



November 18, 2020

Stan Jones
Port of Portland
PO Box 3529
Portland, OR 97208

Re: PDX PFAS Stormwater Monitoring Data Report
Portland International Airport
Portland, Oregon
2550-00

Dear Mr. Jones:

INTRODUCTION

This *Stormwater Monitoring Data Report* documents the collection and analysis of stormwater samples associated with the Portland International Airport (Site, PDX; Figures 1 and 2). As identified in the Preliminary Assessment (Apex, 2017), multiple areas of interest across PDX were identified as having potential historical use of aqueous film-forming foam (AFFF) and possible release to the ground surface. The Oregon Department of Environmental Quality (DEQ) has requested assessment of PDX stormwater to determine if historical use of AFFF that may have contained per- and polyfluorinated alkyl substances (PFAS) has affected stormwater quality.

Based on the PFAS concentrations detected on-site to date in the Original and Former Fire Training Facilities investigation in the northwest portion of PDX (in sub-basin 1N of Basin 1), as well as correspondence with the DEQ, stormwater at the Site is a potential pathway for PFAS impacts to reach sensitive receptors and has not been fully characterized to date.

Figure 2 depicts the stormwater drainage basins on-site. Based on review of the Site stormwater drainage system and discussions with Oregon DEQ, a total of nine stormwater monitoring locations were selected to conduct reconnaissance level sampling for PFAS. In addition, Apex concurrently sampled historical stormwater/surface water sampling locations SW-2, SW-3, OF-1N-NW, and Ditch B, which are located downgradient of the former fire training facilities within Drainage Basin 1N.

Purpose. The purpose of this *Stormwater Monitoring Data Report* is to document investigation activities conducted to assess the potential presence of detectable PFAS concentrations at 13 stormwater monitoring locations across PDX in May and August 2020 (wet and dry seasons; Figure 2). This report also includes a discussion about the stormwater and surface water sampling activities conducted within the Oregon Air National Guard (OANG) leasehold at PDX. These sampling activities have been conducted by OANG independent of the Port PDX investigation and with different investigation objectives, such as the timing of sample collection (i.e. seasonal sampling, including wet and dry season stormwater assessment) for comparison. The data provided by OANG has been incorporated into this report in order to provide the most complete dataset of PFAS in stormwater originating from the PDX property; however, the OANG data may not be directly comparable to the Port data presented herein.

Scope of Work. The scope of work included the following tasks:

- Collection of 13 stormwater/surface water samples at PDX outfalls and ditches for analysis of PFAS during wet weather conditions (May 2020) and dry weather conditions (August 2020) (total of 26 samples);
- Presentation of the OANG stormwater and surface water data collected by others; and
- Preparation of this Stormwater Monitoring Data Report.

These activities are discussed in further detail in the following sections.

BACKGROUND

This section presents a brief description of the Site and its history. Information included in this section was obtained from previously completed site investigations and related work conducted within the vicinity of the Site.

Site Location and Description. The Site includes the entire PDX property and is located in the northeastern portion of the City of Portland, adjacent to the Columbia River (shown on Figures 1 and 2). Portions of PDX have been actively used for aviation firefighting drills since 1963. Fire training exercises utilized water and retardant firefighting foams (i.e. AFFF) to extinguish training fires and during training activities at the Site. PDX and its fire department are regulated under the Federal Aviation Administration (FAA) and the National Fire Protection Association (NFPA) regulations and guidance, which specify the AFFF type, testing, use, and training that is required for use of AFFF on commercial aviation facilities. The PDX fire department has followed these regulations and standards of practice which has resulted in the use and storage of PFAS-containing AFFF since their introduction in the late 1960s.

Site History. Several historical investigations and remedial actions have been conducted at the Site. PFAS were initially detected in groundwater in April 2017, in the northwest portion of the Site, near the former and current fire training facilities, at concentrations above the U.S. Environmental Protection Agency (EPA) Health Advisory level (70 nanograms per liter [ng/L]). Since that time, multiple rounds of soil, groundwater, surface water, stormwater, and sediment sampling have been conducted in the northwest portion of the Site to determine the concentrations of PFAS and delineate the detected groundwater plume. Groundwater investigation activities are ongoing on the PDX property, including the Fire Training Facilities, former fire stations, OANG leasehold, and other areas.

Site Stormwater. Figure 2 shows the current stormwater drainage basins. Drainage from PDX is discharged to the Columbia Slough from 12 drainage basins at a total of 18 discharge points. In some cases, the discharge point to the Slough is mixed with drainage from non-Port properties (e.g. Basins 1, 2, 7, 8, and 9). Additionally, in Basins 1, 2, and 7, Port outfalls discharge to open channels prior to discharging to the Slough. The following describes the current drainage basins and outfalls:

- **Basin 1** – Basin 1 is the western end of PDX and includes runways, taxiways, ramps, fire station, fire training area, jet fuel farm, and the deicing system storage tanks and treatment area. Basin 1 has sub-basins 1N, 1S, and 1E. Sub-basin 1N includes portions of Runway 10R/28L, Taxiways D, H, and K, Perimeter Road, and undeveloped areas. Sub-basin 1N consists of a total area of approximately 648 acres, approximately 130 acres of which are impervious. Sub-basin 1S includes portions of the Northwest Ramp, portions of Taxiways B, C, E, G, M, T, and portions of Runway 3/21. Sub-basin 1S consists of a total area of approximately 160 acres, approximately 32 acres of which are impervious. Sub-basin 1E consists of a total area of approximately 20 acres, approximately 18 acres of which are impervious. Stormwater on the undeveloped, pervious areas where non-industrial activities occur infiltrates and does not runoff. Stormwater from the remaining areas of Basin 1 discharges to the Elrod Ditch system, then the Columbia Slough via the outfall at Multnomah County Drainage District's (MCDD) Pump Station #2.
- **Basin 2** – Basin 2 includes Runway 3/21, taxiways, and ramps. Prior to discharge from PDX facilities, drainage passes through the West Quiescent Pond and a detention pond. Total area is 209 acres; 88 acres are

impervious. There is one Port outfall from Basin 2 to an open channel. This open channel is discharged via an MCDD-owned pump to the Columbia Slough.

- Basin 3 – Basin 3 consists primarily of the Boeing Hangar, a ramp, and portions of the Airtrans Center. Total area is 14 acres; 11 acres are impervious. Basin 3 discharges to the Slough via gravity flow through a 30-inch, Port-owned pipe.
- Basin 4 – Basin 4 consists of parcel carrier facilities (FedEx, UPS, DHL), air cargo, and aircraft loading areas and ramps that drain to the Central Quiescent Pond prior to discharging to the Slough. Total area is 50 acres; 45 acres are impervious. Basin 4 discharges to the Columbia Slough via gravity flow through a 48-inch, Port-owned pipe.
- Basin 5 – Basin 5 contains various industrial buildings, parcel carrier facilities, parking lots, roads (Airtrans Way) and airport ramps that drain directly to the Middle Slough. The Dilute Detention Basin (DDB) is located here, but none of that area is tributary to this basin. Total area is 48 acres; 29 acres are impervious. Basin 5 discharges to the Slough via gravity flow through a 54-inch, Port-owned pipe.
- Basin 6 – Roughly half of Basin 6 is occupied by the Oregon Air National Guard (OANG) facility. The remaining area includes the middle of Runway 10R/28L, several taxiways, and portions of the airport terminals and parking garage. Drainage from OANG is isolated from the Port operated areas and passes through a detention basin prior to discharge to the Port system. Basin 6 is mostly a piped drainage system, including approximately 2.7 miles of sub-drains, with some open channels in the OANG area. Drainage from Basin 6 passes through the East Quiescent Basin and the East Detention Pond prior to discharge to the Middle Slough. Total area is 237 acres; 173 acres are impervious. Basin 6 discharges to the Slough via a pump at the East Detention Pond through a 60-inch, Port-owned pipe.
- Basin 7 – Basin 7 includes Runway 10L/28R, east portion of Runway 10R/28L main airport terminal, maintenance facilities, support facilities, glycol storage tanks, light rail, parking lots, taxiways, and ramps. The area includes approximately 5.7 miles of sub-drains. Total area is 635 acres; 313 acres are impervious. Basin 7 discharges to McBride Slough via gravity flow through four Port-owned discharge pipes. The majority of the drainage is through a 78-inch pipe. McBride Slough, including drainage from non-Port properties, discharges to the Slough via gravity flow through a Port-owned Colewood pipe.
- Basin 8 – Basin 8 consists of parking lots, roadways (including Marine Drive, which may be deiced by the City or state), car rental facilities, hotels, Airport Way, light rail lines, and various commercial facilities. The area is primarily piped storm drain systems on the north side of Airport Way, with approximately 3.8 miles of sub-drains, and several open drainage channels on the south side of Airport Way. There is significant commercial development in the southeast portion of this drainage area with newer stormwater infiltration and treatment facilities. Non-Port drainage includes discharges from City-owned streets. Total area is 433 acres; 158 acres are impervious. Basin 8 discharges to the Slough via gravity flow through a 48-inch, City-owned pipe.
- Basin 9 – Basin 9 consists of long-term parking lots, commercial facilities, Airport Way, and some undeveloped open space. A portion of this drainage comes from I-205 and properties east of I-205 that are not owned/controlled by the Port. Total area is 182 acres; 85 acres are impervious. Basin 9 discharges to the Slough via gravity flow through a 72-inch, MCDD-owned pipe.

Screening Levels and PFAS Regulatory Status. The EPA has established drinking water health advisories for perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) based on the agency's assessment of the latest peer-reviewed science on their potential human health effects. The EPA health advisory level is 70 ng/L, published in 2016. In December 2019, the EPA issued an interim recommendation screening level for drinking water of 40 ng/L; however, there are currently no applicable DEQ screening levels for PFAS in groundwater, stormwater, surface water, sediment, or soil. There are no EPA screening levels for PFAS in stormwater or surface water.

Without applicable DEQ screening levels, Apex reviewed the potential Site receptors and exposure pathways and surveyed screening levels that have been developed by the EPA, other U.S. states, and countries globally. The collected stormwater and surface water data herein was screened against risk-based screening levels developed in

Maine (Recreational and Construction Worker screening values) and Michigan (Aquatic Organisms) for PFOS and PFOA (provided below).

Risk-Based Screening Level	PFOS	PFOA
Recreational	1,200 ng/L	50 ng/L
Construction Worker	5,300 ng/L	220 ng/L
Aquatic Organisms - Chronic	140,000 ng/L	880,000 ng/L

INVESTIGATION ACTIVITIES

The scope of work included stormwater sampling and analysis for the Port basin sampling activities during wet and dry weather conditions in 2020. The field and sampling procedures include stormwater and surface water sampling using grab collection methods, sample management (i.e. containers, storage, and shipment), decontamination, and the handling of investigation-derived wastes (IDW). Detailed field and sampling procedures are described in the Sampling and Analysis Plan (SAP) provided in the *Work Plan* (Apex, 2020b). Copies of sampling field forms are included in Attachment A. Sampling locations are displayed on Figure 3.

Preparatory Activities

Site Health and Safety Plan (HASP). A Site-specific HASP was prepared for the proposed activities and was provided in the *Work Plan* (Apex, 2020b). The HASP was prepared in general accordance with the Occupational Safety and Health Administration (OSHA) and the Oregon Administrative Rules (OAR). A copy of the HASP was maintained on-site during the field activities. In addition, prior to performing any on-site work, Apex prepared a Job Safety Analysis (JSA) guiding task-specific activities, risks, and safety protocols for each task. All field staff supporting the project were required to review and follow the HASP and JSAs. Safety topics were refreshed daily with the field crew at a daily safety tailgate meeting led by Apex's Site Supervisor or Site Safety Officer.

Due to the Covid-19 pandemic, additional safety measures were implemented during the field activities. Apex followed a prepared Covid-19 Awareness JSA and the March 31, 2020 Port of Portland Covid-19 requirements letter. The following steps were taken to reduce or eliminate the spread of Covid-19:

- Personnel committed to staying home and away from the job site if they were exhibiting symptoms of Covid-19 as described by the Centers for Disease Control and Prevention (CDC);
- If personnel on the job site began to have symptoms, they were asked to leave immediately;
- Social distancing protocols were followed with spacing greater than six feet. Enforcement was handled by the Site Safety Officer as presented in the HASP;
- Common areas and areas of high "hand traffic" were cleaned and disinfected regularly;
- Tools, pens, and paperwork were not shared;
- Personnel washed their hands regularly and thoroughly, and used hand sanitizer if soap and water were not available;
- Nitrile gloves were utilized and changed once they contacted a potentially contaminated surface; and
- All personnel wore cloth face coverings.

Property Access. Apex provided notification to Port personnel and Port Airfield Operations (OPS) prior to the sampling event and coordinated access to restricted locations at PDX. Due to the presence of locked gates at several sampling locations, Port personnel directly assisted with access during the sampling events. The notification was submitted to OPS in advance and included the following: Port project manager contact information, Apex project manager and PDX field staff contact information, summary of field work, site plan showing work locations, ingress and egress locations for Apex and work schedule. Apex employees hold a PDX badge to access the site. Airside OPS was notified of Apex's arrival and departure.

Wet Weather and Dry Weather Sampling

Reconnaissance-level stormwater and surface water sampling activities were conducted at PDX on May 30, 2020 (wet weather event) and August 17, 2020 (dry weather event). A total of 10 stormwater samples were collected from PDX outfall, detention pond, and ditch locations, including location OF-1N-NW within Basin 1N which was previously part of the 2019 quarterly monitoring program (Figure 2). Grab surface water samples were also collected within Basin 1N from locations Ditch B, SW-2 and SW-3, which were also previously part of the 2017, 2018, and 2019 groundwater monitoring programs (Figure 2). During the dry weather event, Ditch B was dry and no sample was collected.

