicate samples, which is discussed in Section C4. – Data Quality.

The "J" qualifier on tables and figures denotes that the identification of the analyte was deemed acceptable by the laboratory, but the reported value is an estimate. An accompanying "Q-2" qualifier denotes that the result was greater than the MDL, but less than the MRL. The "QR-2" qualifier indicates that MRL verification recovery was greater than upper control limits. The complete analytical results, MRLs, and associated qualifiers for all analyses of solids in sediment and surface water samples are listed in Appendix C of this report.

C2. Field Measurements

In-Situ Water Quality:

Instantaneous measurements of temperature, pH, specific conductance, dissolved oxygen, and turbidity were collected *in-situ* at all sites and are summarized in Table 11. Water temperature ranged from 24.2 – 28.4°C across all sites depending on the time of day in which the measurement was collected. The pH of surface waters was observed to be relatively consistent throughout the watershed during the study period, ranging from 7.37 – 7.89 S.U. In general, the average specific conductance was higher on the Conasauga River (~246 µS/cm) compared to the receiving waters of the Oostanaula (~122 µS/cm) and Coosa River (~203 µS/cm). The measured values of dissolved oxygen ranged from 6.64 – 8.43 mg/L across all sites and was dependent on the time of day in which the measurement was collected. The lowest values of dissolved oxygen were observed in the early mornings with the highest values observed in the mid to late afternoon, consistent with diurnal cycles of photosynthesis and respiration. On average, a slight decrease in turbidity was observed between the Conasauga (~18 FNU), Oostanaula (~13 FNU), and Coosa Rivers (~9.3 FNU). No exceedances of ambient surface water quality criteria were observed during the period of study.

C3. Computations & Analyses

Mass Loading Rates:

Instantaneous mass loading rates were calculated in grams per day for all PFAS detected in surface water (6:2 FTS, PFBS, PFHpA, PFHxA, PFHxS, PFOA, PFOS, PFPeA), combined concentrations of PFOA and PFOS, and ∑PFAS for sites near USGS stream gages (CONA3, OOST1, OOST3, and CRI). Computed mass loading rates and associated surface water concentrations of PFAS are

summarized in Table 12 and Figure 4. Stream flow conditions were well below the base-flow thresholds set for this study and were approaching the 7-day/10-year low-flow (7Q10) for the stream gages on the Conasauga River (USGS 02387000) and the upper Oostanaula River (USGS 02387500) due to drought-like conditions experienced during the weeks prior to the study. The low-flow conditions limit PFAS inputs to groundwater intrusion, dissolution of PFAS adsorbed to sediments, transformation of precursor compounds within the sediment and surface waters, air deposition, and point-source discharges.

The highest concentrations of PFAS in surface water were observed on the Conasauga River (Table 6 and Figure 4). The Conasauga River at CONA3 accounted for approximately 74% of the combined PFOA and PFOS, and 49% of the ∑PFAS mass loading calculated for the headwaters of the Oostanaula River at OOST1 with a flow contribution of approximately 19%. Except for the short-chain PFBS, concentrations of all other PFAS compounds flowing from the Conasauga River were diluted after the confluence with the Coosawattee River (Figure 2). The flowrate of the Oostanaula increased by approximately 13% from the headwaters at OOST1 in Resaca Georgia and OOST3, upstream of the confluence with the Etowah River in Rome Georgia. Mass loadings calculated at OOST3 are largely attributed to upstream PFAS inputs with mass loadings at OOST1 accounting for approximately 61% and 71% of combined PFOA and PFOS, and ∑PFAS flux at OOST3, respectively. An increase in concentrations of both short and long-chain PFAS between OOST1 and OOST3 was observed. A significant increase in the concentration of PFOS was also observed at OOST2 downstream of Calhoun Georgia. The mass loading loss observed between OOST3 on the Oostanaula River and CRI on the Coosa River can be attributed to dilution of the PFAS compounds below the MDL making a mass balance difficult to attain.

PFAS Class and Functional Groups in Sediment and Surface Water

PFAS detected in sediment and surface waters were classified by both the functional group (*i.e.* PFCAs, PFSAs, FTSs, or FASAs) and carbon chain-length class (*i.e.* short-chain or long-chain) as defined in ITRC (2018) classifications are summarized in Table 13 and results are shown in Figures 3 and 8. In general, surface water samples were mainly comprised of both short-chain PFCAs (ranging 22 – 38%) and short-chain PFSAs (ranging 30 – 68%) throughout the watershed. Moderate levels of long-chain PFCAs (ranging 9 – 15%) and long-chain PFSAs (ranging 9 – 24%) were also detected on the Conasauga River below Loopers Bend (CONA2, CONA3, and CONA4) and along the Oostanaula River (OOST1, OOST2, and OOST3). No long-chain PFAS were detected in the water column upstream of Looper's Bend (CONA1) or in the receiving waters of the Coosa River (CRI). The fluorotelomer 6:2 FTS was also detected at CONA3 comprising only 3% of the total PFAS composition. 6:2 FTS is a potential precursor of short-chain PFCAs, primarily in the form of PFHxA and PFPeA (ITRC, 2018; Buck *et al.*, 2011).

Conversely, sediment samples were primarily dominated by both long-chain PFCAs (ranging 41 – 56%) and long-chain PFSAs (ranging 13 – 40%) across all sites. Moderate levels of both short-chain PFCAs (ranging 2 – 25%) and short-chain PFSAs (ranging 3 – 7%) were also detected in all sediment samples except for the Coosa River (CRI) in which no short-chain PFAS were observed. Furthermore, moderate levels of FASAs were also detected in all sediment samples collected

downstream of Looper's Bend (ranging 8 – 22%) with a minor composition of FASAs of approximately 1% observed upstream of Looper's Bend at CONA1. FASAs such as FOSA, N-MeFOSAA, and N-EtFOSAA have been shown to be potential precursors of both PFOS (ITRC, 2018; Rhoads *et al*, 2008) and PFOA (Plumlee *et al*, 2009).

The partitioning of long-chain PFAS to sediments and short-chain PFAS to the water column supports both theoretical expectations outlined in guidance documents (ITRC, 2018; CONCAWE, 2016) and environmental observations made in previous watershed-scale studies (Zhao *et al*, 2016). The partitioning of long-chain compounds to the solid phase was observed in this study in which the most downstream site on the Coosa River (CRI) had sediment completely devoid of short-chain PFAS while the overlying surface water was solely comprised of short-chain compounds. A study conducted by Zhao *et al.* (2016) on the Yellow River in China, observed further significant partitioning of long-chain PFAS in the water column to suspended particulate matter indicating the transport of suspended sediments as a major transport mechanism for long-chain PFAS to receiving waters. The contribution of resuspended sediments to the transport of long-chain PFAS was not quantified in this study due to low percent recoveries of PFAS target analytes and high variability of PFAS filtrate data discussed in section C1: Analytical Data of this report, and may warrant further investigation.

ITRC (2018) and CONCAWE (2016) also suggest that PFSAs tend to undergo greater partitioning to the sediment compared to PFCAs of the same carbon chain-length. In this study, an opposite effect was observed in which PFCAs were generally more abundant than PFSAs of a similar class in sediments and the composition of PFSAs were similar or greater than PFCAs in surface water. Thus, an organic carbon partition coefficient was calculated for each PFAS analyte with detectable concentrations in co-located sediment and surface water samples using the following equation:

$$K_{oc} = \frac{\left({C_s}/{C_w}\right)}{f_{oc}}$$

Where:

$K_{oc} = Organic\ Carbon\ Partition\ Coefficient$

$C_s = Concentration\ of\ PFAS\ analyte\ detected\ in\ sediment\ [ng/kg\ (dry)]$

$C_w = Concentration\ of\ PFAS\ analyte\ detected\ in\ surface\ water\ [ng/L]$

$f_{oc} = Fraction\ of\ Organic\ Carbon\ in\ Sediment\ [g\ Organic\ Carbon/g\ sediment]$

The logarithm of K_{oc} was calculated for PFBS, PFPeA, PFHxA, PFHpA, PFOA, and PFOS and plotted with respect to the carbon chain-length for each analyte shown in Figure 12. Figure 12 shows that the potential for sediment partitioning for the PFSAs (PFBS and PFOS) increased with carbon chain-length and that PFOS (C8, PFSA) did indeed have a higher sediment partitioning

distribution than PFOA (C8, PFCA) of the same carbon chain-length. In conditions of steady-state equilibrium an increase in the log K_{oc} as carbon chain-length increased would also be expected for the PFCAs (PFPeA, PFHxA, PFHpA, and PFOA). The non-linear relationship between the organic carbon partition coefficients for the PFCAs may in part be due to the transformation of precursors that include short-chain PFCAs as a terminal endpoint in the degradation pathway, such as 6:2 FTS which was detected at CONA3. More information is needed regarding the composition of PFAS sources throughout the watershed in order to determine the availability of PFSAs with respect to PFCAs and potential precursors of either functional group in order to further understand the distributions observed in the environment.

C4. Data Quality

Equipment Decontamination & Preparation:

All sampling containers were certified and managed in accordance with the LSASD Standard Operating Procedure for Equipment Inventory and Management (USEPA, 2017*a*). Equipment used for collecting samples to be analyzed for PFAS (i.e. polypropylene gravity filters, stainless-steel forceps, buckets, spoons, bowls, and petite Ponars) were washed using Luminox® in warm tap water, rinsed with PFAS-free water, air-dried on clean plastic sheets and sealed in clean plastic in preparation for field use. Personnel were required to wear clean nitrile gloves during all processes of cleaning, handling, and packaging equipment. PFAS-free water was certified to be PFAS target analyte free and supplied by the LSASD laboratory in a clean HDPE container. Equipment rinse blank quality control samples were collected after the decontamination process for each type of equipment and for each lot of nitrile gloves used for sampling and submitted to the LSASD laboratory for analysis of PFAS target analytes for verification before field use. No PFAS target analytes were detected at or above the MRLs for any equipment rinse blank quality control samples and were therefore deemed acceptable within the scope of this study (Appendix A).

Field Sampling Quality Controls:

Surface water and sediment samples collected for PFAS analysis were sampled via a trace level sampling technique to avoid cross-contamination of PFAS surface water samples due to sample collection and handling. This process required two field personnel for PFAS sample collection. A designated sampler handled the sample media and sample container only. A second designee operated sampling equipment and assisted with sample container packaging and labeling. Sampling equipment known or suspected to contain PFAS was avoided during sampling activities. Quality control samples which included field equipment rinse blanks, field blanks, and trip blanks were collected to account for the potential of cross-contamination. Additional quality control samples such as temperature blanks, field duplicates and matrix spike/matrix spike duplicates were

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collected in accordance with the LSASD Standard Operating Procedure for Field Sampling Quality Control (USEPA, 2017b).

Field equipment rinse blank quality control samples were collected by rinsing equipment (i.e. polypropylene gravity filters, stainless-steel forceps, buckets, spoons, bowls, and petite Ponars) with PFAS-free water in the field, to evaluate PFAS inputs due to equipment decontamination and reuse in the field following the decontamination procedure outlined in the previous section. Field blank quality control samples were also collected by transferring PFAS-free water into 15mL polypropylene vials in the field to evaluate the trace level sampling technique used for PFAS sample collection. Additionally, a trip blank quality control sample containing PFAS-free water provided by the LSASD laboratory was stored in the sample cooler containing samples collected for PFAS analysis, to account for PFAS inputs during sample storage and transport. No PFAS target analytes were detected at or above the MRLs for any field quality control samples and were therefore deemed acceptable for the scope of this study (Appendix A).

Temperature blanks were placed inside each sample cooler and measured upon arrival to the LSASD laboratory. Temperature blanks accompanying equipment rinse blank samples collected before the commencement of field activities received by the lab on September 11, 2019 were recorded at 3.5°C. The temperature blank stored with the field samples submitted to the lab on September 18, 2019 was recorded at 1.2°C. Both temperature blanks were below the 4.0°C threshold and deemed acceptable by the LSASD laboratory.

A duplicate sample was collected on the Coosa River (CRI) and submitted to the LSASD laboratory for analysis of all analytes targeted for this study (Tables 2 and 3). The duplicate results for all detected analytes along with the calculated relative percent differences (RPDs) are listed in Table 13.

An additional field quality control sample containing PFAS-free water spiked with approximately 400 – 450 ng/L of each PFAS target analyte listed in Table 2 was provided by the LSASD laboratory in a 50 mL polypropylene tube. This sample was filtered through a 1.2 µm GF/C glass microfiber filter placed in a polypropylene gravity filter apparatus to determine the percent recovery of PFAS analytes associated with the filtration technique used to collect filtered samples. A filter blank sample was also collected by rinsing a clean GF/C glass microfiber filter and polypropylene gravity filter apparatus with PFAS-free water supplied by the LSASD laboratory. No PFAS target analytes were detected in the filter blank sample at or above the MRLs. The percent recoveries of PFAS target analytes associated with the spiked field quality control sample are summarized in Table 7.

In-Situ Water Quality Calibration & Verification:

The multi-parameter data sonde used to collect *in-situ* water quality measurements was maintained, calibrated, and verified in accordance with the LSASD Standard Operating Procedures for *In-Situ* Water Quality Monitoring (USEPA, 2018*b*). Calibrations and end-check verifications performed on all parameters measured for the duration of the study were within the acceptable

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ranges in accordance with LSASD's Calibration and End-Check Acceptance Criteria (SESDFORM-060-R0).

USGS Stream Gage Data:

Streamflow data measured, stored, and managed by the U.S. Geological Survey (USGS) was used to calculate instantaneous mass loadings of PFAS analytes summarized in Table 12. Stream gage IDs and the dates and times of the streamflow measurement corresponding to sample collection (± 15 min) are listed in Table 12. All streamflow data was retrieved at www.waterdata.usgs.gov. USGS streamflow data was classified as provisional at the time of retrieval and calculations are subject to revision until they have been thoroughly reviewed and receive final approval in accordance with USGS quality assurance policies and procedures.

C5. Conclusions

A total of 9-distinct compounds of PFAS were positively identified in surface water samples collected from 8 sites located throughout the Conasauga, Oostanaula, and Coosa River watersheds. Sites located along the Conasauga River downstream of Looper's Bend LAS had both the highest diversity of compounds and ∑PFAS concentrations. The composition of PFAS in surface waters was generally dominated by short-chain compounds with PFBS and PFPeA being the most prevalent in liquid phase throughout the watershed. Both PFBS and PFPeA were also found in a previous study to be the most prevalent compounds in the receiving waters of Weiss Lake in Alabama. The diversity of PFAS was found to be greater in sediment samples collected from the same 8 sites containing a total of 16-distinct compounds. The diversity and concentration of ∑PFAS observed in sediments was found to be relatively consistent along the Conasauga and Oostanaula Rivers. In general, sediments consisted primarily of long-chain compounds with sediments collected from the most downstream site on the Coosa River being solely comprised of long-chain PFAS and sulfonamide precursors. The retention of PFAS compounds in sediment was found to be significantly affected by the presence of total organic carbon, carbon chain-length of PFAS analytes, and functional group classification (*i.e.* PFSA vs PFCA). Thus, these parameters should be considered when evaluating the distribution of PFAS at the watershed scale.

Combined concentrations of PFOA and PFOS (ranging from 250 – 280 ng/L) were detected in surface water samples at levels 3 times greater than the EPA's lifetime health advisory (LHA) of 70 ng/L on the Conasauga River below Looper's Bend LAS. Residual combined concentrations of PFOA and PFOS (ranging from 72 – 153 ng/L) were also detected at or above the LHA of 70 ng/L at all sites along the Oostanaula River. Neither PFOA or PFOS were detected at or above the MRL on the Conasauga River upstream of Looper's Bend or in the receiving waters of the Coosa River during the study period. All sediment samples collected throughout the watershed contained PFOS concentrations (ranging from 410 – 15,000 ng/kg (dry)) above the generic and organic carbon corrected RSLs calculated for this study. Similarly, all sites except for the Coosa River, had

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sediments with PFOA concentrations (91 – 1100 ng/kg (dry)) above both the generic and organic carbon corrected RSLs. Sediments collected on the Coosa river did not contain detectable levels of PFOA.

The Conasauga River contributed the majority of instantaneous mass loadings of combined PFOA and PFOS (~74%) as well as ∑PFAS (~49%) to the headwaters of the Oostanaula River comprising only 19% of the total streamflow. An increase in about 13% of the total streamflow was observed along the Oostanaula River from Resaca to Rome, Georgia. Despite the increase in flow, the residual PFAS concentrations in the Oostanaula headwaters accounted for approximately 61% and 71% of the downstream mass loadings of combined PFOA and PFOS, and ∑PFAS, respectively. A loss in mass was observed on the Coosa River due to the dilution of PFAS analytes below detectable levels. Low flows and drought-like conditions preceding the study limits PFAS sources to groundwater intrusion, contaminated sediments, transformation of undetected precursors, air deposition, and point-source discharges throughout the watershed, with a significant proportion originating from the Conasauga River. This study has found that the transport of both surface water and sediments contaminated with PFAS from the Coosa River Basin present significant inputs into the receiving waters of Weiss Lake. Background concentrations of PFAS associated with Weiss Lake sediments are currently unknown. The presence of long-chain PFAS, particularly PFOS, is Weiss Lake sediments is probable.

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Summary Tables

Table 1: Site Coordinates and Descriptions

Station ID	Water Body	Approximate Coordinates (DD.ddddd)		Site Description
		Latitude	Longitude	
CONA1*	Conasauga River	34.70872	-84.86403	Conasauga River at Airport Rd in Dalton, GA
CONA2	Conasauga River	34.67950	-84.90906	Conasauga River downstream of Looper's Bend LAS
CONA3*	Conasauga River	34.66705	-84.92823	Conasauga River at Tilton Bridge Rd in Dalton, GA
CONA4	Conasauga River	34.59325	-84.93432	Conasauga River at Hwy 136 near Resaca, GA
OOST1	Oostanaula River	34.57750	-84.94177	Oostanaula River at Hwy 3 in Resaca, GA
OOST2	Oostanaula River	34.47481	-85.02025	Oostanaula River at Hwy 156 near Calhoun, GA
OOST3*	Oostanaula River	34.28716	-85.16331	Oostanaula River at Armuchee Connector near Rome, GA
CRI*	Coosa River	34.24871	-85.35548	Coosa River at Hwy 100 near AL-GA State Line

*Additional surface water samples were collected at these sites to assess PFAS associated with the suspended sediment fraction.

Table 2: PFAS Target Analytes

Region IV Laboratory Per - and Polyfluoroalkyl Substances (PFAS) Target Analyte List Minimum Detection Limits (MDLs) & Minimum Reporting Limits (MRLs) for Surface Water & Sediments				
Analyte[1]	Water[2] µg/L (ppb)		Soil/Sediment[3] µg/kg (ppb)	
	MDL	MRL	MDL	MRL
Perfluorotetradecanoic acid (PFTeDA)*	NA	NA	0.04	0.4
Perfluorotridecanoic acid (PFTrDA)	0.039	0.04	0.04	0.1
Perfluorododecanoic acid (PFDoA)	0.029	0.04	0.04	0.1
Perfluoroundecanoic acid (PFUDA)	0.021	0.04	0.04	0.1
Perfluorodecanoic acid (PFDA)	0.096	0.16	0.04	0.1
Perfluorononanoic acid (PFNA)	0.016	0.04	0.04	0.1
Perfluorooctanoic acid (PFOA)	0.026	0.04	0.04	0.1
Perfluoroheptanoic acid (PFHpA)	0.014	0.04	0.04	0.1
Perfluorohexanoic acid (PFHxA)	0.031	0.04	0.04	0.1
Perfluoropentanoic acid (PFPeA)	0.018	0.04	0.04	0.1
Perfluorobutyric acid (PFBA)	0.022	0.04	0.04	0.1
Perfluorodecanesulfonate (PFDS)	0.032	0.039	0.04	0.096
Perfluorononanesulfonate (PFNS)	0.015	0.038	0.04	0.096
Perfluorooctanesulfonate (PFOS)	0.017	0.037	0.04	0.092
Perfluoroheptanesulfonate (PFHpS)	0.017	0.038	0.04	0.095
Perfluorohexanesulfonate (PFHxS)	0.017	0.036	0.04	0.091
Perfluoropentanesulfonate (PFPeS)	0.013	0.038	0.04	0.094
Perfluorobutanesulfonate (PFBS)	0.023	0.035	0.04	0.088
Perfluorooctanesulfonamide (FOSA)	0.031	0.04	0.04	0.1
Fluorotelomer sulfonate 8:02 (8:2 FTS)	0.034	0.038	0.04	0.096
Fluorotelomer sulfonate 6:02 (6:2 FTS)	0.029	0.038	0.04	0.095
Fluorotelomer sulfonate 4:02 (4:2 FTS)	0.021	0.037	0.04	0.094
N-ethyl-N-((heptadecafluorooctyl)sulfonyl)glycine (N-EtFOSAA)*	NA	NA	0.04	0.1
N-(Heptadecafluorooctylsulfonyl)-N-methylglycine (N-MeFOSAA)	0.11	0.16	0.04	0.1
Hexafluoropropylene oxide–dimer acid (HFPO-DA)	0.026	0.04	0.04	0.1

* Surface water samples results for N-EtFOSAA and PFTeDA will be reported as estimates and should be used for screening purposes only.

[1]PFAS analytes for both surface water and sediment/soil matrices are analyzed via the method outlined in LSBPROC-800-R1.
[2]PFAS analytes in surface water are analyzed using ASTM standard D7979-17.
[3]PFAS analytes in solids (e.g. soil, sediment, and waste) are analyzed using ASTM standard D7968-17a.

Table 3: **Inorganics Target Analyte List**

Region IV Laboratory Classical Inorganics Target Analyte List Minimum Reporting Limits (MRLs) for Surface Water			
Analyte	**Method**	**Water mg/L (ppm)**	**Soil/Sediment mg/kg (ppm)**
Total Suspended Solids (TSS)	USGS I-3765-85	4.0	NA
Total Organic Carbon (TOC)	SM5310/LSB 107C	1.0	12,000

Table 4: **Sample Collection, Preservation and Holding Times**

Analyses	Media	Container	Preservation	Holding Time
PFAS	Surface Water	2 x 15mL Polypropylene Vial	Ice (≤ 4°C)	42 days
	Sediment	50mL Polypropylene	Ice (≤ 4°C)	42 days
Total Organic Carbon (TOC)	Surface Water	500mL Polyethylene	H_2SO_4 (pH < 2), Ice (≤ 4°C)	28 days
	Sediment	8oz Glass	Ice (≤ 4°C)	NA
Total Suspended Solids (TSS)	Surface Water	1-liter Polyethylene	Ice (≤ 4°C)	7 days

Table 5: ***In-Situ*** **Water Quality Parameters**

Parameter	Units	Measurement Technology	Measurement Uncertainty
pH	SU	Glass electrode	± 0.2 SU
Dissolved Oxygen	mg/L	Luminescent DO probe	± 0.2 mg/L
Temperature	°C	LDO Thermistor	± 0.2 °C
Specific Conductance	µS/cm	Nickel electrode cell	± 0.5% of reading
Turbidity	FNU	Optical Probe	± 5% of reading

Table 6: Detected PFAS - Surface Water

Analyte	Units	Sampling Stations								
		CONA1	CONA2	CONA3	CONA4	OOST1	OOST2	OOST3	CRI	CRI (DUP)
6:2FTS	ng/L	U	U	29 J,Q-2	U	U	U	U	U	U
PFBA		U	63	U	74	U	U	U	U	U
PFBS		58	360	250	400	190	210	210	39	41
PFHpA		U	53	57	59	18 J,Q-2	18 J,Q-2	21 J,Q-2	U	U
PFHxA		U	110	110	110	36 J,Q-2	35 J,Q-2	46	U	U
PFHxS		U	24 J,Q-2	25 J,Q-2	27 J,Q-2	U	U	U	U	U
PFOA		U	120	140	140	41	43	53	U	U
PFOS		U	130	140	130	31 J,Q-2	110	48	U	U
PFPeA		27 J,Q-2	170	180	170	45	47	61	22 J,Q-2	23 J,Q-2
PFOA+PFOS		U	250	280	270	72	153	101	U	U
Total		85	1030	931	1110	361	463	439	61	64

Qualifirer:	Description:
U	The analyte was not detected at or above the reporting limit.
J	The identification of the analyte is acceptable; the reported value is an estimate.
Q-2	Result greater than the MDL but less than the MRL.

* Values in red are above LHA for combined PFOA and PFOS (70 ng/L).

Table 7: PFAS Recovery of Filtered Surface Water Samples

Analyte	Units	Standard			CONA1		CONA3		OOST3		CRI		CRI (DUP)	
		Pre-filter	Post-filter	Recovery (%)	Pre-filter	Post-filter	Pre-filter	Post-filter	Pre-filter	Post-filter	Pre-filter	Post-filter	Pre-filter	Post-filter
4:2FTS	ng/L	~450	410 J,Y-2	91	U	U	U	U	U	U	U	U	U	U
6:2FTS			420 J,Y-2	93	U	U	29 J,Q-2	U	U	U	U	U	U	U
8:2FTS			250 J,Y-2	56	U	U	U	U	U	U	U	U	U	U
FOSA			150 J,Y-2	33	U	U	U	U	U	U	U	U	U	U
HFPO-DA			360 J,Y-2	80	U	U	U	U	U	U	U	U	U	U
N-EtFOSAA			66 J,CR,Y-2	15	U,Y-2	U,Y-2	U,Y-2	U,Y-2	U,Y-2	U,Y-2	U,Y-2	U,Y-2	U,Y-2	U,Y-2
N-MeFOSAA			110 J,CR,Y-2	24	U	U	U	U	U	U	U	U	U	U
PFBA			430 J,Y-2	96	U	U	U	42 J,QS-3	U	U	U	U	U	U
PFBS			370 J,Y-2	82	58	68	250	330	210	100 J,QS-3	39	41	41	35
PFDA			300 J,Y-2	67	U	U	U	U	U	U	U	U	U	U
PFDoA			44 J,Y-2	10	U	U	U	U	U	U	U	U	U	U
PFDS			80 J,Y-2	18	U	U	U	U	U	U	U	U	U	U
PFHpA			430 J,Y-2	96	U	U	57	53	21 J,Q-2	20 J,Q-2	U	U	U	U
PFHpS			400 J,Y-2	89	U	U	U	U	U	U	U	U	U	U
PFHxA			440 J,Y-2	98	U	U	110	100	46	35 J,Q-2	U	U	U	U
PFHxS			410 J,Y-2	91	U	U	25 J,Q-2	19 J,Q-2	U	U	U	U	U	U
PFNA			400 J,Y-2	89	U	U	U	U	U	U	U	U	U	U
PFNS			180 J,Y-2	40	U	U	U	U	U	U	U	U	U	U
PFOA			450 J,Y-2	100	U	U	140	120	53	48	U	U	U	U
PFOS			330 J,Y-2	73	U	U	140	100	48	42	U	U	U	U
PFPeA			430 J,Y-2	96	27 J,Q-2	27 J,Q-2	180	160	61	53	22 J,Q-2	25 J,Q-2	23 J,Q-2	26 J,Q-2
PFPeS			410 J,Y-2	91	U	U	U	U	U	U	U	U	U	U
PFTeDA			69 J,Y-2	15	U,Y-2	U,Y-2	U,Y-2	U,Y-2	U,Y-2	U,Y-2	U,Y-2	U,Y-2	U,Y-2	U,Y-2
PFTrDA			29 J,Q-2,Y-2	6	U	U	U	U	U	U	U	U	U	U
PFUdA			140 J,Y-2	31	U	U	U	U	U	U	U	U	U	U

Qualifirer:	Description:
U	The analyte was not detected at or above the reporting limit.
J	The identification of the analyte is acceptable; the reported value is an estimate.
Q-2	Result greater than the minimum detection limit (MDL) but less than the minimum reporting limit (MRL).
QS-3	Surrogate recovery is lower than established control limits.
Y-2	Data should be limited to screening purposes only.

Table 8: Detected PFAS in Sediment

Analyte	Units	Sampling Stations								
		CONA1	CONA2	CONA3	CONA4	OOST1	OOST2	OOST3	CRI	CRI (DUP)
FOSA	ng/kg (dry)	U	200	180	2200	200	180	110 J,Q-2	74 J,Q-2	160
N-EtFOSAA		44 J,Q-2,Y-2	91 J,Q-2,Y-2	170 J,Y-2	1500 J,Y-2	120 J,Q-2,Y-2	56 J,Q-2,Y-2	29 J,Q-2,Y-2	43 J,Q-2,Y-2	84 J,Q-2,Y-2
N-MeFOSAA		U	160	240	860	220	220	130	120 J,Q-2	170
PFBA		140	U	U	U	U	100 J,Q-2	110 J,Q-2	U	U
PFBS		220	140	280	1100	130	300	230	U	U
PFDA		360	240	230	3900	320	300	160	91 J,Q-2	200
PFDoA		590	520	770	4600	560	710	400	170	260
PFHpA		120 J,Q-2	56 J,Q-2	63 J,Q-2	210 J,Q-2	U	150	120 J,Q-2	U	U
PFHxA		290	140	150	350	U	270	230	U	U
PFNA		65 J,Q-2	U	U	400	U	U	U	U	U
PFOA		240	190	200	1100	61 J,Q-2	440	360	U	U
PFOS		630	1100	920	15000	710	620	430	410	390
PFPeA		420	220	220	560	59 J,Q-2	350	320	U	U
PFTeDA		300 J,Q-2,Y-2	280 J,Q-2,Y-2	540 J,Y-2	1500 J,Y-2	290 J,Q-2,Y-2	400 J,Q-2,Y-2	260 J,Q-2,Y-2	U,Y-2	270 J,Q-2,Y-2
PFTrDA		200 J,QR-2	190 J,QR-2	290 J,QR-2	990 J,QR-2	200 J,QR-2	270 J,QR-2	180 J,QR-2	120 J,Q-2,QR-2	160 J,QR-2
PFUdA		240	230	330	3500	350	350	210	82 J,Q-2	180
PFOA+PFOS		910	1290	1120	16100	801	1060	790	410	890
Total		3555	3386	3873	34770	2840	4260	2990	1067	2020
Site Specific RSLs Corrected for Organic Carbon Fraction										
PFOA	ng/kg (dry)	22.3	26.9	32.9	146	40.8	38.9	29.2	18.2	30.6
PFOS		54.3	69.2	88.6	456	114	108	76.7	40.8	81.1

Qualifier:	Description:
U	The analyte was not detected at or above the reporting limit.
J	The identification of the analyte is acceptable; the reported value is an estimate.
Q-2	Result greater than the minimum detection limit (MDL) but less than the minimum reporting limit (MRL).
QR-2	MRL verification recovery greater than upper control limits.
Y-2	Data for N-EtFOSAA and PFTeDA should be limited to screening purposes only, and were not included in the calculation of Total PFAS.

* Values highlighted in red are above the generic RSLs protective of groundwater for PFOA (17.2 ng/kg) and PFOS (37.8 ng/kg) calculated via the EPA RSL calculator. Concentrations of PFOA and PFOS detected in sediments were also above site specific RSLs which were corrected for the total organic carbon fraction of the sediment samples reported in Table 10 and converted to units g/g.

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Table 9: TOC & TSS - Surface Water

Analyte	Units	Sampling Stations				
		CONA1	CONA3	OOST3	CRI	CRI (DUP)
Total Organic Carbon	mg/L	1.5	2.7	1.9	2	2.8
Total Suspended Solids	mg/L	9.1	9.7	14	29	8.3

Table 10: TOC & % Solids - Sediment

Analyte	Units	Sampling Stations								
		CONA1	CONA2	CONA3	CONA4	OOST1	OOST2	OOST3	CRI	CRI (DUP)
Total Organic Carbon	mg/kg (dry)	3100 **J,Q-2**	4100 **J,Q-2**	5400 **J,Q-2**	30000	7100 **J,Q-2**	6700 **J,Q-2**	4600 **J,Q-2**	2200 **J,Q-2**	4900 **J,Q-2**
Percent Solids	%	76	76	74	28	65	69	74	71	68

Qualifirer:	**Description:**
J	The identification of the analyte is acceptable; the reported value is an estimate.
Q-2	Result greater than the minimum detection limit (MDL) but less than the minimum reporting limit (MRL).

Table 11: *In-Situ* Water Quality Measurements

Station ID	Date (m/dd/yyyy)	Time (hh:mm)	Temperature (°C)	pH (S.U.)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (FNU)
CONA1	9/17/2019	10:20	24.2	7.68	240	6.65	9.0
CONA2	9/17/2019	17:55	28.0	7.89	247	8.43	20
CONA3	9/17/2019	12:55	27.6	7.78	248	7.48	22
CONA4	9/17/2019	14:30	28.4	7.89	249	7.86	20
OOST1	9/17/2019	9:03	25.6	7.37	103	6.64	13
OOST2	9/16/2019	16:46	28.2	7.69	110	8.20	11
OOST3	9/16/2019	14:50	28.3	7.88	154	8.33	14
CRI	9/16/2019	12:30	27.9	7.60	203	7.65	9.3

Table 12: PFAS Mass Loading Rates in Surface Water

Parameter	Units	Sampling Stations				
		CONA3	OOST1	OOST3	CRI	CRI (DUP)
6:2FTS	ng/L	29 J,Q-2	U	U	U	U
PFBS		250	190	210	39	41
PFHpA		57	18 J,Q-2	21 J,Q-2	U	U
PFHxA		110	36 J,Q-2	46	U	U
PFHxS		25 J,Q-2	U	U	U	U
PFOA		140	41	53	U	U
PFOS		140	31 J,Q-2	48	U	U
PFPeA		180	45	61	22 J,Q-2	23 J,Q-2
PFOA+PFOS		280	72	101	U	U
Total		931	361	439	61	64
Sample Date	m/dd/yyyy	9/17/2019	9/17/2019	9/16/2019	9/16/2019	9/16/2019
Sample Time	hh:mm	13:00	9:00	15:00	12:45	13:00
Gage ID	USGS ########	USGS 02387000	USGS 02387500	USGS 02388500	USGS 02397000	USGS 02397000
Discharge	ft^3/s	94	490	566	1010	1010
Mass Loading						
6:2FTS	g/day	7	NA	NA	NA	NA
PFBS		57	228	291	96	101
PFHpA		13	22	29	NA	NA
PFHxA		25	43	64	NA	NA
PFHxS		6	NA	NA	NA	NA
PFOA		32	49	73	NA	NA
PFOS		32	37	66	NA	NA
PFPeA		41	54	84	54	57
PFOA+PFOS		64	86	140	NA	NA
Total		214	433	608	151	158

Qualifirer:	**Description:**
U	The analyte was not detected at or above the reporting limit.
J	The identification of the analyte is acceptable; the reported value is an estimate.
Q-2	Result greater than the minimum detection limit (MDL) but less than the minimum reporting limit (MRL).
NA	Mass loading rate was not calculated due to undetected analyte.

Table 13: PFAS Classifications and Functional Groups

Carbon Chain Length	PFAS Analyte	Class	Functional Group
14	PFTeDA	Short Chain	PFCAs
13	PFTrDA		
12	PFDoA		
11	PFUDA		
10	PFDA		
9	PFNA		
8	PFOA		
7	PFHpA	Long Chain	
6	PFHxA		
5	PFPeA		
4	PFBA		
10	PFDS	Short Chain	PFSAs
9	PFNS		
8	PFOS		
7	PFHpS		
6	PFHxS		
5	PFPeS	Long Chain	
4	PFBS		
10	8:2 FTS	Precursor	Fluorotelomers
8	6:2 FTS		
6	4:2 FTS		
10	N-EtFOSAA	Precursor	Sulfonamides
9	N-MeFOSAA		
8	FOSA		

Based on classifications defined in ITRC (2018).

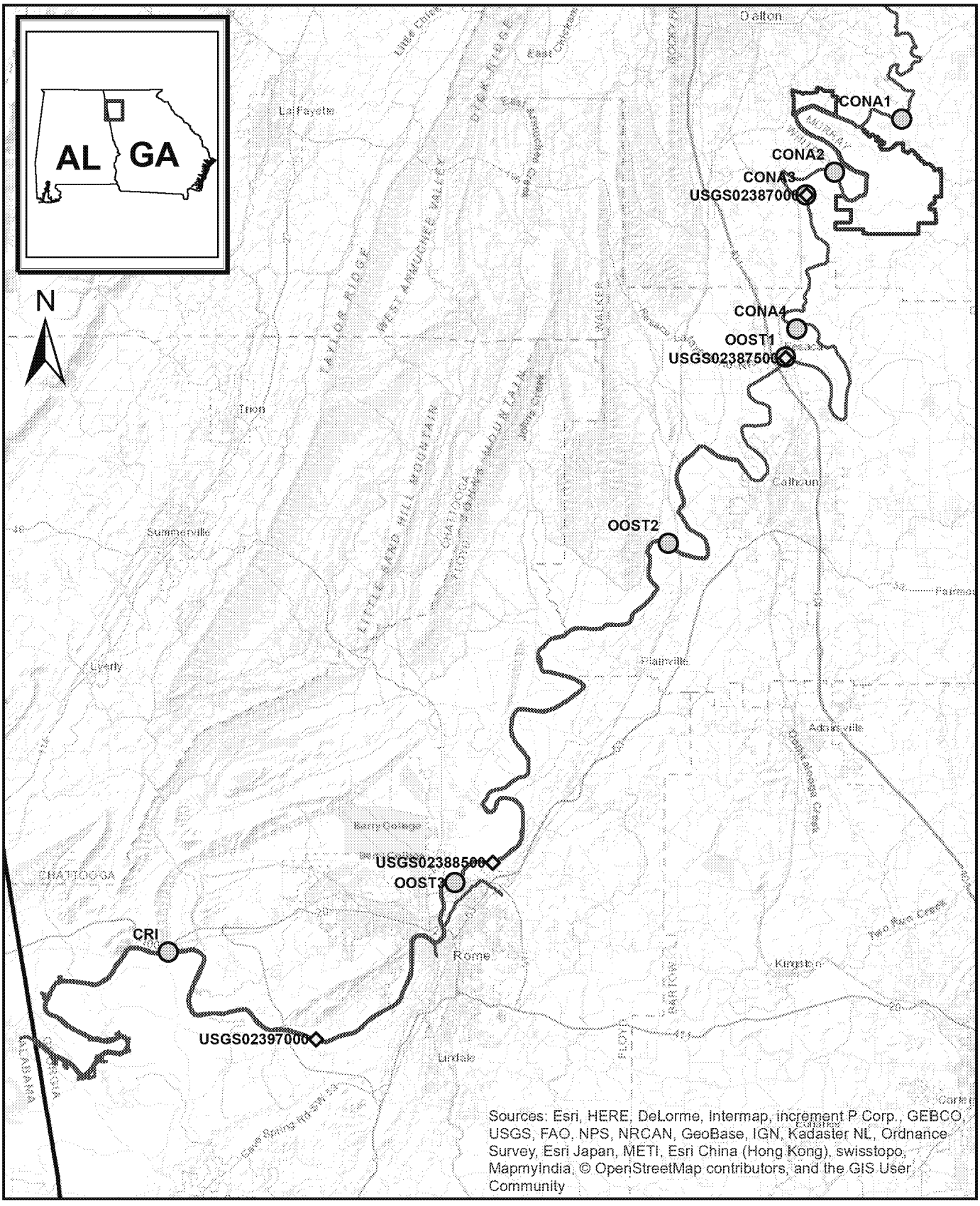
Table 14: Relative Percent Difference for CRI Duplicate

Analyte	Units	CRI	CRI (dup)	RPD (%)
Surface Water				
6:2FTS	ng/L	U	U	0.0
PFBA	ng/L	U	U	0.0
PFBS	ng/L	39	41	5.0
PFHpA	ng/L	U	U	0.0
PFHxA	ng/L	U	U	0.0
PFHxS	ng/L	U	U	0.0
PFOA	ng/L	U	U	0.0
PFOS	ng/L	U	U	0.0
PFPeA	ng/L	22 J,Q-2	23 J,Q-2	4.4
TOC	mg/L	2	2.8	33.3
TSS	mg/L	29	8.3	111.0
Sediment				
FOSA	ng/kg (dry)	74 J,Q-2	160	73.5
N-EtFOSAA	ng/kg (dry)	43 J,Q-2,Y-2	84 J,Q-2,Y-2	64.6
N-MeFOSAA	ng/kg (dry)	120 J,Q-2	170	34.5
PFBA	ng/kg (dry)	U	U	0.0
PFBS	ng/kg (dry)	U	U	0.0
PFDA	ng/kg (dry)	91 J,Q-2	200	74.9
PFDoA	ng/kg (dry)	170	260	34.6
PFHpA	ng/kg (dry)	U	U	0.0
PFHxA	ng/kg (dry)	U	U	0.0
PFNA	ng/kg (dry)	U	U	0.0
PFOA	ng/kg (dry)	U	U	0.0
PFOS	ng/kg (dry)	410	890	73.8
PFPeA	ng/kg (dry)	U	U	0.0
PFTeDA	ng/kg (dry)	U,Y-2	270 J,Q-2,Y-2	200.0
PFTrDA	ng/kg (dry)	120 J,Q-2,QR-2	160 J,QR-2	28.6
PFUdA	ng/kg (dry)	82 J,Q-2	180	74.8
TOC	mg/kg (dry)	2200 J,Q-2	4900 J,Q-2	76.1
% Solids	%	71	68	4.3

Qualifier:	Description:
U	The analyte was not detected at or above the reporting limit.
J	The identification of the analyte is acceptable; the reported value is an estimate.
Q-2	Result greater than the MDL but less than the minimum reporting limit MRL.
QR-2	MRL verification recovery greater than upper control limits.
Y-2	Data for N-EtFOSAA and PFTeDA should be limited to screening purposes only.