Surface Water Sample Collection. Surface water grab samples (samples collected above the outfall) were collected using an extension pole and laboratory-supplied sample containers to assess the concentration of PFAS in surface water in the vicinity of and downgradient of the Original and Former Fire Training Facilities within Basin 1. Surface water was collected from the drainage ditch located approximately 2,400 feet northwest of the Original and Former Facilities at the culvert inlet to the stormwater conveyance system (sample location Ditch B). Surface water samples were also collected downstream of the Original and Former Facilities (sample locations SW-2 and SW-3). Surface water sample SW-2 was collected from the drainage ditch at a location immediately east of the drainage ditch at its intersection with Sunderland Avenue, approximately 1.1 miles southwest of the Former Fire Training Facilities. Surface water sample SW-3 was collected from the drainage ditch near MCDD Pump Station #2, approximately 1.7 miles southwest of the Former Fire Training Facilities.

Stormwater Sample Collection. Stormwater samples were collected either by using a PFAS-free decontaminated sampler or by a direct grab using laboratory-provided PFAS-free containers. The table below describes the stormwater monitoring locations. Stormwater Drainage Basin 1N, monitoring point OF-1N-NW has been sampled as part of the 2017, 2018, and 2019 quarterly groundwater monitoring events for the fire training facilities. The stormwater sampling activities included all significant stormwater drainage basins at PDX. Additional sub-basins, including sub-basins of Basin 7, were not sampled during the reconnaissance events because they are not significant contributors to the overall basin flow, consist of impervious surfaces and relatively shallow piping, and/or drain through a City of Portland outfall. Additional details regarding stormwater sampling procedures, including qualifying conditions for the wet and dry season sampling, were provided in the SAP within the Work Plan (Apex, 2020b).

PDX Drainage Basin	Monitoring Point ID	Characterization	On-Flow?	Sampling Point
1E and 1S	1ES	Mixed stormwater and groundwater	No	Open ditch, at the point where 1S and 1E join
1N	OF-1N-NW	Mixed stormwater and groundwater	No	Manhole
2A	2	Mixed stormwater and groundwater	No	Quiescent pond inlet
3	3	Mixed stormwater and groundwater	No	Manhole, asset ID STSMH2482
4	4	Mixed stormwater and groundwater	No	Quiescent pond inlet
5	5	Mixed stormwater, groundwater, and Columbia Slough water	No	Manhole, asset ID STSMH1341
6	6	Mixed stormwater and groundwater	Yes, sample will be mixed with Oregon Air National Guard (OANG) stormwater and groundwater	Detention pond outlet, before water enters the pump station forebay

PDX Drainage Basin	Monitoring Point ID	Characterization	On-Flow?	Sampling Point
7A	7	Mixed stormwater, groundwater, and Columbia Slough water	Yes, sample will be mixed with OANG stormwater and groundwater	Manhole, asset ID STSMH525
8	8	Mixed stormwater and groundwater	Yes, on-flow from City of Portland streets	Culvert just north of Alderwood, asset ID STSCU13045
9	9	Mixed stormwater and groundwater	Yes, extensive off-site inputs	Culvert on the south side of pond feature, asset ID STCU2283

As presented in the SAP within the approved Work Plan (Apex, 2020b), quality assurance/quality control (QA/QC) procedures were used throughout this project, including precautions to ensure no PFAS cross-contamination. QA/QC samples were collected, including one duplicate sample, one field blank, and one equipment blank.

Handling of Investigation-Derived Waste

IDW is anticipated to include a small amount of decontamination water and personal protective equipment (PPE). Decontamination water was land-applied at each sampling location. PPE was disposed of as solid waste.

ANALYTICAL PROGRAM

Chemical analyses were performed on the stormwater and surface water samples collected by Apex in May and August 2020. Samples were analyzed on a standard turnaround time (15 business days).

Analysis for Chemicals of Potential Concern

All collected stormwater, surface water and QA/QC samples were analyzed for PFAS compounds. PFAS analysis by Isotope Dilution Method (formerly EPA 537 modified) was conducted by Vista Analytical (Vista) in El Dorado Hills, California. Reported PFAS included 24 compounds:

- Perfluorobutane sulfonic acid (PFBS);
- Perfluorobutanoic acid (PFBA);
- Perfluoropentane sulfonic acid (PFPeS);
- Perfluoroheptane sulfonic acid (PFHpS);
- Perfluoropentanoic acid (PFPeA);
- Perfluoroheptanoic acid (PFHpA);
- Perfluorohexane sulfonic acid (PFHxS);
- Perfluorohexanoic acid (PFHxA);
- Perfluorooctane sulfonate (PFOS);
- Perfluorooctanoic acid (PFOA);
- Perfluorotetradecanoic acid (PFTeDA);
- Perfluorononanoic acid (PFNA);
- Perfluorodecanoic acid (PFDA);
- Perfluorononane sulfonic acid (PFNS);
- Perfluorodecane sulfonic acid (PFDS);
- Perfluoroundecanoic acid (PFUdA);
- Perfluorododecanoic acid (PFDoA);

- Perfluorotridecanoic acid (PFTrDA);
- N-Ethylperfluoro-1-octanesulfonamidoacetic acid (N-EtFOSAA);
- N-Methylperfluoro-1-octanesulfonamidoacetic acid (N-MeFOSAA);
- Perfluorooctane sulfonamide (PFOSA); and
- Fluorotelomer sulfonate (C4; 4:2 FTS; C6, 6:2 FTS; and C8, 8:2 FTS).

INVESTIGATION RESULTS

Surface water and stormwater analytical results and laboratory analytical data quality for the samples collected by Apex in May and August 2020 are discussed below. Analytical laboratory reports and a summary of the data quality review is provided in Attachment B. Surface and stormwater results are presented in Figure 3.

Surface Water Analytical Results. Multiple PFAS compounds were detected in samples collected from each of the surface water sampling locations. PFOA was detected above its screening level at SW-2 and SW-3 within Basin 1 in the samples collected in August 2020 (dry weather conditions). Concentrations of PFOA in August 2020 were 334 ng/L at SW-2 and 288 ng/L at SW-3. These concentrations are higher than previously detected concentrations of PFOA in samples collected from these locations in 2017 through 2019.

Stormwater Analytical Results. Multiple PFAS compounds were detected in samples collected from each of the stormwater sampling locations. PFOA was detected above its screening level at OF-1N-NW in Basin 1N in both the wet weather and dry weather samples. Concentrations of PFOA at OF-1N-NW in Basin 1N were 247 ng/L in May 2020 and 157 ng/L in August 2020. Concentrations of PFOA were also detected above its screening level at stormwater sampling location 4 (with a concentration of 54.8 ng/L in August 2020) and location 6 (with concentrations of 74.7 ng/L and 127 ng/L in May and August 2020, respectively). Overall, concentrations of PFAS detected in the dry weather sampling event were generally higher than concentrations detected during the wet weather sampling event.

Laboratory Analytical Data Quality. Apex conducted a QA/QC review of the analytical laboratory data for stormwater and surface water sampling events conducted in May and August 2020. The results of the data quality control review indicate the data are acceptable for the intended use in this monitoring report; however, some results were 'Q' flagged as positive detections that could not be confirmed by ion ratios. These flagged results are estimated positive detections and include PFNA and PFDA from location 2; PFOA and 8:2 FTS from location 4; PFUnA and PFDoA from location 5; PFPeS, PFHpS, and 8:2 FTS from location 6; PFHxA, PFNA, PFDoA, and PFPeA from location 7; PFPeS, PFHpS, and PFDA from location OF1N-NW; PFPeS and 8:2 FTS from location 1ES; PFNA from location SW-2; and PFDA from location SW-3.

OREGON AIR NATIONAL GUARD INVESTIGATION

OANG has leased a portion of PDX property within Drainage Basin 6 since 1949 and is conducting a separate PFAS investigation based on their historical activities on their leasehold. Because OANG's investigation is separate from the PFAS investigation on the rest of the PDX property, their investigation objectives, sampling time intervals, and collection methods may differ from those discussed herein. Use or storage of firefighting materials has historically occurred at several areas on the leased property. Fire training for OANG was historically conducted at the Guard's fire training facility, which was located to the east of the current OANG facility. The OANG fire training facility was active between approximately 1957 and 1978 and the OANG has its own fire department on the base. Between 1963 and 1978, OANG also periodically conducted training at the Port's fire training facilities. After the guard's fire training facility was closed in 1978, OANG fire training took place at the Port fire training facilities (Apex, 2017).

In addition, several non-fire training areas at OANG stored or had releases of AFFF, including hangars, fuel spill areas, waste storage facilities, and firefighting equipment testing areas.

Surface water samples were collected in March and June 2020, and stormwater samples were collected in January 2020. OANG shared the results of their 2020 sampling events with the Port, and figures and tables describing the results are provided in Attachment C. The results are also summarized on Figure 3. Please note that OANG compared their surface water and stormwater sampling results to the EPA drinking water interim recommendation level (40 ng/L). Based on our receptor and pathway evaluation, data collected during Apex's wet and dry weather sampling events were screened against the Maine (Recreational and Construction Worker screening values) and Michigan (Aquatic Organisms) criteria for PFOS and PFOA (as described above). We believe that these screening criteria are more appropriate given that the stormwater and surface water present at PDX are not beneficially used as a drinking water source.

Based on review of the OANG data, detected concentrations of PFOS within OANG's leasehold in surface water are generally higher than concentrations detected elsewhere at PDX. Detected concentrations of PFOA within OANG's leasehold are generally lower than concentrations detected elsewhere at PDX. Detected surface water concentrations of PFOA ranged from 4.8 ng/L to 95 ng/L at OANG. Detected surface water concentrations of PFOS ranged from 13 to 3,600 ng/L at OANG. The highest concentrations of PFAS were detected within OANG's area of concern (AOC) 10 (Ponds and Stormwater Retention Basins).

OANG collected one stormwater sample downgradient of their former burn pit (AOC-11) in January 2020. PFOA was detected at 40 ng/L and PFOS was detected at 220 ng/L.

The composition of PFAS detected in stormwater and surface water collected for the OANG at their leasehold is similar to the composition found at other stormwater and surface water sampling locations at PDX. The bulk of the PFAS detections are in the C4 to C10 range and include sulfonic acids, carboxylic acids, and fluorotelomers.

CONCLUSIONS

Apex collected stormwater and surface water samples during wet and dry weather conditions in 2020 at PDX. Overall, concentrations of PFAS detected in stormwater during the dry weather sampling event were higher than concentrations detected during the wet weather sampling event. Exceedances of the recommended comparative surface water screening criteria were detected at SW-2 and SW-3 in the samples collected in August 2020 (dry weather conditions). For stormwater, PFOA was detected above its recommended comparative screening level at OF-1N-NW in both the wet weather and dry weather samples. Concentrations of PFOA at OF-1N-NW were 247 ng/L in May 2020 and 157 ng/L in August 2020. Concentrations of PFOA were also detected above the recommended comparative screening level at stormwater sampling location 4 (with a concentration of 54.8 ng/L in August 2020) and location 6 (with concentrations of 74.7 ng/L and 127 ng/L in May and August 2020, respectively). A wide variety of PFAS compounds were detected in all stormwater samples, most at low concentrations.

Based on review of the results, elevated PFAS concentrations detected at location 6 may be related to upstream impacts detected by OANG on their PDX leasehold. There is no clear source of the PFAS concentrations detected at location 4, found within drainage basin 4. Situated on the southwestern side of the airfield and bordering the Columbia Slough, basin 4 includes the South Ramp air cargo carriers, including Federal Express, UPS-Cartage Services, DHL Express, Burlington Air Express buildings, and deicing pump station G. Stormwater is conveyed through a quiescent pond before discharging to the Columbia Slough. Industrial activities within Basin 4 include aircraft support services, aircraft loading/unloading, fueling, deicing, aircraft maintenance, equipment parking and maintenance, and truck fueling, washing, and parking. Elevated PFAS concentrations detected at sampling locations OF-1N-NW, SW-2, and SW-3 in Basin 1N are likely related to the historical activities associated with the former fire training facilities as discussed in prior reports.

If you have any questions or would like to discuss this further, please do not hesitate to contact us at (503) 924-4704, extension 1902, Adam.Reese@apexcos.com, or extension 1913, Heather.Gosack@apexcos.com.

Sincerely,



Heather Gosack

Adam Reese, R.G., C.E.G.
Division Manager

Heather Gosack, R.G.
Senior Project Manager

Cc: Mr. Dan Hafley, Oregon Department of Environmental Quality
Mr. Douglas Wise, Portland Water Bureau

Attachments:

Table 1 – Monitoring Program
Table 2 – Field Parameters
Table 3 – Stormwater and Surface Water Analytical Results

Figure 1 – Site Location Map
Figure 2 – PFAS Monitoring Locations
Figure 3 – Stormwater and Surface Water Analytical Results

Attachment A – Field Notes
Attachment B – Analytical Results and Quality Assurance Review
Attachment C – OANG Results

Table 1
Monitoring Program
Portland International Airport
Port of Portland

Monitoring Point ID	Sampling Frequency
<i>Stormwater</i>	
OF1N-NW	2 Events
1ES	2 Events
2	2 Events
3	2 Events
4	2 Events
5	2 Events
6	2 Events
7	2 Events
8	2 Events
9	2 Events
<i>Surface Water Within Basin 1N</i>	
SW-2	2 Events
SW-3	2 Events
Ditch B	2 Events

Notes:

1. Sampling frequency included collection during the wet season (May 2020) and the dry season (August 2020).

Table 2
Field Parameters
Portland International Airport
Portland, Oregon

Monitoring Point ID	Sampling Date	Temp (°C)	Dissolved Oxygen (mg/L)	Conductivity (µS/cm)	pH	ORP (mV)
OF1N-NW	5/30/2020	16.1	--	347.0	6.78	--
	8/17/2020	23.6	6.54	327.8	7.33	-10.0
1ES	5/30/2020	16.8	--	405.0	7.12	--
	8/17/2020	25.4	3.96	239.1	7.45	-9.1
2	5/30/2020	16.3	5.75	496.5	6.70	1.6
	8/17/2020	21.0	5.39	336.5	7.28	-9.6
3	5/30/2020	14.8	5.86	44.7	7.53	19.7
	8/17/2020	Slow drip, unable to obtain readings				
4	5/30/2020	17.5	7.85	48.5	7.37	46.0
	8/17/2020	20.6	5.49	472.1	6.97	-33.6
5	5/30/2020	16.1	8.20	29.8	7.77	8.7
	8/17/2020	19.6	3.20	137.9	7.40	37.6
6	5/30/2020	17.4	7.40	225.0	6.95	59.0
	8/17/2020	22.6	3.78	308.3	7.13	22.6
7	5/30/2020	17.2	8.16	52.2	7.59	22.1
	8/17/2020	25.6	3.64	75.0	7.56	-2.7
8	5/30/2020	15.0	--	71.0	7.70	--
	8/17/2020	23.8	4.50	248.8	7.36	29.7
9	5/30/2020	16.0	--	113.0	7.60	--
	8/17/2020	22.3	4.96	363.8	7.16	28.8
SW-2	5/30/2020	16.9	--	260.0	7.10	--
	8/17/2020	21.0	3.02	236.1	6.77	28.5
SW-3	5/30/2020	16.4	--	287.0	7.21	--
	8/17/2020	21.6	3.51	294.0	6.29	45.4
Ditch B	5/30/2020	16.4	6.96	278.6	7.00	34.8
	8/17/2020	Location dry				

Notes:

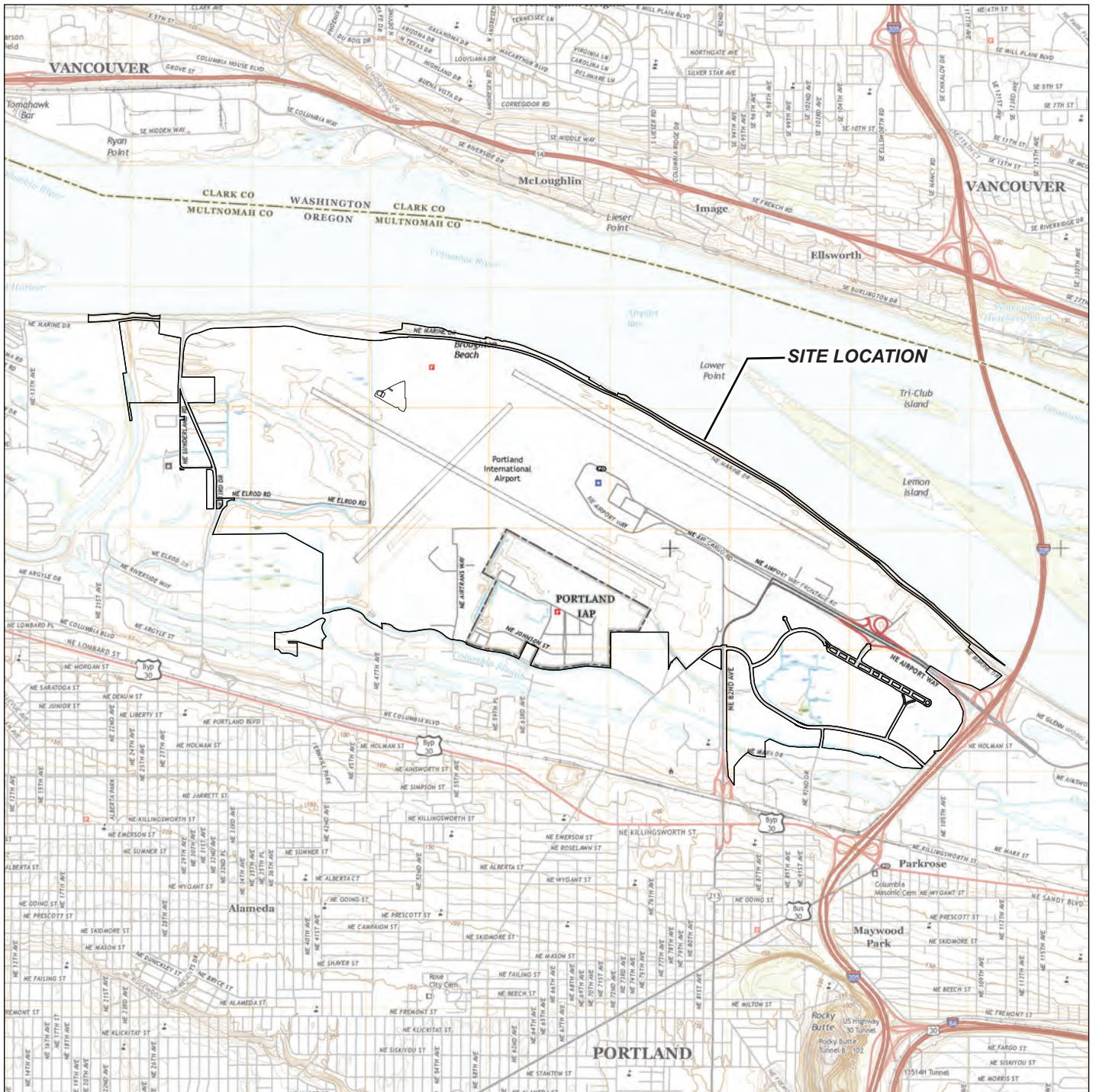
1. °C = Degrees Celsius.
2. µS/cm = Microsiemens per centimeter.
3. ORP = Oxidation-reduction potential.
4. mg/L (ppm) = Milligrams per liter (parts per million).
5. mV = Millivolts.
6. -- = Parameter not recorded.

Table 3
Stormwater and Surface Water Analytical Results
Portland International Airport
Portland, Oregon

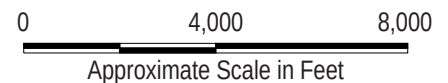
		PFBS	PFBA	PFPeS	PFPeA	PFHxS	PFHxA	PFHpS	PFHpA	PFOS	PFOA	PFNS	PFNA	PFDS	PFDA	PFUnA	PFDoA	PFTrDA	PFTeDA	MeFOSAA	EtFOSAA	PFOSA	4:2 FTS	6:2 FTS	8:2 FTS
Sample Location	Sample Date	Concentrations in ng/L																							
Risk-Based Screening Level	Recreational	--	--	--	--	--	--	--	--	1,200	50	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Construction Worker	--	--	--	--	--	--	--	--	5,300	220	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Aquatic Organisms - Chronic	--	--	--	--	--	--	--	--	140,000	880,000	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1ES	5/30/2020	3.22	11.6	2.32 Q	30.7	18.9	24.2	<1.02	13.3	12.0	26.0	<1.98	2.52	<1.02	2.59 Q	<1.02	<1.02	<1.02	<1.02	<1.02	<1.02	<1.02	<1.02	2.99	<1.05
	8/17/2020	2.79	11.8	1.51	28.8	21.7	25.8	<1.02	18.3	28.1	31.9	<1.97	4.06	<1.02	2.85	<1.02	<1.02	<1.02	<1.02	<1.02	<1.02	<1.02	<1.02	7.42	3.84
2	5/30/2020	<1.05	19.5	<1.27	43.60	12.8	38.4	<1.05	21.4	36.7	30.0	<2.02	5.52 Q	<1.05	2.67 Q	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	3.59	<1.05	48.7	9.29
	8/17/2020	3.04	25.3	1.31	84.9	25.5	70.7	<1.02	34.2	46.4	36.4	<1.97	4.23	<1.02	<1.02	<1.02	<1.02	<1.02	<1.02	<1.02	<1.02	<1.02	<1.02	68.1	7.66
3	5/30/2020	<1.04	1.50	<1.26	1.34	<1.04	<1.14	<1.04	<1.04	<1.04	1.07	<2.02	<1.04	<1.04	<1.04	<1.04	<1.04	<1.04	<1.04	<1.04	<1.04	<1.04	<1.04	4.07	10.1
	8/17/2020	1.95	11.9	<1.30	17.1	<1.08	20.1	<1.08	16.2	1.51	27.2	<2.09	7.22	<1.08	2.13	<1.08	<1.08	<1.08	<1.08	2.61	1.09	<1.08	<1.08	31.1	83.5
4	5/30/2020	<1.03	3.99	<1.24	<1.03	<1.03	1.94	<1.03	<1.03	<1.03	1.56 Q	<1.99	<1.03	<1.03	<1.03	<1.03	<1.03	<1.03	<1.03	<1.03	<1.03	<1.03	<1.03	<1.03	1.59 Q
	8/17/2020	3.61	16.5	<1.27	35.6	13.7	28.3	<1.05	26.9	12.7	54.8	<2.03	2.42	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	109	19.1
5	5/30/2020	<1.02	5.06	<1.24	12.6	<1.02	21.6	<1.02	5.40	1.88	8.30	<1.98	2.28	<1.02	3.16	1.22 Q	1.43 Q	<1.02	<1.02	<1.02	<1.02	<1.02	<1.02	261	69.3
	8/17/2020	2.88	4.88	<1.27	7.22	9.14	6.33	<1.05	6.29	30.2	11.3	<2.04	1.79	<1.05	1.48	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	5.27	8.20
6	5/30/2020	21.3	18.0	22.5 Q	51.8	129	58.6	4.48 Q	21.3	213	74.7	<1.98	4.82	<1.02	7.08	<1.02	3.14	<1.02	<1.02	<1.02	<1.02	<1.02	<1.02	44.5	2.92 Q
	8/17/2020	28.2	26.5	29.4	78.8	183	86.8	6.41	33.3	353	127	<1.95	7.29	<1.01	12.1	<1.01	<1.01	<1.01	<1.01	<1.01	<1.01	<1.01	<1.01	49.8	4.34
7	5/30/2020	<1.01	7.32	<1.22	9.67	<1.01	3.35 Q	<1.01	<1.01	1.60	2.58	<1.95	1.47 Q	<1.01	4.74	1.53	2.65 Q	<1.01	<1.01	<1.01	<1.01	<1.01	<1.01	7.29	3.93
	8/17/2020	2.89 Q	<1.05	<1.27	<1.05	<1.05	18.8	<1.05	8.63	<1.05	12.8	<2.03	6.67	<1.05	15.9	5.20	5.04	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	86.5
8 DUP	5/30/2020	1.52	2.35	<1.23	<1.02	<1.02	<1.11	<1.02	<1.02	<1.02	<1.02	<1.97	<1.02	<1.02	<1.02	<1.02	<1.02	<1.02	<1.02	<1.02	<1.02	<1.02	<1.02	<1.02	<1.05
	5/30/2020	<1.04	2.82	<1.25	<1.04	<1.04	1.24	<1.04	<1.04	<1.04	<1.04	<2.00	<1.04	<1.04	<1.04	<1.04	<1.04	<1.04	<1.04	<1.04	<1.04	<1.04	<1.04	<1.04	<1.07
	8/17/2020	11.3	4.59	<1.25	<1.03	<1.03	3.58	<1.03	<1.03	<1.03	<1.03	<2.00	<1.03	<1.03	<1.03	<1.03	<1.03	<1.03	<1.03	<1.03	<1.03	<1.03	<1.03	<1.03	<1.06
9	5/30/2020	<1.04	4.52	<1.26	<1.04	<1.04	2.80	<1.04	<1.04	1.59	1.84	<2.01	<1.04	<1.04	<1.04	<1.04	<1.04	<1.04	<1.04	<1.04	<1.04	<1.04	<1.04	<1.04	<1.07
	8/17/2020	3.96	5.80	<1.21	9.82	4.85	9.49	<0.996	3.48	11.9	6.17	<1.93	1.09	<0.996	<0.996	<0.996	<0.996	<0.996	<0.996	<0.996	<0.996	<0.996	<0.996	<0.996	<1.03
OF1N-NW DUP DUP	8/29/2017	33.6	--	--	--	352 H	357 H	--	132	2,650 H	441	--	39.6	--	<2.17	<2.17	<2.17	<2.17	<2.17	<2.17	<2.17	--	--	--	--
	6/20/2018	<1.00	--	--	--	<1.00	<1.00	--	<1.00	2.47	2.15	--	<1.00	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	--	--	--	--
	6/20/2018	<1.00	--	--	--	<1.00	1.62	--	<1.00	2.12	1.95	--	<1.00	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	--	--	--	--
	2/6/2019	13.5	--	--	--	117	140	--	69.4	299	193	--	15.0	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	--	--	--	--
	5/2/2019	18.1	--	--	--	105	259	--	171	552	267	--	16.9	--	<1.02	<1.02	<1.02	<1.02	<1.02	<2.03	<1.02	--	--	--	--
	8/9/2019	30.5	88.2	38.4	337	265	331	7.40	132	960	356	1.42 Q	23.9	<1.06	2.55	<1.06	<1.06	<1.06	<1.06	<1.06	<1.06	<1.06	6.84	1,820	137
	11/8/2019	13.6	52.7	19.8	190	117	141	3.19	66.0	302	147	<2.13	8.28	<2.13	<2.13	<2.13	<2.13	<2.13	<2.13	<2.13	<2.13	<2.13	4.81	1,060	44.5
	5/30/2020	16.8	66.2	20.9 Q	278	151	235	4.19 Q	95.2	429	247	<2.00	17.5	<1.03	1.89 Q	<1.03	<1.03	<1.03	<1.03	<1.03	<1.03	<1.03	4.00	1,130	94.6
	8/17/2020	11.4	48.5	14.8	189	111	164	3.14	64.6	322	157	<1.94	12.0	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.99	620	30.3
	8/17/2020	10.6	46.2	14.2	186	112	160	2.86	62.4	294	161	<1.95	11.9	<1.01	<1.01	<1.01	<1.01	<1.01	<1.01	<1.01	<1.01	<1.01	1.32	603	29.8
SW-1 (Ditch A)	8/29/2017	111	--	--	--	2,180 H	450 H	--	351	14,500 H	1,110	--	482	--	10.3	<2.23	<2.23	<2.23	<2.23	<2.23	<2.23	--	--	--	--
SW-2	9/27/2017	11.3	--	--	--	113	97.6	--	47	545	131	--	21.4	--	3.96	1.78	<1.07	<1.07	<1.07	<1.07	<1.07	--	--	--	--
	5/15/2018	10.2	--	--	--	84.9	126	--	55.6	324	140	--	9.35	--	<1.02	<1.02	<1.02	<1.02	<1.02	<1.02	<1.02	--	--	--	--
	2/6/2019	9.74	--	--	--	92.5	139	--	63.6	263	150	--	12.6	--	1.32	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	--	--	--	--
	5/2/2019	12.3	--	--	--	65.6	167	--	106	291	164	--	11.1	--	<1.03	<1.03	<1.03	<1.03	<1.03	<2.07	<1.03	--	--	--	--
	8/9/2019	19.7	71.4	24.8	283	210	296	5.98	109	554	273	<1.01	21.9	<1.01	1.93	<1.01	<1.01	<1.01	<1.01	<1.01	<1.01	<1.01	3.62	1,090	49.1
	11/8/2019	3.90	14.9	4.01	50.2	22.2	33.3	<2.14	19.4	90.2	37.7	<2.14	7.79	<2.14	3.28	<2.14	<2.14	<2.14	<2.14	<2.14	<2.14	<2.14	57.4	12.9	
	5/30/2020	<1.03	4.52	<1.24	9.78	5.20	11.1	<1.03	4.26	29.0	9.87	<1.99	1.53 Q	<1.03	<1.03	<1.03	<1.03	<1.03	<1.03	<1.03	<1.03	<1.03	<1.03	10.3	2.65
	8/17/2020	22.8	94.4	27.7	383	262	359	6.39	123	617	334	<2.04	25.5	<1.06	2.27	<1.06	<1.06	<1.06	<1.06	<1.06	<1.06	<1.06	5.15	1,250	52.8
	8/17/2020	23.8	89.1	26.6	354	233	325	4.33	115	425	288	<2.11	21.4	<1.09	1.90 Q	<1.09	<1.09	<1.09	<1.09	<1.09	<1.09	<1.09	4.22	951	16.9
SW-3	9/27/2017	8.51	--	--	--	54	63.1	--	27	323	76.8	--	12.6	--	3.5	<1.08	<1.08	<1.08	<1.08	<1.08	<1.08	--	--	--	--
	5/15/2018	12.0	--	--	--	97.5	124	--	52.2	270	142	--	9.53	--	<1.04	<1.04	<1.04	<1.04	<1.04	<1.04	<1.04	--	--	--	--
	2/6/2019	9.16	--	--	--	70.6	122	--	53.1	282	133	--	11.5	--	1.10	<1.00	<1.00	<1.00	<1.00	<1.					