Summary Figures

Figure 1: Site Map



EPA

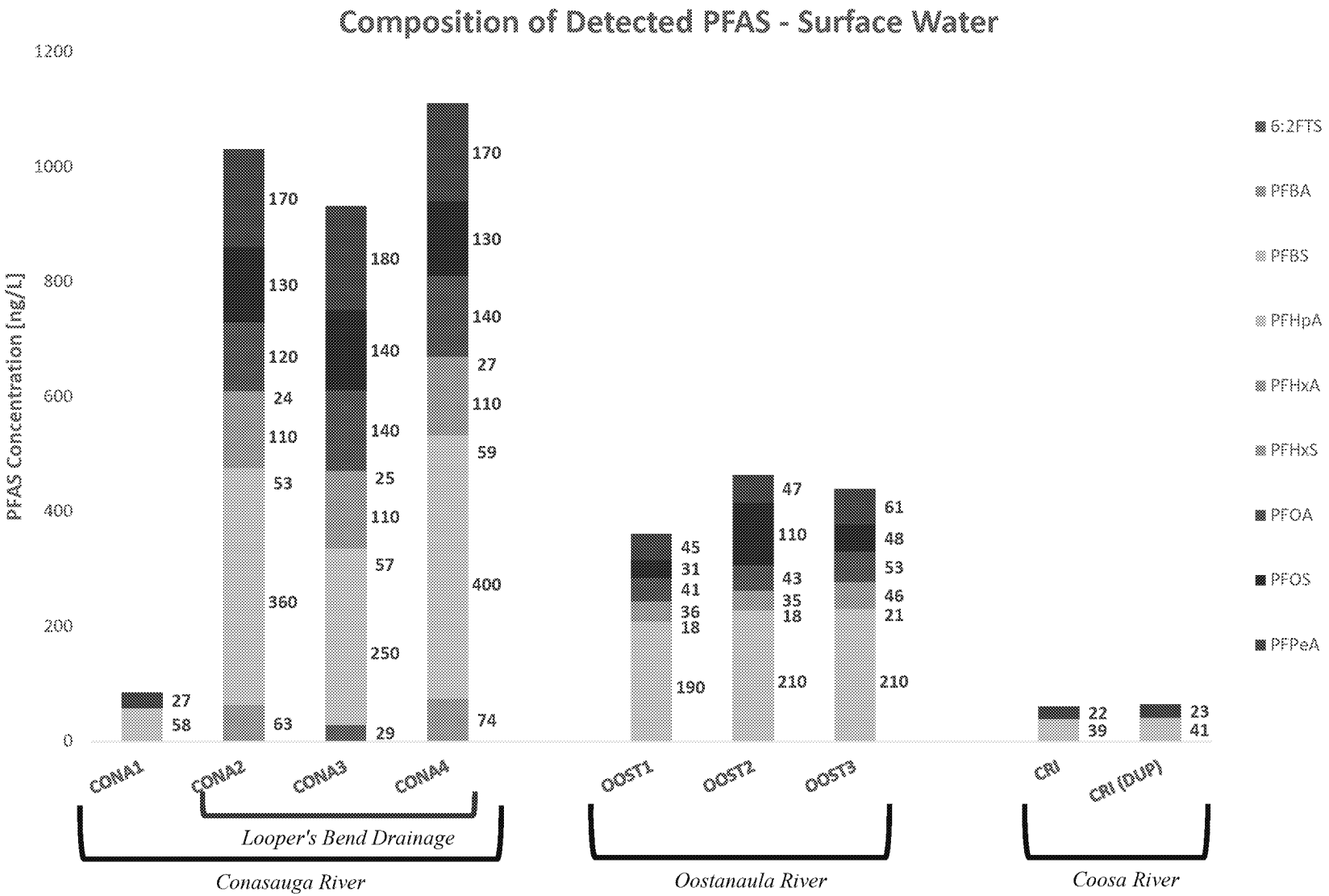
PFAS Sediment Screening:

Upper Coosa River Basin

0 1.5 3 6 9 12 Miles

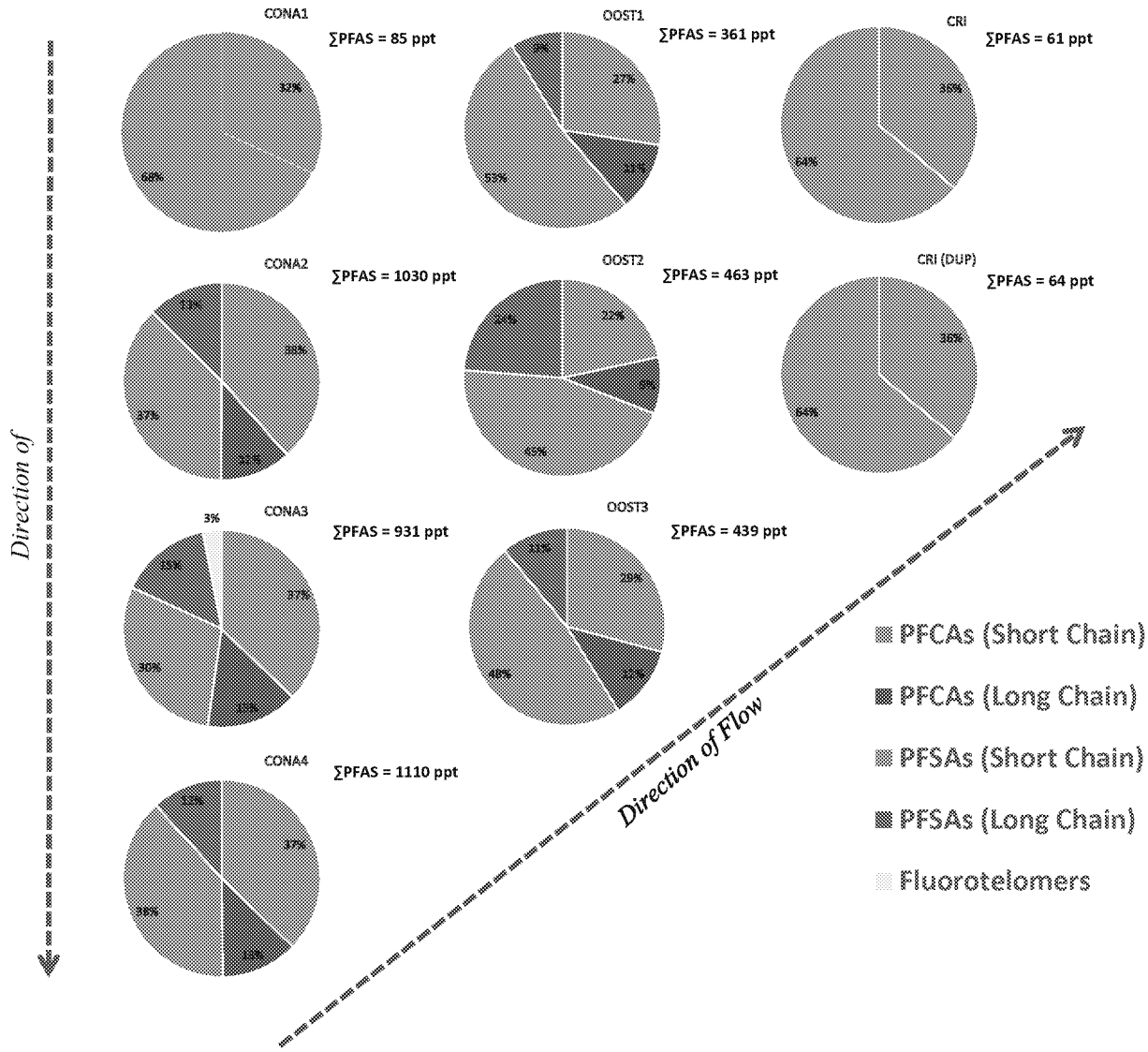
- USGS Gages
- Sampling Stations
- Rivers
- Looper's Bend LAS Boundary

Figure 2: Composition of PFAS Detected in Surface Water



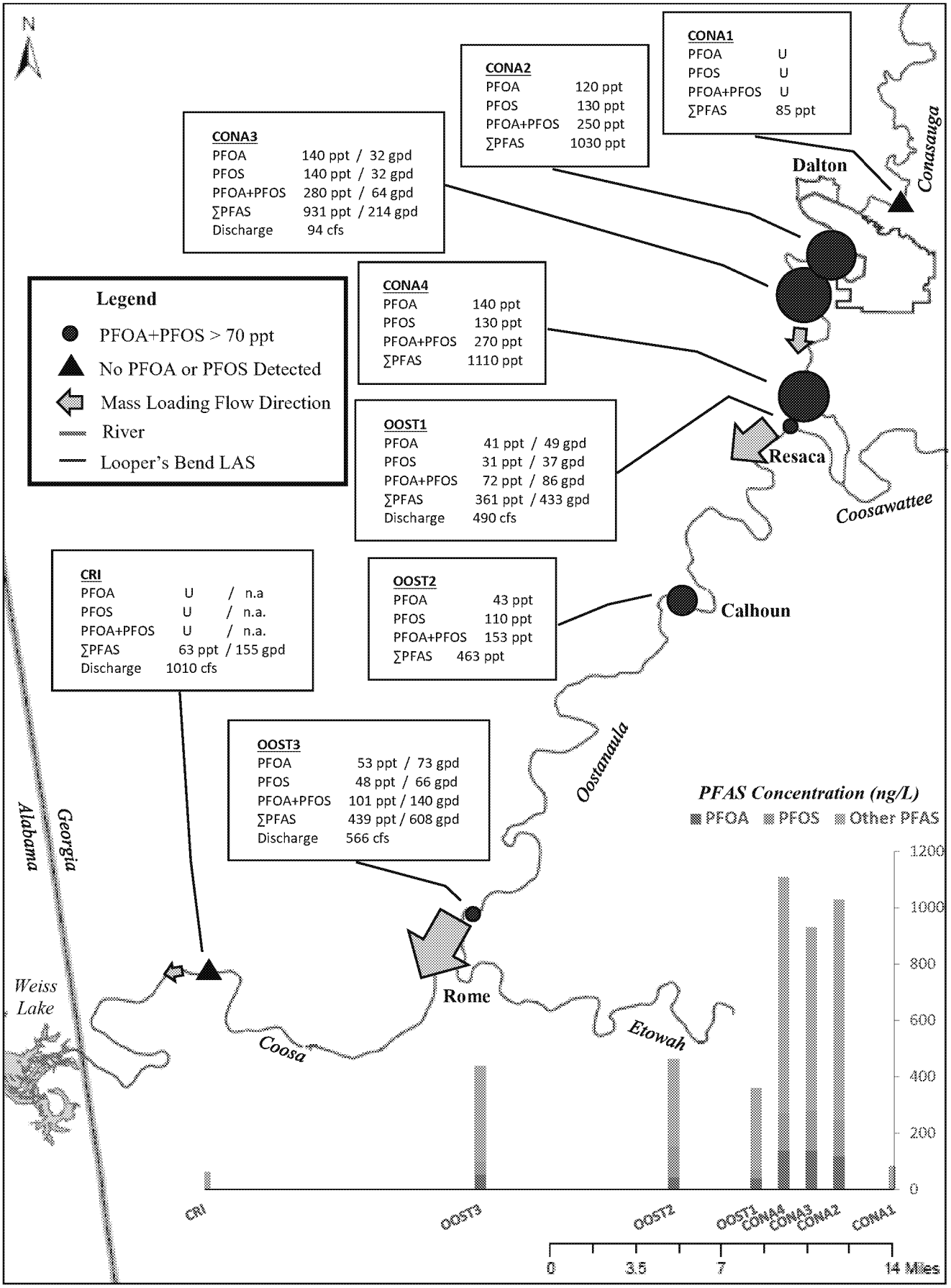
Samples collected on the Conasauga River downstream of Looper's Bend LAS had the highest diversity of PFAS followed by samples collected on the Oostanaula River.

Figure 3: PFAS Class and Functional Groups Detected in Surface Water



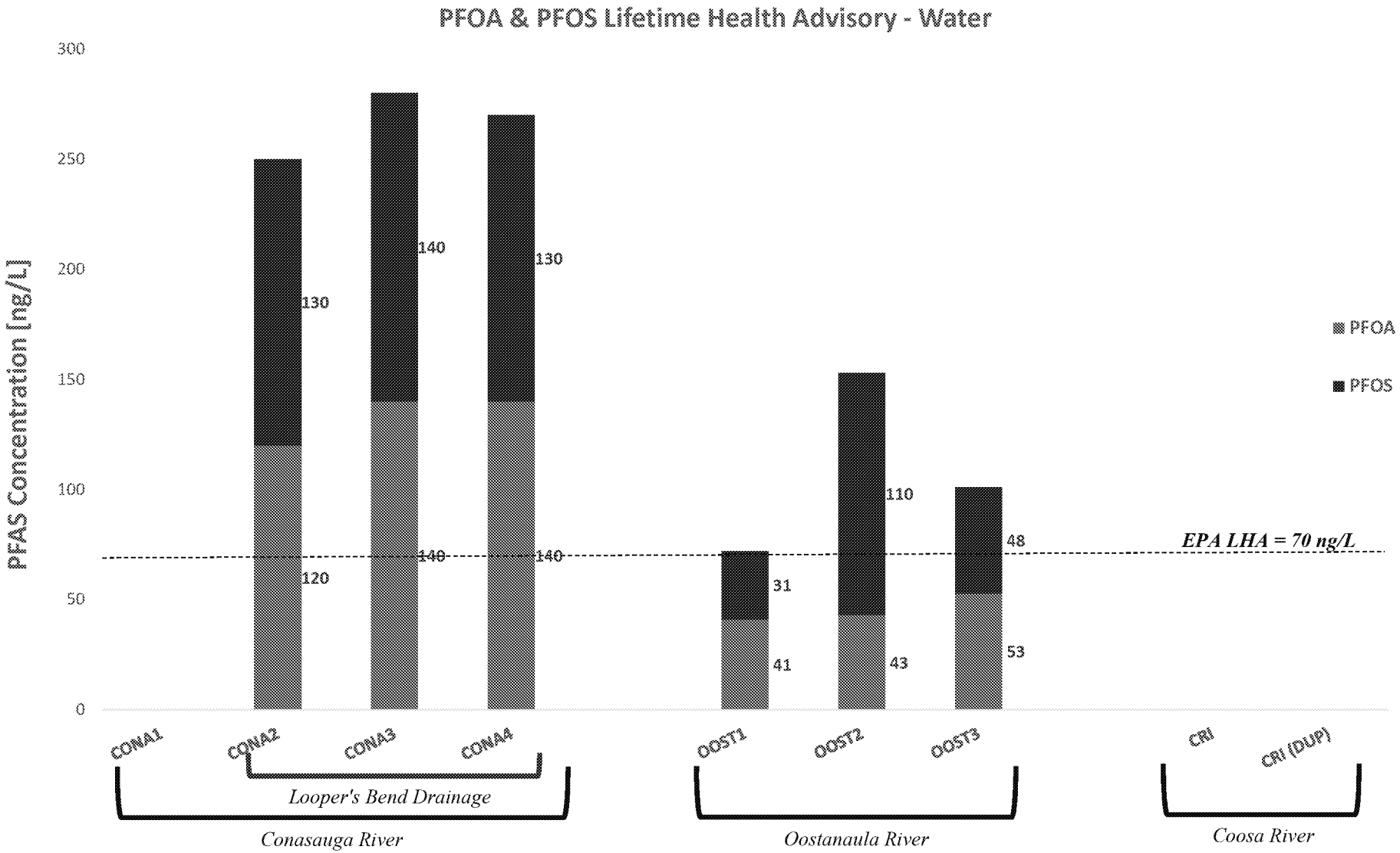
Surface water samples were predominately composed of short-chain PFAS with a moderate presence of long-chain compounds found in the Conasauga and Oostanaula Rivers, downstream of Looper's Bend LAS. The fluorotelomer 6:2 FTS was also detected at CONA3 which is known to be a precursor to short-chain PFCAs.

Figure 4: Distribution and Mass Loading of PFAS in Surface Water



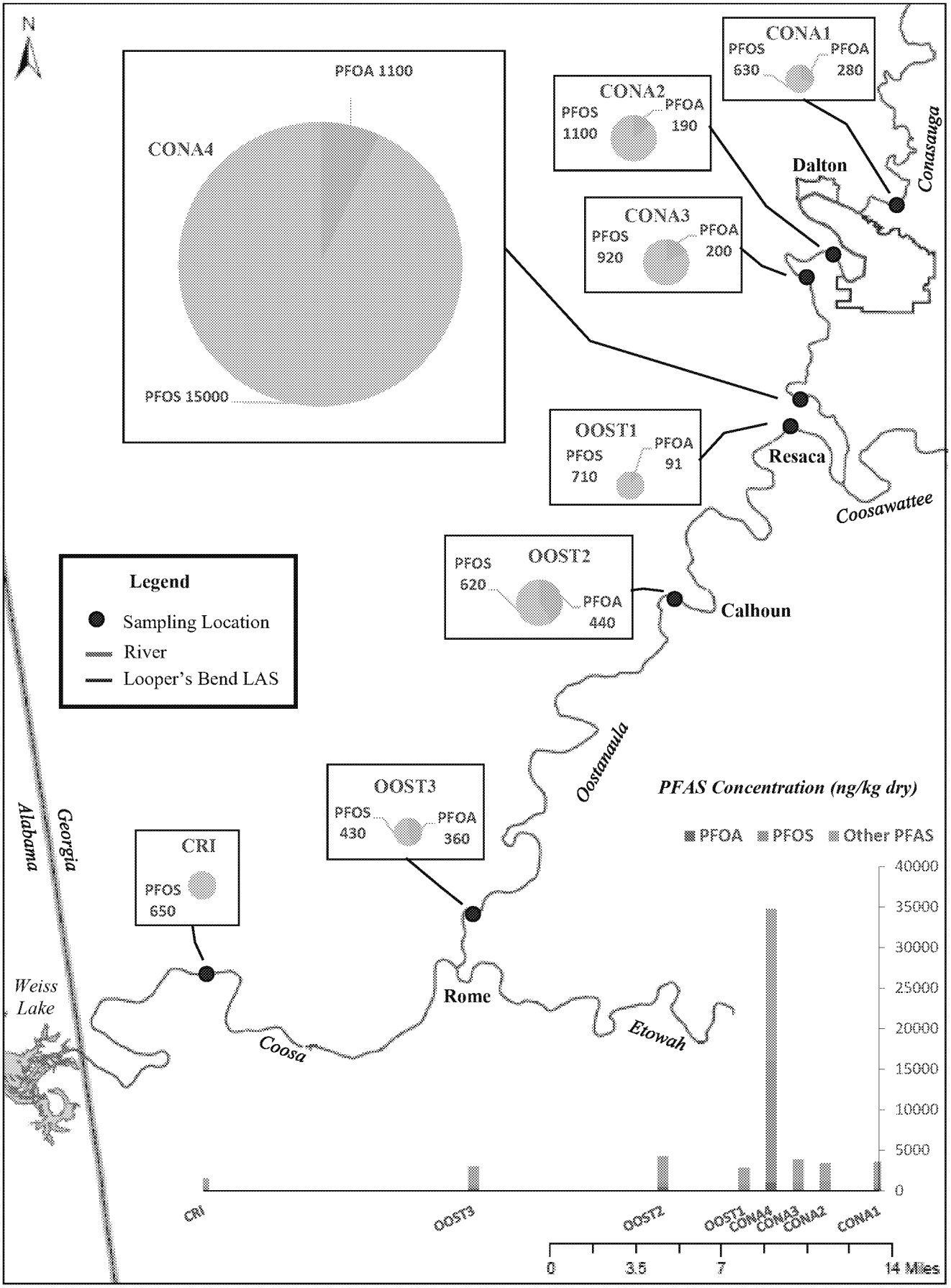
PFAS concentrations are in ng/L (ppt) and mass loading rates are in grams per day (gpd). Flow directional arrows and sampling locations are shown in relative proportion based on total PFAS loading and PFOA+PFOS, respectively.

Figure 5: PFOA and PFOS in Surface Water



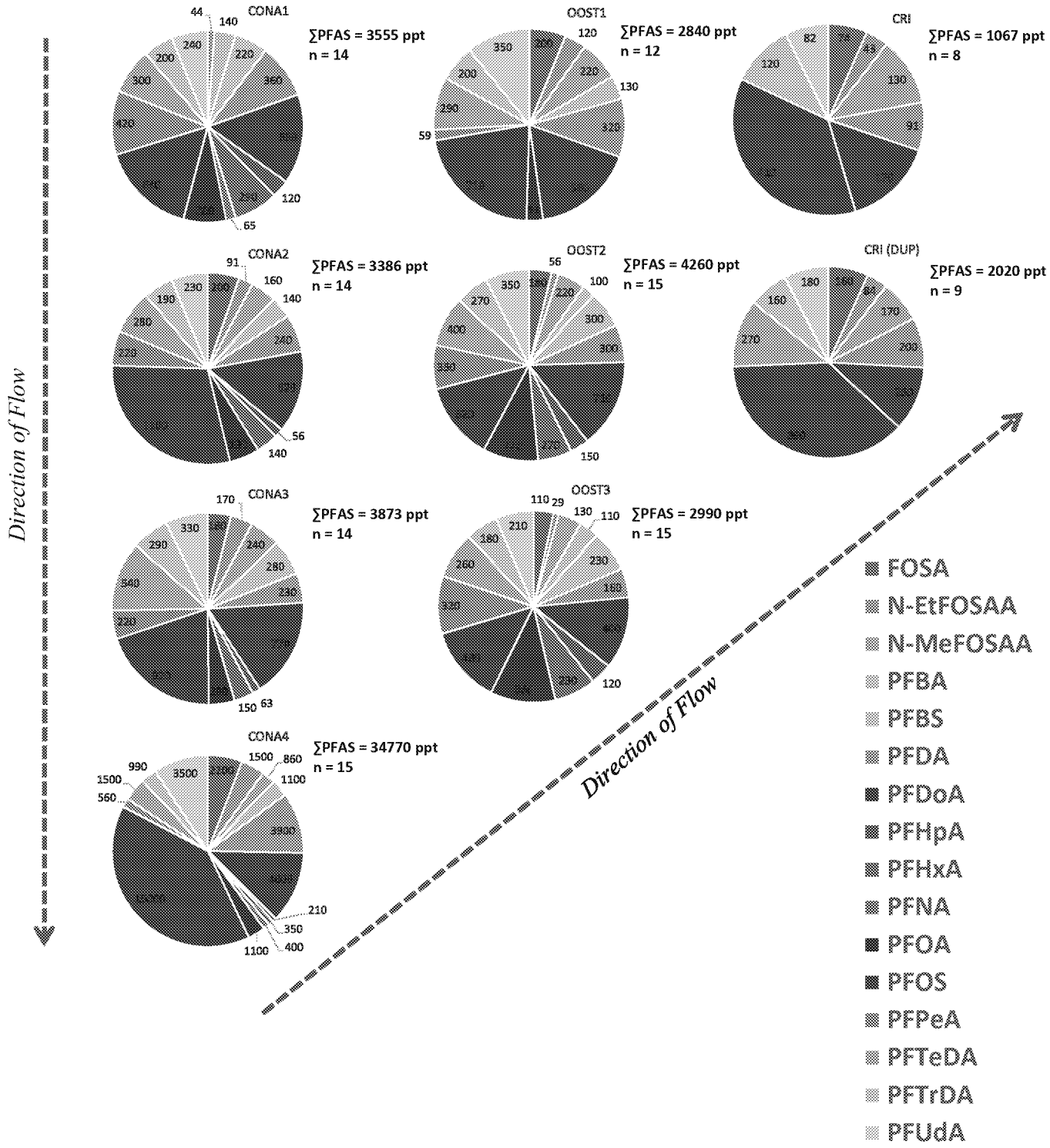
Combined PFOA and PFOS concentrations were approximately 3 times greater than the EPA's lifetime health advisory (LHA) of 70 ppt on the Conasauga River downstream of Looper's Bend LAS with residual concentrations detected at or above the LHA on the Oostanaula River.

Figure 6: Distribution of PFAS in Sediments



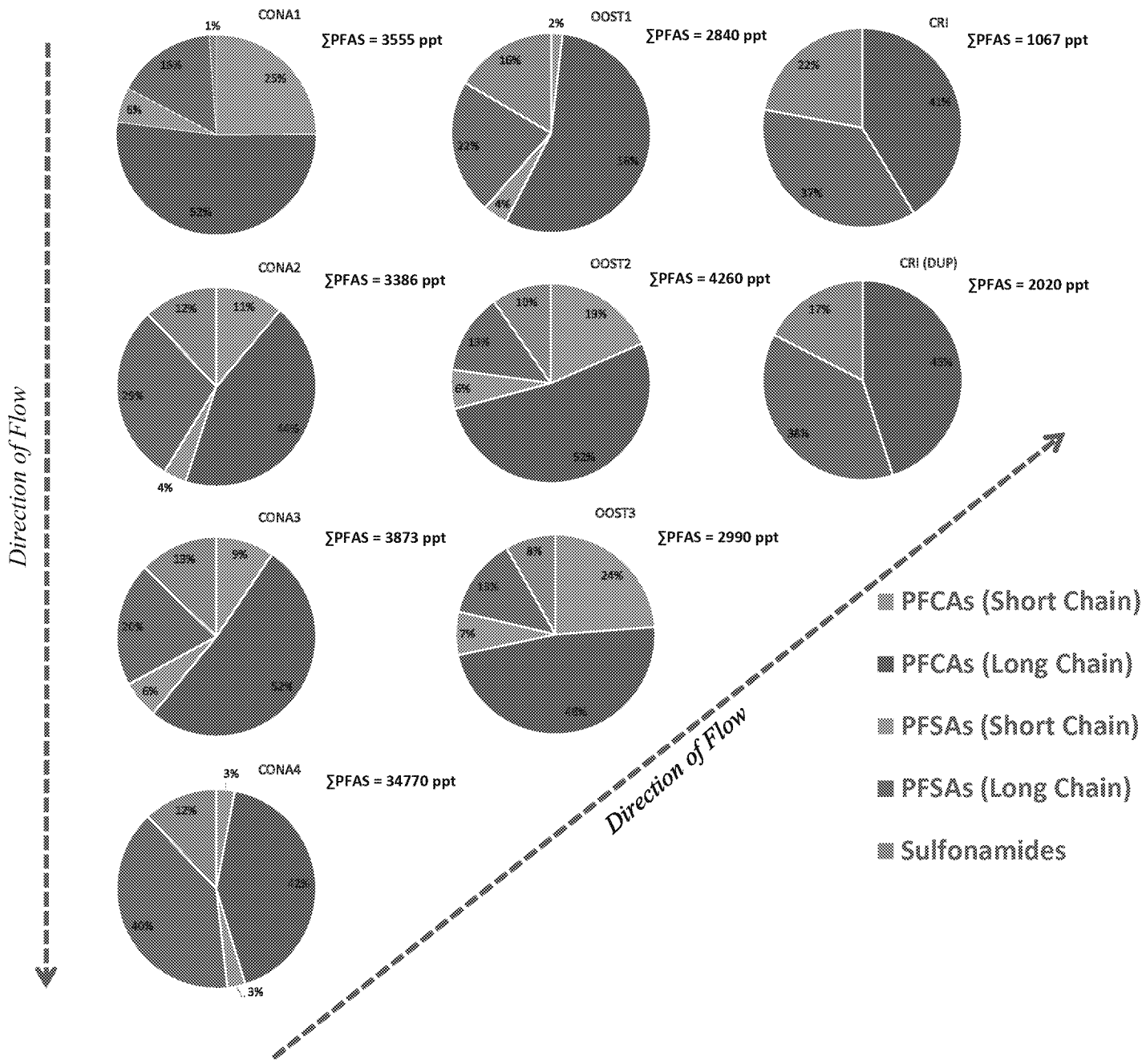
All PFAS concentrations are in ng/kg *dry* (ppt). Pie charts are shown in relative proportions based on combined PFOA and PFOS.

Figure 7: Composition of Detected PFAS in Sediments



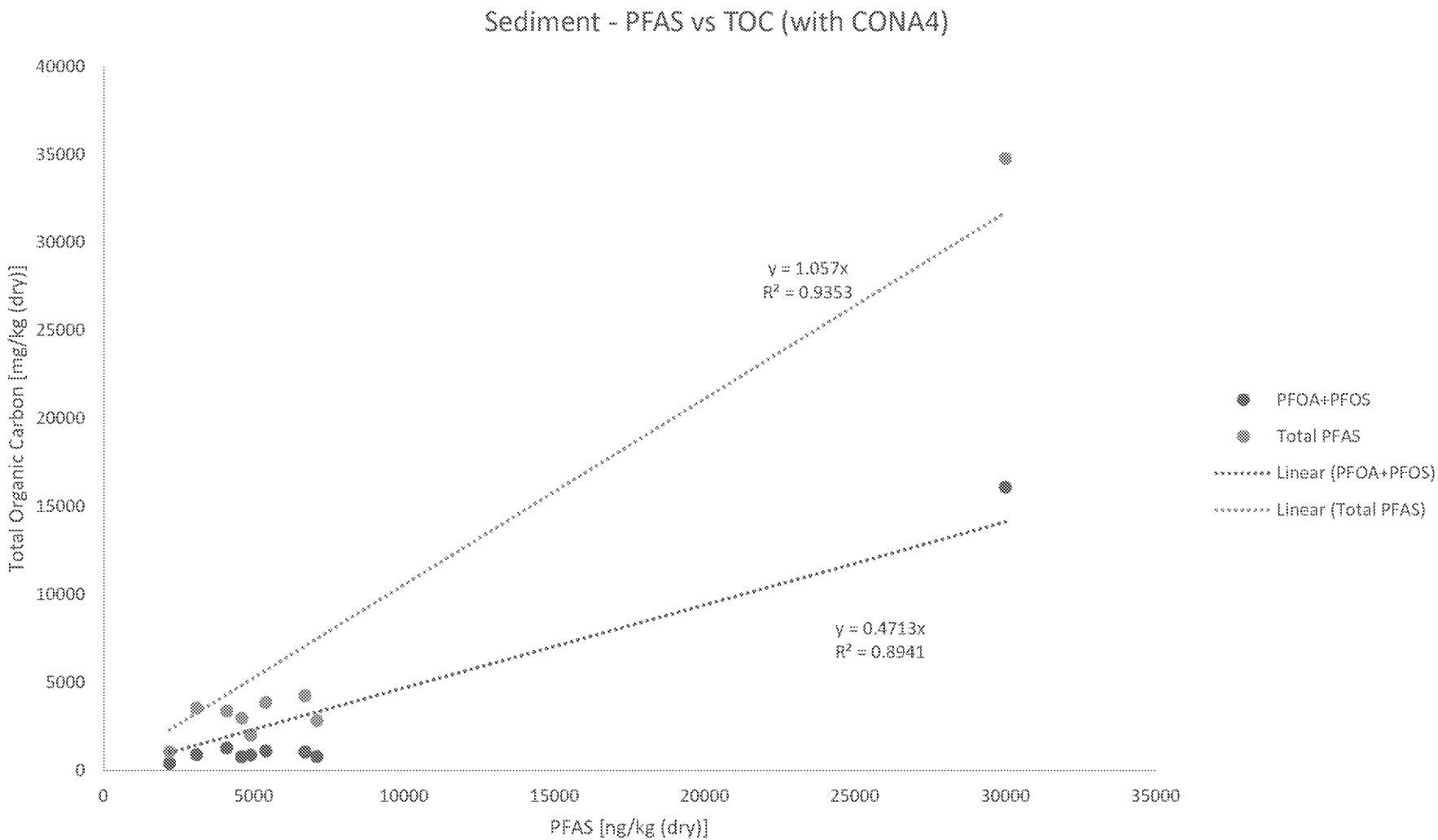
Concentrations of PFAS detected in sediment samples are shown on pie charts in units of ng/kg *dry* (ppt). All sediment samples were relatively diverse in the composition of detected PFAS compounds throughout the watershed.

Figure 8: PFAS Class and Functional Groups Detected in Sediment



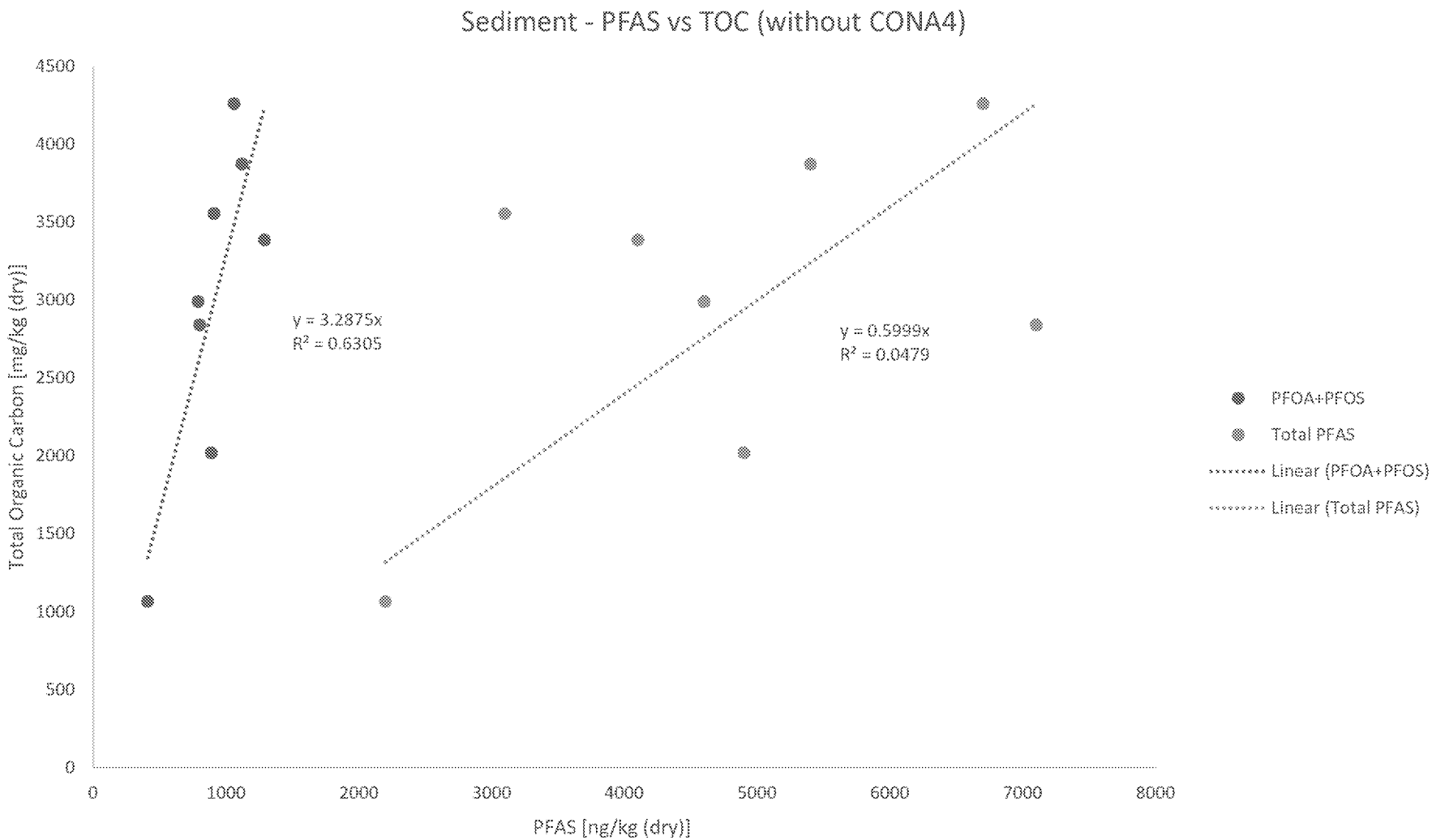
Sediments were predominately composed of long-chain PFAS. Sulfonamides were detected throughout the watershed which are known to be precursors to both PFOS and PFOA.

Figure 9: Sediment TOC and PFAS Retention (CONA4 Included)



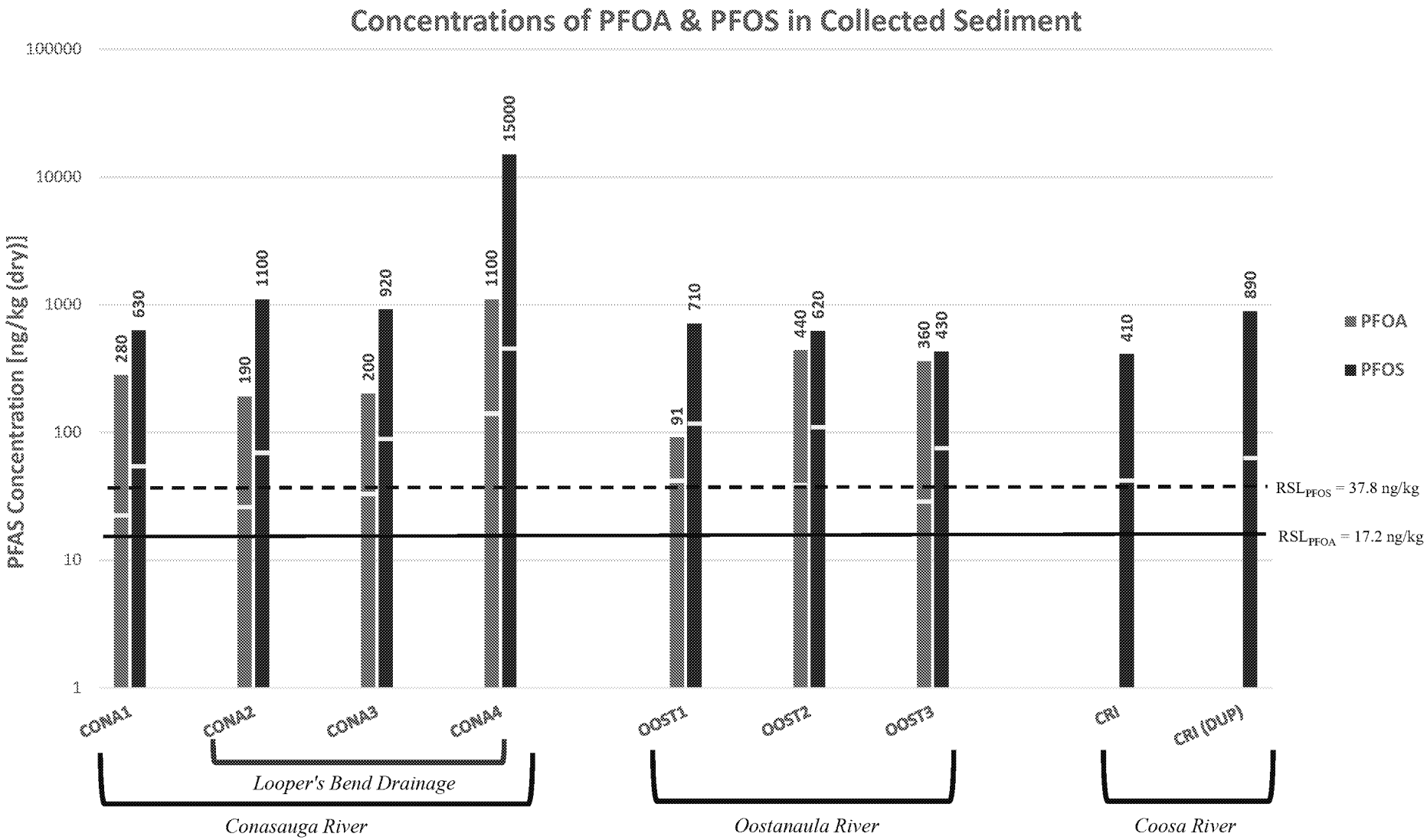
Concentrations of PFAS detected in sediments collected at CONA4 on the Conasauga River were found to be orders of magnitude above conentrations observed at all other sites. This was found to be mainly driven by the presence of total organic carbon at similiarly high concentrations in the sediment sample collected at CONA4.

Figure 10: Sediment TOC and PFAS Retention (CONA4 Excluded)



With CONA4 removed as an outlier, combined concentrations of PFOA and PFOS detected in the sediments are still generally influenced by the presence of total organic carbon. The relationship between Total PFAS concentrations and total organic carbon is inconclusive due to differing effects of oragnic carbon on the retention of PFAS compounds depending on the carbon chain length and functional group as seen in Figure 12.

Figure 11: PFOA and PFOS Detected in Sediments



PFOA and PFOS were detected at concentrations above both generic and site-specific risk screening levels (RSLs) corrected for total organic carbon throughout the watershed. PFOA was not detected at or above the MRL on the Coosa River. Generic RSLs are represented by the solid and dashed lines for PFOA and PFOS, respectively. Yellow lines depict the site-specific RSLs corrected for the organic carbon fraction at each site.