- Notes:
- ng/L = Nanograms per liter (parts per trillion).
 - Bold values indicate the compounds was detected above laboratory reporting limits.
 - < = Compound not detected at or above laboratory reporting limit shown.
 - H = Sample was extracted outside of the EPA 537 recommended holding time of 14 days.
 - Q = Identification of analyte could not be confirmed. Ion ratio exceeded control limit.
 - Screening levels from State of Maine (Recreational) and State of Michigan (Aquatic Organisms).
 - Shading indicates concentration of analyte exceeded the screening level for recreational user.
 - = Value not available.

PFBS	Perfluorobutanesulfonic acid (C4)	PFNS	Perfluorononane sulfonic acid (C9)	PFOSA	Perfluorooctane sulfonamide (C8)
PFBA	Perfluorobutanoic acid (C4)	PFNA	Perfluorononanoic acid (C9)	4:2 FTS	Fluorotelomer sulfonate (C4)
PFPeS	Perfluoropentane sulfonic acid (C5)	PFDS	Perfluorodecane sulfonic acid (C10)	6:2 FTS	Fluorotelomer sulfonate (C6)
PFPeA	Perfluoropentanoic acid (C5)	PFDA	Perfluorodecanoic acid (C10)	8:2 FTS	Fluorotelomer sulfonate (C8)
PFHxS	Perfluorohexanesulfonic acid (C6)	PFUnA	Perfluoroundecanoic acid (C11)		
PFHxA	Perfluorohexanoic acid (C6)	PFDoA	Perfluorododecanoic acid (C12)		
PFHpS	Perfluoroheptane sulfonic acid (C7)	PFTrDA	Perfluorotridecanoic acid (C13)		



Note: Base map prepared from USGS 7.5-minute quadrangle of Portland and Mount Tabor, WA-OR, dated 2017 as provided by USGS.gov.



Site Location Map

Stormwater Monitoring Work Plan
Port of Portland
Portland, Oregon



Apex Companies, LLC
3015 SW First Avenue
Portland, Oregon 97201

Project Number: 2550-00	Drawn: JP	Approved: HG
November 2020		

Figure
1



Legend:

-  PFAS Monitoring Locations
-  Storm Basin Boundary and Designation
-  Port of Portland Property Boundary
-  Oregon Air National Guard (OANG) Base
-  PFAS Monitoring Locations by OANG Sampled by Parsons (2020)

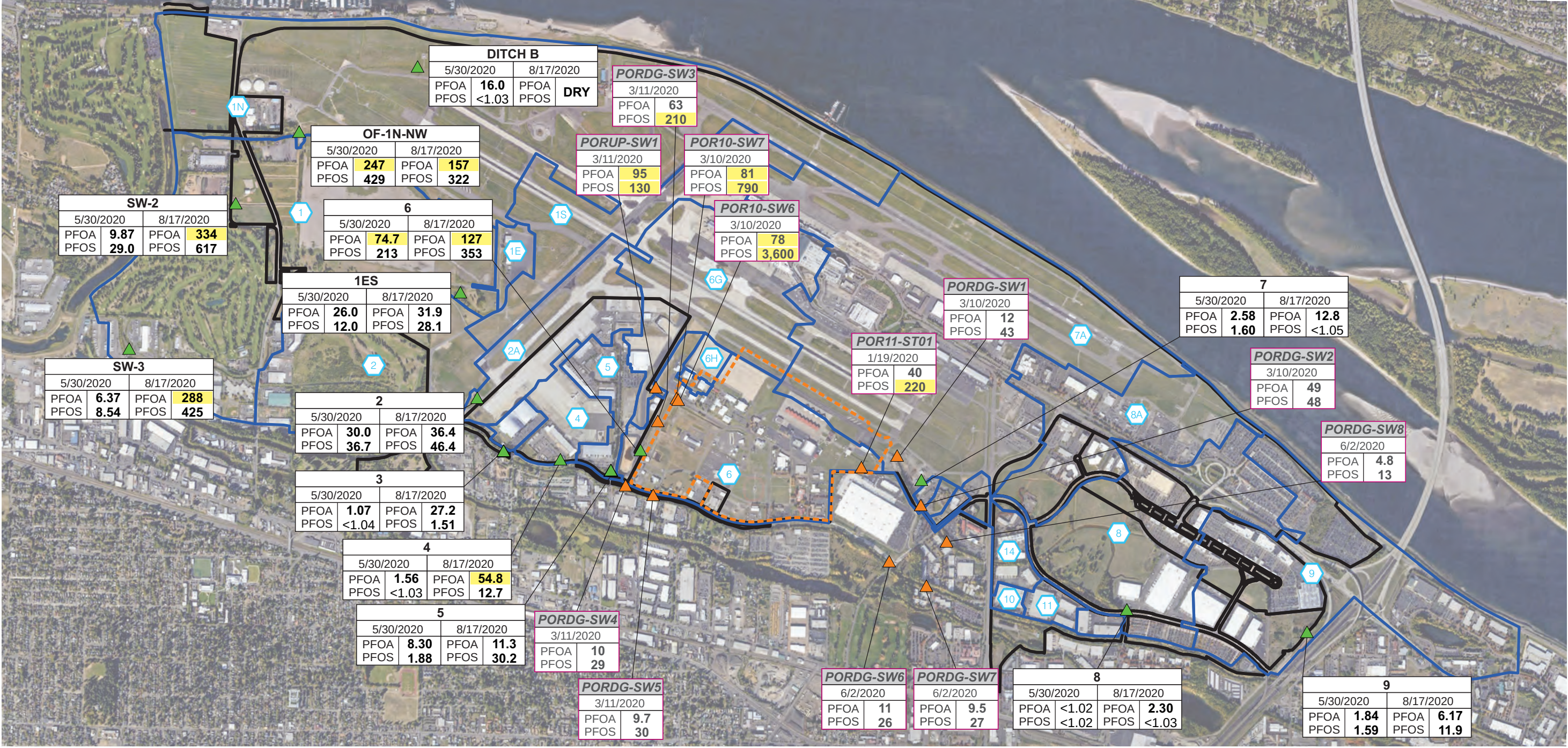
PFAS Monitoring Locations

Stormwater Monitoring Work Plan
Port of Portland
Portland, Oregon

 Apex Companies, LLC
3015 SW First Avenue
Portland, Oregon 97201

Project Number: 2550-00	Drawn: JP	Approved: HG
November 2020		

Figure
2

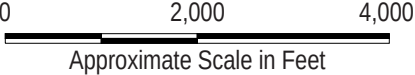


Legend:

- PFAS Monitoring Locations
- Storm Basin Boundary and Designation
- Port Property Boundary
- Oregon Air National Guard (OANG) Base
- PFAS Monitoring Locations by OANG Sampled by Parsons (2020)

DITCH B		PFAS Location Identification
5/30/2020		Italicized Locations Sampled by Parsons (2020)
PFOA	16.0	Sample Date
PFOS	<1.03	Concentration in nanograms per liter (ng/L)
		J = Estimated Value
		Analyte Sampled
		Highlight Exceeds Maine Screening Level for Recreational User

Parsons data screened against USEPA drinking water health advisory level of 70 ng/L.



	Risk-Based Screening Levels		
	Recreational User	Construction Worker	Aquatic Organisms - Chronic
PFOA (Perfluorooctanoic Acid)	50 ng/L	220 ng/L	880,000 ng/L
PFOS (Perfluorooctanesulfonic Acid)	1,200 ng/L	5,300 ng/L	140,000 ng/L

Stormwater and Surface Water Analytical Results

Stormwater Monitoring Work Plan
Port of Portland
Portland, Oregon

Apex Companies, LLC
3015 SW First Avenue
Portland, Oregon 97201

Project Number: 2550-00	Drawn: JP	Approved: HG
----------------------------	--------------	-----------------

November 2020

Figure 3

Attachment A

Field Notes



3015 SW First Avenue
Portland, Oregon 97201-4707
(503) 924-4704 Phone
(503) 943-6357 Fax

PROJECT NUMBER 2550-00
FIELD REPORT NUMBER 1 OF 2
PAGE 1
DATE 5/30/20

PROJECT PDX SW
LOCATION PDX
CLIENT POP
PURPOSE OF OBSERVATIONS collect SW samples
APEX REPRESENTATIVE KK/JM/AR
CONTRACTOR —
CONTRACTOR REP. —
ARRIVAL TIME 1515
DEPARTURE TIME 1815
WEATHER Rain
APEX PROJECT MANAGER A. Reese
PERMIT NO. —
H&S REVIEW yes

Our firm's professionals are represented on site solely to observe operations of the contractor identified, to form opinions about the adequacy of those operations, and to report those opinions to our client. The presence and activities of our field representative do not relieve any contractor from its obligation to meet contractual requirements. The contractor retains sole responsibility for site safety and the methods, operations, and sequence of construction. Unless signed by the Ash Creek Associates Project Manager, this report is preliminary. A preliminary report is provided solely as evidence that field observation was performed. Observations and/or conclusions and/or recommendations conveyed in the final report may vary from and shall take precedence over those included in a preliminary report.

1515 - on site, Review safety, go over scope.
1545 - collect sample at 2.
Temp 16.3 C-49.5 PH 6.70 ORP 1.6 DO 5.75 2 g/m
1610 - collect sample 3 60 g/m
temp 14.8 DO-5.86 C-44.7 PH-7.53 ORP-19.7
1630 - collect sample 4
Temp 17.5 DO-7.85 C-48.5 PH-7.37 ORP-46.0
1640 - collect sample 6
Temp-17.4 DO-7.40 C-228.0 PH-6.95 ORP-59.0
1655 - collect sample 5
Temp-16.1 DO-8.20 C-29.8 PH-7.77 ORP-8.7
1715 - collect sample 7 high water can't see flow
Temp 17.3 DO-8.16 C-52.2 PH-7.59 ORP-22.1
1745 - collect sample Ditch B, 50' north of culvert
Temp-16.4 DO-6.98 C-278.6 PH 7.00 ORP+34.8

BY

REVIEWED BY

KK
APEX REPRESENTATIVE

A. Reese
APEX PROJECT MANAGER



PROJECT NUMBER 2550-00
FIELD REPORT NUMBER _____
PAGE 2 OF 2
DATE 5/30/20

PROJECT	PDX SW	ARRIVAL TIME	
LOCATION	PDX	DEPARTURE TIME	
CLIENT	POP	WEATHER	
PURPOSE OF OBSERVATIONS	SW Sampling		
APEX REPRESENTATIVE		APEX PROJECT MANAGER	
CONTRACTOR		PERMIT NO.	
CONTRACTOR REP.		H&S REVIEW	

Our firm's professionals are represented on site solely to observe operations of the contractor identified, to form opinions about the adequacy of those operations, and to report those opinions to our client. The presence and activities of our field representative do not relieve any contractor from its obligation to meet contractual requirements. The contractor retains sole responsibility for site safety and the methods, operations, and sequence of construction. Unless signed by the Ash Creek Associates Project Manager, this report is preliminary. A preliminary report is provided solely as evidence that field observation was performed. Observations and/or conclusions and/or recommendations conveyed in the final report may vary from and shall take precedence over those included in a preliminary report.

1815 - OFF site

BY

REVIEWED BY

APEX REPRESENTATIVE

APEX PROJECT MANAGER



3015 SW First Avenue
Portland, Oregon 97201-4707
(503) 924-4704 Phone
(503) 943-6357 Fax

PROJECT NUMBER 2550-00
FIELD REPORT NUMBER _____
PAGE 1 OF 1
DATE 5/30/20

PROJECT PDX SW ARRIVAL TIME _____
LOCATION PDX DEPARTURE TIME _____
CLIENT POP WEATHER _____
PURPOSE OF OBSERVATIONS SW sampling
APEX REPRESENTATIVE JM/AR/KK APEX PROJECT MANAGER _____
CONTRACTOR _____ PERMIT NO. _____
CONTRACTOR REP. _____ H&S REVIEW _____

Our firm's professionals are represented on site solely to observe operations of the contractor identified, to form opinions about the adequacy of those operations, and to report those opinions to our client. The presence and activities of our field representative do not relieve any contractor from its obligation to meet contractual requirements. The contractor retains sole responsibility for site safety and the methods, operations, and sequence of construction. Unless signed by the Ash Creek Associates Project Manager, this report is preliminary. A preliminary report is provided solely as evidence that field observation was performed. Observations and/or conclusions and/or recommendations conveyed in the final report may vary from and shall take precedence over those included in a preliminary report.

1550	arrive	SW	PH 6.78	CON 347 US	TEMP 16.1 °C
1610	arrive	SAMPLE 1 ES	PH 7.12	CON 405 US	TEMP 16.8 °C
1640	arrive @	8 DUP	PH 7.70	CON 71 US	TEMP 15.0 °C
1729	arrive @	9	PH 7.60	CON 113 US	TEMP 16.0 °C
1750	arrive @	SW-2 BRIDGE	PH 7.10	CON 260 US	TEMP 16.9 °C
1811	arrive @	SW-3	PH 7.21	CON 287 US	TEMP 16.4 °C

BY

REVIEWED BY

APEX REPRESENTATIVE

APEX PROJECT MANAGER



3015 SW First Avenue
Portland, Oregon 97201-4707
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PROJECT NUMBER 2550-00
FIELD REPORT NUMBER _____
PAGE 1 OF 2
DATE 8/17/20

PROJECT PDX SW ARRIVAL TIME 0830
LOCATION PDX DEPARTURE TIME 1410
CLIENT POD WEATHER SW
PURPOSE OF OBSERVATIONS Collect SW samples
APEX REPRESENTATIVE KK APEX PROJECT MANAGER HG
CONTRACTOR - PERMIT NO. -
CONTRACTOR REP. - H&S REVIEW yes

Our firm's professionals are represented on site solely to observe operations of the contractor identified, to form opinions about the adequacy of those operations, and to report those opinions to our client. The presence and activities of our field representative do not relieve any contractor from its obligation to meet contractual requirements. The contractor retains sole responsibility for site safety and the methods, operations, and sequence of construction. Unless signed by the Ash Creek Associates Project Manager, this report is preliminary. A preliminary report is provided solely as evidence that field observation was performed. Observations and/or conclusions and/or recommendations conveyed in the final report may vary from and shall take precedence over those included in a preliminary report.

830 - on site, Review HASP, setup for sampling
840 - collect sample at SW-3
Temp 21.6 PH 6.29 C 294.0 ORP 45.4 DO 3.51
855 - collect sample at SW-2
Temp 21.0 PH 6.77 C 236.1 ORP 28.5 DO 3.02
900 - collect sample at 5
Temp 19.6 PH 7.40 C 177.9 ORP 37.6 DO 3.20
945 - meet up w/ Blake (Port)
950 - sample 3, manhole dry, took sample from outlet to
slough, slow drip, no parameter, too slow
1105 - Sample 4
Temp 20.6 PH 6.97 C 472.1 ORP -33.6 DO 5.49
1125 - Sample 6
Temp 22.6 PH 7.13 C 308.3 ORP 22.6 DO 3.78
1150 - collect sample 9
Temp 22.3 PH 7.16 C 363.8 ORP 28.8 DO 4.96

BY

KK
APEX REPRESENTATIVE

REVIEWED BY

HG
APEX PROJECT MANAGER



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PROJECT NUMBER 2550-00
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PAGE 2 OF 2
DATE 8/17/20

PROJECT	<u>PDX SW</u>	ARRIVAL TIME	<u>0830</u>
LOCATION	<u>PDX</u>	DEPARTURE TIME	<u>1410</u>
CLIENT	<u>POP</u>	WEATHER	<u>SUN, hot</u>
PURPOSE OF OBSERVATIONS	<u>Collect SW samples</u>		
APEX REPRESENTATIVE	<u>KK</u>	APEX PROJECT MANAGER	<u>AG</u>
CONTRACTOR	<u>—</u>	PERMIT NO.	<u>—</u>
CONTRACTOR REP.	<u>—</u>	H&S REVIEW	<u>YES</u>

Our firm's professionals are represented on site solely to observe operations of the contractor identified, to form opinions about the adequacy of those operations, and to report those opinions to our client. The presence and activities of our field representative do not relieve any contractor from its obligation to meet contractual requirements. The contractor retains sole responsibility for site safety and the methods, operations, and sequence of construction. Unless signed by the Ash Creek Associates Project Manager, this report is preliminary. A preliminary report is provided solely as evidence that field observation was performed. Observations and/or conclusions and/or recommendations conveyed in the final report may vary from and shall take precedence over those included in a preliminary report.

1210 - collect sample 8
Temp 23.8 PH 7.36 C 248.8 ORP 29.7 DO 4.50
1225 - collect sample 7
Temp 25.6 PH 7.56 C 75.0 ORP -2.7 DO 3.64
1245 - collect sample 2
Temp 21.0 PH 7.28 C 336.5 ORP -9.6 DO 5.39
1300 - collect sample 1 ES
Temp 25.4 PH 7.45 C 239.1 ORP -9.1 DO 3.93
1330 - Sample 1A and Dup-1
Temp 23.6 PH 7.33 C 327.8 ORP -10.0 DO 6.54
1340 - Equip Blank
1345 - Field Blank
Ditch B was Dry, no sample
Dump began water
1410 - OFF SITE

BY

REVIEWED BY


APEX REPRESENTATIVE

APEX PROJECT MANAGER

Attachment B

Analytical Results and Quality Assurance Review

Attachment B – Analytical Laboratory Reports and Quality Assurance / Quality Control Review

1.0 Introduction

This attachment documents the results of a quality assurance/quality control (QA/QC) review of the analytical data for stormwater and surface water samples collected in May and August 2020 at the Portland International Airport, Portland, Oregon. Samples from the Site were analyzed by Vista Analytical Laboratory (Vista) of El Dorado Hills, California in accordance with the *Work Plan – PDX PFAS Stormwater Monitoring* (Apex, 2020). Copies of the analytical laboratory reports are included in this attachment, referenced in Table 1 as follows.

Table 1: Analytical Laboratory Reports

Report	Report Date	Sampling Event
2001176	June 16, 2020	Wet Season (May 2020) Stormwater and Surface Water Sampling
2001779	September 14, 2020	Dry Season (August 2020) Stormwater and Surface Water Sampling

2.0 Data Validation

The QA review outlines the applicable quality control criteria utilized during the data review process, as well as any deviations from those criteria. Examination and validation of the laboratory summary reports include:

- Analytical preparation and quantitation methods;
- Analytical method holding times;
- Field and sampling procedures;
- Sample management;
- Chain of custody handling;
- Detection and reporting limits;
- Analyte identification and quantitation;
- Method blank, equipment blank, and field blank detections;
- On-going precision and recovery (OPR) to assess laboratory accuracy; and
- Field duplicate to assess sampling and laboratory precision.

The QA/QC review did not include a review of raw data.

Attachment B – Analytical Laboratory Reports and Quality Assurance / Quality Control Review

This QA/QC review documents the relationship between analytical findings and data quality objectives based on precision and accuracy. It also summarizes possible error or bias and the effect on data quality and usability.

The laboratory quality control (QC) samples provided in data packages were used to evaluate laboratory contamination or background interferences, sample preparation efficiency, instrumentation performance and sample matrix interferences. The QC samples provided by the analytical laboratories include method blanks and ongoing precision and recovery (OPR) samples. Surrogates and labeled standards were also analyzed to assess sample preparation efficiency and matrix interferences.

2.1 Data Qualifiers

Any data that is found to have possible bias or error was qualified and flagged. The following are flags used in this QA/QC review and data tables.

Table 2: Qualifier Flags

Q	Identification of analyte could not be confirmed. Ion ratio exceeded control limit.
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3.0 Analytical Methods

Chemical analyses consisted of the following:

- Per- and polyfluorinated alkyl substances (PFAS) by the Isotope Dilution Method (formerly Modified EPA Method 537).

The samples were extracted and analyzed for a select list of PFAS using the PFAS Isotope Dilution Method. The results for PFHxS, PFOA, PFOS, MeFOSAA, and EtFOSAA include both linear and branched isomers. Results for all other PFAS include linear isomers only.

Vista is certified for the Isotope Dilution Method by the National Environmental Laboratory Accreditation Program (NELAP) (under Modified EPA Method 537).

4.0 Data Quality Assurance Review

The general QA objectives for this project were to develop and implement procedures for obtaining, evaluating, and confirming the usability of data of a specified quality. To collect such information, analytical data must have an appropriate degree of accuracy and reproducibility, samples collected must be representative of actual field conditions, and samples must be collected and analyzed using unbroken chain-of-custody procedures.

Attachment B – Analytical Laboratory Reports and Quality Assurance / Quality Control Review

Reporting limits and analytical results were compared to cleanup and screening levels for each parameter in the matrix of concern. Precision, accuracy, completeness, and comparability parameters used to indicate data quality are defined below.

4.1 Field and Sampling Procedures

Stormwater and surface water sample were collected using a decontaminated telescoping swing and transferred to the sample container, or directly collected into the laboratory-provided sample container.

To prevent cross-contamination between sampling events, clean, dedicated sampling equipment (e.g., groundwater sampling tubing) was used for each sampling event and was discarded after use. Cleaning of non-disposable items (i.e., field meter, telescoping swing sampler, and water level probe) consisted of washing in a detergent (Alconox®) solution, rinsing with tap water, followed by a PFAS-free water rinse.

Samples were collected in two 250 milliliter (mL) HDPE containers per sample location. Container lids were also constructed out of HDPE. All sample containers were provided by the laboratory and certified PFAS-free. Labels containing the sample identification, sample date, and sample time were affixed to containers. This same identification information was recorded on the chain of custody document. After collection, sample containers were placed within one Ziploc® bag per sample location and chilled on wet ice.

To avoid PFAS contamination, sampling personnel avoided using items containing polytetrafluoroethylene (PTFE, also known as Teflon), low-density polyethylene (LDPE) or polypropylene as well as other items that contain PFAS, such as aluminum foil, post-it notes, waterproof field books, markers, chemical ice packs (e.g., blue ice), certain decontamination soaps, and certain product packaging (e.g., such as that found on pre-wrapped foods and snacks). Similarly, many clothing items contain PFAS, such as those coated with Teflon or incorporating a Gore-Tex membrane. Clothing items were only worn if they had been washed at least six times. Field personnel avoided the use of cosmetics, moisturizers, and hand cream. Insect repellent and sunscreen were avoided and alternative skins barriers (e.g. long sleeve clothing, wide-brimmed hats, etc.) were used. PFAS contamination prevention protocols were reviewed with personnel daily during the field activities. Before any samples are collected, the sample handler washed their hands and wore nitrile gloves while collecting and sealing sample containers

4.2 Sample Management

Chain of custody documents were implemented for handling and managing samples. The chain of custody documents were appropriately filled out with sample identification, sample date, sample time, analysis to be performed, and were relinquished by the Apex Companies sampler and received by Vista. Samples were shipped to Vista via FedEx and were packed with wet ice in one ice chest per sampling event. Upon receipt by the laboratory, sample temperatures were recorded as 3.3 degrees Celsius (°C) and 0.1°C. There were

Attachment B – Analytical Laboratory Reports and Quality Assurance / Quality Control Review

no significant discrepancies between sample container labels and information documented on the chain of custody.