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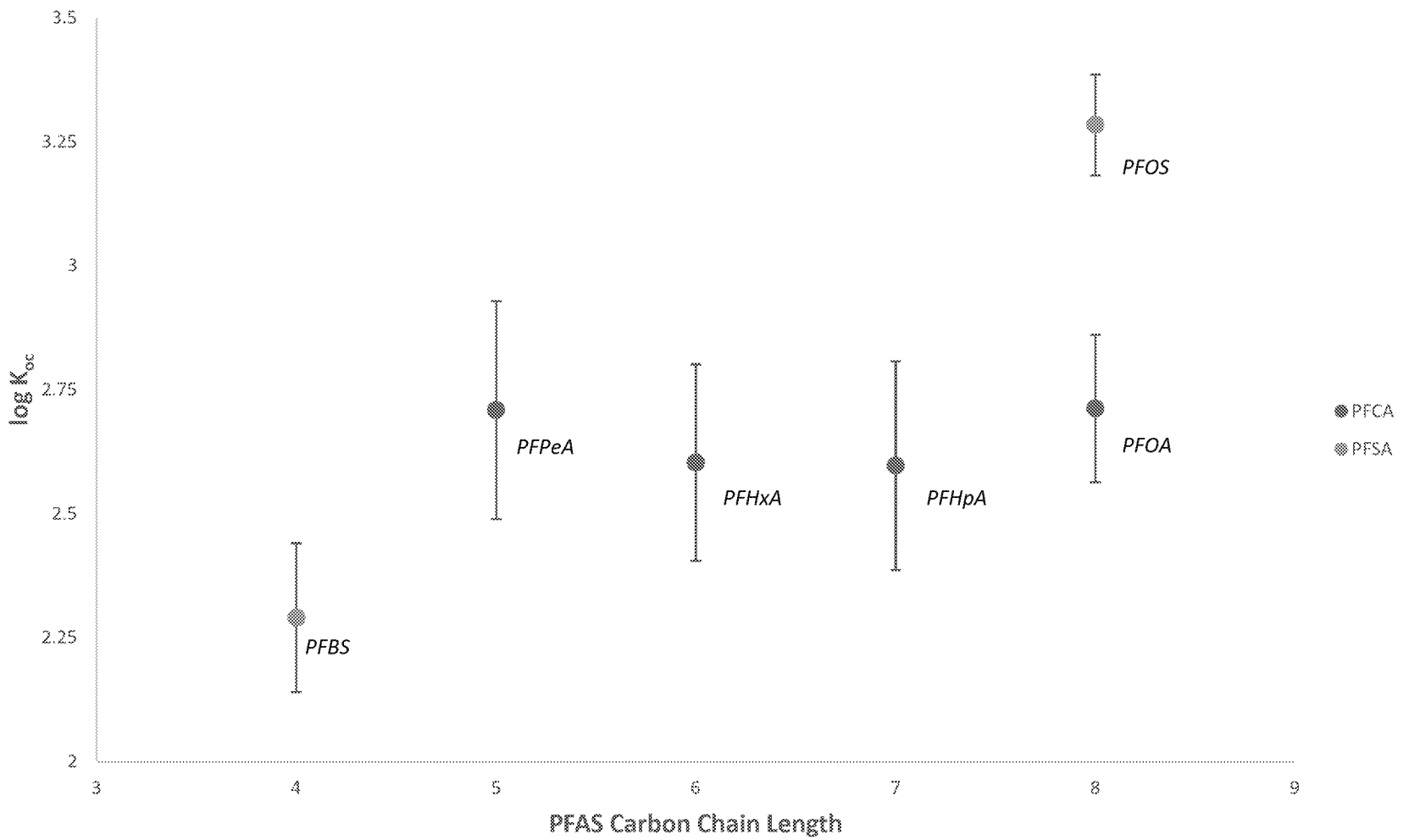
Figure 12: Organic Carbon Partition Coefficients (K_{oc}) of Detected PFAS



The effect of organic carbon and the retention of PFAS in sediments is dependent on both the chain length and functional group. PFAS retention in sediments generally increases with increasing chain length and PFSAs (*e.g.* PFOS) are more likely to be retained compared to PFCAs (*e.g.* PFOA) of the same chain length.

Appendix A – Surface Water PFAS Analytical Results

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Laboratory Services and Applied Science Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 19-0457
Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

October 22, 2019

4LSASD-LSB

MEMORANDUM

SUBJECT: FINAL Analytical Report
Project: 19-0457, PFAS Sediment Screening - Conasauga R

FROM: Diana Burdette
OCS Analyst

THRU: Jeffrey Hendel, Chief
LSB Organic Chemistry Section

TO: Nathan Barlet

Attached are the final results for the analytical groups listed below. This report shall not be reproduced except in full without approval of the Region 4 laboratory. These analyses were performed in accordance with the Laboratory Services Branch's Laboratory Operations and Quality Assurance Manual (LSB LOQAM) found at www.epa.gov/region4/sesd/asbsop. Any unique project data quality objectives specified in writing by the data requestor have also been incorporated into the data unless otherwise noted in the Report Narrative. Chemistry data have been verified based on the LSB LOQAM specifications and have been qualified by this laboratory if the applicable quality control criteria were not met. Verification is defined in Chapter 5 of the LSB LOQAM. For a listing of specific data qualifiers and explanations, please refer to the Data Qualifier Definitions included in this report. The reported results are accurate within the limits of the method(s) and are representative only of the samples as received by the laboratory.

Analyses Included in this report:	Method Used:	Accreditations:
Semi Volatile Organics (SVOA)		
PFAS	ASBPROC-800PFAS (Water)	

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Laboratory Services and Applied Science Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 19-0457
Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

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Sample Disposal Policy

Due to limited space for long term sample storage, LSB's policy is to dispose of samples on a periodic schedule. Air samples collected in summa canisters will be disposed of 30 days following the issuance of this report. All other sample media including original samples, sample extracts and or digestates will be disposed of, in accordance with applicable regulations, 60 days from the date of this report.

This sample disposal policy does not apply to criminal samples which are held until the laboratory is notified by the criminal investigators that case development and litigation are complete.

These samples may be held in the laboratory's custody for a longer period of time. If samples require storage beyond the 60-day period, please contact the Sample Control Coordinator by e-mail at R4SampleCustody@epa.gov.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Laboratory Services and Applied Science Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 19-0457
Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

SAMPLES INCLUDED IN THIS REPORT

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID	Laboratory ID	Matrix	Date Collected	Date Received
19-0457-equip-blk-1-0916	E193805-01	Equipment Rinse Blank	9/16/19 18:30	9/18/19 13:32
19-0457-equip-blk-2-0916	E193805-02	Equipment Rinse Blank	9/17/19 10:30	9/18/19 13:32
19-0457-field-blk-1-0916	E193805-03	Field Blank	9/16/19 15:30	9/18/19 13:32
19-0457-field-blk-2-0916	E193805-04	Field Blank	9/17/19 16:20	9/18/19 13:32
19-0457-filter-spike-0916	E193805-05	Other	9/18/19 12:10	9/18/19 13:32
19-0457-trip-blk-1-0916	E193805-06	Trip Blank - Water	9/16/19 15:20	9/18/19 13:32
19-0457-CONA1-0916	E193805-07	Surface Water	9/17/19 10:40	9/18/19 13:32
19-0457-CONA1-F-0916	E193805-08	Surface Water	9/17/19 10:40	9/18/19 13:32
19-0457-CONA2-0916	E193805-10	Surface Water	9/17/19 18:00	9/18/19 13:32
19-0457-CONA3-0916	E193805-12	Surface Water	9/17/19 13:00	9/18/19 13:32
19-0457-CONA3-F-0916	E193805-13	Surface Water	9/17/19 13:00	9/18/19 13:32
19-0457-CONA4-0916	E193805-15	Surface Water	9/17/19 14:40	9/18/19 13:32
19-0457-CRI-0916	E193805-17	Surface Water	9/16/19 12:45	9/18/19 13:32
19-0457-CRI-DUP-0916	E193805-18	Surface Water	9/16/19 13:00	9/18/19 13:32
19-0457-CRI-F-0916	E193805-19	Surface Water	9/16/19 12:45	9/18/19 13:32
19-0457-CRI-F-DUP-0916	E193805-20	Surface Water	9/16/19 13:00	9/18/19 13:32
19-0457-OOST1-0916	E193805-23	Surface Water	9/17/19 09:00	9/18/19 13:32
19-0457-OOST2-0916	E193805-25	Surface Water	9/16/19 16:45	9/18/19 13:32
19-0457-OOST3-0916	E193805-27	Surface Water	9/16/19 15:00	9/18/19 13:32
19-0457-OOST3-F-0916	E193805-28	Surface Water	9/16/19 15:00	9/18/19 13:32

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DATA QUALIFIER DEFINITIONS

U	The analyte was not detected at or above the reporting limit.
CR	Less than MDL and MRL, Data system set to display the concentration of a known spiked sample
CRa	Less than MDL and MRL, Data system set to display the concentration of a known spiked sample.
J	The identification of the analyte is acceptable; the reported value is an estimate.
Q-2	Result greater than MDL but less than MRL.
QS-3	Surrogate recovery is lower than established control limits.
QS-5	Surrogate recovery is higher than established control limits
Y-2	Data should be limited to screening purposes only

ACRONYMS AND ABBREVIATIONS

CAS Chemical Abstracts Service

Note: Analytes with no known CAS identifiers have been assigned codes beginning with "E", the EPA ID as assigned by the EPA Substance Registry System (www.epa.gov/srs), or beginning with "R4-", a unique identifier assigned by the EPA Region 4 laboratory.

MDL Method Detection Limit - The minimum concentration of a substance (an analyte) that can be measured and reported with a 99% confidence that the analyte concentration is greater than zero.

MRL Minimum Reporting Limit - Analyte concentration that corresponds to the lowest demonstrated level of acceptable quantitation. The MRL is sample-specific and accounts for preparation weights and volumes, dilutions, and moisture content of soil/sediments.

TIC Tentatively Identified Compound - An analyte identified based on a match with the instrument software's mass spectral library. A calibration standard has not been analyzed to confirm the compound's identification or the estimated concentration reported.

ACCREDITATIONS:

ISO ASB is accredited by ISO/IEC 17025, including an amplification for forensic accreditation through ANSI-ASQ National Accreditation Board.

Refer to the certificate and scope of accreditation AT-1644 at:
http://www.epa.gov/aboutepa/about-region-4s-science-and-ecosystem-support-division-sesd

NR The EPA Region 4 Laboratory has not requested accreditation for this test.

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Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-equip-blk-1-0916 **Lab ID:** E193805-01

Station ID: **Matrix:** Equipment Rinse Blank

Date Collected: 9/16/19 18:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	37	U	ng/L	37	10/01/19 10:53	10/08/19 20:51	ASBPROC-800PFAS
27619-97-2	6:2FTS	38	U	ng/L	38	10/01/19 10:53	10/08/19 20:51	ASBPROC-800PFAS
39108-34-4	8:2FTS	38	U	ng/L	38	10/01/19 10:53	10/08/19 20:51	ASBPROC-800PFAS
754-91-6	FOSA	40	U	ng/L	40	10/01/19 10:53	10/08/19 20:51	ASBPROC-800PFAS
13252-13-6	HFPO-DA	40	U	ng/L	40	10/01/19 10:53	10/08/19 20:51	ASBPROC-800PFAS
2991-50-6	N-EtFOSAA	160	U, J, Y-2	ng/L	160	10/01/19 10:53	10/08/19 20:51	ASBPROC-800PFAS
2355-31-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:53	10/08/19 20:51	ASBPROC-800PFAS
375-22-4	PFBA	40	U	ng/L	40	10/01/19 10:53	10/08/19 20:51	ASBPROC-800PFAS
375-73-5	PFBS	35	U	ng/L	35	10/01/19 10:53	10/08/19 20:51	ASBPROC-800PFAS
335-76-2	PFDA	160	U	ng/L	160	10/01/19 10:53	10/08/19 20:51	ASBPROC-800PFAS
307-55-1	PFDoA	40	U	ng/L	40	10/01/19 10:53	10/08/19 20:51	ASBPROC-800PFAS
335-77-3	PFDS	39	U	ng/L	39	10/01/19 10:53	10/08/19 20:51	ASBPROC-800PFAS
375-85-9	PFHpA	40	U	ng/L	40	10/01/19 10:53	10/08/19 20:51	ASBPROC-800PFAS
375-92-8	PFHpS	38	U	ng/L	38	10/01/19 10:53	10/08/19 20:51	ASBPROC-800PFAS
307-24-4	PFHxA	40	U	ng/L	40	10/01/19 10:53	10/08/19 20:51	ASBPROC-800PFAS
355-46-4	PFHxS	36	U	ng/L	36	10/01/19 10:53	10/08/19 20:51	ASBPROC-800PFAS
375-95-1	PFNA	40	U	ng/L	40	10/01/19 10:53	10/08/19 20:51	ASBPROC-800PFAS
68259-12-1	PFNS	38	U	ng/L	38	10/01/19 10:53	10/08/19 20:51	ASBPROC-800PFAS
335-67-1	PFOA	40	U	ng/L	40	10/01/19 10:53	10/08/19 20:51	ASBPROC-800PFAS
1763-23-1	PFOS	37	U	ng/L	37	10/01/19 10:53	10/08/19 20:51	ASBPROC-800PFAS

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Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-equip-blk-1-0916 **Lab ID:** E193805-01

Station ID: **Matrix:** Equipment Rinse Blank

Date Collected: 9/16/19 18:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-90-3	PFPeA	40	U	ng/L	40	10/01/19 10:53	10/08/19 20:51	ASBPROC-800PFAS
2706-91-4	PFPeS	38	U	ng/L	38	10/01/19 10:53	10/08/19 20:51	ASBPROC-800PFAS
376-06-7	PFTeDA	160	U, J, QS-5, Y-2	ng/L	160	10/01/19 10:53	10/08/19 20:51	ASBPROC-800PFAS
72629-94-8	PFTrDA	40	U	ng/L	40	10/01/19 10:53	10/08/19 20:51	ASBPROC-800PFAS
2058-94-8	PFUdA	40	U	ng/L	40	10/01/19 10:53	10/08/19 20:51	ASBPROC-800PFAS

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Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-equip-blk-2-0916 **Lab ID:** E193805-02

Station ID: **Matrix:** Equipment Rinse Blank

Date Collected: 9/17/19 10:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	37	U	ng/L	37	10/01/19 10:53	10/08/19 21:11	ASBPROC-800PFAS
27619-97-2	6:2FTS	38	U	ng/L	38	10/01/19 10:53	10/08/19 21:11	ASBPROC-800PFAS
39108-34-4	8:2FTS	38	U	ng/L	38	10/01/19 10:53	10/08/19 21:11	ASBPROC-800PFAS
754-91-6	FOSA	40	U	ng/L	40	10/01/19 10:53	10/08/19 21:11	ASBPROC-800PFAS
13252-13-6	HFPO-DA	40	U	ng/L	40	10/01/19 10:53	10/08/19 21:11	ASBPROC-800PFAS
2991-50-6	N-EtFOSAA	160	U, J, Y-2	ng/L	160	10/01/19 10:53	10/08/19 21:11	ASBPROC-800PFAS
2355-31-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:53	10/08/19 21:11	ASBPROC-800PFAS
375-22-4	PFBA	40	U	ng/L	40	10/01/19 10:53	10/08/19 21:11	ASBPROC-800PFAS
375-73-5	PFBS	35	U	ng/L	35	10/01/19 10:53	10/08/19 21:11	ASBPROC-800PFAS
335-76-2	PFDA	160	U	ng/L	160	10/01/19 10:53	10/08/19 21:11	ASBPROC-800PFAS
307-55-1	PFDoA	40	U	ng/L	40	10/01/19 10:53	10/08/19 21:11	ASBPROC-800PFAS
335-77-3	PFDS	39	U	ng/L	39	10/01/19 10:53	10/08/19 21:11	ASBPROC-800PFAS
375-85-9	PFHpA	40	U	ng/L	40	10/01/19 10:53	10/08/19 21:11	ASBPROC-800PFAS
375-92-8	PFHpS	38	U	ng/L	38	10/01/19 10:53	10/08/19 21:11	ASBPROC-800PFAS
307-24-4	PFHxA	40	U	ng/L	40	10/01/19 10:53	10/08/19 21:11	ASBPROC-800PFAS
355-46-4	PFHxS	36	U	ng/L	36	10/01/19 10:53	10/08/19 21:11	ASBPROC-800PFAS
375-95-1	PFNA	40	U	ng/L	40	10/01/19 10:53	10/08/19 21:11	ASBPROC-800PFAS
68259-12-1	PFNS	38	U	ng/L	38	10/01/19 10:53	10/08/19 21:11	ASBPROC-800PFAS
335-67-1	PFOA	40	U	ng/L	40	10/01/19 10:53	10/08/19 21:11	ASBPROC-800PFAS
1763-23-1	PFOS	37	U	ng/L	37	10/01/19 10:53	10/08/19 21:11	ASBPROC-800PFAS

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Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-equip-blk-2-0916 **Lab ID:** E193805-02

Station ID: **Matrix:** Equipment Rinse Blank

Date Collected: 9/17/19 10:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-90-3	PFPeA	40	U	ng/L	40	10/01/19 10:53	10/08/19 21:11	ASBPROC-800PFAS
2706-91-4	PFPeS	38	U	ng/L	38	10/01/19 10:53	10/08/19 21:11	ASBPROC-800PFAS
376-06-7	PFTeDA	160	U, J, QS-5, Y-2	ng/L	160	10/01/19 10:53	10/08/19 21:11	ASBPROC-800PFAS
72629-94-8	PFTrDA	40	U	ng/L	40	10/01/19 10:53	10/08/19 21:11	ASBPROC-800PFAS
2058-94-8	PFUdA	40	U	ng/L	40	10/01/19 10:53	10/08/19 21:11	ASBPROC-800PFAS

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Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-field-blk-1-0916 **Lab ID:** E193805-03

Station ID: **Matrix:** Field Blank

Date Collected: 9/16/19 15:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	37	U	ng/L	37	10/01/19 10:53	10/08/19 21:31	ASBPROC-800PFAS
27619-97-2	6:2FTS	38	U	ng/L	38	10/01/19 10:53	10/08/19 21:31	ASBPROC-800PFAS
39108-34-4	8:2FTS	38	U	ng/L	38	10/01/19 10:53	10/08/19 21:31	ASBPROC-800PFAS
754-91-6	FOSA	40	U	ng/L	40	10/01/19 10:53	10/08/19 21:31	ASBPROC-800PFAS
13252-13-6	HFPO-DA	40	U	ng/L	40	10/01/19 10:53	10/08/19 21:31	ASBPROC-800PFAS
2991-50-6	N-EtFOSAA	160	U, J, Y-2	ng/L	160	10/01/19 10:53	10/08/19 21:31	ASBPROC-800PFAS
2355-31-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:53	10/08/19 21:31	ASBPROC-800PFAS
375-22-4	PFBA	40	U	ng/L	40	10/01/19 10:53	10/08/19 21:31	ASBPROC-800PFAS
375-73-5	PFBS	35	U	ng/L	35	10/01/19 10:53	10/08/19 21:31	ASBPROC-800PFAS
335-76-2	PFDA	160	U	ng/L	160	10/01/19 10:53	10/08/19 21:31	ASBPROC-800PFAS
307-55-1	PFDoA	40	U	ng/L	40	10/01/19 10:53	10/08/19 21:31	ASBPROC-800PFAS
335-77-3	PFDS	38	U	ng/L	38	10/01/19 10:53	10/08/19 21:31	ASBPROC-800PFAS
375-85-9	PFHpA	40	U	ng/L	40	10/01/19 10:53	10/08/19 21:31	ASBPROC-800PFAS
375-92-8	PFHpS	38	U	ng/L	38	10/01/19 10:53	10/08/19 21:31	ASBPROC-800PFAS
307-24-4	PFHxA	40	U	ng/L	40	10/01/19 10:53	10/08/19 21:31	ASBPROC-800PFAS
355-46-4	PFHxS	36	U	ng/L	36	10/01/19 10:53	10/08/19 21:31	ASBPROC-800PFAS
375-95-1	PFNA	40	U	ng/L	40	10/01/19 10:53	10/08/19 21:31	ASBPROC-800PFAS
68259-12-1	PFNS	38	U	ng/L	38	10/01/19 10:53	10/08/19 21:31	ASBPROC-800PFAS
335-67-1	PFOA	40	U	ng/L	40	10/01/19 10:53	10/08/19 21:31	ASBPROC-800PFAS
1763-23-1	PFOS	37	U	ng/L	37	10/01/19 10:53	10/08/19 21:31	ASBPROC-800PFAS

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D.A.R.T. Id: 19-0457
Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-field-blk-1-0916 **Lab ID:** E193805-03

Station ID: **Matrix:** Field Blank

Date Collected: 9/16/19 15:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-90-3	PFPeA	40	U	ng/L	40	10/01/19 10:53	10/08/19 21:31	ASBPROC-800PFAS
2706-91-4	PFPeS	37	U	ng/L	37	10/01/19 10:53	10/08/19 21:31	ASBPROC-800PFAS
376-06-7	PFTeDA	160	U, J, QS-5, Y-2	ng/L	160	10/01/19 10:53	10/08/19 21:31	ASBPROC-800PFAS
72629-94-8	PFTrDA	40	U	ng/L	40	10/01/19 10:53	10/08/19 21:31	ASBPROC-800PFAS
2058-94-8	PFUdA	40	U	ng/L	40	10/01/19 10:53	10/08/19 21:31	ASBPROC-800PFAS

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Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-field-blk-2-0916 **Lab ID:** E193805-04

Station ID: **Matrix:** Field Blank

Date Collected: 9/17/19 16:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	37	U	ng/L	37	10/01/19 10:53	10/08/19 21:51	ASBPROC-800PFAS
27619-97-2	6:2FTS	38	U	ng/L	38	10/01/19 10:53	10/08/19 21:51	ASBPROC-800PFAS
39108-34-4	8:2FTS	38	U	ng/L	38	10/01/19 10:53	10/08/19 21:51	ASBPROC-800PFAS
754-91-6	FOSA	40	U	ng/L	40	10/01/19 10:53	10/08/19 21:51	ASBPROC-800PFAS
13252-13-6	HFPO-DA	40	U	ng/L	40	10/01/19 10:53	10/08/19 21:51	ASBPROC-800PFAS
2991-50-6	N-EtFOSAA	160	U, J, Y-2	ng/L	160	10/01/19 10:53	10/08/19 21:51	ASBPROC-800PFAS
2355-31-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:53	10/08/19 21:51	ASBPROC-800PFAS
375-22-4	PFBA	40	U	ng/L	40	10/01/19 10:53	10/08/19 21:51	ASBPROC-800PFAS
375-73-5	PFBS	35	U	ng/L	35	10/01/19 10:53	10/08/19 21:51	ASBPROC-800PFAS
335-76-2	PFDA	160	U	ng/L	160	10/01/19 10:53	10/08/19 21:51	ASBPROC-800PFAS
307-55-1	PFDoA	40	U	ng/L	40	10/01/19 10:53	10/08/19 21:51	ASBPROC-800PFAS
335-77-3	PFDS	38	U	ng/L	38	10/01/19 10:53	10/08/19 21:51	ASBPROC-800PFAS
375-85-9	PFHpA	40	U	ng/L	40	10/01/19 10:53	10/08/19 21:51	ASBPROC-800PFAS
375-92-8	PFHpS	38	U	ng/L	38	10/01/19 10:53	10/08/19 21:51	ASBPROC-800PFAS
307-24-4	PFHxA	40	U	ng/L	40	10/01/19 10:53	10/08/19 21:51	ASBPROC-800PFAS
355-46-4	PFHxS	36	U	ng/L	36	10/01/19 10:53	10/08/19 21:51	ASBPROC-800PFAS
375-95-1	PFNA	40	U	ng/L	40	10/01/19 10:53	10/08/19 21:51	ASBPROC-800PFAS
68259-12-1	PFNS	38	U	ng/L	38	10/01/19 10:53	10/08/19 21:51	ASBPROC-800PFAS
335-67-1	PFOA	40	U	ng/L	40	10/01/19 10:53	10/08/19 21:51	ASBPROC-800PFAS
1763-23-1	PFOS	37	U	ng/L	37	10/01/19 10:53	10/08/19 21:51	ASBPROC-800PFAS

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Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-field-blk-2-0916 **Lab ID:** E193805-04

Station ID: **Matrix:** Field Blank

Date Collected: 9/17/19 16:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-90-3	PFPeA	40	U	ng/L	40	10/01/19 10:53	10/08/19 21:51	ASBPROC-800PFAS
2706-91-4	PFPeS	38	U	ng/L	38	10/01/19 10:53	10/08/19 21:51	ASBPROC-800PFAS
376-06-7	PFTeDA	160	U, J, QS-5, Y-2	ng/L	160	10/01/19 10:53	10/08/19 21:51	ASBPROC-800PFAS
72629-94-8	PFTrDA	40	U	ng/L	40	10/01/19 10:53	10/08/19 21:51	ASBPROC-800PFAS
2058-94-8	PFUdA	40	U	ng/L	40	10/01/19 10:53	10/08/19 21:51	ASBPROC-800PFAS

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Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-filter-spike-0916 **Lab ID:** E193805-05
Station ID: **Matrix:** Other

Date Collected: 9/18/19 12:10

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	410	J, Y-2	ng/L	37	10/01/19 10:53	10/08/19 22:11	ASBPROC-800PFAS
27619-97-2	6:2FTS	420	J, Y-2	ng/L	37	10/01/19 10:53	10/08/19 22:11	ASBPROC-800PFAS
39108-34-4	8:2FTS	250	J, Y-2	ng/L	37	10/01/19 10:53	10/08/19 22:11	ASBPROC-800PFAS
754-91-6	FOSA	150	J, Y-2	ng/L	39	10/01/19 10:53	10/08/19 22:11	ASBPROC-800PFAS
13252-13-6	HFPO-DA	360	J, Y-2	ng/L	39	10/01/19 10:53	10/08/19 22:11	ASBPROC-800PFAS
2991-50-6	N-EtFOSAA	66	J, CR, Y-2	ng/L	62	10/01/19 10:53	10/08/19 22:11	ASBPROC-800PFAS
2355-31-9	N-MeFOSAA	110	J, CR, Y-2	ng/L	54	10/01/19 10:53	10/08/19 22:11	ASBPROC-800PFAS
375-22-4	PFBA	430	J, Y-2	ng/L	39	10/01/19 10:53	10/08/19 22:11	ASBPROC-800PFAS
375-73-5	PFBS	370	J, Y-2	ng/L	35	10/01/19 10:53	10/08/19 22:11	ASBPROC-800PFAS
335-76-2	PFDA	300	J, Y-2	ng/L	160	10/01/19 10:53	10/08/19 22:11	ASBPROC-800PFAS
307-55-1	PFDoA	44	J, Y-2	ng/L	39	10/01/19 10:53	10/08/19 22:11	ASBPROC-800PFAS
335-77-3	PFDS	80	J, Y-2	ng/L	38	10/01/19 10:53	10/08/19 22:11	ASBPROC-800PFAS
375-85-9	PFHpA	430	J, Y-2	ng/L	39	10/01/19 10:53	10/08/19 22:11	ASBPROC-800PFAS
375-92-8	PFHpS	400	J, Y-2	ng/L	37	10/01/19 10:53	10/08/19 22:11	ASBPROC-800PFAS
307-24-4	PFHxA	440	J, Y-2	ng/L	39	10/01/19 10:53	10/08/19 22:11	ASBPROC-800PFAS
355-46-4	PFHxS	410	J, Y-2	ng/L	36	10/01/19 10:53	10/08/19 22:11	ASBPROC-800PFAS
375-95-1	PFNA	400	J, Y-2	ng/L	39	10/01/19 10:53	10/08/19 22:11	ASBPROC-800PFAS
68259-12-1	PFNS	180	J, Y-2	ng/L	37	10/01/19 10:53	10/08/19 22:11	ASBPROC-800PFAS
335-67-1	PFOA	450	J, Y-2	ng/L	39	10/01/19 10:53	10/08/19 22:11	ASBPROC-800PFAS
1763-23-1	PFOS	330	J, Y-2	ng/L	36	10/01/19 10:53	10/08/19 22:11	ASBPROC-800PFAS

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Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-filter-spike-0916 **Lab ID:** E193805-05

Station ID: **Matrix:** Other

Date Collected: 9/18/19 12:10

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-90-3	PFPeA	430	J, Y-2	ng/L	39	10/01/19 10:53	10/08/19 22:11	ASBPROC-800PFAS
2706-91-4	PFPeS	410	J, Y-2	ng/L	37	10/01/19 10:53	10/08/19 22:11	ASBPROC-800PFAS
376-06-7	PFTeDA	69	J, CRa, QS-5, Y-2	ng/L	59	10/01/19 10:53	10/08/19 22:11	ASBPROC-800PFAS
72629-94-8	PFTrDA	29	J, Q-2, Y-2	ng/L	39	10/01/19 10:53	10/08/19 22:11	ASBPROC-800PFAS
2058-94-8	PFUdA	140	J, Y-2	ng/L	39	10/01/19 10:53	10/08/19 22:11	ASBPROC-800PFAS

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Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-trip-blk-1-0916 **Lab ID:** E193805-06

Station ID: **Matrix:** Trip Blank - Water

Date Collected: 9/16/19 15:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	37	U	ng/L	37	10/01/19 10:53	10/08/19 22:31	ASBPROC-800PFAS
27619-97-2	6:2FTS	38	U	ng/L	38	10/01/19 10:53	10/08/19 22:31	ASBPROC-800PFAS
39108-34-4	8:2FTS	38	U	ng/L	38	10/01/19 10:53	10/08/19 22:31	ASBPROC-800PFAS
754-91-6	FOSA	40	U	ng/L	40	10/01/19 10:53	10/08/19 22:31	ASBPROC-800PFAS
13252-13-6	HFPO-DA	40	U	ng/L	40	10/01/19 10:53	10/08/19 22:31	ASBPROC-800PFAS
2991-50-6	N-EtFOSAA	160	U, J, Y-2	ng/L	160	10/01/19 10:53	10/08/19 22:31	ASBPROC-800PFAS
2355-31-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:53	10/08/19 22:31	ASBPROC-800PFAS
375-22-4	PFBA	40	U	ng/L	40	10/01/19 10:53	10/08/19 22:31	ASBPROC-800PFAS
375-73-5	PFBS	35	U	ng/L	35	10/01/19 10:53	10/08/19 22:31	ASBPROC-800PFAS
335-76-2	PFDA	160	U	ng/L	160	10/01/19 10:53	10/08/19 22:31	ASBPROC-800PFAS
307-55-1	PFDoA	40	U	ng/L	40	10/01/19 10:53	10/08/19 22:31	ASBPROC-800PFAS
335-77-3	PFDS	38	U	ng/L	38	10/01/19 10:53	10/08/19 22:31	ASBPROC-800PFAS
375-85-9	PFHpA	40	U	ng/L	40	10/01/19 10:53	10/08/19 22:31	ASBPROC-800PFAS
375-92-8	PFHpS	38	U	ng/L	38	10/01/19 10:53	10/08/19 22:31	ASBPROC-800PFAS
307-24-4	PFHxA	40	U	ng/L	40	10/01/19 10:53	10/08/19 22:31	ASBPROC-800PFAS
355-46-4	PFHxS	36	U	ng/L	36	10/01/19 10:53	10/08/19 22:31	ASBPROC-800PFAS
375-95-1	PFNA	40	U	ng/L	40	10/01/19 10:53	10/08/19 22:31	ASBPROC-800PFAS
68259-12-1	PFNS	38	U	ng/L	38	10/01/19 10:53	10/08/19 22:31	ASBPROC-800PFAS
335-67-1	PFOA	40	U	ng/L	40	10/01/19 10:53	10/08/19 22:31	ASBPROC-800PFAS
1763-23-1	PFOS	37	U	ng/L	37	10/01/19 10:53	10/08/19 22:31	ASBPROC-800PFAS

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Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-trip-blk-1-0916 **Lab ID:** E193805-06

Station ID: **Matrix:** Trip Blank - Water

Date Collected: 9/16/19 15:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-90-3	PFPeA	40	U	ng/L	40	10/01/19 10:53	10/08/19 22:31	ASBPROC-800PFAS
2706-91-4	PFPeS	37	U	ng/L	37	10/01/19 10:53	10/08/19 22:31	ASBPROC-800PFAS
376-06-7	PFTeDA	160	U, J, QS-5, Y-2	ng/L	160	10/01/19 10:53	10/08/19 22:31	ASBPROC-800PFAS
72629-94-8	PFTrDA	40	U	ng/L	40	10/01/19 10:53	10/08/19 22:31	ASBPROC-800PFAS
2058-94-8	PFUdA	40	U	ng/L	40	10/01/19 10:53	10/08/19 22:31	ASBPROC-800PFAS

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Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA1-0916 **Lab ID:** E193805-07

Station ID: CONA1 **Matrix:** Surface Water

Date Collected: 9/17/19 10:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	37	U	ng/L	37	10/01/19 10:53	10/08/19 22:51	ASBPROC-800PFAS
27619-97-2	6:2FTS	38	U	ng/L	38	10/01/19 10:53	10/08/19 22:51	ASBPROC-800PFAS
39108-34-4	8:2FTS	38	U	ng/L	38	10/01/19 10:53	10/08/19 22:51	ASBPROC-800PFAS
754-91-6	FOSA	40	U	ng/L	40	10/01/19 10:53	10/08/19 22:51	ASBPROC-800PFAS
13252-13-6	HFPO-DA	40	U	ng/L	40	10/01/19 10:53	10/08/19 22:51	ASBPROC-800PFAS
2991-50-6	N-EtFOSAA	160	U, J, Y-2	ng/L	160	10/01/19 10:53	10/08/19 22:51	ASBPROC-800PFAS
2355-31-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:53	10/08/19 22:51	ASBPROC-800PFAS
375-22-4	PFBA	40	U	ng/L	40	10/01/19 10:53	10/08/19 22:51	ASBPROC-800PFAS
375-73-5	PFBS	58		ng/L	35	10/01/19 10:53	10/08/19 22:51	ASBPROC-800PFAS
335-76-2	PFDA	160	U	ng/L	160	10/01/19 10:53	10/08/19 22:51	ASBPROC-800PFAS
307-55-1	PFDoA	40	U	ng/L	40	10/01/19 10:53	10/08/19 22:51	ASBPROC-800PFAS
335-77-3	PFDS	39	U	ng/L	39	10/01/19 10:53	10/08/19 22:51	ASBPROC-800PFAS
375-85-9	PFHpA	40	U	ng/L	40	10/01/19 10:53	10/08/19 22:51	ASBPROC-800PFAS
375-92-8	PFHpS	38	U	ng/L	38	10/01/19 10:53	10/08/19 22:51	ASBPROC-800PFAS
307-24-4	PFHxA	40	U	ng/L	40	10/01/19 10:53	10/08/19 22:51	ASBPROC-800PFAS
355-46-4	PFHxS	36	U	ng/L	36	10/01/19 10:53	10/08/19 22:51	ASBPROC-800PFAS
375-95-1	PFNA	40	U	ng/L	40	10/01/19 10:53	10/08/19 22:51	ASBPROC-800PFAS
68259-12-1	PFNS	38	U	ng/L	38	10/01/19 10:53	10/08/19 22:51	ASBPROC-800PFAS
335-67-1	PFOA	40	U	ng/L	40	10/01/19 10:53	10/08/19 22:51	ASBPROC-800PFAS
1763-23-1	PFOS	37	U	ng/L	37	10/01/19 10:53	10/08/19 22:51	ASBPROC-800PFAS

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Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA1-0916 **Lab ID:** E193805-07

Station ID: CONA1 **Matrix:** Surface Water

Date Collected: 9/17/19 10:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-90-3	PFPeA	27	J, Q-2	ng/L	40	10/01/19 10:53	10/08/19 22:51	ASBPROC-800PFAS
2706-91-4	PFPeS	38	U	ng/L	38	10/01/19 10:53	10/08/19 22:51	ASBPROC-800PFAS
376-06-7	PFTeDA	160	U, J, QS-5, Y-2	ng/L	160	10/01/19 10:53	10/08/19 22:51	ASBPROC-800PFAS
72629-94-8	PFTrDA	40	U	ng/L	40	10/01/19 10:53	10/08/19 22:51	ASBPROC-800PFAS
2058-94-8	PFUdA	40	U	ng/L	40	10/01/19 10:53	10/08/19 22:51	ASBPROC-800PFAS

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Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA1-F-0916 **Lab ID:** E193805-08

Station ID: CONA1 **Matrix:** Surface Water

Date Collected: 9/17/19 10:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	37	U	ng/L	37	10/01/19 10:53	10/08/19 23:11	ASBPROC-800PFAS
27619-97-2	6:2FTS	38	U	ng/L	38	10/01/19 10:53	10/08/19 23:11	ASBPROC-800PFAS
39108-34-4	8:2FTS	38	U	ng/L	38	10/01/19 10:53	10/08/19 23:11	ASBPROC-800PFAS
754-91-6	FOSA	40	U	ng/L	40	10/01/19 10:53	10/08/19 23:11	ASBPROC-800PFAS
13252-13-6	HFPO-DA	40	U	ng/L	40	10/01/19 10:53	10/08/19 23:11	ASBPROC-800PFAS
2991-50-6	N-EtFOSAA	160	U, J, Y-2	ng/L	160	10/01/19 10:53	10/08/19 23:11	ASBPROC-800PFAS
2355-31-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:53	10/08/19 23:11	ASBPROC-800PFAS
375-22-4	PFBA	40	U	ng/L	40	10/01/19 10:53	10/08/19 23:11	ASBPROC-800PFAS
375-73-5	PFBS	68		ng/L	35	10/01/19 10:53	10/08/19 23:11	ASBPROC-800PFAS
335-76-2	PFDA	160	U	ng/L	160	10/01/19 10:53	10/08/19 23:11	ASBPROC-800PFAS
307-55-1	PFDoA	40	U	ng/L	40	10/01/19 10:53	10/08/19 23:11	ASBPROC-800PFAS
335-77-3	PFDS	38	U	ng/L	38	10/01/19 10:53	10/08/19 23:11	ASBPROC-800PFAS
375-85-9	PFHpA	40	U	ng/L	40	10/01/19 10:53	10/08/19 23:11	ASBPROC-800PFAS
375-92-8	PFHpS	38	U	ng/L	38	10/01/19 10:53	10/08/19 23:11	ASBPROC-800PFAS
307-24-4	PFHxA	40	U	ng/L	40	10/01/19 10:53	10/08/19 23:11	ASBPROC-800PFAS
355-46-4	PFHxS	36	U	ng/L	36	10/01/19 10:53	10/08/19 23:11	ASBPROC-800PFAS
375-95-1	PFNA	40	U	ng/L	40	10/01/19 10:53	10/08/19 23:11	ASBPROC-800PFAS
68259-12-1	PFNS	38	U	ng/L	38	10/01/19 10:53	10/08/19 23:11	ASBPROC-800PFAS
335-67-1	PFOA	40	U	ng/L	40	10/01/19 10:53	10/08/19 23:11	ASBPROC-800PFAS
1763-23-1	PFOS	37	U	ng/L	37	10/01/19 10:53	10/08/19 23:11	ASBPROC-800PFAS

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Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA1-F-0916 **Lab ID:** E193805-08

Station ID: CONA1 **Matrix:** Surface Water

Date Collected: 9/17/19 10:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-90-3	PFPeA	27	J, Q-2	ng/L	40	10/01/19 10:53	10/08/19 23:11	ASBPROC-800PFAS
2706-91-4	PFPeS	37	U	ng/L	37	10/01/19 10:53	10/08/19 23:11	ASBPROC-800PFAS
376-06-7	PFTeDA	160	U, J, QS-5, Y-2	ng/L	160	10/01/19 10:53	10/08/19 23:11	ASBPROC-800PFAS
72629-94-8	PFTrDA	40	U	ng/L	40	10/01/19 10:53	10/08/19 23:11	ASBPROC-800PFAS
2058-94-8	PFUdA	40	U	ng/L	40	10/01/19 10:53	10/08/19 23:11	ASBPROC-800PFAS

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Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA2-0916 **Lab ID:** E193805-10
Station ID: CONA2 **Matrix:** Surface Water

Date Collected: 9/17/19 18:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	37	U	ng/L	37	10/01/19 10:53	10/08/19 23:31	ASBPROC-800PFAS
27619-97-2	6:2FTS	38	U	ng/L	38	10/01/19 10:53	10/08/19 23:31	ASBPROC-800PFAS
39108-34-4	8:2FTS	38	U	ng/L	38	10/01/19 10:53	10/08/19 23:31	ASBPROC-800PFAS
754-91-6	FOSA	40	U	ng/L	40	10/01/19 10:53	10/08/19 23:31	ASBPROC-800PFAS
13252-13-6	HFPO-DA	40	U	ng/L	40	10/01/19 10:53	10/08/19 23:31	ASBPROC-800PFAS
2991-50-6	N-EtFOSAA	160	U, J, Y-2	ng/L	160	10/01/19 10:53	10/08/19 23:31	ASBPROC-800PFAS
2355-31-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:53	10/08/19 23:31	ASBPROC-800PFAS
375-22-4	PFBA	63		ng/L	40	10/01/19 10:53	10/08/19 23:31	ASBPROC-800PFAS
375-73-5	PFBS	360		ng/L	35	10/01/19 10:53	10/08/19 23:31	ASBPROC-800PFAS
335-76-2	PFDA	160	U	ng/L	160	10/01/19 10:53	10/08/19 23:31	ASBPROC-800PFAS
307-55-1	PFDoA	40	U	ng/L	40	10/01/19 10:53	10/08/19 23:31	ASBPROC-800PFAS
335-77-3	PFDS	38	U	ng/L	38	10/01/19 10:53	10/08/19 23:31	ASBPROC-800PFAS
375-85-9	PFHpA	53		ng/L	40	10/01/19 10:53	10/08/19 23:31	ASBPROC-800PFAS
375-92-8	PFHpS	38	U	ng/L	38	10/01/19 10:53	10/08/19 23:31	ASBPROC-800PFAS
307-24-4	PFHxA	110		ng/L	40	10/01/19 10:53	10/08/19 23:31	ASBPROC-800PFAS
355-46-4	PFHxS	24	J, Q-2	ng/L	36	10/01/19 10:53	10/08/19 23:31	ASBPROC-800PFAS
375-95-1	PFNA	40	U	ng/L	40	10/01/19 10:53	10/08/19 23:31	ASBPROC-800PFAS
68259-12-1	PFNS	38	U	ng/L	38	10/01/19 10:53	10/08/19 23:31	ASBPROC-800PFAS
335-67-1	PFOA	120		ng/L	40	10/01/19 10:53	10/08/19 23:31	ASBPROC-800PFAS
1763-23-1	PFOS	130		ng/L	37	10/01/19 10:53	10/08/19 23:31	ASBPROC-800PFAS

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Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA2-0916 **Lab ID:** E193805-10

Station ID: CONA2 **Matrix:** Surface Water

Date Collected: 9/17/19 18:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-90-3	PFPeA	170		ng/L	40	10/01/19 10:53	10/08/19 23:31	ASBPROC-800PFAS
2706-91-4	PFPeS	37	U	ng/L	37	10/01/19 10:53	10/08/19 23:31	ASBPROC-800PFAS
376-06-7	PFTeDA	160	U, J, QS-5, Y-2	ng/L	160	10/01/19 10:53	10/08/19 23:31	ASBPROC-800PFAS
72629-94-8	PFTrDA	40	U	ng/L	40	10/01/19 10:53	10/08/19 23:31	ASBPROC-800PFAS
2058-94-8	PFUdA	40	U	ng/L	40	10/01/19 10:53	10/08/19 23:31	ASBPROC-800PFAS

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Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA3-0916 **Lab ID:** E193805-12
Station ID: CONA3 **Matrix:** Surface Water

Date Collected: 9/17/19 13:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	37	U	ng/L	37	10/01/19 10:53	10/08/19 23:51	ASBPROC-800PFAS
27619-97-2	6:2FTS	29	J, Q-2	ng/L	38	10/01/19 10:53	10/08/19 23:51	ASBPROC-800PFAS
39108-34-4	8:2FTS	38	U	ng/L	38	10/01/19 10:53	10/08/19 23:51	ASBPROC-800PFAS
754-91-6	FOSA	40	U	ng/L	40	10/01/19 10:53	10/08/19 23:51	ASBPROC-800PFAS
13252-13-6	HFPO-DA	40	U	ng/L	40	10/01/19 10:53	10/08/19 23:51	ASBPROC-800PFAS
2991-50-6	N-EtFOSAA	160	U, J, Y-2	ng/L	160	10/01/19 10:53	10/08/19 23:51	ASBPROC-800PFAS
2355-31-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:53	10/08/19 23:51	ASBPROC-800PFAS
375-22-4	PFBA	40	U	ng/L	40	10/01/19 10:53	10/08/19 23:51	ASBPROC-800PFAS
375-73-5	PFBS	250		ng/L	35	10/01/19 10:53	10/08/19 23:51	ASBPROC-800PFAS
335-76-2	PFDA	160	U	ng/L	160	10/01/19 10:53	10/08/19 23:51	ASBPROC-800PFAS
307-55-1	PFDoA	40	U	ng/L	40	10/01/19 10:53	10/08/19 23:51	ASBPROC-800PFAS
335-77-3	PFDS	39	U	ng/L	39	10/01/19 10:53	10/08/19 23:51	ASBPROC-800PFAS
375-85-9	PFHpA	57		ng/L	40	10/01/19 10:53	10/08/19 23:51	ASBPROC-800PFAS
375-92-8	PFHpS	38	U	ng/L	38	10/01/19 10:53	10/08/19 23:51	ASBPROC-800PFAS
307-24-4	PFHxA	110		ng/L	40	10/01/19 10:53	10/08/19 23:51	ASBPROC-800PFAS
355-46-4	PFHxS	25	J, Q-2	ng/L	36	10/01/19 10:53	10/08/19 23:51	ASBPROC-800PFAS
375-95-1	PFNA	40	U	ng/L	40	10/01/19 10:53	10/08/19 23:51	ASBPROC-800PFAS
68259-12-1	PFNS	38	U	ng/L	38	10/01/19 10:53	10/08/19 23:51	ASBPROC-800PFAS
335-67-1	PFOA	140		ng/L	40	10/01/19 10:53	10/08/19 23:51	ASBPROC-800PFAS
1763-23-1	PFOS	140		ng/L	37	10/01/19 10:53	10/08/19 23:51	ASBPROC-800PFAS

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Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA3-0916 **Lab ID:** E193805-12

Station ID: CONA3 **Matrix:** Surface Water

Date Collected: 9/17/19 13:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-90-3	PFPeA	180		ng/L	40	10/01/19 10:53	10/08/19 23:51	ASBPROC-800PFAS
2706-91-4	PFPeS	38	U	ng/L	38	10/01/19 10:53	10/08/19 23:51	ASBPROC-800PFAS
376-06-7	PFTeDA	160	U, J, QS-5, Y-2	ng/L	160	10/01/19 10:53	10/08/19 23:51	ASBPROC-800PFAS
72629-94-8	PFTrDA	40	U	ng/L	40	10/01/19 10:53	10/08/19 23:51	ASBPROC-800PFAS
2058-94-8	PFUdA	40	U	ng/L	40	10/01/19 10:53	10/08/19 23:51	ASBPROC-800PFAS

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Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA3-F-0916 **Lab ID:** E193805-13
Station ID: CONA3 **Matrix:** Surface Water

Date Collected: 9/17/19 13:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	37	U	ng/L	37	10/01/19 10:53	10/09/19 0:51	ASBPROC-800PFAS
27619-97-2	6:2FTS	38	U	ng/L	38	10/01/19 10:53	10/09/19 0:51	ASBPROC-800PFAS
39108-34-4	8:2FTS	38	U	ng/L	38	10/01/19 10:53	10/09/19 0:51	ASBPROC-800PFAS
754-91-6	FOSA	40	U	ng/L	40	10/01/19 10:53	10/09/19 0:51	ASBPROC-800PFAS
13252-13-6	HFPO-DA	40	U	ng/L	40	10/01/19 10:53	10/09/19 0:51	ASBPROC-800PFAS
2991-50-6	N-EtFOSAA	160	U, J, Y-2	ng/L	160	10/01/19 10:53	10/09/19 0:51	ASBPROC-800PFAS
2355-31-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:53	10/09/19 0:51	ASBPROC-800PFAS
375-22-4	PFBA	42	J, QS-3	ng/L	40	10/01/19 10:53	10/09/19 0:51	ASBPROC-800PFAS
375-73-5	PFBS	330		ng/L	35	10/01/19 10:53	10/09/19 0:51	ASBPROC-800PFAS
335-76-2	PFDA	160	U	ng/L	160	10/01/19 10:53	10/09/19 0:51	ASBPROC-800PFAS
307-55-1	PFDoA	40	U	ng/L	40	10/01/19 10:53	10/09/19 0:51	ASBPROC-800PFAS
335-77-3	PFDS	38	U	ng/L	38	10/01/19 10:53	10/09/19 0:51	ASBPROC-800PFAS
375-85-9	PFHpA	53		ng/L	40	10/01/19 10:53	10/09/19 0:51	ASBPROC-800PFAS
375-92-8	PFHpS	38	U	ng/L	38	10/01/19 10:53	10/09/19 0:51	ASBPROC-800PFAS
307-24-4	PFHxA	100		ng/L	40	10/01/19 10:53	10/09/19 0:51	ASBPROC-800PFAS
355-46-4	PFHxS	19	J, Q-2	ng/L	36	10/01/19 10:53	10/09/19 0:51	ASBPROC-800PFAS
375-95-1	PFNA	40	U	ng/L	40	10/01/19 10:53	10/09/19 0:51	ASBPROC-800PFAS
68259-12-1	PFNS	38	U	ng/L	38	10/01/19 10:53	10/09/19 0:51	ASBPROC-800PFAS
335-67-1	PFOA	120		ng/L	40	10/01/19 10:53	10/09/19 0:51	ASBPROC-800PFAS
1763-23-1	PFOS	100		ng/L	37	10/01/19 10:53	10/09/19 0:51	ASBPROC-800PFAS

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Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA3-F-0916 **Lab ID:** E193805-13

Station ID: CONA3 **Matrix:** Surface Water

Date Collected: 9/17/19 13:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-90-3	PFPeA	160		ng/L	40	10/01/19 10:53	10/09/19 0:51	ASBPROC-800PFAS
2706-91-4	PFPeS	37	U	ng/L	37	10/01/19 10:53	10/09/19 0:51	ASBPROC-800PFAS
376-06-7	PFTeDA	160	U, J, QS-5, Y-2	ng/L	160	10/01/19 10:53	10/09/19 0:51	ASBPROC-800PFAS
72629-94-8	PFTrDA	40	U	ng/L	40	10/01/19 10:53	10/09/19 0:51	ASBPROC-800PFAS
2058-94-8	PFUdA	40	U	ng/L	40	10/01/19 10:53	10/09/19 0:51	ASBPROC-800PFAS

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Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA4-0916 **Lab ID:** E193805-15
Station ID: CONA4 **Matrix:** Surface Water

Date Collected: 9/17/19 14:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	37	U	ng/L	37	10/01/19 10:53	10/09/19 1:11	ASBPROC-800PFAS
27619-97-2	6:2FTS	38	U	ng/L	38	10/01/19 10:53	10/09/19 1:11	ASBPROC-800PFAS
39108-34-4	8:2FTS	38	U	ng/L	38	10/01/19 10:53	10/09/19 1:11	ASBPROC-800PFAS
754-91-6	FOSA	40	U	ng/L	40	10/01/19 10:53	10/09/19 1:11	ASBPROC-800PFAS
13252-13-6	HFPO-DA	40	U	ng/L	40	10/01/19 10:53	10/09/19 1:11	ASBPROC-800PFAS
2991-50-6	N-EtFOSAA	160	U, J, Y-2	ng/L	160	10/01/19 10:53	10/09/19 1:11	ASBPROC-800PFAS
2355-31-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:53	10/09/19 1:11	ASBPROC-800PFAS
375-22-4	PFBA	74		ng/L	40	10/01/19 10:53	10/09/19 1:11	ASBPROC-800PFAS
375-73-5	PFBS	400		ng/L	35	10/01/19 10:53	10/09/19 1:11	ASBPROC-800PFAS
335-76-2	PFDA	160	U	ng/L	160	10/01/19 10:53	10/09/19 1:11	ASBPROC-800PFAS
307-55-1	PFDoA	40	U	ng/L	40	10/01/19 10:53	10/09/19 1:11	ASBPROC-800PFAS
335-77-3	PFDS	39	U	ng/L	39	10/01/19 10:53	10/09/19 1:11	ASBPROC-800PFAS
375-85-9	PFHpA	59		ng/L	40	10/01/19 10:53	10/09/19 1:11	ASBPROC-800PFAS
375-92-8	PFHpS	38	U	ng/L	38	10/01/19 10:53	10/09/19 1:11	ASBPROC-800PFAS
307-24-4	PFHxA	110		ng/L	40	10/01/19 10:53	10/09/19 1:11	ASBPROC-800PFAS
355-46-4	PFHxS	27	J, Q-2	ng/L	36	10/01/19 10:53	10/09/19 1:11	ASBPROC-800PFAS
375-95-1	PFNA	40	U	ng/L	40	10/01/19 10:53	10/09/19 1:11	ASBPROC-800PFAS
68259-12-1	PFNS	38	U	ng/L	38	10/01/19 10:53	10/09/19 1:11	ASBPROC-800PFAS
335-67-1	PFOA	140		ng/L	40	10/01/19 10:53	10/09/19 1:11	ASBPROC-800PFAS
1763-23-1	PFOS	130		ng/L	37	10/01/19 10:53	10/09/19 1:11	ASBPROC-800PFAS

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Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA4-0916 **Lab ID:** E193805-15

Station ID: CONA4 **Matrix:** Surface Water

Date Collected: 9/17/19 14:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-90-3	PFPeA	170		ng/L	40	10/01/19 10:53	10/09/19 1:11	ASBPROC-800PFAS
2706-91-4	PFPeS	38	U	ng/L	38	10/01/19 10:53	10/09/19 1:11	ASBPROC-800PFAS
376-06-7	PFTeDA	160	U, J, QS-5, Y-2	ng/L	160	10/01/19 10:53	10/09/19 1:11	ASBPROC-800PFAS
72629-94-8	PFTrDA	40	U	ng/L	40	10/01/19 10:53	10/09/19 1:11	ASBPROC-800PFAS
2058-94-8	PFUdA	40	U	ng/L	40	10/01/19 10:53	10/09/19 1:11	ASBPROC-800PFAS

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Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CRI-0916 **Lab ID:** E193805-17

Station ID: CRI **Matrix:** Surface Water

Date Collected: 9/16/19 12:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	37	U	ng/L	37	10/01/19 10:53	10/09/19 1:31	ASBPROC-800PFAS
27619-97-2	6:2FTS	38	U	ng/L	38	10/01/19 10:53	10/09/19 1:31	ASBPROC-800PFAS
39108-34-4	8:2FTS	38	U	ng/L	38	10/01/19 10:53	10/09/19 1:31	ASBPROC-800PFAS
754-91-6	FOSA	40	U	ng/L	40	10/01/19 10:53	10/09/19 1:31	ASBPROC-800PFAS
13252-13-6	HFPO-DA	40	U	ng/L	40	10/01/19 10:53	10/09/19 1:31	ASBPROC-800PFAS
2991-50-6	N-EtFOSAA	160	U, J, Y-2	ng/L	160	10/01/19 10:53	10/09/19 1:31	ASBPROC-800PFAS
2355-31-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:53	10/09/19 1:31	ASBPROC-800PFAS
375-22-4	PFBA	40	U	ng/L	40	10/01/19 10:53	10/09/19 1:31	ASBPROC-800PFAS
375-73-5	PFBS	39		ng/L	35	10/01/19 10:53	10/09/19 1:31	ASBPROC-800PFAS
335-76-2	PFDA	160	U	ng/L	160	10/01/19 10:53	10/09/19 1:31	ASBPROC-800PFAS
307-55-1	PFDoA	40	U	ng/L	40	10/01/19 10:53	10/09/19 1:31	ASBPROC-800PFAS
335-77-3	PFDS	38	U	ng/L	38	10/01/19 10:53	10/09/19 1:31	ASBPROC-800PFAS
375-85-9	PFHpA	40	U	ng/L	40	10/01/19 10:53	10/09/19 1:31	ASBPROC-800PFAS
375-92-8	PFHpS	38	U	ng/L	38	10/01/19 10:53	10/09/19 1:31	ASBPROC-800PFAS
307-24-4	PFHxA	40	U	ng/L	40	10/01/19 10:53	10/09/19 1:31	ASBPROC-800PFAS
355-46-4	PFHxS	36	U	ng/L	36	10/01/19 10:53	10/09/19 1:31	ASBPROC-800PFAS
375-95-1	PFNA	40	U	ng/L	40	10/01/19 10:53	10/09/19 1:31	ASBPROC-800PFAS
68259-12-1	PFNS	38	U	ng/L	38	10/01/19 10:53	10/09/19 1:31	ASBPROC-800PFAS
335-67-1	PFOA	40	U	ng/L	40	10/01/19 10:53	10/09/19 1:31	ASBPROC-800PFAS
1763-23-1	PFOS	37	U	ng/L	37	10/01/19 10:53	10/09/19 1:31	ASBPROC-800PFAS

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Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CRI-0916 **Lab ID:** E193805-17

Station ID: CRI **Matrix:** Surface Water

Date Collected: 9/16/19 12:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-90-3	PFPeA	22	J, Q-2	ng/L	40	10/01/19 10:53	10/09/19 1:31	ASBPROC-800PFAS
2706-91-4	PFPeS	37	U	ng/L	37	10/01/19 10:53	10/09/19 1:31	ASBPROC-800PFAS
376-06-7	PFTeDA	160	U, J, QS-5, Y-2	ng/L	160	10/01/19 10:53	10/09/19 1:31	ASBPROC-800PFAS
72629-94-8	PFTrDA	40	U	ng/L	40	10/01/19 10:53	10/09/19 1:31	ASBPROC-800PFAS
2058-94-8	PFUdA	40	U	ng/L	40	10/01/19 10:53	10/09/19 1:31	ASBPROC-800PFAS

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Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CRI-DUP-0916 **Lab ID:** E193805-18

Station ID: CRI **Matrix:** Surface Water

Date Collected: 9/16/19 13:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	37	U	ng/L	37	10/01/19 10:53	10/09/19 1:51	ASBPROC-800PFAS
27619-97-2	6:2FTS	38	U	ng/L	38	10/01/19 10:53	10/09/19 1:51	ASBPROC-800PFAS
39108-34-4	8:2FTS	38	U	ng/L	38	10/01/19 10:53	10/09/19 1:51	ASBPROC-800PFAS
754-91-6	FOSA	40	U	ng/L	40	10/01/19 10:53	10/09/19 1:51	ASBPROC-800PFAS
13252-13-6	HFPO-DA	40	U	ng/L	40	10/01/19 10:53	10/09/19 1:51	ASBPROC-800PFAS
2991-50-6	N-EtFOSAA	160	U, J, Y-2	ng/L	160	10/01/19 10:53	10/09/19 1:51	ASBPROC-800PFAS
2355-31-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:53	10/09/19 1:51	ASBPROC-800PFAS
375-22-4	PFBA	40	U	ng/L	40	10/01/19 10:53	10/09/19 1:51	ASBPROC-800PFAS
375-73-5	PFBS	41		ng/L	35	10/01/19 10:53	10/09/19 1:51	ASBPROC-800PFAS
335-76-2	PFDA	160	U	ng/L	160	10/01/19 10:53	10/09/19 1:51	ASBPROC-800PFAS
307-55-1	PFDoA	40	U	ng/L	40	10/01/19 10:53	10/09/19 1:51	ASBPROC-800PFAS
335-77-3	PFDS	38	U	ng/L	38	10/01/19 10:53	10/09/19 1:51	ASBPROC-800PFAS
375-85-9	PFHpA	40	U	ng/L	40	10/01/19 10:53	10/09/19 1:51	ASBPROC-800PFAS
375-92-8	PFHpS	38	U	ng/L	38	10/01/19 10:53	10/09/19 1:51	ASBPROC-800PFAS
307-24-4	PFHxA	40	U	ng/L	40	10/01/19 10:53	10/09/19 1:51	ASBPROC-800PFAS
355-46-4	PFHxS	36	U	ng/L	36	10/01/19 10:53	10/09/19 1:51	ASBPROC-800PFAS
375-95-1	PFNA	40	U	ng/L	40	10/01/19 10:53	10/09/19 1:51	ASBPROC-800PFAS
68259-12-1	PFNS	38	U	ng/L	38	10/01/19 10:53	10/09/19 1:51	ASBPROC-800PFAS
335-67-1	PFOA	40	U	ng/L	40	10/01/19 10:53	10/09/19 1:51	ASBPROC-800PFAS
1763-23-1	PFOS	37	U	ng/L	37	10/01/19 10:53	10/09/19 1:51	ASBPROC-800PFAS

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Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CRI-DUP-0916 **Lab ID:** E193805-18

Station ID: CRI **Matrix:** Surface Water

Date Collected: 9/16/19 13:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-90-3	PFPeA	23	J, Q-2	ng/L	40	10/01/19 10:53	10/09/19 1:51	ASBPROC-800PFAS
2706-91-4	PFPeS	37	U	ng/L	37	10/01/19 10:53	10/09/19 1:51	ASBPROC-800PFAS
376-06-7	PFTeDA	160	U, J, QS-5, Y-2	ng/L	160	10/01/19 10:53	10/09/19 1:51	ASBPROC-800PFAS
72629-94-8	PFTrDA	40	U	ng/L	40	10/01/19 10:53	10/09/19 1:51	ASBPROC-800PFAS
2058-94-8	PFUdA	40	U	ng/L	40	10/01/19 10:53	10/09/19 1:51	ASBPROC-800PFAS

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Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CRI-F-0916 **Lab ID:** E193805-19

Station ID: CRI **Matrix:** Surface Water

Date Collected: 9/16/19 12:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	37	U	ng/L	37	10/01/19 10:53	10/09/19 2:11	ASBPROC-800PFAS
27619-97-2	6:2FTS	38	U	ng/L	38	10/01/19 10:53	10/09/19 2:11	ASBPROC-800PFAS
39108-34-4	8:2FTS	38	U	ng/L	38	10/01/19 10:53	10/09/19 2:11	ASBPROC-800PFAS
754-91-6	FOSA	40	U	ng/L	40	10/01/19 10:53	10/09/19 2:11	ASBPROC-800PFAS
13252-13-6	HFPO-DA	40	U	ng/L	40	10/01/19 10:53	10/09/19 2:11	ASBPROC-800PFAS
2991-50-6	N-EtFOSAA	160	U, J, Y-2	ng/L	160	10/01/19 10:53	10/09/19 2:11	ASBPROC-800PFAS
2355-31-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:53	10/09/19 2:11	ASBPROC-800PFAS
375-22-4	PFBA	40	U	ng/L	40	10/01/19 10:53	10/09/19 2:11	ASBPROC-800PFAS
375-73-5	PFBS	41		ng/L	35	10/01/19 10:53	10/09/19 2:11	ASBPROC-800PFAS
335-76-2	PFDA	160	U	ng/L	160	10/01/19 10:53	10/09/19 2:11	ASBPROC-800PFAS
307-55-1	PFDoA	40	U	ng/L	40	10/01/19 10:53	10/09/19 2:11	ASBPROC-800PFAS
335-77-3	PFDS	38	U	ng/L	38	10/01/19 10:53	10/09/19 2:11	ASBPROC-800PFAS
375-85-9	PFHpA	40	U	ng/L	40	10/01/19 10:53	10/09/19 2:11	ASBPROC-800PFAS
375-92-8	PFHpS	38	U	ng/L	38	10/01/19 10:53	10/09/19 2:11	ASBPROC-800PFAS
307-24-4	PFHxA	40	U	ng/L	40	10/01/19 10:53	10/09/19 2:11	ASBPROC-800PFAS
355-46-4	PFHxS	36	U	ng/L	36	10/01/19 10:53	10/09/19 2:11	ASBPROC-800PFAS
375-95-1	PFNA	40	U	ng/L	40	10/01/19 10:53	10/09/19 2:11	ASBPROC-800PFAS
68259-12-1	PFNS	38	U	ng/L	38	10/01/19 10:53	10/09/19 2:11	ASBPROC-800PFAS
335-67-1	PFOA	40	U	ng/L	40	10/01/19 10:53	10/09/19 2:11	ASBPROC-800PFAS
1763-23-1	PFOS	37	U	ng/L	37	10/01/19 10:53	10/09/19 2:11	ASBPROC-800PFAS

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Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CRI-F-0916 **Lab ID:** E193805-19

Station ID: CRI **Matrix:** Surface Water

Date Collected: 9/16/19 12:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-90-3	PFPeA	25	J, Q-2	ng/L	40	10/01/19 10:53	10/09/19 2:11	ASBPROC-800PFAS
2706-91-4	PFPeS	37	U	ng/L	37	10/01/19 10:53	10/09/19 2:11	ASBPROC-800PFAS
376-06-7	PFTeDA	160	U, J, QS-5, Y-2	ng/L	160	10/01/19 10:53	10/09/19 2:11	ASBPROC-800PFAS
72629-94-8	PFTrDA	40	U	ng/L	40	10/01/19 10:53	10/09/19 2:11	ASBPROC-800PFAS
2058-94-8	PFUdA	40	U	ng/L	40	10/01/19 10:53	10/09/19 2:11	ASBPROC-800PFAS

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Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CRI-F-DUP-0916 **Lab ID:** E193805-20

Station ID: CRI **Matrix:** Surface Water

Date Collected: 9/16/19 13:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	37	U	ng/L	37	10/01/19 10:53	10/09/19 2:31	ASBPROC-800PFAS
27619-97-2	6:2FTS	38	U	ng/L	38	10/01/19 10:53	10/09/19 2:31	ASBPROC-800PFAS
39108-34-4	8:2FTS	38	U	ng/L	38	10/01/19 10:53	10/09/19 2:31	ASBPROC-800PFAS
754-91-6	FOSA	40	U	ng/L	40	10/01/19 10:53	10/09/19 2:31	ASBPROC-800PFAS
13252-13-6	HFPO-DA	40	U	ng/L	40	10/01/19 10:53	10/09/19 2:31	ASBPROC-800PFAS
2991-50-6	N-EtFOSAA	160	U, J, Y-2	ng/L	160	10/01/19 10:53	10/09/19 2:31	ASBPROC-800PFAS
2355-31-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:53	10/09/19 2:31	ASBPROC-800PFAS
375-22-4	PFBA	40	U	ng/L	40	10/01/19 10:53	10/09/19 2:31	ASBPROC-800PFAS
375-73-5	PFBS	35		ng/L	35	10/01/19 10:53	10/09/19 2:31	ASBPROC-800PFAS
335-76-2	PFDA	160	U	ng/L	160	10/01/19 10:53	10/09/19 2:31	ASBPROC-800PFAS
307-55-1	PFDoA	40	U	ng/L	40	10/01/19 10:53	10/09/19 2:31	ASBPROC-800PFAS
335-77-3	PFDS	38	U	ng/L	38	10/01/19 10:53	10/09/19 2:31	ASBPROC-800PFAS
375-85-9	PFHpA	40	U	ng/L	40	10/01/19 10:53	10/09/19 2:31	ASBPROC-800PFAS
375-92-8	PFHpS	38	U	ng/L	38	10/01/19 10:53	10/09/19 2:31	ASBPROC-800PFAS
307-24-4	PFHxA	40	U	ng/L	40	10/01/19 10:53	10/09/19 2:31	ASBPROC-800PFAS
355-46-4	PFHxS	36	U	ng/L	36	10/01/19 10:53	10/09/19 2:31	ASBPROC-800PFAS
375-95-1	PFNA	40	U	ng/L	40	10/01/19 10:53	10/09/19 2:31	ASBPROC-800PFAS
68259-12-1	PFNS	38	U	ng/L	38	10/01/19 10:53	10/09/19 2:31	ASBPROC-800PFAS
335-67-1	PFOA	40	U	ng/L	40	10/01/19 10:53	10/09/19 2:31	ASBPROC-800PFAS
1763-23-1	PFOS	37	U	ng/L	37	10/01/19 10:53	10/09/19 2:31	ASBPROC-800PFAS

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Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CRI-F-DUP-0916 **Lab ID:** E193805-20

Station ID: CRI **Matrix:** Surface Water

Date Collected: 9/16/19 13:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-90-3	PFPeA	26	J, Q-2	ng/L	40	10/01/19 10:53	10/09/19 2:31	ASBPROC-800PFAS
2706-91-4	PFPeS	37	U	ng/L	37	10/01/19 10:53	10/09/19 2:31	ASBPROC-800PFAS
376-06-7	PFTeDA	160	U, J, QS-5, Y-2	ng/L	160	10/01/19 10:53	10/09/19 2:31	ASBPROC-800PFAS
72629-94-8	PFTrDA	40	U	ng/L	40	10/01/19 10:53	10/09/19 2:31	ASBPROC-800PFAS
2058-94-8	PFUdA	40	U	ng/L	40	10/01/19 10:53	10/09/19 2:31	ASBPROC-800PFAS

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Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-OOST1-0916 **Lab ID:** E193805-23
Station ID: OOST1 **Matrix:** Surface Water

Date Collected: 9/17/19 9:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	37	U	ng/L	37	10/01/19 10:53	10/09/19 2:51	ASBPROC-800PFAS
27619-97-2	6:2FTS	38	U	ng/L	38	10/01/19 10:53	10/09/19 2:51	ASBPROC-800PFAS
39108-34-4	8:2FTS	38	U	ng/L	38	10/01/19 10:53	10/09/19 2:51	ASBPROC-800PFAS
754-91-6	FOSA	40	U	ng/L	40	10/01/19 10:53	10/09/19 2:51	ASBPROC-800PFAS
13252-13-6	HFPO-DA	40	U	ng/L	40	10/01/19 10:53	10/09/19 2:51	ASBPROC-800PFAS
2991-50-6	N-EtFOSAA	160	U, J, Y-2	ng/L	160	10/01/19 10:53	10/09/19 2:51	ASBPROC-800PFAS
2355-31-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:53	10/09/19 2:51	ASBPROC-800PFAS
375-22-4	PFBA	40	U	ng/L	40	10/01/19 10:53	10/09/19 2:51	ASBPROC-800PFAS
375-73-5	PFBS	190		ng/L	35	10/01/19 10:53	10/09/19 2:51	ASBPROC-800PFAS
335-76-2	PFDA	160	U	ng/L	160	10/01/19 10:53	10/09/19 2:51	ASBPROC-800PFAS
307-55-1	PFDoA	40	U	ng/L	40	10/01/19 10:53	10/09/19 2:51	ASBPROC-800PFAS
335-77-3	PFDS	38	U	ng/L	38	10/01/19 10:53	10/09/19 2:51	ASBPROC-800PFAS
375-85-9	PFHpA	18	J, Q-2	ng/L	40	10/01/19 10:53	10/09/19 2:51	ASBPROC-800PFAS
375-92-8	PFHpS	38	U	ng/L	38	10/01/19 10:53	10/09/19 2:51	ASBPROC-800PFAS
307-24-4	PFHxA	36	J, Q-2	ng/L	40	10/01/19 10:53	10/09/19 2:51	ASBPROC-800PFAS
355-46-4	PFHxS	36	U	ng/L	36	10/01/19 10:53	10/09/19 2:51	ASBPROC-800PFAS
375-95-1	PFNA	40	U	ng/L	40	10/01/19 10:53	10/09/19 2:51	ASBPROC-800PFAS
68259-12-1	PFNS	38	U	ng/L	38	10/01/19 10:53	10/09/19 2:51	ASBPROC-800PFAS
335-67-1	PFOA	41		ng/L	40	10/01/19 10:53	10/09/19 2:51	ASBPROC-800PFAS
1763-23-1	PFOS	31	J, Q-2	ng/L	37	10/01/19 10:53	10/09/19 2:51	ASBPROC-800PFAS

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Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-OOST1-0916 **Lab ID:** E193805-23

Station ID: OOST1 **Matrix:** Surface Water

Date Collected: 9/17/19 9:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-90-3	PFPeA	45		ng/L	40	10/01/19 10:53	10/09/19 2:51	ASBPROC-800PFAS
2706-91-4	PFPeS	37	U	ng/L	37	10/01/19 10:53	10/09/19 2:51	ASBPROC-800PFAS
376-06-7	PFTeDA	160	U, J, QS-5, Y-2	ng/L	160	10/01/19 10:53	10/09/19 2:51	ASBPROC-800PFAS
72629-94-8	PFTrDA	40	U	ng/L	40	10/01/19 10:53	10/09/19 2:51	ASBPROC-800PFAS
2058-94-8	PFUdA	40	U	ng/L	40	10/01/19 10:53	10/09/19 2:51	ASBPROC-800PFAS

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Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-OOST2-0916 **Lab ID:** E193805-25
Station ID: OOST2 **Matrix:** Surface Water

Date Collected: 9/16/19 16:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	37	U	ng/L	37	10/01/19 10:53	10/09/19 3:11	ASBPROC-800PFAS
27619-97-2	6:2FTS	38	U	ng/L	38	10/01/19 10:53	10/09/19 3:11	ASBPROC-800PFAS
39108-34-4	8:2FTS	38	U	ng/L	38	10/01/19 10:53	10/09/19 3:11	ASBPROC-800PFAS
754-91-6	FOSA	40	U	ng/L	40	10/01/19 10:53	10/09/19 3:11	ASBPROC-800PFAS
13252-13-6	HFPO-DA	40	U	ng/L	40	10/01/19 10:53	10/09/19 3:11	ASBPROC-800PFAS
2991-50-6	N-EtFOSAA	160	U, J, Y-2	ng/L	160	10/01/19 10:53	10/09/19 3:11	ASBPROC-800PFAS
2355-31-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:53	10/09/19 3:11	ASBPROC-800PFAS
375-22-4	PFBA	40	U	ng/L	40	10/01/19 10:53	10/09/19 3:11	ASBPROC-800PFAS
375-73-5	PFBS	210		ng/L	35	10/01/19 10:53	10/09/19 3:11	ASBPROC-800PFAS
335-76-2	PFDA	160	U	ng/L	160	10/01/19 10:53	10/09/19 3:11	ASBPROC-800PFAS
307-55-1	PFDoA	40	U	ng/L	40	10/01/19 10:53	10/09/19 3:11	ASBPROC-800PFAS
335-77-3	PFDS	38	U	ng/L	38	10/01/19 10:53	10/09/19 3:11	ASBPROC-800PFAS
375-85-9	PFHpA	18	J, Q-2	ng/L	40	10/01/19 10:53	10/09/19 3:11	ASBPROC-800PFAS
375-92-8	PFHpS	38	U	ng/L	38	10/01/19 10:53	10/09/19 3:11	ASBPROC-800PFAS
307-24-4	PFHxA	35	J, Q-2	ng/L	40	10/01/19 10:53	10/09/19 3:11	ASBPROC-800PFAS
355-46-4	PFHxS	36	U	ng/L	36	10/01/19 10:53	10/09/19 3:11	ASBPROC-800PFAS
375-95-1	PFNA	40	U	ng/L	40	10/01/19 10:53	10/09/19 3:11	ASBPROC-800PFAS
68259-12-1	PFNS	38	U	ng/L	38	10/01/19 10:53	10/09/19 3:11	ASBPROC-800PFAS
335-67-1	PFOA	43		ng/L	40	10/01/19 10:53	10/09/19 3:11	ASBPROC-800PFAS
1763-23-1	PFOS	110		ng/L	37	10/01/19 10:53	10/09/19 3:11	ASBPROC-800PFAS

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Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-OOST2-0916 **Lab ID:** E193805-25

Station ID: OOST2 **Matrix:** Surface Water

Date Collected: 9/16/19 16:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-90-3	PFPeA	47		ng/L	40	10/01/19 10:53	10/09/19 3:11	ASBPROC-800PFAS
2706-91-4	PFPeS	37	U	ng/L	37	10/01/19 10:53	10/09/19 3:11	ASBPROC-800PFAS
376-06-7	PFTeDA	160	U, J, QS-5, Y-2	ng/L	160	10/01/19 10:53	10/09/19 3:11	ASBPROC-800PFAS
72629-94-8	PFTrDA	40	U	ng/L	40	10/01/19 10:53	10/09/19 3:11	ASBPROC-800PFAS
2058-94-8	PFUdA	40	U	ng/L	40	10/01/19 10:53	10/09/19 3:11	ASBPROC-800PFAS

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Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-OOST3-0916 **Lab ID:** E193805-27
Station ID: OOST3 **Matrix:** Surface Water

Date Collected: 9/16/19 15:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	37	U	ng/L	37	10/01/19 10:53	10/09/19 3:31	ASBPROC-800PFAS
27619-97-2	6:2FTS	38	U	ng/L	38	10/01/19 10:53	10/09/19 3:31	ASBPROC-800PFAS
39108-34-4	8:2FTS	38	U	ng/L	38	10/01/19 10:53	10/09/19 3:31	ASBPROC-800PFAS
754-91-6	FOSA	40	U	ng/L	40	10/01/19 10:53	10/09/19 3:31	ASBPROC-800PFAS
13252-13-6	HFPO-DA	40	U	ng/L	40	10/01/19 10:53	10/09/19 3:31	ASBPROC-800PFAS
2991-50-6	N-EtFOSAA	160	U, J, Y-2	ng/L	160	10/01/19 10:53	10/09/19 3:31	ASBPROC-800PFAS
2355-31-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:53	10/09/19 3:31	ASBPROC-800PFAS
375-22-4	PFBA	40	U	ng/L	40	10/01/19 10:53	10/09/19 3:31	ASBPROC-800PFAS
375-73-5	PFBS	210		ng/L	35	10/01/19 10:53	10/09/19 3:31	ASBPROC-800PFAS
335-76-2	PFDA	160	U	ng/L	160	10/01/19 10:53	10/09/19 3:31	ASBPROC-800PFAS
307-55-1	PFDoA	40	U	ng/L	40	10/01/19 10:53	10/09/19 3:31	ASBPROC-800PFAS
335-77-3	PFDS	38	U	ng/L	38	10/01/19 10:53	10/09/19 3:31	ASBPROC-800PFAS
375-85-9	PFHpA	21	J, Q-2	ng/L	40	10/01/19 10:53	10/09/19 3:31	ASBPROC-800PFAS
375-92-8	PFHpS	38	U	ng/L	38	10/01/19 10:53	10/09/19 3:31	ASBPROC-800PFAS
307-24-4	PFHxA	46		ng/L	40	10/01/19 10:53	10/09/19 3:31	ASBPROC-800PFAS
355-46-4	PFHxS	36	U	ng/L	36	10/01/19 10:53	10/09/19 3:31	ASBPROC-800PFAS
375-95-1	PFNA	40	U	ng/L	40	10/01/19 10:53	10/09/19 3:31	ASBPROC-800PFAS
68259-12-1	PFNS	38	U	ng/L	38	10/01/19 10:53	10/09/19 3:31	ASBPROC-800PFAS
335-67-1	PFOA	53		ng/L	40	10/01/19 10:53	10/09/19 3:31	ASBPROC-800PFAS
1763-23-1	PFOS	48		ng/L	37	10/01/19 10:53	10/09/19 3:31	ASBPROC-800PFAS

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Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-OOST3-0916 **Lab ID:** E193805-27

Station ID: OOST3 **Matrix:** Surface Water

Date Collected: 9/16/19 15:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-90-3	PFPeA	61		ng/L	40	10/01/19 10:53	10/09/19 3:31	ASBPROC-800PFAS
2706-91-4	PFPeS	37	U	ng/L	37	10/01/19 10:53	10/09/19 3:31	ASBPROC-800PFAS
376-06-7	PFTeDA	160	U, J, QS-5, Y-2	ng/L	160	10/01/19 10:53	10/09/19 3:31	ASBPROC-800PFAS
72629-94-8	PFTrDA	40	U	ng/L	40	10/01/19 10:53	10/09/19 3:31	ASBPROC-800PFAS
2058-94-8	PFUdA	40	U	ng/L	40	10/01/19 10:53	10/09/19 3:31	ASBPROC-800PFAS

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Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-OOST3-F-0916 **Lab ID:** E193805-28

Station ID: OOST3 **Matrix:** Surface Water

Date Collected: 9/16/19 15:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	37	U	ng/L	37	10/01/19 10:53	10/09/19 3:51	ASBPROC-800PFAS
27619-97-2	6:2FTS	38	U	ng/L	38	10/01/19 10:53	10/09/19 3:51	ASBPROC-800PFAS
39108-34-4	8:2FTS	38	U	ng/L	38	10/01/19 10:53	10/09/19 3:51	ASBPROC-800PFAS
754-91-6	FOSA	40	U	ng/L	40	10/01/19 10:53	10/09/19 3:51	ASBPROC-800PFAS
13252-13-6	HFPO-DA	40	U	ng/L	40	10/01/19 10:53	10/09/19 3:51	ASBPROC-800PFAS
2991-50-6	N-EtFOSAA	160	U, J, Y-2	ng/L	160	10/01/19 10:53	10/09/19 3:51	ASBPROC-800PFAS
2355-31-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:53	10/09/19 3:51	ASBPROC-800PFAS
375-22-4	PFBA	40	U, J, QS-3	ng/L	40	10/01/19 10:53	10/09/19 3:51	ASBPROC-800PFAS
375-73-5	PFBS	100	J, QS-3	ng/L	35	10/01/19 10:53	10/09/19 3:51	ASBPROC-800PFAS
335-76-2	PFDA	160	U	ng/L	160	10/01/19 10:53	10/09/19 3:51	ASBPROC-800PFAS
307-55-1	PFDoA	40	U	ng/L	40	10/01/19 10:53	10/09/19 3:51	ASBPROC-800PFAS
335-77-3	PFDS	38	U	ng/L	38	10/01/19 10:53	10/09/19 3:51	ASBPROC-800PFAS
375-85-9	PFHpA	20	J, Q-2	ng/L	40	10/01/19 10:53	10/09/19 3:51	ASBPROC-800PFAS
375-92-8	PFHpS	38	U	ng/L	38	10/01/19 10:53	10/09/19 3:51	ASBPROC-800PFAS
307-24-4	PFHxA	35	J, Q-2	ng/L	40	10/01/19 10:53	10/09/19 3:51	ASBPROC-800PFAS
355-46-4	PFHxS	36	U	ng/L	36	10/01/19 10:53	10/09/19 3:51	ASBPROC-800PFAS
375-95-1	PFNA	40	U	ng/L	40	10/01/19 10:53	10/09/19 3:51	ASBPROC-800PFAS
68259-12-1	PFNS	38	U	ng/L	38	10/01/19 10:53	10/09/19 3:51	ASBPROC-800PFAS
335-67-1	PFOA	48		ng/L	40	10/01/19 10:53	10/09/19 3:51	ASBPROC-800PFAS
1763-23-1	PFOS	42		ng/L	37	10/01/19 10:53	10/09/19 3:51	ASBPROC-800PFAS