Upon receipt the laboratory noted particulate matter in water collected from locations 4, 5, 6, 7, 8, 9, OF1N-NW, 1ES, and SW-2 that required centrifuging prior to extraction. Centrifuging is a standard practice when extracting PFAS samples since particulates will clog the solid-phase extraction (SPE) cartridge. If SPE cartridges are clogged, it interferes with the extraction process and lowers the recoveries of the internal standards. The solids from the centrifuging are also rinsed in methanol, which is included in the extraction. The PFAS reported by the laboratory are almost exclusively found in the aqueous portion of the samples. The longer carbon chain PFAS will sorb more to the particulate; however, this will also result in lower recoveries for longer-chain internal standards.

4.3 Holding Times

The holding time is the minimum amount of time the sample can be stored before analytes start to degrade and are not representative of initial sampling concentrations. Water samples to be analyzed for PFAS should be extracted within 14 days from collection. Extracts can be stored up to 28 days before analysis. Samples were extracted and analyzed within the method specified holding times.

4.4 Reporting Limits

Reporting limits are the lowest concentration an instrument is capable of accurately detecting an analyte. They are determined by the laboratory and are based on instrumentation capabilities, the matrix of field samples, sample preparation procedures and EPA suggested reporting limits. Reporting limits for PFAS were consistent with historical data and below promulgated screening values.

4.5 Analyte Identification and Quantitation

For analysis of PFAS, the recovery of some labeled standards was outside of control limits. Labeled standards are spiked directly into samples before preparation to determine matrix interferences and concentration of analytes. Recovery of these labeled standards automatically corrects sample concentration due to isotope dilution. Data quality is not considered affected if the signal-to-noise ratio is greater than 10:1, which was achieved. No data is flagged in the data table.

Ion ratios were outside of control limits for the following samples: PFNA and PFDA from location 2; PFOA and 8:2 FTS from location 4; PFUnA and PFDoA from location 5; PFPeS, PFHpS, and 8:2 FTS from location 6; PFHxA, PFNA, PFDoA, and PFPeA from location 7; PFPeS, PFHpS, and PFDA from location OF1N-NW; PFPeS and 8:2 FTS from location 1ES; PFNA from location SW-2; and PFDA from location SW-3. Ion ratios help to identify compounds in complex matrices. When ion ratios are exceeded, the positive identification for the analyte is not confirmed, and the analyte is only suspected as being present in the sample. These results

Attachment B – Analytical Laboratory Reports and Quality Assurance / Quality Control Review

are 'Q' flagged in the table as analytes that are suspected to be present, but the identification could not be confirmed with ion ratios.

4.6 Method Blanks

A method – or laboratory – blank is a quality control sample prepared by the laboratory from an analyte-free matrix and analyzed in an analytical batch along with environmental and other QC samples. It is used to assess laboratory contamination or background interferences. Target PFAS were not detected in the analytical batch method blank samples.

4.7 Equipment Blank

An equipment blank is a sample of analyte-free water poured over or through decontaminated field sampling equipment during a sampling event. Equipment blanks assess contamination from the total sampling, sample preparation, and measurement process when decontaminated sampling equipment is used to collect samples.

One equipment blank was analyzed per sampling event and target PFAS were not detected.

4.8 Field Blank

One field blank was collected during the stormwater monitoring event. The field blank sample was filled at the laboratory with PFAS-free water and shipped to the sampling site with the sampling bottles. For each field blank shipped, an empty sample bottle will also be shipped. At the sampling site, the sampler transferred the water within the laboratory-supplied container to another empty container while in the field. Field blanks assess potential contamination during shipment and from ambient conditions while sampling.

One field blank was analyzed per sampling event and target PFAS were not detected.

4.9 Accuracy

Accuracy compares the accepted reference concentration of an analyte to the concentration determined analytically. Accuracy is measured as a percent recovery. This recovery must be within a certain range – or control limit – for the data in an analytical batch to be considered acceptable. The analytical laboratory provides quality control samples and surrogates to help determine the accuracy and acceptability of the data reported. These quality control samples and surrogates are discussed below.

4.9.1 Ongoing Precision and Recovery (OPR)

Ongoing precision and recovery (OPR) quality control samples were analyzed in place of LCS/LCSDs for PFAS analysis. Laboratory control samples (LCS) and laboratory control duplicate samples (LCSD) were

Attachment B – Analytical Laboratory Reports and Quality Assurance / Quality Control Review

analyzed by the laboratory to assess the accuracy of the analytical methods. The LCS and LCSD are prepared from an analyte-free matrix that is spiked with known levels of compounds of concern. The concentrations are measured and compared to the known spiked levels; expressed as a percent recovery. This percent recovery must be within method or laboratory defined control limits for data to be considered acceptable. Analytes were recovered within OPR quality control limits.

4.10 Precision

Precision is measured by how close values of duplicate analyses are to each other. These duplicate analyses are prepared from separate aliquots of the same sample and are analyzed at the same (or similar) time. Precision in the field ensures that samples taken are representative of field concentrations; this is demonstrated by field duplicates. Analytical precision is the ability of the laboratory to reproduce results that are similar to each other; this is measured through duplicate analysis of environmental and batch QC samples. Precision is estimated by the relative percent difference (RPD) between the original analysis and the duplicate analysis.

4.10.1 Field Duplicate

A field duplicate is a second field sample collected from a selected sample location. Field duplicate samples serve as a check on laboratory precision, sampling quality, as well as potential variability of the sample matrix. The field duplicate is analyzed and compared to the original sample to assess precision. This comparison can be expressed by the RPD between the original and duplicate samples. Field duplicate samples are controlled if the reported result is greater than five times the reporting limit.

Field duplicates were collected from location 8 in May 2020 and OF1N-NW in August 2020. Detected PFAS were less than five times the reporting limit for the May 2020 event; therefore, results were not controlled. For the August 2020 sampling event, results greater than five times the reporting limit were within the 30 percent RPD control limit.

5.0 Conclusion

In conclusion, the QA objectives have been met and the data are of sufficient quality for use in this project.



June 16, 2020

Vista Work Order No. 2001176

Ms. Heather Gosack
Apex Companies, LLC
3015 SW First Avenue
Portland, OR 97201

Dear Ms. Gosack,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on June 02, 2020 under your Project Name 'PDX Fire Training Facility'.

Vista Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at mmaier@vista-analytical.com.

Thank you for choosing Vista as part of your analytical support team.

Sincerely,

Martha Maier
Laboratory Director



Vista Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. Results relate only to the samples as received by the laboratory. This report should not be reproduced except in full without the written approval of Vista.

Vista Work Order No. 2001176

Case Narrative

Sample Condition on Receipt:

Fourteen surface water samples and two water samples were received in good condition and within the method temperature requirements. The samples were received and stored securely in accordance with Vista standard operating procedures and EPA methodology.

Analytical Notes:

PFAS Isotope Dilution Method

The following samples contained particulate and were centrifuged prior to extraction:

<u>Laboratory ID</u>	<u>Sample Name</u>
2001176-05	5
2001176-06	7
2001176-08	1N
2001176-09	1ES
2001176-12	9
2001176-13	SW-2

The samples were extracted and analyzed for a selected list of PFAS using Vista's PFAS Isotope Dilution Method. The results for PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Results for all other analytes include the linear isomers only.

Holding Times

The samples were extracted within the EPA-recommended hold time.

Quality Control

The Initial Calibration and Continuing Calibration Verifications met the acceptance criteria.

A Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with the preparation batch. No analytes were detected in the Method Blank above the Reporting Limit. The OPR recoveries were within the method acceptance criteria.

The internal standard recoveries outside the acceptance criteria are flagged with an "H" qualifier.

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Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
2001176-01	2	30-May-20 15:45	02-Jun-20 09:29	HDPE Bottle, 250 mL
2001176-02	3	30-May-20 16:10	02-Jun-20 09:29	HDPE Bottle, 250 mL
2001176-03	4	30-May-20 16:30	02-Jun-20 09:29	HDPE Bottle, 250 mL
2001176-04	6	30-May-20 16:40	02-Jun-20 09:29	HDPE Bottle, 250 mL
2001176-05	5	30-May-20 16:55	02-Jun-20 09:29	HDPE Bottle, 250 mL
2001176-06	7	30-May-20 17:15	02-Jun-20 09:29	HDPE Bottle, 250 mL
2001176-07	Ditch B	30-May-20 17:45	02-Jun-20 09:29	HDPE Bottle, 250 mL
2001176-08	1N	30-May-20 15:50	02-Jun-20 09:29	HDPE Bottle, 250 mL
2001176-09	1ES	30-May-20 16:10	02-Jun-20 09:29	HDPE Bottle, 250 mL
2001176-10	8	30-May-20 16:40	02-Jun-20 09:29	HDPE Bottle, 250 mL
2001176-11	8 DUP	30-May-20 16:40	02-Jun-20 09:29	HDPE Bottle, 250 mL
2001176-12	9	30-May-20 17:29	02-Jun-20 09:29	HDPE Bottle, 250 mL
2001176-13	SW-2	30-May-20 17:50	02-Jun-20 09:29	HDPE Bottle, 250 mL
2001176-14	SW-3	30-May-20 18:11	02-Jun-20 09:29	HDPE Bottle, 250 mL
2001176-15	Field Blank	30-May-20 18:00	02-Jun-20 09:29	HDPE Bottle, 250 mL
2001176-16	Equip Blank	30-May-20 17:55	02-Jun-20 09:29	HDPE Bottle, 250 mL

ANALYTICAL RESULTS

Sample ID: Method Blank					PFAS Isotope Dilution Method				
Client Data					Laboratory Data				
Name:	Apex Companies, LLC	Matrix:	Aqueous	Lab Sample:	B0F0009-BLK1	Column:	BEH C18		
Project:	PDX Fire Training Facility								
Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	ND	1.00		B0F0009	05-Jun-20	0.250 L	09-Jun-20 01:50	1
PFPeA	2706-90-3	ND	1.00		B0F0009	05-Jun-20	0.250 L	09-Jun-20 21:27	1
PFBS	375-73-5	ND	1.00		B0F0009	05-Jun-20	0.250 L	09-Jun-20 01:50	1
4:2 FTS	757124-72-4	ND	1.00		B0F0009	05-Jun-20	0.250 L	09-Jun-20 01:50	1
PFHxA	307-24-4	ND	1.09		B0F0009	05-Jun-20	0.250 L	09-Jun-20 01:50	1
PFPeS	2706-91-4	ND	1.21		B0F0009	05-Jun-20	0.250 L	09-Jun-20 01:50	1
PFHpA	375-85-9	ND	1.00		B0F0009	05-Jun-20	0.250 L	09-Jun-20 01:50	1
PFHxS	355-46-4	ND	1.00		B0F0009	05-Jun-20	0.250 L	09-Jun-20 01:50	1
6:2 FTS	27619-97-2	ND	1.00		B0F0009	05-Jun-20	0.250 L	09-Jun-20 21:27	1
PFOA	335-67-1	ND	1.00		B0F0009	05-Jun-20	0.250 L	09-Jun-20 21:27	1
PFHpS	375-92-8	ND	1.00		B0F0009	05-Jun-20	0.250 L	09-Jun-20 01:50	1
PFNA	375-95-1	ND	1.00		B0F0009	05-Jun-20	0.250 L	09-Jun-20 01:50	1
PFOSA	754-91-6	ND	1.00		B0F0009	05-Jun-20	0.250 L	09-Jun-20 01:50	1
PFOS	1763-23-1	ND	1.00		B0F0009	05-Jun-20	0.250 L	09-Jun-20 01:50	1
PFDA	335-76-2	ND	1.00		B0F0009	05-Jun-20	0.250 L	09-Jun-20 01:50	1
8:2 FTS	39108-34-4	ND	1.03		B0F0009	05-Jun-20	0.250 L	09-Jun-20 01:50	1
PFNS	68259-12-1	ND	1.94		B0F0009	05-Jun-20	0.250 L	09-Jun-20 01:50	1
MeFOSAA	2355-31-9	ND	1.00		B0F0009	05-Jun-20	0.250 L	09-Jun-20 01:50	1
EtFOSAA	2991-50-6	ND	1.00		B0F0009	05-Jun-20	0.250 L	09-Jun-20 01:50	1
PFUnA	2058-94-8	ND	1.00		B0F0009	05-Jun-20	0.250 L	09-Jun-20 01:50	1
PFDS	335-77-3	ND	1.00		B0F0009	05-Jun-20	0.250 L	09-Jun-20 01:50	1
PFDoA	307-55-1	ND	1.00		B0F0009	05-Jun-20	0.250 L	09-Jun-20 01:50	1
PFTTrDA	72629-94-8	ND	1.00		B0F0009	05-Jun-20	0.250 L	09-Jun-20 01:50	1
PFTeDA	376-06-7	ND	1.00		B0F0009	05-Jun-20	0.250 L	09-Jun-20 01:50	1
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	136	60 - 130	H	B0F0009	05-Jun-20	0.250 L	09-Jun-20 01:50	1
13C3-PFPeA	IS	78.1	60 - 150		B0F0009	05-Jun-20	0.250 L	09-Jun-20 21:27	1
13C3-PFBS	IS	97.6	60 - 150		B0F0009	05-Jun-20	0.250 L	09-Jun-20 01:50	1
13C2-4:2 FTS	IS	96.7	20 - 150		B0F0009	05-Jun-20	0.250 L	09-Jun-20 01:50	1
13C2-PFHxA	IS	85.0	70 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 01:50	1
13C4-PFHpA	IS	79.9	60 - 150		B0F0009	05-Jun-20	0.250 L	09-Jun-20 01:50	1
13C3-PFHxS	IS	92.6	60 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 01:50	1
13C2-6:2 FTS	IS	74.7	40 - 150		B0F0009	05-Jun-20	0.250 L	09-Jun-20 21:27	1
13C5-PFNA	IS	83.5	50 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 01:50	1
13C8-PFOSA	IS	41.2	20 - 150		B0F0009	05-Jun-20	0.250 L	09-Jun-20 01:50	1
13C2-PFOA	IS	80.1	60 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 21:27	1
13C8-PFOS	IS	89.9	60 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 01:50	1
13C2-PFDA	IS	84.3	60 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 01:50	1