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Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-OOST3-F-0916 **Lab ID:** E193805-28

Station ID: OOST3 **Matrix:** Surface Water

Date Collected: 9/16/19 15:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-90-3	PFPeA	53		ng/L	40	10/01/19 10:53	10/09/19 3:51	ASBPROC-800PFAS
2706-91-4	PFPeS	37	U	ng/L	37	10/01/19 10:53	10/09/19 3:51	ASBPROC-800PFAS
376-06-7	PFTeDA	160	U, J, QS-5, Y-2	ng/L	160	10/01/19 10:53	10/09/19 3:51	ASBPROC-800PFAS
72629-94-8	PFTrDA	40	U	ng/L	40	10/01/19 10:53	10/09/19 3:51	ASBPROC-800PFAS
2058-94-8	PFUdA	40	U	ng/L	40	10/01/19 10:53	10/09/19 3:51	ASBPROC-800PFAS

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Semi Volatile Organics (SVOA) - Quality Control
US-EPA, Region 4, LSASD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1910004 - S PFC										
Blank (1910004-BLK1)				Prepared: 10/01/19 Analyzed: 10/08/19						
ASBPROC-800PFAS										
4:2FTS	U	37	ng/L							U
6:2FTS	U	38	"							U
8:2FTS	U	38	"							U
FOSA	U	40	"							U
HFPO-DA	U	40	"							U
N-EtFOSAA	U	160	"							Y-2, U
N-MeFOSAA	U	160	"							U
PFBA	U	40	"							U
PFBS	U	35	"							U
PFDA	U	160	"							U
PFDoA	U	40	"							U
PFDS	U	39	"							U
PFHpA	U	40	"							U
PFHpS	U	38	"							U
PFHxA	U	40	"							U
PFHxS	U	36	"							U
PFNA	U	40	"							U
PFNS	U	38	"							U
PFOA	U	40	"							U
PFOS	U	37	"							U
PFPeA	U	40	"							U
PFPeS	U	38	"							U
PFTeDA	U	160	"							Y-2, U
PFTrDA	U	40	"							U
PFUdA	U	40	"							U
LCS (1910004-BS1)				Prepared: 10/01/19 Analyzed: 10/08/19						
ASBPROC-800PFAS										
4:2FTS	383	37	ng/L	374.00		102	67.1-125			
6:2FTS	451	38	"	380.00		119	49.2-134			
8:2FTS	453	38	"	384.00		118	56.4-136			
FOSA	423	40	"	400.00		106	57.7-148			
HFPO-DA	315	40	"	400.00		78.8	51.1-127			
N-EtFOSAA	426	160	"	400.00		106	47.2-185.3			Y-2
N-MeFOSAA	399	160	"	400.00		99.9	43.2-178			
PFBA	388	40	"	400.00		97.0	67.9-118			
PFBS	316	35	"	354.00		89.4	68.2-118			
PFDA	411	160	"	400.00		103	47.4-162			
PFDoA	441	40	"	400.00		110	56.5-155			

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Semi Volatile Organics (SVOA) - Quality Control
US-EPA, Region 4, LSASD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1910004 - S PFC										
LCS (1910004-BS1)				Prepared: 10/01/19 Analyzed: 10/08/19						
PFDS	385	39	ng/L	386.00		99.8	35.1-168			
PFHpA	368	40	"	400.00		92.0	72.8-116			
PFHpS	366	38	"	380.00		96.3	59.7-130			
PFHxA	364	40	"	400.00		91.0	62.6-127			
PFHxS	340	36	"	364.80		93.3	69.5-117			
PFNA	380	40	"	400.00		95.1	64.1-128.4			
PFNS	338	38	"	384.00		87.9	63.3-126			
PFOA	389	40	"	400.00		97.3	66.7-122			
PFOS	350	37	"	370.20		94.6	70.4-122			
PFPeA	377	40	"	400.00		94.2	72-115			
PFPeS	345	38	"	376.00		91.6	69-117			
PFTeDA	436	160	"	400.00		109	42.9-179			Y-2
PFTrDA	505	40	"	400.00		126	32.2-215			
PFUdA	415	40	"	400.00		104	65.8-142			
Matrix Spike (1910004-MS1)		**Source: E193805-07**		Prepared: 10/01/19 Analyzed: 10/09/19						
ASBPROC-800PFAS										
4:2FTS	357	37	ng/L	337.55	U	106	70-133			
6:2FTS	384	38	"	342.96	U	112	58-143			
8:2FTS	349	38	"	346.57	U	101	66-126			
FOSA	382	40	"	361.01	U	106	61-138			
HFPO-DA	318	40	"	361.01	U	88.1	45-129			
N-EtFOSAA	391	160	"	361.01	U	108	50-168			Y-2
N-MeFOSAA	367	160	"	361.01	U	102	47-169			
PFBA	371	40	"	361.01	U	103	60-141			
PFBS	407	35	"	319.49	58.0	109	62-135			
PFDA	385	160	"	361.01	U	107	53-156			
PFDoA	354	40	"	361.01	U	97.9	30-172			
PFDS	361	38	"	348.38	U	104	44-151			
PFHpA	377	40	"	361.01	U	104	75-122			
PFHpS	367	38	"	342.96	U	107	66-132			
PFHxA	392	40	"	361.01	U	109	64-138			
PFHxS	351	36	"	329.24	U	107	72-124			
PFNA	379	40	"	361.01	U	105	72-129			
PFNS	329	38	"	346.57	U	95.1	61-126			
PFOA	402	40	"	361.01	U	111	74-127			
PFOS	351	37	"	334.12	U	105	68-132			
PFPeA	389	40	"	361.01	26.9	100	75-122			
PFPeS	326	37	"	339.35	U	96.1	72-122			
PFTeDA	293	160	"	361.01	U	81.1	10-194			Y-2

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Semi Volatile Organics (SVOA) - Quality Control
US-EPA, Region 4, LSASD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1910004 - S PFC										
Matrix Spike (1910004-MS1)	**Source: E193805-07**			Prepared: 10/01/19 Analyzed: 10/09/19						
PFTrDA	357	40	ng/L	361.01	U	99.0	10-193			
PFUdA	372	40	"	361.01	U	103	44-164			
Matrix Spike Dup (1910004-MSD1)	**Source: E193805-07**			Prepared: 10/01/19 Analyzed: 10/09/19						
ASBPROC-800PFAS										
4:2FTS	343	37	ng/L	316.41	U	108	70-133	4.19	34	
6:2FTS	352	38	"	321.49	U	110	58-143	8.53	45	
8:2FTS	349	38	"	324.87	U	107	66-126	0.232	56	
FOSA	376	40	"	338.41	U	111	61-138	1.47	39	
HFPO-DA	312	40	"	338.41	U	92.2	45-129	1.84	57	
N-EtFOSAA	383	160	"	338.41	U	113	50-168	1.99	53	Y-2
N-MeFOSAA	394	160	"	338.41	U	117	47-169	7.11	65	
PFBA	375	40	"	338.41	U	111	60-141	1.15	37	
PFBS	413	35	"	299.49	58.0	118	62-135	1.42	32	
PFDA	376	160	"	338.41	U	111	53-156	2.34	57	
PFDoA	381	40	"	338.41	U	113	30-172	7.52	56	
PFDS	384	39	"	326.57	U	118	44-151	6.24	66	
PFHpA	381	40	"	338.41	U	113	75-122	0.981	26	
PFHpS	354	38	"	321.49	U	110	66-132	3.63	28	
PFHxA	384	40	"	338.41	U	114	64-138	1.96	42	
PFHxS	340	36	"	308.63	U	110	72-124	3.36	32	
PFNA	370	40	"	338.41	U	109	72-129	2.37	31	
PFNS	342	38	"	324.87	U	105	61-126	3.64	35	
PFOA	387	40	"	338.41	U	114	74-127	3.71	32	
PFOS	345	37	"	313.20	U	110	68-132	1.75	37	
PFPeA	391	40	"	338.41	26.9	108	75-122	0.539	27	
PFPeS	348	38	"	318.10	U	109	72-122	6.52	29	
PFTeDA	367	160	"	338.41	U	108	10-194	22.5	111	Y-2
PFTrDA	400	40	"	338.41	U	118	10-193	11.1	106	
PFUdA	371	40	"	338.41	U	110	44-164	0.0590	48	

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Semi Volatile Organics (SVOA) - Quality Control
US-EPA, Region 4, LSASD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1910004 - S PFC										
MRL Verification (1910004-PS1)				Prepared: 10/01/19 Analyzed: 10/08/19						
ASBPROC-800PFAS										
4:2FTS	36.7	37	ng/L	37.400		98.1	47.1-145			MRL-2, Q-2, J
6:2FTS	49.1	38	"	38.000		129	29.2-154			MRL-2
8:2FTS	42.0	38	"	38.400		109	36.4-156			MRL-2
FOSA	45.0	40	"	40.000		112	37.7-168			MRL-2
HFPO-DA	43.0	40	"	40.000		108	31.3-147			MRL-2
PFBA	38.9	40	"	40.000		97.3	47.9-138			MRL-2, Q-2, J
PFBS	41.7	35	"	35.400		118	48.2-138			MRL-2
PFDoA	47.6	40	"	40.000		119	36.5-175			MRL-2
PFDS	47.0	39	"	38.600		122	15.1-188			MRL-2
PFHpA	50.2	40	"	40.000		126	52.8-136			MRL-2
PFHpS	47.3	38	"	38.000		125	39.7-150			MRL-2
PFHxA	47.3	40	"	40.000		118	42.6-147			MRL-2
PFHxS	43.6	36	"	36.480		120	49.5-138			MRL-2
PFNA	47.0	40	"	40.000		118	44.1-148			MRL-2
PFNS	44.3	38	"	38.400		115	43.3-146			MRL-2
PFOA	45.4	40	"	40.000		113	46.7-142			MRL-2
PFOS	44.7	37	"	37.020		121	50.4-142			MRL-2
PFPeA	47.0	40	"	40.000		117	52-135			MRL-2
PFPeS	45.7	38	"	37.600		121	49-137			MRL-2
PFTrDA	62.9	40	"	40.000		157	12.2-235			MRL-2
PFUdA	45.5	40	"	40.000		114	45.8-162			MRL-2
MRL Verification (1910004-PS2)				Prepared: 10/01/19 Analyzed: 10/08/19						
ASBPROC-800PFAS										
N-EtFOSAA	152	160	ng/L	160.00		95.0	27.2-205			MRL-2, Q-2, Y-2, J
N-MeFOSAA	156	160	"	160.00		97.7	23.2-198			MRL-2, Q-2, J
PFDA	158	160	"	160.00		98.8	27.4-182			MRL-2, Q-2, J
PFTeDA	210	160	"	160.00		131	22.9-199			MRL-2, Y-2

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Notes and Definitions for QC Samples

U	The analyte was not detected at or above the reporting limit.
J	The identification of the analyte is acceptable; the reported value is an estimate.
MRL-2	MRL verification for Non-Potable Water matrix
Q-2	Result greater than MDL but less than MRL.
Y-2	Data should be limited to screening purposes only

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October 18, 2019

MEMORANDUM

SUBJECT: FINAL Analytical Report
Project: 19-0457, PFAS Sediment Screening - Conasauga R

FROM: Jeffrey Hendel
LSB Organic Chemistry Section Chief

THRU: Sandra Aker, Chief
Laboratory Services Branch

TO: Nathan Barlet

Attached are the final results for the analytical groups listed below. This report shall not be reproduced except in full without approval of the Region 4 laboratory. These analyses were performed in accordance with the Laboratory Services Branch's Laboratory Operations and Quality Assurance Manual (LSB LOQAM) found at www.epa.gov/region4/sesd/asbsop. Any unique project data quality objectives specified in writing by the data requestor have also been incorporated into the data unless otherwise noted in the Report Narrative. Chemistry data have been verified based on the LSB LOQAM specifications and have been qualified by this laboratory if the applicable quality control criteria were not met. Verification is defined in Chapter 5 of the LSB LOQAM. For a listing of specific data qualifiers and explanations, please refer to the Data Qualifier Definitions included in this report. The reported results are accurate within the limits of the method(s) and are representative only of the samples as received by the laboratory.

Analyses Included in this report:	Method Used:	Accreditations:
Semi Volatile Organics (SVOA)		
PFAS	ASBPROC-800PFAS (Water)	

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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Sample Disposal Policy

Due to limited space for long term sample storage, LSB's policy is to dispose of samples on a periodic schedule. Air samples collected in summa canisters will be disposed of 30 days following the issuance of this report. All other sample media including original samples, sample extracts and or digestates will be disposed of, in accordance with applicable regulations, 60 days from the date of this report.

This sample disposal policy does not apply to criminal samples which are held until the laboratory is notified by the criminal investigators that case development and litigation are complete.

These samples may be held in the laboratory's custody for a longer period of time. If samples require storage beyond the 60-day period, please contact the Sample Control Coordinator by e-mail at R4SampleCustody@epa.gov.

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SAMPLES INCLUDED IN THIS REPORT

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID	Laboratory ID	Matrix	Date Collected	Date Received
19-0457-buck-blk-0911	E193703-01	Equipment Rinse Blank	9/11/19 14:38	9/11/19 16:58
19-0457-filter-blk-0911	E193703-02	Equipment Rinse Blank	9/11/19 16:10	9/11/19 16:58
19-0457-ponar-blk-0911	E193703-03	Equipment Rinse Blank	9/11/19 14:45	9/11/19 16:58

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DATA QUALIFIER DEFINITIONS

U	The analyte was not detected at or above the reporting limit.
J	The identification of the analyte is acceptable; the reported value is an estimate.
QC-1	Analyte concentration low in continuing calibration verification standard
QC-3	Analyte calibration criteria not met
QC-5	Calibration check standard less than method control limits.
Y-2	Data should be limited to screening purposes only

ACRONYMS AND ABBREVIATIONS

CAS Chemical Abstracts Service

Note: Analytes with no known CAS identifiers have been assigned codes beginning with "E", the EPA ID as assigned by the EPA Substance Registry System (www.epa.gov/srs), or beginning with "R4-", a unique identifier assigned by the EPA Region 4 laboratory.

MDL Method Detection Limit - The minimum concentration of a substance (an analyte) that can be measured and reported with a 99% confidence that the analyte concentration is greater than zero.

MRL Minimum Reporting Limit - Analyte concentration that corresponds to the lowest demonstrated level of acceptable quantitation. The MRL is sample-specific and accounts for preparation weights and volumes, dilutions, and moisture content of soil/sediments.

TIC Tentatively Identified Compound - An analyte identified based on a match with the instrument software's mass spectral library. A calibration standard has not been analyzed to confirm the compound's identification or the estimated concentration reported.

ACCREDITATIONS:

ISO ASB is accredited by ISO/IEC 17025, including an amplification for forensic accreditation through ANSI-ASQ National Accreditation Board.

Refer to the certificate and scope of accreditation AT-1644 at:
http://www.epa.gov/aboutepa/about-region-4s-science-and-ecosystem-support-division-sesd

NR The EPA Region 4 Laboratory has not requested accreditation for this test.

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Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-buck-blk-0911 **Lab ID:** E193703-01

Station ID: **Matrix:** Equipment Rinse Blank

Date Collected: 9/11/19 14:38

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	37	U	ng/L	37	9/13/19 16:45	9/19/19 1:14	ASBPROC-800PFAS
27619-97-2	6:2FTS	38	U	ng/L	38	9/13/19 16:45	9/19/19 1:14	ASBPROC-800PFAS
39108-34-4	8:2FTS	38	U	ng/L	38	9/13/19 16:45	9/19/19 1:14	ASBPROC-800PFAS
754-91-6	FOSA	40	U	ng/L	40	9/13/19 16:45	9/19/19 1:14	ASBPROC-800PFAS
13252-13-6	HFPO-DA	40	U	ng/L	40	9/13/19 16:45	9/19/19 1:14	ASBPROC-800PFAS
2991-50-6	N-EtFOSAA	160	U, J, Y-2	ng/L	160	9/13/19 16:45	9/23/19 17:58	ASBPROC-800PFAS
2355-31-9	N-MeFOSAA	160	U	ng/L	160	9/13/19 16:45	9/19/19 1:14	ASBPROC-800PFAS
375-22-4	PFBA	40	U	ng/L	40	9/13/19 16:45	9/19/19 1:14	ASBPROC-800PFAS
375-73-5	PFBS	35	U	ng/L	35	9/13/19 16:45	9/19/19 1:14	ASBPROC-800PFAS
335-76-2	PFDA	160	U	ng/L	160	9/13/19 16:45	9/19/19 1:14	ASBPROC-800PFAS
307-55-1	PFDoA	40	U	ng/L	40	9/13/19 16:45	9/19/19 1:14	ASBPROC-800PFAS
335-77-3	PFDS	38	U	ng/L	38	9/13/19 16:45	9/19/19 1:14	ASBPROC-800PFAS
375-85-9	PFHpA	40	U	ng/L	40	9/13/19 16:45	9/19/19 1:14	ASBPROC-800PFAS
375-92-8	PFHpS	38	U	ng/L	38	9/13/19 16:45	9/19/19 1:14	ASBPROC-800PFAS
307-24-4	PFHxA	40	U	ng/L	40	9/13/19 16:45	9/19/19 1:14	ASBPROC-800PFAS
355-46-4	PFHxS	36	U	ng/L	36	9/13/19 16:45	9/19/19 1:14	ASBPROC-800PFAS
375-95-1	PFNA	40	U	ng/L	40	9/13/19 16:45	9/19/19 1:14	ASBPROC-800PFAS
68259-12-1	PFNS	38	U	ng/L	38	9/13/19 16:45	9/19/19 1:14	ASBPROC-800PFAS
335-67-1	PFOA	40	U	ng/L	40	9/13/19 16:45	9/19/19 1:14	ASBPROC-800PFAS
1763-23-1	PFOS	37	U	ng/L	37	9/13/19 16:45	9/19/19 1:14	ASBPROC-800PFAS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Laboratory Services and Applied Science Division
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D.A.R.T. Id: 19-0457
Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Jeffrey Hendel

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-buck-blk-0911 **Lab ID:** E193703-01

Station ID: **Matrix:** Equipment Rinse Blank

Date Collected: 9/11/19 14:38

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-90-3	PFPeA	40	U	ng/L	40	9/13/19 16:45	9/19/19 1:14	ASBPROC-800PFAS
2706-91-4	PFPeS	37	U	ng/L	37	9/13/19 16:45	9/19/19 1:14	ASBPROC-800PFAS
376-06-7	PFTeDA	160	U, J, QC-1, QC-3, QC-5, Y-2	ng/L	160	9/13/19 16:45	9/23/19 17:58	ASBPROC-800PFAS
72629-94-8	PFTrDA	40	U, J, QC-3	ng/L	40	9/13/19 16:45	9/19/19 1:14	ASBPROC-800PFAS
2058-94-8	PFUdA	40	U	ng/L	40	9/13/19 16:45	9/19/19 1:14	ASBPROC-800PFAS

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Region 4 Laboratory Services and Applied Science Division
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Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-filter-blk-0911 **Lab ID:** E193703-02

Station ID: **Matrix:** Equipment Rinse Blank

Date Collected: 9/11/19 16:10

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	38	U	ng/L	38	9/13/19 16:45	9/19/19 1:34	ASBPROC-800PFAS
27619-97-2	6:2FTS	38	U	ng/L	38	9/13/19 16:45	9/19/19 1:34	ASBPROC-800PFAS
39108-34-4	8:2FTS	39	U	ng/L	39	9/13/19 16:45	9/19/19 1:34	ASBPROC-800PFAS
754-91-6	FOSA	40	U	ng/L	40	9/13/19 16:45	9/19/19 1:34	ASBPROC-800PFAS
13252-13-6	HFPO-DA	40	U	ng/L	40	9/13/19 16:45	9/19/19 1:34	ASBPROC-800PFAS
2991-50-6	N-EtFOSAA	160	U, J, Y-2	ng/L	160	9/13/19 16:45	9/20/19 22:53	ASBPROC-800PFAS
2355-31-9	N-MeFOSAA	160	U	ng/L	160	9/13/19 16:45	9/19/19 1:34	ASBPROC-800PFAS
375-22-4	PFBA	40	U	ng/L	40	9/13/19 16:45	9/19/19 1:34	ASBPROC-800PFAS
375-73-5	PFBS	36	U	ng/L	36	9/13/19 16:45	9/19/19 1:34	ASBPROC-800PFAS
335-76-2	PFDA	160	U	ng/L	160	9/13/19 16:45	9/19/19 1:34	ASBPROC-800PFAS
307-55-1	PFDoA	40	U	ng/L	40	9/13/19 16:45	9/19/19 1:34	ASBPROC-800PFAS
335-77-3	PFDS	39	U	ng/L	39	9/13/19 16:45	9/19/19 1:34	ASBPROC-800PFAS
375-85-9	PFHpA	40	U	ng/L	40	9/13/19 16:45	9/19/19 1:34	ASBPROC-800PFAS
375-92-8	PFHpS	38	U	ng/L	38	9/13/19 16:45	9/19/19 1:34	ASBPROC-800PFAS
307-24-4	PFHxA	40	U	ng/L	40	9/13/19 16:45	9/19/19 1:34	ASBPROC-800PFAS
355-46-4	PFHxS	37	U	ng/L	37	9/13/19 16:45	9/19/19 1:34	ASBPROC-800PFAS
375-95-1	PFNA	40	U	ng/L	40	9/13/19 16:45	9/19/19 1:34	ASBPROC-800PFAS
68259-12-1	PFNS	39	U	ng/L	39	9/13/19 16:45	9/19/19 1:34	ASBPROC-800PFAS
335-67-1	PFOA	40	U	ng/L	40	9/13/19 16:45	9/19/19 1:34	ASBPROC-800PFAS
1763-23-1	PFOS	37	U	ng/L	37	9/13/19 16:45	9/19/19 1:34	ASBPROC-800PFAS

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Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-filter-blk-0911 **Lab ID:** E193703-02

Station ID: **Matrix:** Equipment Rinse Blank

Date Collected: 9/11/19 16:10

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-90-3	PFPeA	40	U	ng/L	40	9/13/19 16:45	9/19/19 1:34	ASBPROC-800PFAS
2706-91-4	PFPeS	38	U	ng/L	38	9/13/19 16:45	9/19/19 1:34	ASBPROC-800PFAS
376-06-7	PFTeDA	160	U, J, QC-1, QC-3, Y-2	ng/L	160	9/13/19 16:45	9/20/19 22:53	ASBPROC-800PFAS
72629-94-8	PFTrDA	40	U, J, QC-3	ng/L	40	9/13/19 16:45	9/19/19 1:34	ASBPROC-800PFAS
2058-94-8	PFUdA	40	U	ng/L	40	9/13/19 16:45	9/19/19 1:34	ASBPROC-800PFAS

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Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-ponar-blk-0911 **Lab ID:** E193703-03

Station ID: **Matrix:** Equipment Rinse Blank

Date Collected: 9/11/19 14:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	38	U	ng/L	38	9/13/19 16:45	9/19/19 1:54	ASBPROC-800PFAS
27619-97-2	6:2FTS	38	U	ng/L	38	9/13/19 16:45	9/19/19 1:54	ASBPROC-800PFAS
39108-34-4	8:2FTS	39	U	ng/L	39	9/13/19 16:45	9/19/19 1:54	ASBPROC-800PFAS
754-91-6	FOSA	40	U	ng/L	40	9/13/19 16:45	9/19/19 1:54	ASBPROC-800PFAS
13252-13-6	HFPO-DA	40	U	ng/L	40	9/13/19 16:45	9/19/19 1:54	ASBPROC-800PFAS
2991-50-6	N-EtFOSAA	160	U, J, Y-2	ng/L	160	9/13/19 16:45	9/20/19 23:13	ASBPROC-800PFAS
2355-31-9	N-MeFOSAA	160	U	ng/L	160	9/13/19 16:45	9/19/19 1:54	ASBPROC-800PFAS
375-22-4	PFBA	40	U	ng/L	40	9/13/19 16:45	9/19/19 1:54	ASBPROC-800PFAS
375-73-5	PFBS	36	U	ng/L	36	9/13/19 16:45	9/19/19 1:54	ASBPROC-800PFAS
335-76-2	PFDA	160	U	ng/L	160	9/13/19 16:45	9/19/19 1:54	ASBPROC-800PFAS
307-55-1	PFDoA	40	U	ng/L	40	9/13/19 16:45	9/19/19 1:54	ASBPROC-800PFAS
335-77-3	PFDS	39	U	ng/L	39	9/13/19 16:45	9/19/19 1:54	ASBPROC-800PFAS
375-85-9	PFHpA	40	U	ng/L	40	9/13/19 16:45	9/19/19 1:54	ASBPROC-800PFAS
375-92-8	PFHpS	38	U	ng/L	38	9/13/19 16:45	9/19/19 1:54	ASBPROC-800PFAS
307-24-4	PFHxA	40	U	ng/L	40	9/13/19 16:45	9/19/19 1:54	ASBPROC-800PFAS
355-46-4	PFHxS	37	U	ng/L	37	9/13/19 16:45	9/19/19 1:54	ASBPROC-800PFAS
375-95-1	PFNA	40	U	ng/L	40	9/13/19 16:45	9/19/19 1:54	ASBPROC-800PFAS
68259-12-1	PFNS	39	U	ng/L	39	9/13/19 16:45	9/19/19 1:54	ASBPROC-800PFAS
335-67-1	PFOA	40	U	ng/L	40	9/13/19 16:45	9/19/19 1:54	ASBPROC-800PFAS
1763-23-1	PFOS	37	U	ng/L	37	9/13/19 16:45	9/19/19 1:54	ASBPROC-800PFAS

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Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-ponar-blk-0911 **Lab ID:** E193703-03

Station ID: **Matrix:** Equipment Rinse Blank

Date Collected: 9/11/19 14:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-90-3	PFPeA	40	U	ng/L	40	9/13/19 16:45	9/19/19 1:54	ASBPROC-800PFAS
2706-91-4	PFPeS	38	U	ng/L	38	9/13/19 16:45	9/19/19 1:54	ASBPROC-800PFAS
376-06-7	PFTeDA	160	U, J, Y-2, QC-1, QC-3	ng/L	160	9/13/19 16:45	9/20/19 23:13	ASBPROC-800PFAS
72629-94-8	PFTrDA	40	U, J, QC-3	ng/L	40	9/13/19 16:45	9/19/19 1:54	ASBPROC-800PFAS
2058-94-8	PFUdA	40	U	ng/L	40	9/13/19 16:45	9/19/19 1:54	ASBPROC-800PFAS

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Semi Volatile Organics (SVOA) - Quality Control
US-EPA, Region 4, LSASD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1909026 - S PFC										
Blank (1909026-BLK1)				Prepared: 09/13/19 Analyzed: 09/18/19						
ASBPROC-800PFAS										
4:2FTS	U	37	ng/L							U
6:2FTS	U	38	"							U
8:2FTS	U	38	"							U
FOSA	U	40	"							U
HFPO-DA	U	40	"							U
N-EtFOSAA	U	160	"							Y-2, U
N-MeFOSAA	U	160	"							U
PFBA	U	40	"							U
PFBS	U	35	"							U
PFDA	U	160	"							U
PFDoA	U	40	"							U
PFDS	U	39	"							U
PFHpA	U	40	"							U
PFHpS	U	38	"							U
PFHxA	U	40	"							U
PFHxS	U	36	"							U
PFNA	U	40	"							U
PFNS	U	38	"							U
PFOA	U	40	"							U
PFOS	U	37	"							U
PFPeA	U	40	"							U
PFPeS	U	38	"							U
PFTeDA	U	160	"							QC-1, QC-3, Y-2, U
PFTrDA	U	40	"							QC-3, U
PFUdA	U	40	"							U
LCS (1909026-BS1)				Prepared: 09/13/19 Analyzed: 09/18/19						
ASBPROC-800PFAS										
4:2FTS	467	37	ng/L	374.00		125	67.1-125			
6:2FTS	457	38	"	380.00		120	49.2-134			
8:2FTS	414	38	"	384.00		108	56.4-136			
FOSA	422	40	"	400.00		105	57.7-148			
HFPO-DA	366	40	"	400.00		91.4	51.1-127			
N-EtFOSAA	453	160	"	400.00		113	47.2-185.3			Y-2
N-MeFOSAA	426	160	"	400.00		107	43.2-178			
PFBA	451	40	"	400.00		113	67.9-118			
PFBS	414	35	"	354.00		117	68.2-118			

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Semi Volatile Organics (SVOA) - Quality Control
US-EPA, Region 4, LSASD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1909026 - S PFC										
LCS (1909026-BS1)				Prepared: 09/13/19 Analyzed: 09/18/19						
PFDA	456	160	ng/L	400.00		114	47.4-162			
PFDoA	442	40	"	400.00		110	56.5-155			
PFDS	445	39	"	386.00		115	35.1-168			
PFHpA	461	40	"	400.00		115	72.8-116			
PFHpS	441	38	"	380.00		116	59.7-130			
PFHxA	484	40	"	400.00		121	62.6-127			
PFHxS	437	36	"	364.80		120	69.5-117			QL-2
PFNA	460	40	"	400.00		115	64.1-128.4			
PFNS	402	38	"	384.00		105	63.3-126			
PFOA	457	40	"	400.00		114	66.7-122			
PFOS	414	37	"	370.20		112	70.4-122			
PFPeA	459	40	"	400.00		115	72-115			
PFPeS	434	38	"	376.00		115	69-117			
PFTeDA	484	160	"	400.00		121	42.9-179			QC-1, QC-3, Y-2
PFTrDA	485	40	"	400.00		121	32.2-215			QC-3
PFUdA	477	40	"	400.00		119	65.8-142			
Matrix Spike (1909026-MS1)		**Source: E193701-01**		Prepared: 09/13/19 Analyzed: 09/19/19						
ASBPROC-800PFAS										
4:2FTS	456	38	ng/L	382.41	U	119	70-133			
6:2FTS	474	38	"	388.55	U	122	58-143			
8:2FTS	438	39	"	392.64	U	112	66-126			
FOSA	458	40	"	409.00	U	112	61-138			
HFPO-DA	919	40	"	409.00	549	90.3	45-129			
N-MeFOSAA	491	160	"	409.00	U	120	47-169			
PFBA	461	40	"	409.00	U	113	60-141			
PFBS	412	36	"	361.96	U	114	62-135			
PFDA	493	160	"	409.00	U	121	53-156			
PFDoA	466	40	"	409.00	U	114	30-172			
PFDS	467	39	"	394.68	U	118	44-151			
PFHpA	495	40	"	409.00	18.8	117	75-122			
PFHpS	454	38	"	388.55	U	117	66-132			
PFHxA	501	40	"	409.00	U	123	64-138			
PFHxS	454	37	"	373.01	U	122	72-124			
PFNA	487	40	"	409.00	U	119	72-129			
PFNS	409	39	"	392.64	U	104	61-126			
PFOA	498	40	"	409.00	U	122	74-127			
PFOS	443	37	"	378.53	U	117	68-132			

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Semi Volatile Organics (SVOA) - Quality Control
US-EPA, Region 4, LSASD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1909026 - S PFC										
Matrix Spike (1909026-MS1)	**Source: E193701-01**			Prepared: 09/13/19 Analyzed: 09/19/19						
PFPeA	508	40	ng/L	409.00	30.4	117	75-122			
PFPeS	442	38	"	384.46	U	115	72-122			
PFTrDA	528	40	"	409.00	U	129	10-193			QC-3
PFUdA	486	40	"	409.00	U	119	44-164			
Matrix Spike Dup (1909026-MSD1)	**Source: E193701-01**			Prepared: 09/13/19 Analyzed: 09/19/19						
ASBPROC-800PFAS										
4:2FTS	455	37	ng/L	374.75	U	121	70-133	0.310	34	
6:2FTS	508	38	"	380.76	U	133	58-143	6.84	45	
8:2FTS	431	38	"	384.77	U	112	66-126	1.75	56	
FOSA	451	40	"	400.80	U	112	61-138	1.68	39	
HFPO-DA	899	40	"	400.80	549	87.2	45-129	2.19	57	
N-MeFOSAA	490	160	"	400.80	U	122	47-169	0.216	65	
PFBA	467	40	"	400.80	U	117	60-141	1.24	37	
PFBS	424	35	"	354.71	U	120	62-135	2.88	32	
PFDA	468	160	"	400.80	U	117	53-156	5.32	57	
PFDoA	479	40	"	400.80	U	120	30-172	2.76	56	
PFDS	457	39	"	386.77	U	118	44-151	2.03	66	
PFHpA	492	40	"	400.80	18.8	118	75-122	0.722	26	
PFHpS	453	38	"	380.76	U	119	66-132	0.248	28	
PFHxA	490	40	"	400.80	U	122	64-138	2.28	42	
PFHxS	441	37	"	365.53	U	121	72-124	2.87	32	
PFNA	487	40	"	400.80	U	121	72-129	0.0107	31	
PFNS	402	38	"	384.77	U	104	61-126	1.82	35	
PFOA	489	40	"	400.80	U	122	74-127	1.97	32	
PFOS	441	37	"	370.94	U	119	68-132	0.375	37	
PFPeA	498	40	"	400.80	30.4	117	75-122	1.96	27	
PFPeS	446	38	"	376.75	U	118	72-122	0.874	29	
PFTrDA	509	40	"	400.80	U	127	10-193	3.69	106	QC-3
PFUdA	507	40	"	400.80	U	126	44-164	4.14	48	

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Semi Volatile Organics (SVOA) - Quality Control
US-EPA, Region 4, LSASD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1909026 - S PFC										
MRL Verification (1909026-PS1)				Prepared: 09/13/19 Analyzed: 09/18/19						
ASBPROC-800PFAS										
4:2FTS	44.4	37	ng/L	37.400		119	47.1-145			MRL-2
6:2FTS	42.5	38	"	38.000		112	29.2-154			MRL-2
8:2FTS	37.0	38	"	38.400		96.3	36.4-156			MRL-2, Q-2, J
FOSA	37.8	40	"	40.000		94.5	37.7-168			MRL-2, Q-2, J
HFPO-DA	26.1	40	"	40.000		65.3	31.3-147			MRL-2, Q-2, J
PFBA	43.4	40	"	40.000		108	47.9-138			MRL-2
PFBS	36.4	35	"	35.400		103	48.2-138			MRL-2
PFDoA	37.6	40	"	40.000		94.0	36.5-175			MRL-2, Q-2, J
PFDS	39.8	39	"	38.600		103	15.1-188			MRL-2
PFHpA	42.5	40	"	40.000		106	52.8-136			MRL-2
PFHpS	39.3	38	"	38.000		103	39.7-150			MRL-2
PFHxA	45.9	40	"	40.000		115	42.6-147			MRL-2
PFHxS	44.9	36	"	36.480		123	49.5-138			MRL-2
PFNA	40.5	40	"	40.000		101	44.1-148			MRL-2
PFNS	41.2	38	"	38.400		107	43.3-146			MRL-2
PFOA	42.2	40	"	40.000		106	46.7-142			MRL-2
PFOS	43.3	37	"	37.020		117	50.4-142			MRL-2
PFPeA	40.9	40	"	40.000		102	52-135			MRL-2
PFPeS	36.2	38	"	37.600		96.4	49-137			MRL-2, Q-2, J
PFTrDA	43.8	40	"	40.000		109	12.2-235			MRL-2, QC-3
PFUdA	38.9	40	"	40.000		97.2	45.8-162			MRL-2, Q-2, J
MRL Verification (1909026-PS2)				Prepared: 09/13/19 Analyzed: 09/20/19						
ASBPROC-800PFAS										
N-EtFOSAA	133	160	ng/L	160.00		83.0	27.2-205			MRL-2, Q-2, Y-2, J
N-MeFOSAA	150	160	"	160.00		93.6	23.2-198			MRL-2, Q-2, J
PFDA	164	160	"	160.00		103	27.4-182			MRL-2
PFTeDA	90.9	160	"	160.00		56.8	22.9-199			MRL-2, Q-2, QC-1, QC-3, J, Y-2

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Notes and Definitions for QC Samples

U	The analyte was not detected at or above the reporting limit.
J	The identification of the analyte is acceptable; the reported value is an estimate.
MRL-2	MRL verification for Non-Potable Water matrix
Q-2	Result greater than MDL but less than MRL.
QC-1	Analyte concentration low in continuing calibration verification standard
QC-3	Analyte calibration criteria not met
QL-2	Laboratory Control Spike Recovery greater than method control limits
Y-2	Data should be limited to screening purposes only

Appendix B – Sediment PFAS Analytical Results

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Laboratory Services and Applied Science Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 19-0457
Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

October 18, 2019

4LSASD-LSB

MEMORANDUM

SUBJECT: FINAL Analytical Report
Project: 19-0457, PFAS Sediment Screening - Conasauga R

FROM: Diana Burdette
OCS Analyst

THRU: Jeffrey Hendel, Chief
LSB Organic Chemistry Section

TO: Nathan Barlet

Attached are the final results for the analytical groups listed below. This report shall not be reproduced except in full without approval of the Region 4 laboratory. These analyses were performed in accordance with the Laboratory Services Branch's Laboratory Operations and Quality Assurance Manual (LSB LOQAM) found at www.epa.gov/region4/sesd/asbsop. Any unique project data quality objectives specified in writing by the data requestor have also been incorporated into the data unless otherwise noted in the Report Narrative. Chemistry data have been verified based on the LSB LOQAM specifications and have been qualified by this laboratory if the applicable quality control criteria were not met. Verification is defined in Chapter 5 of the LSB LOQAM. For a listing of specific data qualifiers and explanations, please refer to the Data Qualifier Definitions included in this report. The reported results are accurate within the limits of the method(s) and are representative only of the samples as received by the laboratory.

Analyses Included in this report:	Method Used:	Accreditations:
Semi Volatile Organics (SVOA)		
PFAS	ASBPROC-800PFAS (Soil)	

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Sample Disposal Policy

Due to limited space for long term sample storage, LSB's policy is to dispose of samples on a periodic schedule. Air samples collected in summa canisters will be disposed of 30 days following the issuance of this report. All other sample media including original samples, sample extracts and or digestates will be disposed of, in accordance with applicable regulations, 60 days from the date of this report.

This sample disposal policy does not apply to criminal samples which are held until the laboratory is notified by the criminal investigators that case development and litigation are complete.

These samples may be held in the laboratory's custody for a longer period of time. If samples require storage beyond the 60-day period, please contact the Sample Control Coordinator by e-mail at R4SampleCustody@epa.gov.

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SAMPLES INCLUDED IN THIS REPORT

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID	Laboratory ID	Matrix	Date Collected	Date Received
19-0457-CONA1-S-0916	E193805-09	Sediment	9/17/19 11:00	9/18/19 13:32
19-0457-CONA2-S-0916	E193805-11	Sediment	9/17/19 18:20	9/18/19 13:32
19-0457-CONA3-S-0916	E193805-14	Sediment	9/17/19 13:15	9/18/19 13:32
19-0457-CONA4-S-0916	E193805-16	Sediment	9/17/19 14:50	9/18/19 13:32
19-0457-CRI-S-0916	E193805-21	Sediment	9/16/19 13:30	9/18/19 13:32
19-0457-CRI-S-DUP-0916	E193805-22	Sediment	9/16/19 14:00	9/18/19 13:32
19-0457-OOST1-S-0916	E193805-24	Sediment	9/17/19 09:20	9/18/19 13:32
19-0457-OOST2-S-0916	E193805-26	Sediment	9/16/19 17:00	9/18/19 13:32
19-0457-OOST3-S-0916	E193805-29	Sediment	9/16/19 15:15	9/18/19 13:32

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DATA QUALIFIER DEFINITIONS

U	The analyte was not detected at or above the reporting limit.
J	The identification of the analyte is acceptable; the reported value is an estimate.
Q-2	Result greater than MDL but less than MRL.
QC-3	Analyte calibration criteria not met
QR-2	MRL verification recovery greater than upper control limits.
QS-5	Surrogate recovery is higher than established control limits
Y-2	Data should be limited to screening purposes only

ACRONYMS AND ABBREVIATIONS

CAS Chemical Abstracts Service

Note: Analytes with no known CAS identifiers have been assigned codes beginning with "E", the EPA ID as assigned by the EPA Substance Registry System (www.epa.gov/srs), or beginning with "R4-", a unique identifier assigned by the EPA Region 4 laboratory.

MDL Method Detection Limit - The minimum concentration of a substance (an analyte) that can be measured and reported with a 99% confidence that the analyte concentration is greater than zero.

MRL Minimum Reporting Limit - Analyte concentration that corresponds to the lowest demonstrated level of acceptable quantitation. The MRL is sample-specific and accounts for preparation weights and volumes, dilutions, and moisture content of soil/sediments.

TIC Tentatively Identified Compound - An analyte identified based on a match with the instrument software's mass spectral library. A calibration standard has not been analyzed to confirm the compound's identification or the estimated concentration reported.

ACCREDITATIONS:

ISO ASB is accredited by ISO/IEC 17025, including an amplification for forensic accreditation through ANSI-ASQ National Accreditation Board.

Refer to the certificate and scope of accreditation AT-1644 at:
http://www.epa.gov/aboutepa/about-region-4s-science-and-ecosystem-support-division-sesd

NR The EPA Region 4 Laboratory has not requested accreditation for this test.

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Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA1-S-0916 **Lab ID:** E193805-09
Station ID: CONA1 **Matrix:** Sediment

Date Collected: 9/17/19 11:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	120	U	ng/kg dry	120	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PFAS
27619-97-2	6:2FTS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PFAS
39108-34-4	8:2FTS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PFAS
754-91-6	FOSA	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PFAS
13252-13-6	HFPO-DA	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PFAS
2991-50-6	N-EtFOSAA	44	J, Q-2, Y-2	ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PFAS
2355-31-9	N-MeFOSAA	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PFAS
375-22-4	PFBA	140		ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PFAS
375-73-5	PFBS	220		ng/kg dry	120	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PFAS
335-76-2	PFDA	360		ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PFAS
307-55-1	PFDoA	590		ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PFAS
335-77-3	PFDS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PFAS
375-85-9	PFHpA	120	J, Q-2	ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PFAS
375-92-8	PFHpS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PFAS
307-24-4	PFHxA	290		ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PFAS
355-46-4	PFHxS	120	U	ng/kg dry	120	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PFAS
375-95-1	PFNA	65	J, Q-2	ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PFAS
68259-12-1	PFNS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PFAS
335-67-1	PFOA	280		ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PFAS
1763-23-1	PFOS	630		ng/kg dry	120	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PFAS

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Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA1-S-0916 **Lab ID:** E193805-09

Station ID: CONA1 **Matrix:** Sediment

Date Collected: 9/17/19 11:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-90-3	PFPeA	420		ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PFAS
2706-91-4	PFPeS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PFAS
376-06-7	PFTeDA	300	J, Q-2, QC-3, QR-2, QS-5, Y-2	ng/kg dry	530	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PFAS
72629-94-8	PFTrDA	200	J, QR-2	ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PFAS
2058-94-8	PFUdA	240		ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PFAS

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Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA2-S-0916 **Lab ID:** E193805-11
Station ID: CONA2 **Matrix:** Sediment

Date Collected: 9/17/19 18:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	120	U	ng/kg dry	120	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PFAS
27619-97-2	6:2FTS	120	U	ng/kg dry	120	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PFAS
39108-34-4	8:2FTS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PFAS
754-91-6	FOSA	200		ng/kg dry	130	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PFAS
13252-13-6	HFPO-DA	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PFAS
2991-50-6	N-EtFOSAA	91	J, Y-2, Q-2	ng/kg dry	130	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PFAS
2355-31-9	N-MeFOSAA	160		ng/kg dry	130	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PFAS
375-22-4	PFBA	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PFAS
375-73-5	PFBS	140		ng/kg dry	120	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PFAS
335-76-2	PFDA	240		ng/kg dry	130	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PFAS
307-55-1	PFDoA	520		ng/kg dry	130	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PFAS
335-77-3	PFDS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PFAS
375-85-9	PFHpA	56	J, Q-2	ng/kg dry	130	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PFAS
375-92-8	PFHpS	120	U	ng/kg dry	120	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PFAS
307-24-4	PFHxA	140		ng/kg dry	130	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PFAS
355-46-4	PFHxS	120	U	ng/kg dry	120	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PFAS
375-95-1	PFNA	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PFAS
68259-12-1	PFNS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PFAS
335-67-1	PFOA	190		ng/kg dry	130	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PFAS
1763-23-1	PFOS	1100		ng/kg dry	120	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PFAS

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Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA2-S-0916 **Lab ID:** E193805-11

Station ID: CONA2 **Matrix:** Sediment

Date Collected: 9/17/19 18:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-90-3	PFPeA	220		ng/kg dry	130	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PFAS
2706-91-4	PFPeS	120	U	ng/kg dry	120	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PFAS
376-06-7	PFTeDA	280	J, Q-2, QC-3, QR-2, QS-5, Y-2	ng/kg dry	520	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PFAS
72629-94-8	PFTrDA	190	J, QR-2	ng/kg dry	130	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PFAS
2058-94-8	PFUdA	230		ng/kg dry	130	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PFAS

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Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA3-S-0916 **Lab ID:** E193805-14
Station ID: CONA3 **Matrix:** Sediment

Date Collected: 9/17/19 13:15

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PFAS
27619-97-2	6:2FTS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PFAS
39108-34-4	8:2FTS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PFAS
754-91-6	FOSA	180		ng/kg dry	140	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PFAS
13252-13-6	HFPO-DA	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PFAS
2991-50-6	N-EtFOSAA	170	J, Y-2	ng/kg dry	140	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PFAS
2355-31-9	N-MeFOSAA	240		ng/kg dry	140	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PFAS
375-22-4	PFBA	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PFAS
375-73-5	PFBS	280		ng/kg dry	120	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PFAS
335-76-2	PFDA	230		ng/kg dry	140	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PFAS
307-55-1	PFDoA	770		ng/kg dry	140	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PFAS
335-77-3	PFDS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PFAS
375-85-9	PFHpA	63	J, Q-2	ng/kg dry	140	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PFAS
375-92-8	PFHpS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PFAS
307-24-4	PFHxA	150		ng/kg dry	140	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PFAS
355-46-4	PFHxS	120	U	ng/kg dry	120	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PFAS
375-95-1	PFNA	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PFAS
68259-12-1	PFNS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PFAS
335-67-1	PFOA	200		ng/kg dry	140	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PFAS
1763-23-1	PFOS	920		ng/kg dry	130	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PFAS

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Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA3-S-0916 **Lab ID:** E193805-14

Station ID: CONA3 **Matrix:** Sediment

Date Collected: 9/17/19 13:15

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-90-3	PFPeA	220		ng/kg dry	140	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PFAS
2706-91-4	PFPeS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PFAS
376-06-7	PFTeDA	540	J, QC-3, QR-2, QS-5, Y-2	ng/kg dry	540	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PFAS
72629-94-8	PFTrDA	290	J, QR-2	ng/kg dry	140	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PFAS
2058-94-8	PFUdA	330		ng/kg dry	140	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PFAS

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Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA4-S-0916 **Lab ID:** E193805-16
Station ID: CONA4 **Matrix:** Sediment

Date Collected: 9/17/19 14:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	330	U	ng/kg dry	330	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PFAS
27619-97-2	6:2FTS	330	U	ng/kg dry	330	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PFAS
39108-34-4	8:2FTS	340	U	ng/kg dry	340	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PFAS
754-91-6	FOSA	2200		ng/kg dry	350	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PFAS
13252-13-6	HFPO-DA	350	U	ng/kg dry	350	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PFAS
2991-50-6	N-EtFOSAA	1500	J, Y-2	ng/kg dry	350	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PFAS
2355-31-9	N-MeFOSAA	860		ng/kg dry	350	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PFAS
375-22-4	PFBA	350	U	ng/kg dry	350	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PFAS
375-73-5	PFBS	1100		ng/kg dry	310	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PFAS
335-76-2	PFDA	3900		ng/kg dry	350	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PFAS
307-55-1	PFDoA	4600		ng/kg dry	350	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PFAS
335-77-3	PFDS	340	U	ng/kg dry	340	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PFAS
375-85-9	PFHpA	210	J, Q-2	ng/kg dry	350	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PFAS
375-92-8	PFHpS	330	U	ng/kg dry	330	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PFAS
307-24-4	PFHxA	350		ng/kg dry	350	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PFAS
355-46-4	PFHxS	320	U	ng/kg dry	320	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PFAS
375-95-1	PFNA	400		ng/kg dry	350	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PFAS
68259-12-1	PFNS	340	U	ng/kg dry	340	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PFAS
335-67-1	PFOA	1100		ng/kg dry	350	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PFAS
1763-23-1	PFOS	15000		ng/kg dry	320	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PFAS

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Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA4-S-0916 **Lab ID:** E193805-16

Station ID: CONA4 **Matrix:** Sediment

Date Collected: 9/17/19 14:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-90-3	PFPeA	560		ng/kg dry	350	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PFAS
2706-91-4	PFPeS	330	U	ng/kg dry	330	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PFAS
376-06-7	PFTeDA	1500	J, QC-3, QR-2, QS-5, Y-2	ng/kg dry	1400	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PFAS
72629-94-8	PFTrDA	990	J, QR-2	ng/kg dry	350	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PFAS
2058-94-8	PFUdA	3500		ng/kg dry	350	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PFAS

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Region 4 Laboratory Services and Applied Science Division
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D.A.R.T. Id: 19-0457
Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CRI-S-0916 **Lab ID:** E193805-21

Station ID: CRI **Matrix:** Sediment

Date Collected: 9/16/19 13:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PFAS
27619-97-2	6:2FTS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PFAS
39108-34-4	8:2FTS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PFAS
754-91-6	FOSA	74	J, Q-2	ng/kg dry	140	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PFAS
13252-13-6	HFPO-DA	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PFAS
2991-50-6	N-EtFOSAA	43	J, Q-2, Y-2	ng/kg dry	140	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PFAS
2355-31-9	N-MeFOSAA	120	J, Q-2	ng/kg dry	140	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PFAS
375-22-4	PFBA	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PFAS
375-73-5	PFBS	120	U	ng/kg dry	120	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PFAS
335-76-2	PFDA	91	J, Q-2	ng/kg dry	140	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PFAS
307-55-1	PFDoA	170		ng/kg dry	140	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PFAS
335-77-3	PFDS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PFAS
375-85-9	PFHpA	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PFAS
375-92-8	PFHpS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PFAS
307-24-4	PFHxA	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PFAS
355-46-4	PFHxS	120	U	ng/kg dry	120	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PFAS
375-95-1	PFNA	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PFAS
68259-12-1	PFNS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PFAS
335-67-1	PFOA	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PFAS
1763-23-1	PFOS	410		ng/kg dry	130	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PFAS

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Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CRI-S-0916 **Lab ID:** E193805-21

Station ID: CRI **Matrix:** Sediment

Date Collected: 9/16/19 13:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-90-3	PFPeA	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PFAS
2706-91-4	PFPeS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PFAS
376-06-7	PFTeDA	540	U, J, QC-3, Y-2	ng/kg dry	540	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PFAS
72629-94-8	PFTrDA	120	J, Q-2, QR-2	ng/kg dry	140	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PFAS
2058-94-8	PFUdA	82	J, Q-2	ng/kg dry	140	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PFAS

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Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CRI-S-DUP-0916 **Lab ID:** E193805-22

Station ID: CRI **Matrix:** Sediment

Date Collected: 9/16/19 14:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PFAS
27619-97-2	6:2FTS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PFAS
39108-34-4	8:2FTS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PFAS
754-91-6	FOSA	160		ng/kg dry	150	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PFAS
13252-13-6	HFPO-DA	150	U	ng/kg dry	150	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PFAS
2991-50-6	N-EtFOSAA	84	J, Q-2, Y-2	ng/kg dry	150	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PFAS
2355-31-9	N-MeFOSAA	170		ng/kg dry	150	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PFAS
375-22-4	PFBA	150	U	ng/kg dry	150	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PFAS
375-73-5	PFBS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PFAS
335-76-2	PFDA	200		ng/kg dry	150	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PFAS
307-55-1	PFDoA	260		ng/kg dry	150	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PFAS
335-77-3	PFDS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PFAS
375-85-9	PFHpA	150	U	ng/kg dry	150	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PFAS
375-92-8	PFHpS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PFAS
307-24-4	PFHxA	150	U	ng/kg dry	150	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PFAS
355-46-4	PFHxS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PFAS
375-95-1	PFNA	150	U	ng/kg dry	150	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PFAS
68259-12-1	PFNS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PFAS
335-67-1	PFOA	150	U	ng/kg dry	150	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PFAS
1763-23-1	PFOS	890		ng/kg dry	140	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PFAS

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Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CRI-S-DUP-0916 **Lab ID:** E193805-22

Station ID: CRI **Matrix:** Sediment

Date Collected: 9/16/19 14:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-90-3	PFPeA	150	U	ng/kg dry	150	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PFAS
2706-91-4	PFPeS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PFAS
376-06-7	PFTeDA	270	J, Q-2, QC-3, QR-2, QS-5, Y-2	ng/kg dry	590	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PFAS
72629-94-8	PFTrDA	160	J, QR-2	ng/kg dry	150	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PFAS
2058-94-8	PFUdA	180		ng/kg dry	150	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PFAS

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Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-OOST1-S-0916 **Lab ID:** E193805-24
Station ID: OOST1 **Matrix:** Sediment

Date Collected: 9/17/19 9:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PFAS
27619-97-2	6:2FTS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PFAS
39108-34-4	8:2FTS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PFAS
754-91-6	FOSA	200		ng/kg dry	150	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PFAS
13252-13-6	HFPO-DA	150	U	ng/kg dry	150	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PFAS
2991-50-6	N-EtFOSAA	120	J, Q-2, Y-2	ng/kg dry	150	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PFAS
2355-31-9	N-MeFOSAA	220		ng/kg dry	150	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PFAS
375-22-4	PFBA	150	U	ng/kg dry	150	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PFAS
375-73-5	PFBS	130		ng/kg dry	130	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PFAS
335-76-2	PFDA	320		ng/kg dry	150	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PFAS
307-55-1	PFDoA	560		ng/kg dry	150	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PFAS
335-77-3	PFDS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PFAS
375-85-9	PFHpA	150	U	ng/kg dry	150	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PFAS
375-92-8	PFHpS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PFAS
307-24-4	PFHxA	150	U	ng/kg dry	150	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PFAS
355-46-4	PFHxS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PFAS
375-95-1	PFNA	150	U	ng/kg dry	150	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PFAS
68259-12-1	PFNS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PFAS
335-67-1	PFOA	91	J, Q-2	ng/kg dry	150	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PFAS
1763-23-1	PFOS	710		ng/kg dry	140	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PFAS

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Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-OOST1-S-0916 **Lab ID:** E193805-24

Station ID: OOST1 **Matrix:** Sediment

Date Collected: 9/17/19 9:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-90-3	PFPeA	59	J, Q-2	ng/kg dry	150	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PFAS
2706-91-4	PFPeS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PFAS
376-06-7	PFTeDA	290	J, Q-2, QC-3, QR-2, QS-5, Y-2	ng/kg dry	600	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PFAS
72629-94-8	PFTrDA	200	J, QR-2	ng/kg dry	150	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PFAS
2058-94-8	PFUdA	350		ng/kg dry	150	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PFAS

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Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-OOST2-S-0916 **Lab ID:** E193805-26
Station ID: OOST2 **Matrix:** Sediment

Date Collected: 9/16/19 17:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PFAS
27619-97-2	6:2FTS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PFAS
39108-34-4	8:2FTS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PFAS
754-91-6	FOSA	180		ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PFAS
13252-13-6	HFPO-DA	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PFAS
2991-50-6	N-EtFOSAA	56	J, Q-2, Y-2	ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PFAS
2355-31-9	N-MeFOSAA	220		ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PFAS
375-22-4	PFBA	100	J, Q-2	ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PFAS
375-73-5	PFBS	300		ng/kg dry	130	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PFAS
335-76-2	PFDA	300		ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PFAS
307-55-1	PFDoA	710		ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PFAS
335-77-3	PFDS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PFAS
375-85-9	PFHpA	150		ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PFAS
375-92-8	PFHpS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PFAS
307-24-4	PFHxA	270		ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PFAS
355-46-4	PFHxS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PFAS
375-95-1	PFNA	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PFAS
68259-12-1	PFNS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PFAS
335-67-1	PFOA	440		ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PFAS
1763-23-1	PFOS	620		ng/kg dry	130	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PFAS

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Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-OOST2-S-0916 **Lab ID:** E193805-26

Station ID: OOST2 **Matrix:** Sediment

Date Collected: 9/16/19 17:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-90-3	PFPeA	350		ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PFAS
2706-91-4	PFPeS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PFAS
376-06-7	PFTeDA	400	J, Q-2, QC-3, QR-2, QS-5, Y-2	ng/kg dry	580	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PFAS
72629-94-8	PFTrDA	270	J, QR-2	ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PFAS
2058-94-8	PFUdA	350		ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PFAS

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Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-OOST3-S-0916 **Lab ID:** E193805-29
Station ID: OOST3 **Matrix:** Sediment

Date Collected: 9/16/19 15:15

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	120	U	ng/kg dry	120	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PFAS
27619-97-2	6:2FTS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PFAS
39108-34-4	8:2FTS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PFAS
754-91-6	FOSA	110	J, Q-2	ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PFAS
13252-13-6	HFPO-DA	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PFAS
2991-50-6	N-EtFOSAA	29	J, Q-2, Y-2	ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PFAS
2355-31-9	N-MeFOSAA	130		ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PFAS
375-22-4	PFBA	110	J, Q-2	ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PFAS
375-73-5	PFBS	230		ng/kg dry	120	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PFAS
335-76-2	PFDA	160		ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PFAS
307-55-1	PFDoA	400		ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PFAS
335-77-3	PFDS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PFAS
375-85-9	PFHpA	120	J, Q-2	ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PFAS
375-92-8	PFHpS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PFAS
307-24-4	PFHxA	230		ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PFAS
355-46-4	PFHxS	120	U	ng/kg dry	120	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PFAS
375-95-1	PFNA	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PFAS
68259-12-1	PFNS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PFAS
335-67-1	PFOA	360		ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PFAS
1763-23-1	PFOS	430		ng/kg dry	120	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PFAS

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Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-OOST3-S-0916 **Lab ID:** E193805-29
Station ID: OOST3 **Matrix:** Sediment

Date Collected: 9/16/19 15:15

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-90-3	PFPeA	320		ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PFAS
2706-91-4	PFPeS	120	U	ng/kg dry	120	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PFAS
376-06-7	PFTeDA	260	J, Q-2, QC-3, QR-2, QS-5, Y-2	ng/kg dry	530	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PFAS
72629-94-8	PFTrDA	180	J, QR-2	ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PFAS
2058-94-8	PFUdA	210		ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PFAS

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Semi Volatile Organics (SVOA) - Quality Control
US-EPA, Region 4, LSASD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1909053 - S PFC										
Blank (1909053-BLK1)				Prepared: 09/25/19 Analyzed: 10/01/19						
ASBPROC-800PFAS										
4:2FTS	U	94	ng/kg dry							U
6:2FTS	U	95	"							U
8:2FTS	U	96	"							U
FOSA	U	100	"							U
HFPO-DA	U	100	"							U
N-EtFOSAA	U	100	"							U, Y-2
N-MeFOSAA	U	100	"							U
PFBA	U	100	"							U
PFBS	U	88	"							U
PFDA	U	100	"							U
PFDoA	U	100	"							U
PFDS	U	96	"							U
PFHpA	U	100	"							U
PFHpS	U	95	"							U
PFHxA	U	100	"							U
PFHxS	U	91	"							U
PFNA	U	100	"							U
PFNS	U	96	"							U
PFOA	U	100	"							U
PFOS	U	93	"							U
PFPeA	U	100	"							U
PFPeS	U	94	"							U
PFTeDA	U	400	"							U, QC-3, Y-2
PFTrDA	U	100	"							U
PFUdA	U	100	"							U
LCS (1909053-BS1)				Prepared: 09/25/19 Analyzed: 10/01/19						
ASBPROC-800PFAS										
4:2FTS	1050	94	ng/kg dry	935.00		112	70-130			
6:2FTS	1060	95	"	950.00		112	70-130			
8:2FTS	933	96	"	960.00		97.2	70-130			
FOSA	1110	100	"	1000.0		111	70-130			
HFPO-DA	877	100	"	1000.0		87.7	70-130			
N-EtFOSAA	1210	100	"	1000.0		121	70-130			Y-2
N-MeFOSAA	1100	100	"	1000.0		110	70-130			
PFBA	1050	100	"	1000.0		105	70-130			
PFBS	926	88	"	885.00		105	70-130			
PFDA	1080	100	"	1000.0		108	70-130			

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Semi Volatile Organics (SVOA) - Quality Control
US-EPA, Region 4, LSASD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1909053 - S PFC										
LCS (1909053-BS1)				Prepared: 09/25/19 Analyzed: 10/01/19						
PFDoA	1140	100	ng/kg dry	1000.0		114	70-130			
PFDS	1060	96	"	965.00		110	70-130			
PFHpA	1050	100	"	1000.0		105	70-130			
PFHpS	1020	95	"	950.00		107	70-130			
PFHxA	1100	100	"	1000.0		110	70-130			
PFHxS	1020	91	"	912.00		111	70-130			
PFNA	1090	100	"	1000.0		109	70-130			
PFNS	977	96	"	960.00		102	70-130			
PFOA	1060	100	"	1000.0		106	70-130			
PFOS	955	93	"	925.50		103	70-130			
PFPeA	1050	100	"	1000.0		105	70-130			
PFPeS	931	94	"	940.00		99.1	70-130			
PFTeDA	1160	400	"	1000.0		116	70-130			QC-3, Y-2
PFTrDA	1190	100	"	1000.0		119	70-130			
PFUdA	1120	100	"	1000.0		112	70-130			
Matrix Spike (1909053-MS1)		**Source: E193805-09**		Prepared: 09/25/19 Analyzed: 10/01/19						
ASBPROC-800PFAS										
4:2FTS	1390	120	ng/kg dry	1230.3	U	113	70-133			
6:2FTS	1440	120	"	1250.0	U	116	58-143			
8:2FTS	1240	130	"	1263.2	U	98.0	66-126			
FOSA	1410	130	"	1315.8	U	107	61-138			
HFPO-DA	1030	130	"	1315.8	U	78.0	45-129			
N-EtFOSAA	1300	130	"	1315.8	44.3	95.6	50-168			Y-2
N-MeFOSAA	1280	130	"	1315.8	U	97.3	47-169			
PFBA	1390	130	"	1315.8	140	94.7	60-141			
PFBS	1390	120	"	1164.5	223	100	62-135			
PFDA	1580	130	"	1315.8	363	92.6	53-156			
PFDoA	1740	130	"	1315.8	594	87.4	30-172			
PFDS	1160	130	"	1269.7	U	91.4	44-151			
PFHpA	1410	130	"	1315.8	121	97.6	75-122			
PFHpS	1190	120	"	1250.0	U	95.1	66-132			
PFHxA	1590	130	"	1315.8	286	99.1	64-138			
PFHxS	1230	120	"	1200.0	U	102	70-130			
PFNA	1310	130	"	1315.8	64.6	94.3	72-129			
PFNS	1120	130	"	1263.2	U	88.9	61-126			
PFOA	1590	130	"	1315.8	278	99.9	74-127			
PFOS	1830	120	"	1217.8	627	98.9	68-132			
PFPeA	1670	130	"	1315.8	415	95.4	75-122			

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Semi Volatile Organics (SVOA) - Quality Control
US-EPA, Region 4, LSASD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1909053 - S PFC										
Matrix Spike (1909053-MS1)	**Source: E193805-09**			Prepared: 09/25/19 Analyzed: 10/01/19						
PFPeS	1170	120	ng/kg dry	1236.8	U	94.6	72-122			
PFTeDA	1340	530	"	1315.8	305	78.8	70-130			QC-3, Y-2
PFTrDA	1360	130	"	1315.8	202	88.3	10-193			
PFUdA	1480	130	"	1315.8	240	93.9	44-164			
Matrix Spike Dup (1909053-MSD1)	**Source: E193805-09**			Prepared: 09/25/19 Analyzed: 10/01/19						
ASBPROC-800PFAS										
4:2FTS	1260	120	ng/kg dry	1198.7	U	105	70-133	9.93	34	
6:2FTS	1310	120	"	1217.9	U	108	58-143	9.56	45	
8:2FTS	1210	120	"	1230.8	U	98.6	66-126	2.03	56	
FOSA	1460	130	"	1282.1	U	114	61-138	3.34	39	
HFPO-DA	1030	130	"	1282.1	U	80.0	45-129	0.0570	57	
N-EtFOSAA	1360	130	"	1282.1	44.3	102	50-168	4.14	53	Y-2
N-MeFOSAA	1350	130	"	1282.1	U	106	47-169	5.60	65	
PFBA	1360	130	"	1282.1	140	95.4	60-141	1.71	37	
PFBS	1390	110	"	1134.6	223	103	62-135	0.264	32	
PFDA	1610	130	"	1282.1	363	97.2	53-156	1.68	57	
PFDoA	1740	130	"	1282.1	594	89.3	30-172	0.314	56	
PFDS	1260	120	"	1237.2	U	102	44-151	8.35	66	
PFHpA	1370	130	"	1282.1	121	97.3	75-122	2.63	26	
PFHpS	1220	120	"	1217.9	U	99.8	66-132	2.20	28	
PFHxA	1570	130	"	1282.1	286	99.9	64-138	1.47	42	
PFHxS	1190	120	"	1169.2	U	102	70-130	3.15	20	
PFNA	1310	130	"	1282.1	64.6	96.9	72-129	0.126	31	
PFNS	1140	120	"	1230.8	U	92.6	61-126	1.54	35	
PFOA	1500	130	"	1282.1	278	95.1	74-127	6.20	32	
PFOS	1870	120	"	1186.5	627	105	68-132	1.90	37	
PFPeA	1640	130	"	1282.1	415	95.7	75-122	1.72	27	
PFPeS	1150	120	"	1205.1	U	95.3	72-122	1.82	29	
PFTeDA	1570	510	"	1282.1	305	98.4	70-130	15.5	30	QC-3, Y-2
PFTrDA	1420	130	"	1282.1	202	95.1	10-193	4.07	106	
PFUdA	1480	130	"	1282.1	240	96.8	44-164	0.403	48	

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Semi Volatile Organics (SVOA) - Quality Control
US-EPA, Region 4, LSASD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1909053 - S PFC										
MRL Verification (1909053-PS1)				Prepared: 09/25/19 Analyzed: 10/01/19						
ASBPROC-800PFAS										
4:2FTS	112	94	ng/kg dry	93.500		119	50-150			MRL-3
6:2FTS	116	95	"	95.000		122	50-150			MRL-3
8:2FTS	86.3	96	"	96.000		89.9	50-150			J, MRL-3, Q-2
FOSA	116	100	"	100.00		116	50-150			MRL-3
HFPO-DA	92.4	100	"	100.00		92.4	50-150			J, MRL-3, Q-2
N-EtFOSAA	113	100	"	100.00		113	50-150			MRL-3, Y-2
N-MeFOSAA	119	100	"	100.00		119	50-150			MRL-3
PFBA	111	100	"	100.00		111	50-150			MRL-3
PFBS	101	88	"	88.500		115	50-150			MRL-3
PFDA	113	100	"	100.00		113	50-150			MRL-3
PFDoA	127	100	"	100.00		127	50-150			MRL-3
PFDS	126	96	"	96.500		131	50-150			MRL-3
PFHpA	102	100	"	100.00		102	50-150			MRL-3
PFHpS	102	95	"	95.000		107	50-150			MRL-3
PFHxA	119	100	"	100.00		119	50-150			MRL-3
PFHxS	103	91	"	91.200		113	50-150			MRL-3
PFNA	97.4	100	"	100.00		97.4	50-150			J, MRL-3, Q-2
PFNS	97.1	96	"	96.000		101	50-150			MRL-3
PFOA	102	100	"	100.00		102	50-150			MRL-3
PFOS	91.8	93	"	92.550		99.1	50-150			J, MRL-3, Q-2
PFPeA	112	100	"	100.00		112	50-150			MRL-3
PFPeS	92.8	94	"	94.000		98.8	50-150			J, MRL-3, Q-2
PFTeDA	210	400	"	100.00		210	50-150			J, MRL-3, Q-2, QC-3, QR-2, Y-2
PFTrDA	156	100	"	100.00		156	50-150			MRL-3, QR-2
PFUdA	107	100	"	100.00		107	50-150			MRL-3

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Notes and Definitions for QC Samples

U	The analyte was not detected at or above the reporting limit.
J	The identification of the analyte is acceptable; the reported value is an estimate.
MRL-3	MRL verification for Soil matrix
Q-2	Result greater than MDL but less than MRL.
QC-3	Analyte calibration criteria not met
QR-2	MRL verification recovery greater than upper control limits.
Y-2	Data should be limited to screening purposes only

Appendix C – Solids Analytical Results

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October 22, 2019

MEMORANDUM

SUBJECT: FINAL Analytical Report
Project: 19-0457, PFAS Sediment Screening - Conasauga R

FROM: Floyd Wellborn
LSB Inorganic Chemistry Section Chief

THRU: Sandra Aker, Chief
Laboratory Services Branch

TO: Nathan Barlet

Attached are the final results for the analytical groups listed below. This report shall not be reproduced except in full without approval of the Region 4 laboratory. These analyses were performed in accordance with the Laboratory Services Branch's Laboratory Operations and Quality Assurance Manual (LSB LOQAM) found at www.epa.gov/region4/sesd/asbsop. Any unique project data quality objectives specified in writing by the data requestor have also been incorporated into the data unless otherwise noted in the Report Narrative. Chemistry data have been verified based on the LSB LOQAM specifications and have been qualified by this laboratory if the applicable quality control criteria were not met. Verification is defined in Chapter 5 of the LSB LOQAM. For a listing of specific data qualifiers and explanations, please refer to the Data Qualifier Definitions included in this report. The reported results are accurate within the limits of the method(s) and are representative only of the samples as received by the laboratory.

Analyses Included in this report:	Method Used:	Accreditations:
Classical/Nutrient Analyses (CNA)		
Classical/Nutrients	ASB 107C (Soil)	ISO
Classical/Nutrients	SM 5310B (Water)	ISO
Solids	USGS I-3765-85 (Water)	ISO
Physical Properties (PHYSP)		
Physical Properties	EPA 200.2 (Soil)	ISO

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Report Narrative for Work Order: E193805 Analysis: CNA

10/21/19 FW: These results are re-reported at the request of the project leader to include estimated results for TOC in soil down to the MDL. No other results were changed. This report replaces E193805 CNA PHYSP FINAL 10 10 19 1452.

Sample Disposal Policy

Due to limited space for long term sample storage, LSB's policy is to dispose of samples on a periodic schedule. Air samples collected in summa canisters will be disposed of 30 days following the issuance of this report. All other sample media including original samples, sample extracts and or digestates will be disposed of, in accordance with applicable regulations, 60 days from the date of this report.

This sample disposal policy does not apply to criminal samples which are held until the laboratory is notified by the criminal investigators that case development and litigation are complete.

These samples may be held in the laboratory's custody for a longer period of time. If samples require storage beyond the 60-day period, please contact the Sample Control Coordinator by e-mail at R4SampleCustody@epa.gov.

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SAMPLES INCLUDED IN THIS REPORT

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID	Laboratory ID	Matrix	Date Collected	Date Received
19-0457-CONA1-0916	E193805-07	Surface Water	9/17/19 10:40	9/18/19 13:32
19-0457-CONA1-S-0916	E193805-09	Sediment	9/17/19 11:00	9/18/19 13:32
19-0457-CONA2-S-0916	E193805-11	Sediment	9/17/19 18:20	9/18/19 13:32
19-0457-CONA3-0916	E193805-12	Surface Water	9/17/19 13:00	9/18/19 13:32
19-0457-CONA3-S-0916	E193805-14	Sediment	9/17/19 13:15	9/18/19 13:32
19-0457-CONA4-S-0916	E193805-16	Sediment	9/17/19 14:50	9/18/19 13:32
19-0457-CRI-0916	E193805-17	Surface Water	9/16/19 12:45	9/18/19 13:32
19-0457-CRI-DUP-0916	E193805-18	Surface Water	9/16/19 13:00	9/18/19 13:32
19-0457-CRI-S-0916	E193805-21	Sediment	9/16/19 13:30	9/18/19 13:32
19-0457-CRI-S-DUP-0916	E193805-22	Sediment	9/16/19 14:00	9/18/19 13:32
19-0457-OOST1-S-0916	E193805-24	Sediment	9/17/19 09:20	9/18/19 13:32
19-0457-OOST2-S-0916	E193805-26	Sediment	9/16/19 17:00	9/18/19 13:32
19-0457-OOST3-0916	E193805-27	Surface Water	9/16/19 15:00	9/18/19 13:32
19-0457-OOST3-S-0916	E193805-29	Sediment	9/16/19 15:15	9/18/19 13:32

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DATA QUALIFIER DEFINITIONS

J The identification of the analyte is acceptable; the reported value is an estimate.

Q-2 Result greater than MDL but less than MRL.

ACRONYMS AND ABBREVIATIONS

CAS Chemical Abstracts Service

Note: Analytes with no known CAS identifiers have been assigned codes beginning with "E", the EPA ID as assigned by the EPA Substance Registry System (www.epa.gov/srs), or beginning with "R4-", a unique identifier assigned by the EPA Region 4 laboratory.

MDL Method Detection Limit - The minimum concentration of a substance (an analyte) that can be measured and reported with a 99% confidence that the analyte concentration is greater than zero.

MRL Minimum Reporting Limit - Analyte concentration that corresponds to the lowest demonstrated level of acceptable quantitation. The MRL is sample-specific and accounts for preparation weights and volumes, dilutions, and moisture content of soil/sediments.

TIC Tentatively Identified Compound - An analyte identified based on a match with the instrument software's mass spectral library. A calibration standard has not been analyzed to confirm the compound's identification or the estimated concentration reported.

ACCREDITATIONS:

ISO ASB is accredited by ISO/IEC 17025, including an amplification for forensic accreditation through ANSI-ASQ National Accreditation Board.

Refer to the certificate and scope of accreditation AT-1644 at:
http://www.epa.gov/aboutepa/about-region-4s-science-and-ecosystem-support-division-sesd

NR The EPA Region 4 Laboratory has not requested accreditation for this test.

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Classical/Nutrient Analyses

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA1-0916 **Lab ID:** E193805-07

Station ID: CONA1 **Matrix:** Surface Water

Date Collected: 9/17/19 10:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E701250	Total Organic Carbon	1.5		mg/L	1.0	10/07/19 9:47	10/07/19 13:05	SM 5310B
E1642818	Total Suspended Solids	9.1		mg/L	5.0	9/20/19 16:15	9/23/19 8:15	USGS I-3765-85

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Classical/Nutrient Analyses

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA1-S-0916 **Lab ID:** E193805-09
Station ID: CONA1 **Matrix:** Sediment

Date Collected: 9/17/19 11:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E701250	Total Organic Carbon	3100	J, Q-2	mg/kg dry	12000	10/07/19 16:22	10/09/19 14:04	ASB 107C

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Physical Properties

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA1-S-0916 **Lab ID:** E193805-09
Station ID: CONA1 **Matrix:** Sediment

Date Collected: 9/17/19 11:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	76		%	0.0	10/04/19 14:47	10/07/19 8:40	EPA 200.2

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Classical/Nutrient Analyses

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA2-S-0916 **Lab ID:** E193805-11
Station ID: CONA2 **Matrix:** Sediment

Date Collected: 9/17/19 18:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E701250	Total Organic Carbon	4100	J, Q-2	mg/kg dry	12000	10/07/19 16:22	10/09/19 14:37	ASB 107C

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Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Floyd Wellborn

Physical Properties

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA2-S-0916 **Lab ID:** E193805-11
Station ID: CONA2 **Matrix:** Sediment

Date Collected: 9/17/19 18:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	76		%	0.0	10/04/19 14:47	10/07/19 8:40	EPA 200.2

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Classical/Nutrient Analyses

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA3-0916 **Lab ID:** E193805-12
Station ID: CONA3 **Matrix:** Surface Water

Date Collected: 9/17/19 13:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E701250	Total Organic Carbon	2.7		mg/L	1.0	10/07/19 9:47	10/07/19 14:15	SM 5310B
E1642818	Total Suspended Solids	9.7		mg/L	5.0	9/20/19 16:15	9/23/19 8:15	USGS I-3765-85

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Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA3-S-0916 **Lab ID:** E193805-14
Station ID: CONA3 **Matrix:** Sediment

Date Collected: 9/17/19 13:15

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E701250	Total Organic Carbon	5400	J, Q-2	mg/kg dry	12000	10/07/19 16:22	10/09/19 14:46	ASB 107C

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Physical Properties

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA3-S-0916 **Lab ID:** E193805-14
Station ID: CONA3 **Matrix:** Sediment

Date Collected: 9/17/19 13:15

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	74		%	0.0	10/04/19 14:47	10/07/19 8:40	EPA 200.2

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Classical/Nutrient Analyses

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA4-S-0916 **Lab ID:** E193805-16
Station ID: CONA4 **Matrix:** Sediment

Date Collected: 9/17/19 14:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E701250	Total Organic Carbon	30000		mg/kg dry	12000	10/07/19 16:22	10/09/19 14:59	ASB 107C

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Physical Properties

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA4-S-0916 **Lab ID:** E193805-16
Station ID: CONA4 **Matrix:** Sediment

Date Collected: 9/17/19 14:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	28		%	0.0	10/04/19 14:47	10/07/19 8:40	EPA 200.2

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Classical/Nutrient Analyses

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CRI-0916 **Lab ID:** E193805-17

Station ID: CRI **Matrix:** Surface Water

Date Collected: 9/16/19 12:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E701250	Total Organic Carbon	2.0		mg/L	1.0	10/07/19 9:47	10/07/19 14:40	SM 5310B
E1642818	Total Suspended Solids	29		mg/L	5.0	9/20/19 16:15	9/23/19 8:15	USGS I-3765-85

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Classical/Nutrient Analyses

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CRI-DUP-0916 **Lab ID:** E193805-18

Station ID: CRI **Matrix:** Surface Water

Date Collected: 9/16/19 13:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E701250	Total Organic Carbon	2.8		mg/L	1.0	10/07/19 9:47	10/07/19 14:59	SM 5310B
E1642818	Total Suspended Solids	8.3		mg/L	5.0	9/20/19 16:15	9/23/19 8:15	USGS I-3765-85

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Classical/Nutrient Analyses

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CRI-S-0916 **Lab ID:** E193805-21
Station ID: CRI **Matrix:** Sediment

Date Collected: 9/16/19 13:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E701250	Total Organic Carbon	2200	J, Q-2	mg/kg dry	12000	10/07/19 16:22	10/09/19 15:11	ASB 107C

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Physical Properties

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CRI-S-0916 **Lab ID:** E193805-21
Station ID: CRI **Matrix:** Sediment

Date Collected: 9/16/19 13:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	71		%	0.0	10/04/19 14:47	10/07/19 8:40	EPA 200.2

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Classical/Nutrient Analyses

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CRI-S-DUP-0916 **Lab ID:** E193805-22

Station ID: CRI **Matrix:** Sediment

Date Collected: 9/16/19 14:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E701250	Total Organic Carbon	4900	J, Q-2	mg/kg dry	12000	10/07/19 16:22	10/09/19 15:20	ASB 107C

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Physical Properties

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CRI-S-DUP-0916 **Lab ID:** E193805-22
Station ID: CRI **Matrix:** Sediment

Date Collected: 9/16/19 14:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	68		%	0.0	10/04/19 14:47	10/07/19 8:40	EPA 200.2

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Classical/Nutrient Analyses

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-OOST1-S-0916 **Lab ID:** E193805-24
Station ID: OOST1 **Matrix:** Sediment

Date Collected: 9/17/19 9:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E701250	Total Organic Carbon	7100	J, Q-2	mg/kg dry	12000	10/07/19 16:22	10/09/19 15:29	ASB 107C

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Physical Properties

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-OOST1-S-0916 **Lab ID:** E193805-24
Station ID: OOST1 **Matrix:** Sediment

Date Collected: 9/17/19 9:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	65		%	0.0	10/04/19 14:47	10/07/19 8:40	EPA 200.2

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Classical/Nutrient Analyses

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-OOST2-S-0916 **Lab ID:** E193805-26
Station ID: OOST2 **Matrix:** Sediment

Date Collected: 9/16/19 17:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E701250	Total Organic Carbon	6700	J, Q-2	mg/kg dry	12000	10/07/19 16:22	10/09/19 15:40	ASB 107C

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Physical Properties

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-OOST2-S-0916 **Lab ID:** E193805-26
Station ID: OOST2 **Matrix:** Sediment

Date Collected: 9/16/19 17:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	69		%	0.0	10/04/19 14:47	10/07/19 8:40	EPA 200.2

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Classical/Nutrient Analyses

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-OOST3-0916 **Lab ID:** E193805-27
Station ID: OOST3 **Matrix:** Surface Water

Date Collected: 9/16/19 15:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E701250	Total Organic Carbon	1.9		mg/L	1.0	10/07/19 9:47	10/07/19 15:18	SM 5310B
E1642818	Total Suspended Solids	14		mg/L	5.0	9/20/19 16:15	9/23/19 8:15	USGS I-3765-85

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Classical/Nutrient Analyses

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-OOST3-S-0916 **Lab ID:** E193805-29
Station ID: OOST3 **Matrix:** Sediment

Date Collected: 9/16/19 15:15

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E701250	Total Organic Carbon	4600	J, Q-2	mg/kg dry	12000	10/07/19 16:22	10/09/19 15:51	ASB 107C

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Physical Properties

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-OOST3-S-0916 **Lab ID:** E193805-29
Station ID: OOST3 **Matrix:** Sediment

Date Collected: 9/16/19 15:15

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	74		%	0.0	10/04/19 14:47	10/07/19 8:40	EPA 200.2

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Classical/Nutrient Analyses (CNA) - Quality Control
US-EPA, Region 4, LSASD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1910005 - C 2540 Solids										
Blank (1910005-BLK1)				Prepared: 09/20/19 Analyzed: 09/23/19						
USGS I-3765-85										
Total Suspended Solids	U	5.0	mg/L							U
LCS (1910005-BS1)				Prepared: 09/20/19 Analyzed: 09/23/19						
USGS I-3765-85										
Total Suspended Solids	90.000	5.0	mg/L	100.00		90.0	77.1-110			
LCS Dup (1910005-BSD1)				Prepared: 09/20/19 Analyzed: 09/23/19						
USGS I-3765-85										
Total Suspended Solids	87.400	5.0	mg/L	100.00		87.4	77.1-110	2.93	10	
Duplicate (1910005-DUP1)		**Source: E193805-27**		Prepared: 09/20/19 Analyzed: 09/23/19						
USGS I-3765-85										
Total Suspended Solids	15.400	5.0	mg/L		14.400			6.71	10	
MRL Verification (1910005-PS1)				Prepared: 09/20/19 Analyzed: 09/23/19						
USGS I-3765-85										
Total Suspended Solids	4.5000	5.0	mg/L	5.0000		90.0	57.1-130			MRL-2, U
Batch 1910021 - C 415 TOC Wtr										
Blank (1910021-BLK1)				Prepared & Analyzed: 10/07/19						
SM 5310B										
Total Organic Carbon	U	1.0	mg/L							U
LCS (1910021-BS1)				Prepared & Analyzed: 10/07/19						
SM 5310B										
Total Organic Carbon	47.410	1.0	mg/L	50.000		94.8	90-110			
LCS (1910021-BS2)				Prepared & Analyzed: 10/07/19						
SM 5310B										
Total Organic Carbon	5.0390	1.0	mg/L	5.0000		101	90-110			
LCS Dup (1910021-BSD1)				Prepared & Analyzed: 10/07/19						
SM 5310B										
Total Organic Carbon	47.270	1.0	mg/L	50.000		94.5	90-110	0.296	10	

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Classical/Nutrient Analyses (CNA) - Quality Control
US-EPA, Region 4, LSASD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1910021 - C 415 TOC Wtr										
Matrix Spike (1910021-MS1)		**Source: E193805-07**		Prepared & Analyzed: 10/07/19						
SM 5310B										
Total Organic Carbon	48.560	1.0	mg/L	50.000	1.4830	94.2	90-110			
Matrix Spike Dup (1910021-MSD1)		**Source: E193805-07**		Prepared & Analyzed: 10/07/19						
SM 5310B										
Total Organic Carbon	47.900	1.0	mg/L	50.000	1.4830	92.8	90-110	1.37	10	
MRL Verification (1910021-PS1)				Prepared & Analyzed: 10/07/19						
SM 5310B										
Total Organic Carbon	1.0800	1.0	mg/L	1.0000		108	70-130			MRL-2
Batch 1910023 - C ASB107C TOC										
Blank (1910023-BLK1)				Prepared: 10/07/19 Analyzed: 10/09/19						
ASB 107C										
Total Organic Carbon	U	12000	mg/kg dry							U
LCS (1910023-BS1)				Prepared: 10/07/19 Analyzed: 10/09/19						
ASB 107C										
Total Organic Carbon	40460	12000	mg/kg dry	40328		100	90-110			
Matrix Spike (1910023-MS1)		**Source: E193805-09**		Prepared: 10/07/19 Analyzed: 10/09/19						
ASB 107C										
Total Organic Carbon	42968	12000	mg/kg dry	39996	3136.9	99.6	90-110			
Matrix Spike Dup (1910023-MSD1)		**Source: E193805-09**		Prepared: 10/07/19 Analyzed: 10/09/19						
ASB 107C										
Total Organic Carbon	44938	12000	mg/kg dry	39776	3136.9	105	90-110	5.38	20	
MRL Verification (1910023-PS1)				Prepared: 10/07/19 Analyzed: 10/09/19						
ASB 107C										
Total Organic Carbon	11700	12000	mg/kg dry	12000		97.5	85-115			MRL-3, J

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Physical Properties (PHYSP) - Quality Control
US-EPA, Region 4, LSASD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1910019 - M % Solids										
Duplicate (1910019-DUP1)		**Source: E193805-29**		Prepared: 10/04/19 Analyzed: 10/07/19						
EPA 200.2										
% Solids	72.423	0.0	%		73.703			1.75	10	

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Notes and Definitions for QC Samples

U	The analyte was not detected at or above the reporting limit.
J	The identification of the analyte is acceptable; the reported value is an estimate.
MRL-2	MRL verification for Non-Potable Water matrix
MRL-3	MRL verification for Soil matrix

Appendix D – Generic RSL Calculations

Default
Equation Inputs for Soil to Groundwater

Variable	Value
THQ (target hazard quotient) unitless	0.1
TR (target risk) unitless	1E-06
LT (lifetime) years	70
K (volatilization factor of Andelman) L/m^3	0.5
l_{sc} (apparent thickness of stratum corneum) cm	0.001
ED_{res} (exposure duration - resident) years	26
ED_{res-c} (exposure duration - child) years	6
ED_{res-a} (exposure duration - adult) years	20
ED_{0-2} (mutagenic exposure duration first phase) years	2
ED_{2-6} (mutagenic exposure duration second phase) years	4
ED_{6-16} (mutagenic exposure duration third phase) years	10
ED_{16-26} (mutagenic exposure duration fourth phase) years	10
EF_{res} (exposure frequency) days/year	350
EF_{res-c} (exposure frequency - child) days/year	350
EF_{res-a} (exposure frequency - adult) days/year	350
EF_{0-2} (mutagenic exposure frequency first phase) days/year	350
EF_{2-6} (mutagenic exposure frequency second phase) days/year	350
EF_{6-16} (mutagenic exposure frequency third phase) days/year	350
EF_{16-26} (mutagenic exposure frequency fourth phase) days/year	350
$ET_{event-res-adj}$ (age-adjusted exposure time) hours/event	0.67077
$ET_{event-res-madj}$ (mutagenic age-adjusted exposure time) hours/event	0.67077
ET_{res} (exposure time) hours/day	24
ET_{res-c} (dermal exposure time - child) hours/event	0.54
ET_{res-a} (dermal exposure time - adult) hours/event	0.71
ET_{res-c} (inhalation exposure time - child) hours/day	24
ET_{res-a} (inhalation exposure time - adult) hours/day	24
ET_{0-2} (mutagenic inhalation exposure time first phase) hours/day	24
ET_{2-6} (mutagenic inhalation exposure time second phase) hours/day	24
ET_{6-16} (mutagenic inhalation exposure time third phase) hours/day	24
ET_{16-26} (mutagenic inhalation exposure time fourth phase) hours/day	24
ET_{0-2} (mutagenic dermal exposure time first phase) hours/event	0.54
ET_{2-6} (mutagenic dermal exposure time second phase) hours/event	0.54
ET_{6-16} (mutagenic dermal exposure time third phase) hours/event	0.71

Output generated 20AUG2019:10:23:01

Default
Equation Inputs for Soil to Groundwater

2

Variable	Value
ET_{16-26} (mutagenic dermal exposure time fourth phase) hours/event	0.71
BW_{resa} (body weight - adult) kg	80
BW_{resc} (body weight - child) kg	15
BW_{0-2} (mutagenic body weight) kg	15
BW_{2-6} (mutagenic body weight) kg	15
BW_{6-16} (mutagenic body weight) kg	80
BW_{16-26} (mutagenic body weight) kg	80
$IFW_{researti}$ (adjusted intake factor) L/kg	327.95
$IFW_{researti}$ (adjusted intake factor) L/kg	327.95
$IFWM_{researti}$ (mutagenic adjusted intake factor) L/kg	1019.9
$IFWM_{researti}$ (mutagenic adjusted intake factor) L/kg	1019.9
IRW_{resc} (water intake rate - child) L/day	0.78
IRW_{resa} (water intake rate - adult) L/day	2.5
IRW_{0-2} (mutagenic water intake rate) L/day	0.78
IRW_{2-6} (mutagenic water intake rate) L/day	0.78
IRW_{6-16} (mutagenic water intake rate) L/day	2.5
IRW_{16-26} (mutagenic water intake rate) L/day	2.5
EV_{resa} (events - adult) per day	1
EV_{resc} (events - child) per day	1
EV_{0-2} (mutagenic events) per day	1
EV_{2-6} (mutagenic events) per day	1
EV_{6-16} (mutagenic events) per day	1
EV_{16-26} (mutagenic events) per day	1
$DFW_{researti}$ (age-adjusted dermal factor) cm^2-event/kg	2610650
$DFWM_{researti}$ (mutagenic age-adjusted dermal factor) cm^2-event/kg	8191633
SA_{resc} (skin surface area - child) cm^2	6365
SA_{resa} (skin surface area - adult) cm^2	19652
SA_{0-2} (mutagenic skin surface area) cm^2	6365
SA_{2-6} (mutagenic skin surface area) cm^2	6365
SA_{6-16} (mutagenic skin surface area) cm^2	19652
SA_{16-26} (mutagenic skin surface area) cm^2	19652
DAF (dilution attenuation factor) unitless	1
DAF (dilution attenuation factor) unitless	1

Output generated 20AUG2019:10:23:01

Default
Equation Inputs for Soil to Groundwater

3

Variable	Value
$Theta_w$ (water-filled soil porosity) L_{water}/L_{soil}	0.3
$Theta_a$ (air-filled soil porosity) L_{air}/L_{soil} }	0.134
n (soil porosity) L_{pore}/L_{soil}	0.434
p_b (dry soil bulk density) kg/L	1.5
I (infiltration rate) m/yr	0.18
ED_{res} (exposure duration) yr	70
t_{res} (time - resident) yr	26
foc (fraction organic carbon in soil) g/g	0.002
p_s (soil particle density) kg/L	2.65
T_w (groundwater temperature) Celsius	25

Output generated 20AUG2019:10:23:01

Default
Risk-Based Regional Screening Levels (RSL) for Soil to Groundwater

4

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; G = see user's guide; U = user provided; ca = cancer; nc = noncancer; * = where: nc SL < 100X ca SL; ** = where nc SL < 10X ca SL; SSL values are based on DAF=1; max = ceiling limit exceeded; sat = Csat exceeded.

Sub-chronic toxicity values will be used where available. RfC and RfD references followed by 's' indicates subchronic value; RfC and RfD references followed by 'c' indicates chronic value.

Chemical	CAS Number	Mutagen?	Volatile?	Chemical Type	SF_o (mg/kg-day) $^{-1}$	SF_o Ref	IUR (ug/m^3)$^{-1}$	IUR Ref	RfD (mg/kg-day)	RfD Ref	RfC (mg/m^3)	RfC Ref	GIABS	ABS	S (mg/L)	K_d\ (cm^3/g)
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	No	No	Organics	-		-		2.00E-05	D /Chronic	-		1	0.1	680	7.43E-01
Perfluorooctanoic acid (PFOA)	335-67-1	No	No	Organics	7.00E-02	D	-		2.00E-05	D /Chronic	-		1	0.1	9500	2.30E-01

K_{oc}\ (cm^3/g)	Dilution Attenuation Factor (DAF) (unitless)	HLC (atm-m^3/mole)	Henry's Law Constant (unitless)	H` and HLC Ref	Normal Boiling Point BP (K)	BP Ref	Critical Temperature TC (K)	TC Ref	Noncarcinogenic SL Adult THI=0.1 (ug/L)	Noncarcinogenic SL Child THI=0.1 (ug/L)	Carcinogenic SL TR=1E-06 (ug/L)	Water Concentration (Adult) (mg/L)
3.72E+02	1	-	-		532.15	PHYSPROP	-		6.67E-02	4.01E-02	-	6.67E-05
1.15E+02	1	4E-6	1.64E-04	ATSDR Draft Profile	465.55	PHYSPROP	-		6.67E-02	4.01E-02	1.11E+00	6.67E-05

Water Concentration (Child) (mg/L)	Water Concentration (Cancer) (mg/L)	Maximum Contaminant Level (MCL) (ug/L)	Water Concentration (MCL) (mg/L)	MCL-based SL (mg/kg)	Noncarcinogenic Adult SL THI=0.1 (mg/kg)	Noncarcinogenic Child SL THI=0.1 (mg/kg)	Carcinogenic SL (mg/kg)	Risk-Based SL (mg/kg)
4.01E-05	-	-	-	-	6.29E-05	3.78E-05	-	3.78E-05
4.01E-05	1.11E-03	-	-	-	2.87E-05	1.72E-05	4.78E-04	1.72E-05

Output generated 20AUG2019:10:23:01

Inhalation Unit Risk Toxicity Metadata

Chemical	CASNUM	Chemical Type	Inhalation Unit Risk (µg/m ^{3})$^{-1}$	Toxicity Source	EPA Cancer Classification	Inhalation Unit Risk Tumor Type
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	Organics				
Perfluorooctanoic acid (PFOA)	335-67-1	Organics				

Inhalation Unit Risk Target Organ	Inhalation Unit Risk Species	Inhalation Unit Risk Method	Inhalation Unit Risk Route	Inhalation Unit Risk Treatment Duration	Inhalation Unit Risk Study Reference	Inhalation Unit Risk Notes

Output generated 20AUG2019:10:23:01

Oral Slope Factor Toxicity Metadata

6

Chemical	CASNUM	Chemical Type	Oral Slope Factor (mg/kg-day) $^{-1}$	Toxicity Source	EPA Cancer Classification	Oral Slope Factor Tumor Type	Oral Slope Factor Target Organ	Oral Slope Factor Species	Oral Slope Factor Method	Oral Slope Factor Route	Oral Slope Factor Treatment Duration	Oral Slope Factor Study Reference	Oral Slope Factor Notes
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	Organics											
Perfluorooctanoic acid (PFOA)	335-67-1	Organics	7.00E-02	DWSHA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Output generated 20AUG2019:10:23:01

Oral Sub-Chronic Toxicity Metadata

Chemical	CASNUM	Chemical Type	Subchronic Oral Reference Dose (mg/kg-day)	Toxicity Source	Oral Subchronic Reference Dose Basis	Oral Subchronic Reference Dose Confidence Level	Oral Subchronic Reference Dose Critical Effect
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	Organics	-				
Perfluorooctanoic acid (PFOA)	335-67-1	Organics	-				

Oral Subchronic Reference Dose Target Organ	Oral Subchronic Reference Dose Modifying Factor	Oral Subchronic Reference Dose Uncertainty Factor	Oral Subchronic Reference Dose Species	Oral Subchronic Reference Dose Route	Oral Subchronic Reference Dose Study Duration	Oral Subchronic Reference Dose Study Reference	Oral Subchronic Reference Dose Notes

Output generated 20AUG2019:10:23:01

Inhalation Sub-Chronic Toxicity Metadata

8

Chemical	CASNUM	Chemical Type	Subchronic Inhalation Reference Concentration (mg/m³)	Toxicity Source	Inhalation Subchronic Reference Concentration Basis	Inhalation Subchronic Reference Concentration Confidence Level	Inhalation Subchronic Reference Concentration Critical Effect	Inhalation Subchronic Reference Concentration Target Organ
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	Organics	-					
Perfluorooctanoic acid (PFOA)	335-67-1	Organics	-					

Inhalation Subchronic Reference Concentration Modifying Factor	Inhalation Subchronic Reference Concentration Uncertainty Factor	Inhalation Subchronic Reference Concentration Species	Inhalation Subchronic Reference Concentration Route	Inhalation Subchronic Reference Concentration Study Duration	Inhalation Subchronic Reference Concentration Study Reference	Inhalation Subchronic Reference Concentration Notes

Output generated 20AUG2019:10:23:01

Appendix E – Site Specific RSL Calculations

Site-specific Equation Inputs for Soil to Groundwater

1

*** Inputted values different from defaults are highlighted.**

Variable	Default Value	Form-input Value
DAF (dilution attenuation factor) unitless	1	1
DAF (dilution attenuation factor) unitless	1	1
BW_{0-2} (mutagenic body weight) kg	15	15
BW_{2-6} (mutagenic body weight) kg	15	15
BW_{6-16} (mutagenic body weight) kg	80	80
BW_{16-26} (mutagenic body weight) kg	80	80
BW_{res-a} (body weight - adult) kg	80	80
BW_{res-c} (body weight - child) kg	15	15
$DFW_{res-adj}$ (age-adjusted dermal factor) cm^2-event/kg	2610650	2610650
$DFWM_{res-adj}$ (mutagenic age-adjusted dermal factor) cm^2-event/kg	8191633	8191633
ED_{res} (exposure duration - resident) years	26	26
ED_{0-2} (mutagenic exposure duration first phase) years	2	2
ED_{2-6} (mutagenic exposure duration second phase) years	4	4
ED_{6-16} (mutagenic exposure duration third phase) years	10	10
ED_{16-26} (mutagenic exposure duration fourth phase) years	10	10
ED_{res-a} (exposure duration - adult) years	20	20
ED_{res-c} (exposure duration - child) years	6	6
EF_{res} (exposure frequency) days/year	350	350
EF_{0-2} (mutagenic exposure frequency first phase) days/year	350	350
EF_{2-6} (mutagenic exposure frequency second phase) days/year	350	350
EF_{6-16} (mutagenic exposure frequency third phase) days/year	350	350
EF_{16-26} (mutagenic exposure frequency fourth phase) days/year	350	350
EF_{res-a} (exposure frequency - adult) days/year	350	350
EF_{res-c} (exposure frequency - child) days/year	350	350
ET_{res} (exposure time) hours/day	24	24
$ET_{event-res-adj}$ (age-adjusted exposure time) hours/event	0.67077	0.67077
$ET_{event-res-madj}$ (mutagenic age-adjusted exposure time) hours/event	0.67077	0.67077
ET_{0-2} (mutagenic dermal exposure time first phase) hours/event	0.54	0.54
ET_{2-6} (mutagenic dermal exposure time second phase) hours/event	0.54	0.54
ET_{6-16} (mutagenic dermal exposure time third phase) hours/event	0.71	0.71
ET_{16-26} (mutagenic dermal exposure time fourth phase) hours/event	0.71	0.71

Output generated 29OCT2019:10:02:09

Site-specific Equation Inputs for Soil to Groundwater

2

*** Inputted values different from defaults are highlighted.**

Variable	Default Value	Form-input Value
ET_{res-a} (dermal exposure time - adult) hours/event	0.71	0.71
ET_{res-c} (dermal exposure time - child) hours/event	0.54	0.54
ET_{0-2} (mutagenic inhalation exposure time first phase) hours/day	24	24
ET_{2-6} (mutagenic inhalation exposure time second phase) hours/day	24	24
ET_{6-16} (mutagenic inhalation exposure time third phase) hours/day	24	24
ET_{16-26} (mutagenic inhalation exposure time fourth phase) hours/day	24	24
ET_{res-a} (inhalation exposure time - adult) hours/day	24	24
ET_{res-c} (inhalation exposure time - child) hours/day	24	24
EV_{0-2} (mutagenic events) per day	1	1
EV_{2-6} (mutagenic events) per day	1	1
EV_{6-16} (mutagenic events) per day	1	1
EV_{16-26} (mutagenic events) per day	1	1
EV_{res-a} (events - adult) per day	1	1
EV_{res-c} (events - child) per day	1	1
THQ (target hazard quotient) unitless	0.1	0.1
$IFW_{res-adj}$ (adjusted intake factor) L/kg	327.95	327.95
$IFWM_{res-adj}$ (mutagenic adjusted intake factor) L/kg	1019.9	1019.9
IRW_{0-2} (mutagenic water intake rate) L/day	0.78	0.78
IRW_{2-6} (mutagenic water intake rate) L/day	0.78	0.78
IRW_{6-16} (mutagenic water intake rate) L/day	2.5	2.5
IRW_{16-26} (mutagenic water intake rate) L/day	2.5	2.5
IRW_{res-a} (water intake rate - adult) L/day	2.5	2.5
IRW_{res-c} (water intake rate - child) L/day	0.78	0.78
K (volatilization factor of Andelman) L/m^3	0.5	0.5
LT (lifetime) years	70	70
SA_{0-2} (mutagenic skin surface area) cm^2	6365	6365
SA_{2-6} (mutagenic skin surface area) cm^2	6365	6365
SA_{6-16} (mutagenic skin surface area) cm^2	19652	19652
SA_{16-26} (mutagenic skin surface area) cm^2	19652	19652
SA_{res-a} (skin surface area - adult) cm^2	19652	19652
SA_{res-c} (skin surface area - child) cm^2	6365	6365

Output generated 29OCT2019:10:02:09

Site-specific Equation Inputs for Soil to Groundwater

3

*** Inputted values different from defaults are highlighted.**

Variable	Default Value	Form-input Value
l_{sc} (apparent thickness of stratum corneum) cm	0.001	0.001
TR (target risk) unitless	1.0E-06	1.0E-06

Output generated 29OCT2019:10:02:09

Site-specific Regional Screening Levels (RSL) for Soil to Groundwater

4

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; G = see user's guide; U = user provided; ca = cancer; nc = noncancer; * = where: nc SL < 100X ca SL; ** = where nc SL < 10X ca SL; SSL values are based on DAF=1; max = ceiling limit exceeded; sat = Csat exceeded.

Chemical	CAS Number	Mutagen?	Volatile?	Chemical Type	SF_o (mg/kg-day)$^{-1}$	SF_o Ref	IUR (ug/m^3)$^{-1}$	IUR Ref	RfD (mg/kg-day)	RfD Ref	RfC (mg/m^3)	RfC Ref	GIABS	ABS	S (mg/L)	K_d\ (cm^3/g)
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	No	No	Organics	-		-		2.00E-05	U	-		1	0.1	680	1.15E+00
Perfluorooctanoic acid (PFOA)	335-67-1	No	No	Organics	7.00E-02	U	-		2.00E-05	U	-		1	0.1	9500	3.57E-01

K_{oc}\ (cm^3/g)	Dilution Attenuation Factor (DAF) (unitless)	HLC (atm-m^3/mole)	Henry's Law Constant (unitless)	H` and HLC Ref	Normal Boiling Point BP (K)	BP Ref	Critical Temperature TC (K)	TC Ref	Noncarcinogenic SL Adult THI=0.1 (ug/L)	Noncarcinogenic SL Child THI=0.1 (ug/L)	Carcinogenic SL TR=1E-06 (ug/L)	Water Concentration (Adult) (mg/L)
3.72E+02	1	-	-		532.15	U	-		6.67E-02	4.01E-02	-	6.67E-05
1.15E+02	1	4E-6	1.64E-04	U	465.15	U	-		6.67E-02	4.01E-02	1.11E+00	6.67E-05

Water Concentration (Child) (mg/L)	Water Concentration (Cancer) (mg/L)	Maximum Contaminant Level (MCL) (ug/L)	Water Concentration (MCL) (mg/L)	MCL-based SL (mg/kg)	Noncarcinogenic Adult SL THI=0.1 (mg/kg)	Noncarcinogenic Child SL THI=0.1 (mg/kg)	Carcinogenic SL (mg/kg)	Risk-Based SL (mg/kg)
4.01E-05	-	-	-	-	9.03E-05	5.43E-05	-	5.43E-05
4.01E-05	1.11E-03	-	-	-	3.71E-05	2.23E-05	6.19E-04	2.23E-05

Output generated 29OCT2019:10:02:09

Site-specific Equation Inputs for Soil to Groundwater

1

*** Inputted values different from defaults are highlighted.**

Variable	Default Value	Form-input Value
DAF (dilution attenuation factor) unitless	1	1
DAF (dilution attenuation factor) unitless	1	1
BW_{0-2} (mutagenic body weight) kg	15	15
BW_{2-6} (mutagenic body weight) kg	15	15
BW_{6-16} (mutagenic body weight) kg	80	80
BW_{16-26} (mutagenic body weight) kg	80	80
BW_{resa} (body weight - adult) kg	80	80
BW_{resc} (body weight - child) kg	15	15
DFW_{resadj} (age-adjusted dermal factor) cm^2-event/kg	2610650	2610650
$DFWM_{resadj}$ (mutagenic age-adjusted dermal factor) cm^2-event/kg	8191633	8191633
ED_{res} (exposure duration - resident) years	26	26
ED_{0-2} (mutagenic exposure duration first phase) years	2	2
ED_{2-6} (mutagenic exposure duration second phase) years	4	4
ED_{6-16} (mutagenic exposure duration third phase) years	10	10
ED_{16-26} (mutagenic exposure duration fourth phase) years	10	10
ED_{resa} (exposure duration - adult) years	20	20
ED_{resc} (exposure duration - child) years	6	6
EF_{res} (exposure frequency) days/year	350	350
EF_{0-2} (mutagenic exposure frequency first phase) days/year	350	350
EF_{2-6} (mutagenic exposure frequency second phase) days/year	350	350
EF_{6-16} (mutagenic exposure frequency third phase) days/year	350	350
EF_{16-26} (mutagenic exposure frequency fourth phase) days/year	350	350
EF_{resa} (exposure frequency - adult) days/year	350	350
EF_{resc} (exposure frequency - child) days/year	350	350
ET_{res} (exposure time) hours/day	24	24
$ET_{event-resadj}$ (age-adjusted exposure time) hours/event	0.67077	0.67077
$ET_{event-resmadj}$ (mutagenic age-adjusted exposure time) hours/event	0.67077	0.67077
ET_{0-2} (mutagenic dermal exposure time first phase) hours/event	0.54	0.54
ET_{2-6} (mutagenic dermal exposure time second phase) hours/event	0.54	0.54
ET_{6-16} (mutagenic dermal exposure time third phase) hours/event	0.71	0.71
ET_{16-26} (mutagenic dermal exposure time fourth phase) hours/event	0.71	0.71

Output generated 29OCT2019:10:07:36

Site-specific Equation Inputs for Soil to Groundwater

2

*** Inputted values different from defaults are highlighted.**

Variable	Default Value	Form-input Value
ET_{res-a} (dermal exposure time - adult) hours/event	0.71	0.71
ET_{res-c} (dermal exposure time - child) hours/event	0.54	0.54
ET_{0-2} (mutagenic inhalation exposure time first phase) hours/day	24	24
ET_{2-6} (mutagenic inhalation exposure time second phase) hours/day	24	24
ET_{6-16} (mutagenic inhalation exposure time third phase) hours/day	24	24
ET_{16-26} (mutagenic inhalation exposure time fourth phase) hours/day	24	24
ET_{res-a} (inhalation exposure time - adult) hours/day	24	24
ET_{res-c} (inhalation exposure time - child) hours/day	24	24
EV_{0-2} (mutagenic events) per day	1	1
EV_{2-6} (mutagenic events) per day	1	1
EV_{6-16} (mutagenic events) per day	1	1
EV_{16-26} (mutagenic events) per day	1	1
EV_{res-a} (events - adult) per day	1	1
EV_{res-c} (events - child) per day	1	1
THQ (target hazard quotient) unitless	0.1	0.1
$IFW_{res-adj}$ (adjusted intake factor) L/kg	327.95	327.95
$IFWM_{res-adj}$ (mutagenic adjusted intake factor) L/kg	1019.9	1019.9
IRW_{0-2} (mutagenic water intake rate) L/day	0.78	0.78
IRW_{2-6} (mutagenic water intake rate) L/day	0.78	0.78
IRW_{6-16} (mutagenic water intake rate) L/day	2.5	2.5
IRW_{16-26} (mutagenic water intake rate) L/day	2.5	2.5
IRW_{res-a} (water intake rate - adult) L/day	2.5	2.5
IRW_{res-c} (water intake rate - child) L/day	0.78	0.78
K (volatilization factor of Andelman) L/m^3	0.5	0.5
LT (lifetime) years	70	70
SA_{0-2} (mutagenic skin surface area) cm^2	6365	6365
SA_{2-6} (mutagenic skin surface area) cm^2	6365	6365
SA_{6-16} (mutagenic skin surface area) cm^2	19652	19652
SA_{16-26} (mutagenic skin surface area) cm^2	19652	19652
SA_{res-a} (skin surface area - adult) cm^2	19652	19652
SA_{res-c} (skin surface area - child) cm^2	6365	6365

Output generated 29OCT2019:10:07:36

Site-specific Equation Inputs for Soil to Groundwater

3

*** Inputted values different from defaults are highlighted.**

Variable	Default Value	Form-input Value
l_{sc} (apparent thickness of stratum corneum) cm	0.001	0.001
TR (target risk) unitless	1.0E-06	1.0E-06

Output generated 29OCT2019:10:07:36

Site-specific Regional Screening Levels (RSL) for Soil to Groundwater

4

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; G = see user's guide; U = user provided; ca = cancer; nc = noncancer; * = where: nc SL < 100X ca SL; ** = where nc SL < 10X ca SL; SSL values are based on DAF=1; max = ceiling limit exceeded; sat = Csat exceeded.

Chemical	CAS Number	Mutagen?	Volatile?	Chemical Type	SF_o $(mg/kg\text{-}day)^{-1}$	SF_o Ref	IUR $(ug/m^3)^{-1}$	IUR Ref	RfD (mg/kg-day)	RfD Ref	RfC (mg/m^3)	RfC Ref	GIABS	ABS	S (mg/L)	K_d \ (cm^3/g)
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	No	No	Organics	-		-		2.00E-05	U	-		1	0.1	680	1.53E+00
Perfluorooctanoic acid (PFOA)	335-67-1	No	No	Organics	7.00E-02	U	-		2.00E-05	U	-		1	0.1	9500	4.72E-01

K_{oc} \ (cm^3/g)	Dilution Attenuation Factor (DAF) (unitless)	HLC $(atm\text{-}m^3/mole)$	Henry's Law Constant (unitless)	H` and HLC Ref	Normal Boiling Point BP (K)	BP Ref	Critical Temperature TC (K)	TC Ref	Noncarcinogenic SL Adult THI=0.1 (ug/L)	Noncarcinogenic SL Child THI=0.1 (ug/L)	Carcinogenic SL TR=1E-06 (ug/L)	Water Concentration (Adult) (mg/L)
3.72E+02	1	-	-		532.15	U	-		6.67E-02	4.01E-02	-	6.67E-05
1.15E+02	1	4E-6	1.64E-04	U	465.15	U	-		6.67E-02	4.01E-02	1.11E+00	6.67E-05

Water Concentration (Child) (mg/L)	Water Concentration (Cancer) (mg/L)	Maximum Contaminant Level (MCL) (ug/L)	Water Concentration (MCL) (mg/L)	MCL-based SL (mg/kg)	Noncarcinogenic Adult SL THI=0.1 (mg/kg)	Noncarcinogenic Child SL THI=0.1 (mg/kg)	Carcinogenic SL (mg/kg)	Risk-Based SL (mg/kg)
4.01E-05	-	-	-	-	1.15E-04	6.92E-05	-	6.92E-05
4.01E-05	1.11E-03	-	-	-	4.48E-05	2.69E-05	7.47E-04	2.69E-05

Output generated 29OCT2019:10:07:36

Site-specific Equation Inputs for Soil to Groundwater

1

*** Inputted values different from defaults are highlighted.**

Variable	Default Value	Form-input Value
DAF (dilution attenuation factor) unitless	1	1
DAF (dilution attenuation factor) unitless	1	1
BW_{0-2} (mutagenic body weight) kg	15	15
BW_{2-6} (mutagenic body weight) kg	15	15
BW_{6-16} (mutagenic body weight) kg	80	80
BW_{16-26} (mutagenic body weight) kg	80	80
BW_{resa} (body weight - adult) kg	80	80
BW_{resc} (body weight - child) kg	15	15
DFW_{resadj} (age-adjusted dermal factor) cm^2-event/kg	2610650	2610650
$DFWM_{resadj}$ (mutagenic age-adjusted dermal factor) cm^2-event/kg	8191633	8191633
ED_{res} (exposure duration - resident) years	26	26
ED_{0-2} (mutagenic exposure duration first phase) years	2	2
ED_{2-6} (mutagenic exposure duration second phase) years	4	4
ED_{6-16} (mutagenic exposure duration third phase) years	10	10
ED_{16-26} (mutagenic exposure duration fourth phase) years	10	10
ED_{resa} (exposure duration - adult) years	20	20
ED_{resc} (exposure duration - child) years	6	6
EF_{res} (exposure frequency) days/year	350	350
EF_{0-2} (mutagenic exposure frequency first phase) days/year	350	350
EF_{2-6} (mutagenic exposure frequency second phase) days/year	350	350
EF_{6-16} (mutagenic exposure frequency third phase) days/year	350	350
EF_{16-26} (mutagenic exposure frequency fourth phase) days/year	350	350
EF_{resa} (exposure frequency - adult) days/year	350	350
EF_{resc} (exposure frequency - child) days/year	350	350
ET_{res} (exposure time) hours/day	24	24
$ET_{event-resadj}$ (age-adjusted exposure time) hours/event	0.67077	0.67077
$ET_{event-resmadj}$ (mutagenic age-adjusted exposure time) hours/event	0.67077	0.67077
ET_{0-2} (mutagenic dermal exposure time first phase) hours/event	0.54	0.54
ET_{2-6} (mutagenic dermal exposure time second phase) hours/event	0.54	0.54
ET_{6-16} (mutagenic dermal exposure time third phase) hours/event	0.71	0.71
ET_{16-26} (mutagenic dermal exposure time fourth phase) hours/event	0.71	0.71

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Site-specific Equation Inputs for Soil to Groundwater

2

*** Inputted values different from defaults are highlighted.**

Variable	Default Value	Form-input Value
ET_{res-a} (dermal exposure time - adult) hours/event	0.71	0.71
ET_{res-c} (dermal exposure time - child) hours/event	0.54	0.54
ET_{0-2} (mutagenic inhalation exposure time first phase) hours/day	24	24
ET_{2-6} (mutagenic inhalation exposure time second phase) hours/day	24	24
ET_{6-16} (mutagenic inhalation exposure time third phase) hours/day	24	24
ET_{16-26} (mutagenic inhalation exposure time fourth phase) hours/day	24	24
ET_{res-a} (inhalation exposure time - adult) hours/day	24	24
ET_{res-c} (inhalation exposure time - child) hours/day	24	24
EV_{0-2} (mutagenic events) per day	1	1
EV_{2-6} (mutagenic events) per day	1	1
EV_{6-16} (mutagenic events) per day	1	1
EV_{16-26} (mutagenic events) per day	1	1
EV_{res-a} (events - adult) per day	1	1
EV_{res-c} (events - child) per day	1	1
THQ (target hazard quotient) unitless	0.1	0.1
$IFW_{res-adj}$ (adjusted intake factor) L/kg	327.95	327.95
$IFWM_{res-adj}$ (mutagenic adjusted intake factor) L/kg	1019.9	1019.9
IRW_{0-2} (mutagenic water intake rate) L/day	0.78	0.78
IRW_{2-6} (mutagenic water intake rate) L/day	0.78	0.78
IRW_{6-16} (mutagenic water intake rate) L/day	2.5	2.5
IRW_{16-26} (mutagenic water intake rate) L/day	2.5	2.5
IRW_{res-a} (water intake rate - adult) L/day	2.5	2.5
IRW_{res-c} (water intake rate - child) L/day	0.78	0.78
K (volatilization factor of Andelman) L/m^3	0.5	0.5
LT (lifetime) years	70	70
SA_{0-2} (mutagenic skin surface area) cm^2	6365	6365
SA_{2-6} (mutagenic skin surface area) cm^2	6365	6365
SA_{6-16} (mutagenic skin surface area) cm^2	19652	19652
SA_{16-26} (mutagenic skin surface area) cm^2	19652	19652
SA_{res-a} (skin surface area - adult) cm^2	19652	19652
SA_{res-c} (skin surface area - child) cm^2	6365	6365

Output generated 29OCT2019:10:10:43

Site-specific Equation Inputs for Soil to Groundwater

3

*** Inputted values different from defaults are highlighted.**

Variable	Default Value	Form-input Value
l_{sc} (apparent thickness of stratum corneum) cm	0.001	0.001
TR (target risk) unitless	1.0E-06	1.0E-06

Output generated 29OCT2019:10:10:43

Site-specific Regional Screening Levels (RSL) for Soil to Groundwater

4

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; G = see user's guide; U = user provided; ca = cancer; nc = noncancer; * = where: nc SL < 100X ca SL; ** = where nc SL < 10X ca SL; SSL values are based on DAF=1; max = ceiling limit exceeded; sat = Csat exceeded.

Chemical	CAS Number	Mutagen?	Volatile?	Chemical Type	SF_o $(mg/kg\text{-}day)^{-1}$	SF_o Ref	IUR $(ug/m^3)^{-1}$	IUR Ref	RfD (mg/kg-day)	RfD Ref	RfC (mg/m^3)	RfC Ref	GIABS	ABS	S (mg/L)	K_d \ (cm^3/g)
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	No	No	Organics	-		-		2.00E-05	U	-		1	0.1	680	2.01E+00
Perfluorooctanoic acid (PFOA)	335-67-1	No	No	Organics	7.00E-02	U	-		2.00E-05	U	-		1	0.1	9500	6.21E-01

K_{oc} \ (cm^3/g)	Dilution Attenuation Factor (DAF) (unitless)	HLC $(atm\text{-}m^3/mole)$	Henry's Law Constant (unitless)	H` and HLC Ref	Normal Boiling Point BP (K)	BP Ref	Critical Temperature TC (K)	TC Ref	Noncarcinogenic SL Adult THI=0.1 (ug/L)	Noncarcinogenic SL Child THI=0.1 (ug/L)	Carcinogenic SL TR=1E-06 (ug/L)	Water Concentration (Adult) (mg/L)
3.72E+02	1	-	-		532.15	U	-		6.67E-02	4.01E-02	-	6.67E-05
1.15E+02	1	4E-6	1.64E-04	U	465.15	U	-		6.67E-02	4.01E-02	1.11E+00	6.67E-05

Water Concentration (Child) (mg/L)	Water Concentration (Cancer) (mg/L)	Maximum Contaminant Level (MCL) (ug/L)	Water Concentration (MCL) (mg/L)	MCL-based SL (mg/kg)	Noncarcinogenic Adult SL THI=0.1 (mg/kg)	Noncarcinogenic Child SL THI=0.1 (mg/kg)	Carcinogenic SL (mg/kg)	Risk-Based SL (mg/kg)
4.01E-05	-	-	-	-	1.47E-04	8.86E-05	-	8.86E-05
4.01E-05	1.11E-03	-	-	-	5.48E-05	3.29E-05	9.14E-04	3.29E-05

Output generated 29OCT2019:10:10:43

Site-specific Equation Inputs for Soil to Groundwater

1

*** Inputted values different from defaults are highlighted.**

Variable	Default Value	Form-input Value
DAF (dilution attenuation factor) unitless	1	1
DAF (dilution attenuation factor) unitless	1	1
BW_{0-2} (mutagenic body weight) kg	15	15
BW_{2-6} (mutagenic body weight) kg	15	15
BW_{6-16} (mutagenic body weight) kg	80	80
BW_{16-26} (mutagenic body weight) kg	80	80
BW_{resa} (body weight - adult) kg	80	80
BW_{resc} (body weight - child) kg	15	15
DFW_{resadj} (age-adjusted dermal factor) cm^2-event/kg	2610650	2610650
$DFWM_{resadj}$ (mutagenic age-adjusted dermal factor) cm^2-event/kg	8191633	8191633
ED_{res} (exposure duration - resident) years	26	26
ED_{0-2} (mutagenic exposure duration first phase) years	2	2
ED_{2-6} (mutagenic exposure duration second phase) years	4	4
ED_{6-16} (mutagenic exposure duration third phase) years	10	10
ED_{16-26} (mutagenic exposure duration fourth phase) years	10	10
ED_{resa} (exposure duration - adult) years	20	20
ED_{resc} (exposure duration - child) years	6	6
EF_{res} (exposure frequency) days/year	350	350
EF_{0-2} (mutagenic exposure frequency first phase) days/year	350	350
EF_{2-6} (mutagenic exposure frequency second phase) days/year	350	350
EF_{6-16} (mutagenic exposure frequency third phase) days/year	350	350
EF_{16-26} (mutagenic exposure frequency fourth phase) days/year	350	350
EF_{resa} (exposure frequency - adult) days/year	350	350
EF_{resc} (exposure frequency - child) days/year	350	350
ET_{res} (exposure time) hours/day	24	24
$ET_{event-resadj}$ (age-adjusted exposure time) hours/event	0.67077	0.67077
$ET_{event-resmadj}$ (mutagenic age-adjusted exposure time) hours/event	0.67077	0.67077
ET_{0-2} (mutagenic dermal exposure time first phase) hours/event	0.54	0.54
ET_{2-6} (mutagenic dermal exposure time second phase) hours/event	0.54	0.54
ET_{6-16} (mutagenic dermal exposure time third phase) hours/event	0.71	0.71
ET_{16-26} (mutagenic dermal exposure time fourth phase) hours/event	0.71	0.71

Output generated 05DEC2019:16:08:29

Site-specific Equation Inputs for Soil to Groundwater

2

*** Inputted values different from defaults are highlighted.**

Variable	Default Value	Form-input Value
ET_{res-a} (dermal exposure time - adult) hours/event	0.71	0.71
ET_{res-c} (dermal exposure time - child) hours/event	0.54	0.54
ET_{0-2} (mutagenic inhalation exposure time first phase) hours/day	24	24
ET_{2-6} (mutagenic inhalation exposure time second phase) hours/day	24	24
ET_{6-16} (mutagenic inhalation exposure time third phase) hours/day	24	24
ET_{16-26} (mutagenic inhalation exposure time fourth phase) hours/day	24	24
ET_{res-a} (inhalation exposure time - adult) hours/day	24	24
ET_{res-c} (inhalation exposure time - child) hours/day	24	24
EV_{0-2} (mutagenic events) per day	1	1
EV_{2-6} (mutagenic events) per day	1	1
EV_{6-16} (mutagenic events) per day	1	1
EV_{16-26} (mutagenic events) per day	1	1
EV_{res-a} (events - adult) per day	1	1
EV_{res-c} (events - child) per day	1	1
THQ (target hazard quotient) unitless	0.1	0.1
$IFW_{res-adj}$ (adjusted intake factor) L/kg	327.95	327.95
$IFWM_{res-adj}$ (mutagenic adjusted intake factor) L/kg	1019.9	1019.9
IRW_{0-2} (mutagenic water intake rate) L/day	0.78	0.78
IRW_{2-6} (mutagenic water intake rate) L/day	0.78	0.78
IRW_{6-16} (mutagenic water intake rate) L/day	2.5	2.5
IRW_{16-26} (mutagenic water intake rate) L/day	2.5	2.5
IRW_{res-a} (water intake rate - adult) L/day	2.5	2.5
IRW_{res-c} (water intake rate - child) L/day	0.78	0.78
K (volatilization factor of Andelman) L/m^3	0.5	0.5
LT (lifetime) years	70	70
SA_{0-2} (mutagenic skin surface area) cm^2	6365	6365
SA_{2-6} (mutagenic skin surface area) cm^2	6365	6365
SA_{6-16} (mutagenic skin surface area) cm^2	19652	19652
SA_{16-26} (mutagenic skin surface area) cm^2	19652	19652
SA_{res-a} (skin surface area - adult) cm^2	19652	19652
SA_{res-c} (skin surface area - child) cm^2	6365	6365

Output generated 05DEC2019:16:08:29

Site-specific Equation Inputs for Soil to Groundwater

3

*** Inputted values different from defaults are highlighted.**

Variable	Default Value	Form-input Value
l_{sc} (apparent thickness of stratum corneum) cm	0.001	0.001
TR (target risk) unitless	1.0E-06	1.0E-06

Output generated 05DEC2019:16:08:29

Site-specific Regional Screening Levels (RSL) for Soil to Groundwater

4

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; G = see user's guide; U = user provided; ca = cancer; nc = noncancer; * = where: nc SL < 100X ca SL; ** = where nc SL < 10X ca SL; SSL values are based on DAF=1; max = ceiling limit exceeded; sat = Csat exceeded.

Chemical	CAS Number	Mutagen?	Volatile?	Chemical Type	SF_o (mg/kg-day)$^{-1}$	SF_o Ref	IUR (ug/m^3)$^{-1}$	IUR Ref	RfD (mg/kg-day)	RfD Ref	RfC (mg/m^3)	RfC Ref	GIABS	ABS	S (mg/L)	K_d\ (cm^3/g)
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	No	No	Organics	-		-		2.00E-05	U	-		1	0.1	680	1.12E+01
Perfluorooctanoic acid (PFOA)	335-67-1	No	No	Organics	7.00E-02	U	-		2.00E-05	U	-		1	0.1	9500	3.45E+00

K_{oc}\ (cm^3/g)	Dilution Attenuation Factor (DAF) (unitless)	HLC (atm-m^3/mole)	Henry's Law Constant (unitless)	H` and HLC Ref	Normal Boiling Point BP (K)	BP Ref	Critical Temperature TC (K)	TC Ref	Noncarcinogenic SL Adult THI=0.1 (ug/L)	Noncarcinogenic SL Child THI=0.1 (ug/L)	Carcinogenic SL TR=1E-06 (ug/L)	Water Concentration (Adult) (mg/L)
3.72E+02	1	-	-		532.15	U	-		6.67E-02	4.01E-02	-	6.67E-05
1.15E+02	1	4E-6	1.64E-04	U	465.15	U	-		6.67E-02	4.01E-02	1.11E+00	6.67E-05

Water Concentration (Child) (mg/L)	Water Concentration (Cancer) (mg/L)	Maximum Contaminant Level (MCL) (ug/L)	Water Concentration (MCL) (mg/L)	MCL-based SL (mg/kg)	Noncarcinogenic Adult SL THI=0.1 (mg/kg)	Noncarcinogenic Child SL THI=0.1 (mg/kg)	Carcinogenic SL (mg/kg)	Risk-Based SL (mg/kg)
4.01E-05	-	-	-	-	7.58E-04	4.56E-04	-	4.56E-04
4.01E-05	1.11E-03	-	-	-	2.44E-04	1.46E-04	4.06E-03	1.46E-04

Output generated 05DEC2019:16:08:29

Site-specific Equation Inputs for Soil to Groundwater

1

*** Inputted values different from defaults are highlighted.**

Variable	Default Value	Form-input Value
DAF (dilution attenuation factor) unitless	1	1
DAF (dilution attenuation factor) unitless	1	1
BW_{0-2} (mutagenic body weight) kg	15	15
BW_{2-6} (mutagenic body weight) kg	15	15
BW_{6-16} (mutagenic body weight) kg	80	80
BW_{16-26} (mutagenic body weight) kg	80	80
BW_{resa} (body weight - adult) kg	80	80
BW_{resc} (body weight - child) kg	15	15
DFW_{resadj} (age-adjusted dermal factor) cm^2-event/kg	2610650	2610650
$DFWM_{resadj}$ (mutagenic age-adjusted dermal factor) cm^2-event/kg	8191633	8191633
ED_{res} (exposure duration - resident) years	26	26
ED_{0-2} (mutagenic exposure duration first phase) years	2	2
ED_{2-6} (mutagenic exposure duration second phase) years	4	4
ED_{6-16} (mutagenic exposure duration third phase) years	10	10
ED_{16-26} (mutagenic exposure duration fourth phase) years	10	10
ED_{resa} (exposure duration - adult) years	20	20
ED_{resc} (exposure duration - child) years	6	6
EF_{res} (exposure frequency) days/year	350	350
EF_{0-2} (mutagenic exposure frequency first phase) days/year	350	350
EF_{2-6} (mutagenic exposure frequency second phase) days/year	350	350
EF_{6-16} (mutagenic exposure frequency third phase) days/year	350	350
EF_{16-26} (mutagenic exposure frequency fourth phase) days/year	350	350
EF_{resa} (exposure frequency - adult) days/year	350	350
EF_{resc} (exposure frequency - child) days/year	350	350
ET_{res} (exposure time) hours/day	24	24
$ET_{event-resadj}$ (age-adjusted exposure time) hours/event	0.67077	0.67077
$ET_{event-resmadj}$ (mutagenic age-adjusted exposure time) hours/event	0.67077	0.67077
ET_{0-2} (mutagenic dermal exposure time first phase) hours/event	0.54	0.54
ET_{2-6} (mutagenic dermal exposure time second phase) hours/event	0.54	0.54
ET_{6-16} (mutagenic dermal exposure time third phase) hours/event	0.71	0.71
ET_{16-26} (mutagenic dermal exposure time fourth phase) hours/event	0.71	0.71

Output generated 29OCT2019:10:12:26

Site-specific Equation Inputs for Soil to Groundwater

2

*** Inputted values different from defaults are highlighted.**

Variable	Default Value	Form-input Value
ET_{res-a} (dermal exposure time - adult) hours/event	0.71	0.71
ET_{res-c} (dermal exposure time - child) hours/event	0.54	0.54
ET_{0-2} (mutagenic inhalation exposure time first phase) hours/day	24	24
ET_{2-6} (mutagenic inhalation exposure time second phase) hours/day	24	24
ET_{6-16} (mutagenic inhalation exposure time third phase) hours/day	24	24
ET_{16-26} (mutagenic inhalation exposure time fourth phase) hours/day	24	24
ET_{res-a} (inhalation exposure time - adult) hours/day	24	24
ET_{res-c} (inhalation exposure time - child) hours/day	24	24
EV_{0-2} (mutagenic events) per day	1	1
EV_{2-6} (mutagenic events) per day	1	1
EV_{6-16} (mutagenic events) per day	1	1
EV_{16-26} (mutagenic events) per day	1	1
EV_{res-a} (events - adult) per day	1	1
EV_{res-c} (events - child) per day	1	1
THQ (target hazard quotient) unitless	0.1	0.1
$IFW_{res-adj}$ (adjusted intake factor) L/kg	327.95	327.95
$IFWM_{res-adj}$ (mutagenic adjusted intake factor) L/kg	1019.9	1019.9
IRW_{0-2} (mutagenic water intake rate) L/day	0.78	0.78
IRW_{2-6} (mutagenic water intake rate) L/day	0.78	0.78
IRW_{6-16} (mutagenic water intake rate) L/day	2.5	2.5
IRW_{16-26} (mutagenic water intake rate) L/day	2.5	2.5
IRW_{res-a} (water intake rate - adult) L/day	2.5	2.5
IRW_{res-c} (water intake rate - child) L/day	0.78	0.78
K (volatilization factor of Andelman) L/m^3	0.5	0.5
LT (lifetime) years	70	70
SA_{0-2} (mutagenic skin surface area) cm^2	6365	6365
SA_{2-6} (mutagenic skin surface area) cm^2	6365	6365
SA_{6-16} (mutagenic skin surface area) cm^2	19652	19652
SA_{16-26} (mutagenic skin surface area) cm^2	19652	19652
SA_{res-a} (skin surface area - adult) cm^2	19652	19652
SA_{res-c} (skin surface area - child) cm^2	6365	6365

Output generated 29OCT2019:10:12:26

Site-specific Equation Inputs for Soil to Groundwater

3

*** Inputted values different from defaults are highlighted.**

Variable	Default Value	Form-input Value
l_{sc} (apparent thickness of stratum corneum) cm	0.001	0.001
TR (target risk) unitless	1.0E-06	1.0E-06

Output generated 29OCT2019:10:12:26

Site-specific Regional Screening Levels (RSL) for Soil to Groundwater

4

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; G = see user's guide; U = user provided; ca = cancer; nc = noncancer; * = where: nc SL < 100X ca SL; ** = where nc SL < 10X ca SL; SSL values are based on DAF=1; max = ceiling limit exceeded; sat = Csat exceeded.

Chemical	CAS Number	Mutagen?	Volatile?	Chemical Type	SF_o (mg/kg-day)$^{-1}$	SF_o Ref	IUR (ug/m^3)$^{-1}$	IUR Ref	RfD (mg/kg-day)	RfD Ref	RfC (mg/m^3)	RfC Ref	GIABS	ABS	S (mg/L)	K_d\ (cm^3/g)
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	No	No	Organics	-		-		2.00E-05	U	-		1	0.1	680	2.64E+00
Perfluorooctanoic acid (PFOA)	335-67-1	No	No	Organics	7.00E-02	U	-		2.00E-05	U	-		1	0.1	9500	8.17E-01

K_{oc}\ (cm^3/g)	Dilution Attenuation Factor (DAF) (unitless)	HLC (atm-m^3/mole)	Henry's Law Constant (unitless)	H` and HLC Ref	Normal Boiling Point BP (K)	BP Ref	Critical Temperature TC (K)	TC Ref	Noncarcinogenic SL Adult THI=0.1 (ug/L)	Noncarcinogenic SL Child THI=0.1 (ug/L)	Carcinogenic SL TR=1E-06 (ug/L)	Water Concentration (Adult) (mg/L)
3.72E+02	1	-	-		532.15	U	-		6.67E-02	4.01E-02	-	6.67E-05
1.15E+02	1	4E-6	1.64E-04	U	465.15	U	-		6.67E-02	4.01E-02	1.11E+00	6.67E-05

Water Concentration (Child) (mg/L)	Water Concentration (Cancer) (mg/L)	Maximum Contaminant Level (MCL) (ug/L)	Water Concentration (MCL) (mg/L)	MCL-based SL (mg/kg)	Noncarcinogenic Adult SL THI=0.1 (mg/kg)	Noncarcinogenic Child SL THI=0.1 (mg/kg)	Carcinogenic SL (mg/kg)	Risk-Based SL (mg/kg)
4.01E-05	-	-	-	-	1.90E-04	1.14E-04	-	1.14E-04
4.01E-05	1.11E-03	-	-	-	6.78E-05	4.08E-05	1.13E-03	4.08E-05

Output generated 29OCT2019:10:12:26

Site-specific Equation Inputs for Soil to Groundwater

1

*** Inputted values different from defaults are highlighted.**

Variable	Default Value	Form-input Value
DAF (dilution attenuation factor) unitless	1	1
DAF (dilution attenuation factor) unitless	1	1
BW_{0-2} (mutagenic body weight) kg	15	15
BW_{2-6} (mutagenic body weight) kg	15	15
BW_{6-16} (mutagenic body weight) kg	80	80
BW_{16-26} (mutagenic body weight) kg	80	80
BW_{resa} (body weight - adult) kg	80	80
BW_{resc} (body weight - child) kg	15	15
DFW_{resadj} (age-adjusted dermal factor) cm^2-event/kg	2610650	2610650
$DFWM_{resadj}$ (mutagenic age-adjusted dermal factor) cm^2-event/kg	8191633	8191633
ED_{res} (exposure duration - resident) years	26	26
ED_{0-2} (mutagenic exposure duration first phase) years	2	2
ED_{2-6} (mutagenic exposure duration second phase) years	4	4
ED_{6-16} (mutagenic exposure duration third phase) years	10	10
ED_{16-26} (mutagenic exposure duration fourth phase) years	10	10
ED_{resa} (exposure duration - adult) years	20	20
ED_{resc} (exposure duration - child) years	6	6
EF_{res} (exposure frequency) days/year	350	350
EF_{0-2} (mutagenic exposure frequency first phase) days/year	350	350
EF_{2-6} (mutagenic exposure frequency second phase) days/year	350	350
EF_{6-16} (mutagenic exposure frequency third phase) days/year	350	350
EF_{16-26} (mutagenic exposure frequency fourth phase) days/year	350	350
EF_{resa} (exposure frequency - adult) days/year	350	350
EF_{resc} (exposure frequency - child) days/year	350	350
ET_{res} (exposure time) hours/day	24	24
$ET_{event-resadj}$ (age-adjusted exposure time) hours/event	0.67077	0.67077
$ET_{event-resmadj}$ (mutagenic age-adjusted exposure time) hours/event	0.67077	0.67077
ET_{0-2} (mutagenic dermal exposure time first phase) hours/event	0.54	0.54
ET_{2-6} (mutagenic dermal exposure time second phase) hours/event	0.54	0.54
ET_{6-16} (mutagenic dermal exposure time third phase) hours/event	0.71	0.71
ET_{16-26} (mutagenic dermal exposure time fourth phase) hours/event	0.71	0.71

Output generated 29OCT2019:10:15:03

Site-specific Equation Inputs for Soil to Groundwater

2

*** Inputted values different from defaults are highlighted.**

Variable	Default Value	Form-input Value
ET_{res-a} (dermal exposure time - adult) hours/event	0.71	0.71
ET_{res-c} (dermal exposure time - child) hours/event	0.54	0.54
ET_{0-2} (mutagenic inhalation exposure time first phase) hours/day	24	24
ET_{2-6} (mutagenic inhalation exposure time second phase) hours/day	24	24
ET_{6-16} (mutagenic inhalation exposure time third phase) hours/day	24	24
ET_{16-26} (mutagenic inhalation exposure time fourth phase) hours/day	24	24
ET_{res-a} (inhalation exposure time - adult) hours/day	24	24
ET_{res-c} (inhalation exposure time - child) hours/day	24	24
EV_{0-2} (mutagenic events) per day	1	1
EV_{2-6} (mutagenic events) per day	1	1
EV_{6-16} (mutagenic events) per day	1	1
EV_{16-26} (mutagenic events) per day	1	1
EV_{res-a} (events - adult) per day	1	1
EV_{res-c} (events - child) per day	1	1
THQ (target hazard quotient) unitless	0.1	0.1
$IFW_{res-adj}$ (adjusted intake factor) L/kg	327.95	327.95
$IFWM_{res-adj}$ (mutagenic adjusted intake factor) L/kg	1019.9	1019.9
IRW_{0-2} (mutagenic water intake rate) L/day	0.78	0.78
IRW_{2-6} (mutagenic water intake rate) L/day	0.78	0.78
IRW_{6-16} (mutagenic water intake rate) L/day	2.5	2.5
IRW_{16-26} (mutagenic water intake rate) L/day	2.5	2.5
IRW_{res-a} (water intake rate - adult) L/day	2.5	2.5
IRW_{res-c} (water intake rate - child) L/day	0.78	0.78
K (volatilization factor of Andelman) L/m^3	0.5	0.5
LT (lifetime) years	70	70
SA_{0-2} (mutagenic skin surface area) cm^2	6365	6365
SA_{2-6} (mutagenic skin surface area) cm^2	6365	6365
SA_{6-16} (mutagenic skin surface area) cm^2	19652	19652
SA_{16-26} (mutagenic skin surface area) cm^2	19652	19652
SA_{res-a} (skin surface area - adult) cm^2	19652	19652
SA_{res-c} (skin surface area - child) cm^2	6365	6365

Output generated 29OCT2019:10:15:03

Site-specific Equation Inputs for Soil to Groundwater

3

*** Inputted values different from defaults are highlighted.**

Variable	Default Value	Form-input Value
l_{sc} (apparent thickness of stratum corneum) cm	0.001	0.001
TR (target risk) unitless	1.0E-06	1.0E-06

Output generated 29OCT2019:10:15:03

Site-specific Regional Screening Levels (RSL) for Soil to Groundwater

4

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; G = see user's guide; U = user provided; ca = cancer; nc = noncancer; * = where: nc SL < 100X ca SL; ** = where nc SL < 10X ca SL; SSL values are based on DAF=1; max = ceiling limit exceeded; sat = Csat exceeded.

Chemical	CAS Number	Mutagen?	Volatile?	Chemical Type	SF_o $(mg/kg\text{-}day)^{-1}$	SF_o Ref	IUR $(ug/m^3)^{-1}$	IUR Ref	RfD (mg/kg-day)	RfD Ref	RfC (mg/m^3)	RfC Ref	GIABS	ABS	S (mg/L)	K_d \ (cm^3/g)
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	No	No	Organics	-		-		2.00E-05	U	-		1	0.1	680	2.49E+00
Perfluorooctanoic acid (PFOA)	335-67-1	No	No	Organics	7.00E-02	U	-		2.00E-05	U	-		1	0.1	9500	7.71E-01

K_{oc} \ (cm^3/g)	Dilution Attenuation Factor (DAF) (unitless)	HLC $(atm\text{-}m^3/mole)$	Henry's Law Constant (unitless)	H` and HLC Ref	Normal Boiling Point BP (K)	BP Ref	Critical Temperature TC (K)	TC Ref	Noncarcinogenic SL Adult THI=0.1 (ug/L)	Noncarcinogenic SL Child THI=0.1 (ug/L)	Carcinogenic SL TR=1E-06 (ug/L)	Water Concentration (Adult) (mg/L)
3.72E+02	1	-	-		532.15	U	-		6.67E-02	4.01E-02	-	6.67E-05
1.15E+02	1	4E-6	1.64E-04	U	465.15	U	-		6.67E-02	4.01E-02	1.11E+00	6.67E-05

Water Concentration (Child) (mg/L)	Water Concentration (Cancer) (mg/L)	Maximum Contaminant Level (MCL) (ug/L)	Water Concentration (MCL) (mg/L)	MCL-based SL (mg/kg)	Noncarcinogenic Adult SL THI=0.1 (mg/kg)	Noncarcinogenic Child SL THI=0.1 (mg/kg)	Carcinogenic SL (mg/kg)	Risk-Based SL (mg/kg)
4.01E-05	-	-	-	-	1.80E-04	1.08E-04	-	1.08E-04
4.01E-05	1.11E-03	-	-	-	6.48E-05	3.89E-05	1.08E-03	3.89E-05

Output generated 29OCT2019:10:15:03

Site-specific Equation Inputs for Soil to Groundwater

1

*** Inputted values different from defaults are highlighted.**

Variable	Default Value	Form-input Value
DAF (dilution attenuation factor) unitless	1	1
DAF (dilution attenuation factor) unitless	1	1
BW_{0-2} (mutagenic body weight) kg	15	15
BW_{2-6} (mutagenic body weight) kg	15	15
BW_{6-16} (mutagenic body weight) kg	80	80
BW_{16-26} (mutagenic body weight) kg	80	80
BW_{resa} (body weight - adult) kg	80	80
BW_{resc} (body weight - child) kg	15	15
DFW_{resadj} (age-adjusted dermal factor) cm^2-event/kg	2610650	2610650
$DFWM_{resadj}$ (mutagenic age-adjusted dermal factor) cm^2-event/kg	8191633	8191633
ED_{res} (exposure duration - resident) years	26	26
ED_{0-2} (mutagenic exposure duration first phase) years	2	2
ED_{2-6} (mutagenic exposure duration second phase) years	4	4
ED_{6-16} (mutagenic exposure duration third phase) years	10	10
ED_{16-26} (mutagenic exposure duration fourth phase) years	10	10
ED_{resa} (exposure duration - adult) years	20	20
ED_{resc} (exposure duration - child) years	6	6
EF_{res} (exposure frequency) days/year	350	350
EF_{0-2} (mutagenic exposure frequency first phase) days/year	350	350
EF_{2-6} (mutagenic exposure frequency second phase) days/year	350	350
EF_{6-16} (mutagenic exposure frequency third phase) days/year	350	350
EF_{16-26} (mutagenic exposure frequency fourth phase) days/year	350	350
EF_{resa} (exposure frequency - adult) days/year	350	350
EF_{resc} (exposure frequency - child) days/year	350	350
ET_{res} (exposure time) hours/day	24	24
$ET_{event-resadj}$ (age-adjusted exposure time) hours/event	0.67077	0.67077
$ET_{event-resmadj}$ (mutagenic age-adjusted exposure time) hours/event	0.67077	0.67077
ET_{0-2} (mutagenic dermal exposure time first phase) hours/event	0.54	0.54
ET_{2-6} (mutagenic dermal exposure time second phase) hours/event	0.54	0.54
ET_{6-16} (mutagenic dermal exposure time third phase) hours/event	0.71	0.71
ET_{16-26} (mutagenic dermal exposure time fourth phase) hours/event	0.71	0.71

Output generated 29OCT2019:10:15:37

Site-specific Equation Inputs for Soil to Groundwater

2

*** Inputted values different from defaults are highlighted.**

Variable	Default Value	Form-input Value
ET_{res-a} (dermal exposure time - adult) hours/event	0.71	0.71
ET_{res-c} (dermal exposure time - child) hours/event	0.54	0.54
ET_{0-2} (mutagenic inhalation exposure time first phase) hours/day	24	24
ET_{2-6} (mutagenic inhalation exposure time second phase) hours/day	24	24
ET_{6-16} (mutagenic inhalation exposure time third phase) hours/day	24	24
ET_{16-26} (mutagenic inhalation exposure time fourth phase) hours/day	24	24
ET_{res-a} (inhalation exposure time - adult) hours/day	24	24
ET_{res-c} (inhalation exposure time - child) hours/day	24	24
EV_{0-2} (mutagenic events) per day	1	1
EV_{2-6} (mutagenic events) per day	1	1
EV_{6-16} (mutagenic events) per day	1	1
EV_{16-26} (mutagenic events) per day	1	1
EV_{res-a} (events - adult) per day	1	1
EV_{res-c} (events - child) per day	1	1
THQ (target hazard quotient) unitless	0.1	0.1
$IFW_{res-adj}$ (adjusted intake factor) L/kg	327.95	327.95
$IFWM_{res-adj}$ (mutagenic adjusted intake factor) L/kg	1019.9	1019.9
IRW_{0-2} (mutagenic water intake rate) L/day	0.78	0.78
IRW_{2-6} (mutagenic water intake rate) L/day	0.78	0.78
IRW_{6-16} (mutagenic water intake rate) L/day	2.5	2.5
IRW_{16-26} (mutagenic water intake rate) L/day	2.5	2.5
IRW_{res-a} (water intake rate - adult) L/day	2.5	2.5
IRW_{res-c} (water intake rate - child) L/day	0.78	0.78
K (volatilization factor of Andelman) L/m^3	0.5	0.5
LT (lifetime) years	70	70
SA_{0-2} (mutagenic skin surface area) cm^2	6365	6365
SA_{2-6} (mutagenic skin surface area) cm^2	6365	6365
SA_{6-16} (mutagenic skin surface area) cm^2	19652	19652
SA_{16-26} (mutagenic skin surface area) cm^2	19652	19652
SA_{res-a} (skin surface area - adult) cm^2	19652	19652
SA_{res-c} (skin surface area - child) cm^2	6365	6365

Output generated 29OCT2019:10:15:37

Site-specific Equation Inputs for Soil to Groundwater

3

*** Inputted values different from defaults are highlighted.**

Variable	Default Value	Form-input Value
l_{sc} (apparent thickness of stratum corneum) cm	0.001	0.001
TR (target risk) unitless	1.0E-06	1.0E-06

Output generated 29OCT2019:10:15:37

Site-specific Regional Screening Levels (RSL) for Soil to Groundwater

4

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Chemical	CAS Number	Mutagen?	Volatile?	Chemical Type	SF_o (mg/kg-day)$^{-1}$	SF_o Ref	IUR (ug/m^3)$^{-1}$	IUR Ref	RfD (mg/kg-day)	RfD Ref	RfC (mg/m^3)	RfC Ref	GIABS	ABS	S (mg/L)	K_d\ (cm^3/g)
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	No	No	Organics	-		-		2.00E-05	U	-		1	0.1	680	1.71E+00
Perfluorooctanoic acid (PFOA)	335-67-1	No	No	Organics	7.00E-02	U	-		2.00E-05	U	-		1	0.1	9500	5.29E-01

K_{oc}\ (cm^3/g)	Dilution Attenuation Factor (DAF) (unitless)	HLC (atm-m^3/mole)	Henry's Law Constant (unitless)	H` and HLC Ref	Normal Boiling Point BP (K)	BP Ref	Critical Temperature TC (K)	TC Ref	Noncarcinogenic SL Adult THI=0.1 (ug/L)	Noncarcinogenic SL Child THI=0.1 (ug/L)	Carcinogenic SL TR=1E-06 (ug/L)	Water Concentration (Adult) (mg/L)
3.72E+02	1	-	-		532.15	U	-		6.67E-02	4.01E-02	-	6.67E-05
1.15E+02	1	4E-6	1.64E-04	U	465.15	U	-		6.67E-02	4.01E-02	1.11E+00	6.67E-05

Water Concentration (Child) (mg/L)	Water Concentration (Cancer) (mg/L)	Maximum Contaminant Level (MCL) (ug/L)	Water Concentration (MCL) (mg/L)	MCL-based SL (mg/kg)	Noncarcinogenic Adult SL THI=0.1 (mg/kg)	Noncarcinogenic Child SL THI=0.1 (mg/kg)	Carcinogenic SL (mg/kg)	Risk-Based SL (mg/kg)
4.01E-05	-	-	-	-	1.28E-04	7.67E-05	-	7.67E-05
4.01E-05	1.11E-03	-	-	-	4.87E-05	2.92E-05	8.11E-04	2.92E-05

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Site-specific Equation Inputs for Soil to Groundwater

1

*** Inputted values different from defaults are highlighted.**

Variable	Default Value	Form-input Value
DAF (dilution attenuation factor) unitless	1	1
DAF (dilution attenuation factor) unitless	1	1
BW_{0-2} (mutagenic body weight) kg	15	15
BW_{2-6} (mutagenic body weight) kg	15	15
BW_{6-16} (mutagenic body weight) kg	80	80
BW_{16-26} (mutagenic body weight) kg	80	80
BW_{resa} (body weight - adult) kg	80	80
BW_{resc} (body weight - child) kg	15	15
DFW_{resadj} (age-adjusted dermal factor) cm^2-event/kg	2610650	2610650
$DFWM_{resadj}$ (mutagenic age-adjusted dermal factor) cm^2-event/kg	8191633	8191633
ED_{res} (exposure duration - resident) years	26	26
ED_{0-2} (mutagenic exposure duration first phase) years	2	2
ED_{2-6} (mutagenic exposure duration second phase) years	4	4
ED_{6-16} (mutagenic exposure duration third phase) years	10	10
ED_{16-26} (mutagenic exposure duration fourth phase) years	10	10
ED_{resa} (exposure duration - adult) years	20	20
ED_{resc} (exposure duration - child) years	6	6
EF_{res} (exposure frequency) days/year	350	350
EF_{0-2} (mutagenic exposure frequency first phase) days/year	350	350
EF_{2-6} (mutagenic exposure frequency second phase) days/year	350	350
EF_{6-16} (mutagenic exposure frequency third phase) days/year	350	350
EF_{16-26} (mutagenic exposure frequency fourth phase) days/year	350	350
EF_{resa} (exposure frequency - adult) days/year	350	350
EF_{resc} (exposure frequency - child) days/year	350	350
ET_{res} (exposure time) hours/day	24	24
$ET_{event-resadj}$ (age-adjusted exposure time) hours/event	0.67077	0.67077
$ET_{event-resmadj}$ (mutagenic age-adjusted exposure time) hours/event	0.67077	0.67077
ET_{0-2} (mutagenic dermal exposure time first phase) hours/event	0.54	0.54
ET_{2-6} (mutagenic dermal exposure time second phase) hours/event	0.54	0.54
ET_{6-16} (mutagenic dermal exposure time third phase) hours/event	0.71	0.71
ET_{16-26} (mutagenic dermal exposure time fourth phase) hours/event	0.71	0.71

Output generated 29OCT2019:10:16:31

Site-specific Equation Inputs for Soil to Groundwater

2

*** Inputted values different from defaults are highlighted.**

Variable	Default Value	Form-input Value
ET_{res-a} (dermal exposure time - adult) hours/event	0.71	0.71
ET_{res-c} (dermal exposure time - child) hours/event	0.54	0.54
ET_{0-2} (mutagenic inhalation exposure time first phase) hours/day	24	24
ET_{2-6} (mutagenic inhalation exposure time second phase) hours/day	24	24
ET_{6-16} (mutagenic inhalation exposure time third phase) hours/day	24	24
ET_{16-26} (mutagenic inhalation exposure time fourth phase) hours/day	24	24
ET_{res-a} (inhalation exposure time - adult) hours/day	24	24
ET_{res-c} (inhalation exposure time - child) hours/day	24	24
EV_{0-2} (mutagenic events) per day	1	1
EV_{2-6} (mutagenic events) per day	1	1
EV_{6-16} (mutagenic events) per day	1	1
EV_{16-26} (mutagenic events) per day	1	1
EV_{res-a} (events - adult) per day	1	1
EV_{res-c} (events - child) per day	1	1
THQ (target hazard quotient) unitless	0.1	0.1
$IFW_{res-adj}$ (adjusted intake factor) L/kg	327.95	327.95
$IFWM_{res-adj}$ (mutagenic adjusted intake factor) L/kg	1019.9	1019.9
IRW_{0-2} (mutagenic water intake rate) L/day	0.78	0.78
IRW_{2-6} (mutagenic water intake rate) L/day	0.78	0.78
IRW_{6-16} (mutagenic water intake rate) L/day	2.5	2.5
IRW_{16-26} (mutagenic water intake rate) L/day	2.5	2.5
IRW_{res-a} (water intake rate - adult) L/day	2.5	2.5
IRW_{res-c} (water intake rate - child) L/day	0.78	0.78
K (volatilization factor of Andelman) L/m^3	0.5	0.5
LT (lifetime) years	70	70
SA_{0-2} (mutagenic skin surface area) cm^2	6365	6365
SA_{2-6} (mutagenic skin surface area) cm^2	6365	6365
SA_{6-16} (mutagenic skin surface area) cm^2	19652	19652
SA_{16-26} (mutagenic skin surface area) cm^2	19652	19652
SA_{res-a} (skin surface area - adult) cm^2	19652	19652
SA_{res-c} (skin surface area - child) cm^2	6365	6365

Output generated 29OCT2019:10:16:31

Site-specific Equation Inputs for Soil to Groundwater

3

*** Inputted values different from defaults are highlighted.**

Variable	Default Value	Form-input Value
l_{sc} (apparent thickness of stratum corneum) cm	0.001	0.001
TR (target risk) unitless	1.0E-06	1.0E-06

Output generated 29OCT2019:10:16:31

Site-specific Regional Screening Levels (RSL) for Soil to Groundwater

4

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; G = see user's guide; U = user provided; ca = cancer; nc = noncancer; * = where: nc SL < 100X ca SL; ** = where nc SL < 10X ca SL; SSL values are based on DAF=1; max = ceiling limit exceeded; sat = Csat exceeded.

Chemical	CAS Number	Mutagen?	Volatile?	Chemical Type	SF_o $(mg/kg\text{-}day)^{-1}$	SF_o Ref	IUR $(ug/m^3)^{-1}$	IUR Ref	RfD (mg/kg-day)	RfD Ref	RfC (mg/m^3)	RfC Ref	GIABS	ABS	S (mg/L)	K_d \ (cm^3/g)
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	No	No	Organics	-		-		2.00E-05	U	-		1	0.1	680	8.18E-01
Perfluorooctanoic acid (PFOA)	335-67-1	No	No	Organics	7.00E-02	U	-		2.00E-05	U	-		1	0.1	9500	2.53E-01

K_{oc} \ (cm^3/g)	Dilution Attenuation Factor (DAF) (unitless)	HLC $(atm\text{-}m^3/mole)$	Henry's Law Constant (unitless)	H` and HLC Ref	Normal Boiling Point BP (K)	BP Ref	Critical Temperature TC (K)	TC Ref	Noncarcinogenic SL Adult THI=0.1 (ug/L)	Noncarcinogenic SL Child THI=0.1 (ug/L)	Carcinogenic SL TR=1E-06 (ug/L)	Water Concentration (Adult) (mg/L)
3.72E+02	1	-	-		532.15	U	-		6.67E-02	4.01E-02	-	6.67E-05
1.15E+02	1	4E-6	1.64E-04	U	465.15	U	-		6.67E-02	4.01E-02	1.11E+00	6.67E-05

Water Concentration (Child) (mg/L)	Water Concentration (Cancer) (mg/L)	Maximum Contaminant Level (MCL) (ug/L)	Water Concentration (MCL) (mg/L)	MCL-based SL (mg/kg)	Noncarcinogenic Adult SL THI=0.1 (mg/kg)	Noncarcinogenic Child SL THI=0.1 (mg/kg)	Carcinogenic SL (mg/kg)	Risk-Based SL (mg/kg)
4.01E-05	-	-	-	-	6.80E-05	4.08E-05	-	4.08E-05
4.01E-05	1.11E-03	-	-	-	3.02E-05	1.82E-05	5.04E-04	1.82E-05

Output generated 29OCT2019:10:16:31

Site-specific Equation Inputs for Soil to Groundwater

1

*** Inputted values different from defaults are highlighted.**

Variable	Default Value	Form-input Value
DAF (dilution attenuation factor) unitless	1	1
DAF (dilution attenuation factor) unitless	1	1
BW_{0-2} (mutagenic body weight) kg	15	15
BW_{2-6} (mutagenic body weight) kg	15	15
BW_{6-16} (mutagenic body weight) kg	80	80
BW_{16-26} (mutagenic body weight) kg	80	80
BW_{resa} (body weight - adult) kg	80	80
BW_{resc} (body weight - child) kg	15	15
DFW_{resadj} (age-adjusted dermal factor) cm^2-event/kg	2610650	2610650
$DFWM_{resadj}$ (mutagenic age-adjusted dermal factor) cm^2-event/kg	8191633	8191633
ED_{res} (exposure duration - resident) years	26	26
ED_{0-2} (mutagenic exposure duration first phase) years	2	2
ED_{2-6} (mutagenic exposure duration second phase) years	4	4
ED_{6-16} (mutagenic exposure duration third phase) years	10	10
ED_{16-26} (mutagenic exposure duration fourth phase) years	10	10
ED_{resa} (exposure duration - adult) years	20	20
ED_{resc} (exposure duration - child) years	6	6
EF_{res} (exposure frequency) days/year	350	350
EF_{0-2} (mutagenic exposure frequency first phase) days/year	350	350
EF_{2-6} (mutagenic exposure frequency second phase) days/year	350	350
EF_{6-16} (mutagenic exposure frequency third phase) days/year	350	350
EF_{16-26} (mutagenic exposure frequency fourth phase) days/year	350	350
EF_{resa} (exposure frequency - adult) days/year	350	350
EF_{resc} (exposure frequency - child) days/year	350	350
ET_{res} (exposure time) hours/day	24	24
$ET_{event-resadj}$ (age-adjusted exposure time) hours/event	0.67077	0.67077
$ET_{event-resmadj}$ (mutagenic age-adjusted exposure time) hours/event	0.67077	0.67077
ET_{0-2} (mutagenic dermal exposure time first phase) hours/event	0.54	0.54
ET_{2-6} (mutagenic dermal exposure time second phase) hours/event	0.54	0.54
ET_{6-16} (mutagenic dermal exposure time third phase) hours/event	0.71	0.71
ET_{16-26} (mutagenic dermal exposure time fourth phase) hours/event	0.71	0.71

Output generated 29OCT2019:10:17:09

Site-specific Equation Inputs for Soil to Groundwater

2

*** Inputted values different from defaults are highlighted.**

Variable	Default Value	Form-input Value
ET_{res-a} (dermal exposure time - adult) hours/event	0.71	0.71
ET_{res-c} (dermal exposure time - child) hours/event	0.54	0.54
ET_{0-2} (mutagenic inhalation exposure time first phase) hours/day	24	24
ET_{2-6} (mutagenic inhalation exposure time second phase) hours/day	24	24
ET_{6-16} (mutagenic inhalation exposure time third phase) hours/day	24	24
ET_{16-26} (mutagenic inhalation exposure time fourth phase) hours/day	24	24
ET_{res-a} (inhalation exposure time - adult) hours/day	24	24
ET_{res-c} (inhalation exposure time - child) hours/day	24	24
EV_{0-2} (mutagenic events) per day	1	1
EV_{2-6} (mutagenic events) per day	1	1
EV_{6-16} (mutagenic events) per day	1	1
EV_{16-26} (mutagenic events) per day	1	1
EV_{res-a} (events - adult) per day	1	1
EV_{res-c} (events - child) per day	1	1
THQ (target hazard quotient) unitless	0.1	0.1
$IFW_{res-adj}$ (adjusted intake factor) L/kg	327.95	327.95
$IFWM_{res-adj}$ (mutagenic adjusted intake factor) L/kg	1019.9	1019.9
IRW_{0-2} (mutagenic water intake rate) L/day	0.78	0.78
IRW_{2-6} (mutagenic water intake rate) L/day	0.78	0.78
IRW_{6-16} (mutagenic water intake rate) L/day	2.5	2.5
IRW_{16-26} (mutagenic water intake rate) L/day	2.5	2.5
IRW_{res-a} (water intake rate - adult) L/day	2.5	2.5
IRW_{res-c} (water intake rate - child) L/day	0.78	0.78
K (volatilization factor of Andelman) L/m^3	0.5	0.5
LT (lifetime) years	70	70
SA_{0-2} (mutagenic skin surface area) cm^2	6365	6365
SA_{2-6} (mutagenic skin surface area) cm^2	6365	6365
SA_{6-16} (mutagenic skin surface area) cm^2	19652	19652
SA_{16-26} (mutagenic skin surface area) cm^2	19652	19652
SA_{res-a} (skin surface area - adult) cm^2	19652	19652
SA_{res-c} (skin surface area - child) cm^2	6365	6365

Output generated 29OCT2019:10:17:09

Site-specific Equation Inputs for Soil to Groundwater

3

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Variable	Default Value	Form-input Value
l_{sc} (apparent thickness of stratum corneum) cm	0.001	0.001
TR (target risk) unitless	1.0E-06	1.0E-06

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Perfluorooctanoic acid (PFOA)	335-67-1	No	No	Organics	7.00E-02	U	-		2.00E-05	U	-		1	0.1	9500	5.64E-01

K_{oc}\ (cm^3/g)	Dilution Attenuation Factor (DAF) (unitless)	HLC (atm-m^3/mole)	Henry's Law Constant (unitless)	H` and HLC Ref	Normal Boiling Point BP (K)	BP Ref	Critical Temperature TC (K)	TC Ref	Noncarcinogenic SL Adult THI=0.1 (ug/L)	Noncarcinogenic SL Child THI=0.1 (ug/L)	Carcinogenic SL TR=1E-06 (ug/L)	Water Concentration (Adult) (mg/L)
3.72E+02	1	-	-		532.15	U	-		6.67E-02	4.01E-02	-	6.67E-05
1.15E+02	1	4E-6	1.64E-04	U	465.15	U	-		6.67E-02	4.01E-02	1.11E+00	6.67E-05

Water Concentration (Child) (mg/L)	Water Concentration (Cancer) (mg/L)	Maximum Contaminant Level (MCL) (ug/L)	Water Concentration (MCL) (mg/L)	MCL-based SL (mg/kg)	Noncarcinogenic Adult SL THI=0.1 (mg/kg)	Noncarcinogenic Child SL THI=0.1 (mg/kg)	Carcinogenic SL (mg/kg)	Risk-Based SL (mg/kg)
4.01E-05	-	-	-	-	1.35E-04	8.11E-05	-	8.11E-05
4.01E-05	1.11E-03	-	-	-	5.10E-05	3.06E-05	8.50E-04	3.06E-05

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