Sample ID: Method Blank					PFAS Isotope Dilution Method					
Client Data Name: Apex Companies, LLC Matrix: Aqueous Project: PDX Fire Training Facility					Laboratory Data Lab Sample: B0F0009-BLK1 Column: BEH C18					
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-8:2 FTS	IS	75.8	40 - 150		B0F0009	05-Jun-20	0.250 L	09-Jun-20 01:50	1	
d3-MeFOSAA	IS	72.4	50 - 150		B0F0009	05-Jun-20	0.250 L	09-Jun-20 01:50	1	
13C2-PFUnA	IS	77.0	60 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 01:50	1	
d5-EtFOSAA	IS	62.4	50 - 150		B0F0009	05-Jun-20	0.250 L	09-Jun-20 01:50	1	
13C2-PFDoA	IS	71.1	30 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 01:50	1	
13C2-PFTeDA	IS	67.3	20 - 150		B0F0009	05-Jun-20	0.250 L	09-Jun-20 01:50	1	

RL - Reporting limit

Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: OPR						PFAS Isotope Dilution Method					
Client Data						Laboratory Data					
Name:	Apex Companies, LLC		Matrix:	Aqueous		Lab Sample:	B0F0009-BS1		Column:	BEH C18	
Project:	PDX Fire Training Facility										
Analyte	CAS Number	Amt Found (ng/L)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	42.9	40.0	107	70 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 02:01	1
PFPeA	2706-90-3	44.0	40.0	110	70 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 21:37	1
PFBS	375-73-5	41.8	40.0	104	70 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 02:01	1
4:2 FTS	757124-72-4	43.0	40.0	108	60 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 02:01	1
PFHxA	307-24-4	45.5	40.0	114	70 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 02:01	1
PFPeS	2706-91-4	42.2	40.0	105	70 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 02:01	1
PFHpA	375-85-9	40.7	40.0	102	70 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 02:01	1
PFHxS	355-46-4	43.3	40.0	108	70 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 02:01	1
6:2 FTS	27619-97-2	47.5	40.0	119	60 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 21:37	1
PFOA	335-67-1	47.9	40.0	120	70 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 21:37	1
PFHpS	375-92-8	48.3	40.0	121	60 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 02:01	1
PFNA	375-95-1	46.5	40.0	116	70 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 02:01	1
PFOSA	754-91-6	50.7	40.0	127	70 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 02:01	1
PFOS	1763-23-1	43.2	40.0	108	70 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 02:01	1
PFDA	335-76-2	39.7	40.0	99.3	70 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 02:01	1
8:2 FTS	39108-34-4	36.9	40.0	92.1	60 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 02:01	1
PFNS	68259-12-1	43.8	40.0	110	70 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 02:01	1
MeFOSAA	2355-31-9	42.5	40.0	106	70 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 02:01	1
EtFOSAA	2991-50-6	39.5	40.0	98.6	70 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 02:01	1
PFUnA	2058-94-8	42.2	40.0	106	70 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 02:01	1
PFDS	335-77-3	38.5	40.0	96.3	60 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 02:01	1
PFDoA	307-55-1	42.2	40.0	106	70 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 02:01	1
PFTTrDA	72629-94-8	43.6	40.0	109	60 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 02:01	1
PFTeDA	376-06-7	43.4	40.0	109	70 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 02:01	1
Labeled Standards	Type			% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS			134	60- 130	H	B0F0009	05-Jun-20	0.250 L	09-Jun-20 02:01	1
13C3-PFPeA	IS			81.3	60- 150		B0F0009	05-Jun-20	0.250 L	09-Jun-20 21:37	1
13C3-PFBS	IS			94.9	60- 150		B0F0009	05-Jun-20	0.250 L	09-Jun-20 02:01	1
13C2-4:2 FTS	IS			99.6	20- 150		B0F0009	05-Jun-20	0.250 L	09-Jun-20 02:01	1
13C2-PFHxA	IS			85.5	70- 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 02:01	1
13C4-PFHpA	IS			86.8	60- 150		B0F0009	05-Jun-20	0.250 L	09-Jun-20 02:01	1
13C3-PFHxS	IS			91.1	60- 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 02:01	1
13C2-6:2 FTS	IS			76.6	40- 150		B0F0009	05-Jun-20	0.250 L	09-Jun-20 21:37	1
13C5-PFNA	IS			85.7	50- 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 02:01	1
13C8-PFOSA	IS			43.2	20- 150		B0F0009	05-Jun-20	0.250 L	09-Jun-20 02:01	1

Sample ID: OPR					PFAS Isotope Dilution Method				
Client Data Name: Apex Companies, LLC Project: PDX Fire Training Facility					Laboratory Data Lab Sample: B0F0009-BS1 Column: BEH C18				
Labeled Standards	Type	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFOA	IS	80.9	60- 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 21:37	1
13C8-PFOS	IS	84.7	60- 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 02:01	1
13C2-PFDA	IS	85.5	60- 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 02:01	1
13C2-8:2 FTS	IS	79.0	40- 150		B0F0009	05-Jun-20	0.250 L	09-Jun-20 02:01	1
d3-MeFOSAA	IS	70.3	50- 150		B0F0009	05-Jun-20	0.250 L	09-Jun-20 02:01	1
13C2-PFUnA	IS	74.5	60- 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 02:01	1
d5-EtFOSAA	IS	67.7	50- 150		B0F0009	05-Jun-20	0.250 L	09-Jun-20 02:01	1
13C2-PFDoA	IS	71.8	30- 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 02:01	1
13C2-PFTeDA	IS	59.4	20- 150		B0F0009	05-Jun-20	0.250 L	09-Jun-20 02:01	1

Sample ID: 2 **PFAS Isotope Dilution Method**

Client Data				Laboratory Data			
Name:	Apex Companies, LLC	Matrix:	Surface Water	Lab Sample:	2001176-01	Column:	BEH C18
Project:	PDX Fire Training Facility	Date Collected:	30-May-20 15:45	Date Received:	02-Jun-20 09:29		

Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	19.5	1.05		B0F0009	05-Jun-20	0.239 L	09-Jun-20 02:11	1
PFPeA	2706-90-3	43.6	1.05		B0F0009	05-Jun-20	0.239 L	09-Jun-20 21:48	1
PFBS	375-73-5	ND	1.05		B0F0009	05-Jun-20	0.239 L	09-Jun-20 02:11	1
4:2 FTS	757124-72-4	ND	1.05		B0F0009	05-Jun-20	0.239 L	09-Jun-20 02:11	1
PFHxA	307-24-4	38.4	1.14		B0F0009	05-Jun-20	0.239 L	09-Jun-20 02:11	1
PFPeS	2706-91-4	ND	1.27		B0F0009	05-Jun-20	0.239 L	09-Jun-20 02:11	1
PFHpA	375-85-9	21.4	1.05		B0F0009	05-Jun-20	0.239 L	09-Jun-20 02:11	1
PFHxS	355-46-4	12.8	1.05		B0F0009	05-Jun-20	0.239 L	09-Jun-20 02:11	1
6:2 FTS	27619-97-2	48.7	1.05		B0F0009	05-Jun-20	0.239 L	09-Jun-20 21:48	1
PFOA	335-67-1	30.0	1.05		B0F0009	05-Jun-20	0.239 L	09-Jun-20 21:48	1
PFHpS	375-92-8	ND	1.05		B0F0009	05-Jun-20	0.239 L	09-Jun-20 02:11	1
PFNA	375-95-1	5.52	1.05	Q	B0F0009	05-Jun-20	0.239 L	09-Jun-20 02:11	1
PFOSA	754-91-6	3.59	1.05		B0F0009	05-Jun-20	0.239 L	09-Jun-20 02:11	1
PFOS	1763-23-1	36.7	1.05		B0F0009	05-Jun-20	0.239 L	09-Jun-20 02:11	1
PFDA	335-76-2	2.67	1.05	Q	B0F0009	05-Jun-20	0.239 L	09-Jun-20 02:11	1
8:2 FTS	39108-34-4	9.29	1.08		B0F0009	05-Jun-20	0.239 L	09-Jun-20 02:11	1
PFNS	68259-12-1	ND	2.02		B0F0009	05-Jun-20	0.239 L	09-Jun-20 02:11	1
MeFOSAA	2355-31-9	ND	1.05		B0F0009	05-Jun-20	0.239 L	09-Jun-20 02:11	1
EtFOSAA	2991-50-6	ND	1.05		B0F0009	05-Jun-20	0.239 L	09-Jun-20 02:11	1
PFUnA	2058-94-8	ND	1.05		B0F0009	05-Jun-20	0.239 L	09-Jun-20 02:11	1
PFDS	335-77-3	ND	1.05		B0F0009	05-Jun-20	0.239 L	09-Jun-20 02:11	1
PFDoA	307-55-1	ND	1.05		B0F0009	05-Jun-20	0.239 L	09-Jun-20 02:11	1
PFTTrDA	72629-94-8	ND	1.05		B0F0009	05-Jun-20	0.239 L	09-Jun-20 02:11	1
PFTeDA	376-06-7	ND	1.05		B0F0009	05-Jun-20	0.239 L	09-Jun-20 02:11	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	131	60 - 130	H	B0F0009	05-Jun-20	0.239 L	09-Jun-20 02:11	1
13C3-PFPeA	IS	79.5	60 - 150		B0F0009	05-Jun-20	0.239 L	09-Jun-20 21:48	1
13C3-PFBS	IS	96.9	60 - 150		B0F0009	05-Jun-20	0.239 L	09-Jun-20 02:11	1
13C2-4:2 FTS	IS	91.7	20 - 150		B0F0009	05-Jun-20	0.239 L	09-Jun-20 02:11	1
13C2-PFHxA	IS	84.3	70 - 130		B0F0009	05-Jun-20	0.239 L	09-Jun-20 02:11	1
13C4-PFHpA	IS	85.6	60 - 150		B0F0009	05-Jun-20	0.239 L	09-Jun-20 02:11	1
13C3-PFHxS	IS	99.0	60 - 130		B0F0009	05-Jun-20	0.239 L	09-Jun-20 02:11	1
13C2-6:2 FTS	IS	77.1	40 - 150		B0F0009	05-Jun-20	0.239 L	09-Jun-20 21:48	1
13C5-PFNA	IS	88.9	50 - 130		B0F0009	05-Jun-20	0.239 L	09-Jun-20 02:11	1
13C8-PFOSA	IS	55.1	20 - 150		B0F0009	05-Jun-20	0.239 L	09-Jun-20 02:11	1
13C2-PFOA	IS	82.4	60 - 130		B0F0009	05-Jun-20	0.239 L	09-Jun-20 21:48	1
13C8-PFOS	IS	88.9	60 - 130		B0F0009	05-Jun-20	0.239 L	09-Jun-20 02:11	1
13C2-PFDA	IS	89.8	60 - 130		B0F0009	05-Jun-20	0.239 L	09-Jun-20 02:11	1

Sample ID: 2					PFAS Isotope Dilution Method					
Client Data Name: Apex Companies, LLC Project: PDX Fire Training Facility					Laboratory Data Lab Sample: 2001176-01 Date Received: 02-Jun-20 09:29 Column: BEH C18					
Matrix: Surface Water Date Collected: 30-May-20 15:45										
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-8:2 FTS	IS	92.4	40 - 150		B0F0009	05-Jun-20	0.239 L	09-Jun-20 02:11	1	
d3-MeFOSAA	IS	82.7	50 - 150		B0F0009	05-Jun-20	0.239 L	09-Jun-20 02:11	1	
13C2-PFUnA	IS	90.0	60 - 130		B0F0009	05-Jun-20	0.239 L	09-Jun-20 02:11	1	
d5-EtFOSAA	IS	83.6	50 - 150		B0F0009	05-Jun-20	0.239 L	09-Jun-20 02:11	1	
13C2-PFDoA	IS	82.8	30 - 130		B0F0009	05-Jun-20	0.239 L	09-Jun-20 02:11	1	
13C2-PFTeDA	IS	73.4	20 - 150		B0F0009	05-Jun-20	0.239 L	09-Jun-20 02:11	1	

RL - Reporting limit

Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: 3

PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Apex Companies, LLC	Matrix:	Surface Water	Lab Sample:	2001176-02	Column:	BEH C18
Project:	PDX Fire Training Facility	Date Collected:	30-May-20 16:10	Date Received:	02-Jun-20 09:29		

Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	1.50	1.04		B0F0009	05-Jun-20	0.240 L	09-Jun-20 02:22	1
PFPeA	2706-90-3	1.34	1.04		B0F0009	05-Jun-20	0.240 L	09-Jun-20 21:58	1
PFBS	375-73-5	ND	1.04		B0F0009	05-Jun-20	0.240 L	09-Jun-20 02:22	1
4:2 FTS	757124-72-4	ND	1.04		B0F0009	05-Jun-20	0.240 L	09-Jun-20 02:22	1
PFHxA	307-24-4	ND	1.14		B0F0009	05-Jun-20	0.240 L	09-Jun-20 02:22	1
PFPeS	2706-91-4	ND	1.26		B0F0009	05-Jun-20	0.240 L	09-Jun-20 02:22	1
PFHpA	375-85-9	ND	1.04		B0F0009	05-Jun-20	0.240 L	09-Jun-20 02:22	1
PFHxS	355-46-4	ND	1.04		B0F0009	05-Jun-20	0.240 L	09-Jun-20 02:22	1
6:2 FTS	27619-97-2	4.07	1.04		B0F0009	05-Jun-20	0.240 L	09-Jun-20 21:58	1
PFOA	335-67-1	1.07	1.04		B0F0009	05-Jun-20	0.240 L	09-Jun-20 21:58	1
PFHpS	375-92-8	ND	1.04		B0F0009	05-Jun-20	0.240 L	09-Jun-20 02:22	1
PFNA	375-95-1	ND	1.04		B0F0009	05-Jun-20	0.240 L	09-Jun-20 02:22	1
PFOSA	754-91-6	ND	1.04		B0F0009	05-Jun-20	0.240 L	09-Jun-20 02:22	1
PFOS	1763-23-1	ND	1.04		B0F0009	05-Jun-20	0.240 L	09-Jun-20 02:22	1
PFDA	335-76-2	ND	1.04		B0F0009	05-Jun-20	0.240 L	09-Jun-20 02:22	1
8:2 FTS	39108-34-4	10.1	1.07		B0F0009	05-Jun-20	0.240 L	09-Jun-20 02:22	1
PFNS	68259-12-1	ND	2.02		B0F0009	05-Jun-20	0.240 L	09-Jun-20 02:22	1
MeFOSAA	2355-31-9	ND	1.04		B0F0009	05-Jun-20	0.240 L	09-Jun-20 02:22	1
EtFOSAA	2991-50-6	ND	1.04		B0F0009	05-Jun-20	0.240 L	09-Jun-20 02:22	1
PFOA	2058-94-8	ND	1.04		B0F0009	05-Jun-20	0.240 L	09-Jun-20 02:22	1
PFDS	335-77-3	ND	1.04		B0F0009	05-Jun-20	0.240 L	09-Jun-20 02:22	1
PFDoA	307-55-1	ND	1.04		B0F0009	05-Jun-20	0.240 L	09-Jun-20 02:22	1
PFTTrDA	72629-94-8	ND	1.04		B0F0009	05-Jun-20	0.240 L	09-Jun-20 02:22	1
PFTeDA	376-06-7	ND	1.04		B0F0009	05-Jun-20	0.240 L	09-Jun-20 02:22	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	144	60 - 130	H	B0F0009	05-Jun-20	0.240 L	09-Jun-20 02:22	1
13C3-PFPeA	IS	83.5	60 - 150		B0F0009	05-Jun-20	0.240 L	09-Jun-20 21:58	1
13C3-PFBS	IS	91.9	60 - 150		B0F0009	05-Jun-20	0.240 L	09-Jun-20 02:22	1
13C2-4:2 FTS	IS	94.1	20 - 150		B0F0009	05-Jun-20	0.240 L	09-Jun-20 02:22	1
13C2-PFHxA	IS	87.2	70 - 130		B0F0009	05-Jun-20	0.240 L	09-Jun-20 02:22	1
13C4-PFHpA	IS	88.8	60 - 150		B0F0009	05-Jun-20	0.240 L	09-Jun-20 02:22	1
13C3-PFHxS	IS	91.5	60 - 130		B0F0009	05-Jun-20	0.240 L	09-Jun-20 02:22	1
13C2-6:2 FTS	IS	79.7	40 - 150		B0F0009	05-Jun-20	0.240 L	09-Jun-20 21:58	1
13C5-PFNA	IS	87.2	50 - 130		B0F0009	05-Jun-20	0.240 L	09-Jun-20 02:22	1
13C8-PFOA	IS	60.2	20 - 150		B0F0009	05-Jun-20	0.240 L	09-Jun-20 02:22	1
13C2-PFOA	IS	82.1	60 - 130		B0F0009	05-Jun-20	0.240 L	09-Jun-20 21:58	1
13C8-PFOS	IS	90.5	60 - 130		B0F0009	05-Jun-20	0.240 L	09-Jun-20 02:22	1
13C2-PFDA	IS	88.4	60 - 130		B0F0009	05-Jun-20	0.240 L	09-Jun-20 02:22	1

Sample ID: 3					PFAS Isotope Dilution Method					
Client Data Name: Apex Companies, LLC Project: PDX Fire Training Facility					Laboratory Data Lab Sample: 2001176-02 Date Received: 02-Jun-20 09:29 Column: BEH C18					
Matrix: Surface Water Date Collected: 30-May-20 16:10										
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-8:2 FTS	IS	86.5	40 - 150		B0F0009	05-Jun-20	0.240 L	09-Jun-20 02:22	1	
d3-MeFOSAA	IS	70.6	50 - 150		B0F0009	05-Jun-20	0.240 L	09-Jun-20 02:22	1	
13C2-PFUnA	IS	83.1	60 - 130		B0F0009	05-Jun-20	0.240 L	09-Jun-20 02:22	1	
d5-EtFOSAA	IS	69.2	50 - 150		B0F0009	05-Jun-20	0.240 L	09-Jun-20 02:22	1	
13C2-PFDoA	IS	84.5	30 - 130		B0F0009	05-Jun-20	0.240 L	09-Jun-20 02:22	1	
13C2-PFTeDA	IS	67.2	20 - 150		B0F0009	05-Jun-20	0.240 L	09-Jun-20 02:22	1	

RL - Reporting limit

Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: 4

PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Apex Companies, LLC	Matrix:	Surface Water	Lab Sample:	2001176-03	Column:	BEH C18
Project:	PDX Fire Training Facility	Date Collected:	30-May-20 16:30	Date Received:	02-Jun-20 09:29		

Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	3.99	1.03		B0F0009	05-Jun-20	0.243 L	09-Jun-20 02:32	1
PFPeA	2706-90-3	ND	1.03		B0F0009	05-Jun-20	0.243 L	09-Jun-20 22:09	1
PFBS	375-73-5	ND	1.03		B0F0009	05-Jun-20	0.243 L	09-Jun-20 02:32	1
4:2 FTS	757124-72-4	ND	1.03		B0F0009	05-Jun-20	0.243 L	09-Jun-20 02:32	1
PFHxA	307-24-4	1.94	1.12		B0F0009	05-Jun-20	0.243 L	09-Jun-20 02:32	1
PFPeS	2706-91-4	ND	1.24		B0F0009	05-Jun-20	0.243 L	09-Jun-20 02:32	1
PFHpA	375-85-9	ND	1.03		B0F0009	05-Jun-20	0.243 L	09-Jun-20 02:32	1
PFHxS	355-46-4	ND	1.03		B0F0009	05-Jun-20	0.243 L	09-Jun-20 02:32	1
6:2 FTS	27619-97-2	ND	1.03		B0F0009	05-Jun-20	0.243 L	09-Jun-20 22:09	1
PFOA	335-67-1	1.56	1.03	Q	B0F0009	05-Jun-20	0.243 L	09-Jun-20 22:09	1
PFHpS	375-92-8	ND	1.03		B0F0009	05-Jun-20	0.243 L	09-Jun-20 02:32	1
PFNA	375-95-1	ND	1.03		B0F0009	05-Jun-20	0.243 L	09-Jun-20 02:32	1
PFOSA	754-91-6	ND	1.03		B0F0009	05-Jun-20	0.243 L	09-Jun-20 02:32	1
PFOS	1763-23-1	ND	1.03		B0F0009	05-Jun-20	0.243 L	09-Jun-20 02:32	1
PFDA	335-76-2	ND	1.03		B0F0009	05-Jun-20	0.243 L	09-Jun-20 02:32	1
8:2 FTS	39108-34-4	1.59	1.06	Q	B0F0009	05-Jun-20	0.243 L	09-Jun-20 02:32	1
PFNS	68259-12-1	ND	1.99		B0F0009	05-Jun-20	0.243 L	09-Jun-20 02:32	1
MeFOSAA	2355-31-9	ND	1.03		B0F0009	05-Jun-20	0.243 L	09-Jun-20 02:32	1
EtFOSAA	2991-50-6	ND	1.03		B0F0009	05-Jun-20	0.243 L	09-Jun-20 02:32	1
PFUnA	2058-94-8	ND	1.03		B0F0009	05-Jun-20	0.243 L	09-Jun-20 02:32	1
PFDS	335-77-3	ND	1.03		B0F0009	05-Jun-20	0.243 L	09-Jun-20 02:32	1
PFDoA	307-55-1	ND	1.03		B0F0009	05-Jun-20	0.243 L	09-Jun-20 02:32	1
PFTTrDA	72629-94-8	ND	1.03		B0F0009	05-Jun-20	0.243 L	09-Jun-20 02:32	1
PFTeDA	376-06-7	ND	1.03		B0F0009	05-Jun-20	0.243 L	09-Jun-20 02:32	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	120	60 - 130		B0F0009	05-Jun-20	0.243 L	09-Jun-20 02:32	1
13C3-PFPeA	IS	75.9	60 - 150		B0F0009	05-Jun-20	0.243 L	09-Jun-20 22:09	1
13C3-PFBS	IS	92.0	60 - 150		B0F0009	05-Jun-20	0.243 L	09-Jun-20 02:32	1
13C2-4:2 FTS	IS	92.0	20 - 150		B0F0009	05-Jun-20	0.243 L	09-Jun-20 02:32	1
13C2-PFHxA	IS	82.5	70 - 130		B0F0009	05-Jun-20	0.243 L	09-Jun-20 02:32	1
13C4-PFHpA	IS	83.5	60 - 150		B0F0009	05-Jun-20	0.243 L	09-Jun-20 02:32	1
13C3-PFHxS	IS	89.8	60 - 130		B0F0009	05-Jun-20	0.243 L	09-Jun-20 02:32	1
13C2-6:2 FTS	IS	79.8	40 - 150		B0F0009	05-Jun-20	0.243 L	09-Jun-20 22:09	1
13C5-PFNA	IS	85.8	50 - 130		B0F0009	05-Jun-20	0.243 L	09-Jun-20 02:32	1
13C8-PFOSA	IS	54.5	20 - 150		B0F0009	05-Jun-20	0.243 L	09-Jun-20 02:32	1
13C2-PFOA	IS	82.7	60 - 130		B0F0009	05-Jun-20	0.243 L	09-Jun-20 22:09	1
13C8-PFOS	IS	87.7	60 - 130		B0F0009	05-Jun-20	0.243 L	09-Jun-20 02:32	1
13C2-PFDA	IS	86.3	60 - 130		B0F0009	05-Jun-20	0.243 L	09-Jun-20 02:32	1

Sample ID: 4					PFAS Isotope Dilution Method					
Client Data Name: Apex Companies, LLC Project: PDX Fire Training Facility					Laboratory Data Lab Sample: 2001176-03 Date Received: 02-Jun-20 09:29 Column: BEH C18					
Matrix: Surface Water Date Collected: 30-May-20 16:30										
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-8:2 FTS	IS	75.8	40 - 150		B0F0009	05-Jun-20	0.243 L	09-Jun-20 02:32	1	
d3-MeFOSAA	IS	76.6	50 - 150		B0F0009	05-Jun-20	0.243 L	09-Jun-20 02:32	1	
13C2-PFUnA	IS	83.1	60 - 130		B0F0009	05-Jun-20	0.243 L	09-Jun-20 02:32	1	
d5-EtFOSAA	IS	73.3	50 - 150		B0F0009	05-Jun-20	0.243 L	09-Jun-20 02:32	1	
13C2-PFDoA	IS	81.1	30 - 130		B0F0009	05-Jun-20	0.243 L	09-Jun-20 02:32	1	
13C2-PFTeDA	IS	67.8	20 - 150		B0F0009	05-Jun-20	0.243 L	09-Jun-20 02:32	1	

RL - Reporting limit

Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: 6 **PFAS Isotope Dilution Method**

Client Data				Laboratory Data			
Name:	Apex Companies, LLC	Matrix:	Surface Water	Lab Sample:	2001176-04	Column:	BEH C18
Project:	PDX Fire Training Facility	Date Collected:	30-May-20 16:40	Date Received:	02-Jun-20 09:29		

Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	18.0	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:43	1
PFPeA	2706-90-3	51.8	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 22:19	1
PFBS	375-73-5	21.3	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:43	1
4:2 FTS	757124-72-4	ND	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:43	1
PFHxA	307-24-4	58.6	1.12		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:43	1
PFPeS	2706-91-4	22.5	1.24	Q	B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:43	1
PFHpA	375-85-9	21.3	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:43	1
PFHxS	355-46-4	129	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:43	1
6:2 FTS	27619-97-2	44.5	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 22:19	1
PFOA	335-67-1	74.7	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 22:19	1
PFHpS	375-92-8	4.48	1.02	Q	B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:43	1
PFNA	375-95-1	4.82	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:43	1
PFOSA	754-91-6	ND	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:43	1
PFOS	1763-23-1	213	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:43	1
PFDA	335-76-2	7.08	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:43	1
8:2 FTS	39108-34-4	2.92	1.06	Q	B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:43	1
PFNS	68259-12-1	ND	1.98		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:43	1
MeFOSAA	2355-31-9	ND	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:43	1
EtFOSAA	2991-50-6	ND	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:43	1
PFUnA	2058-94-8	ND	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:43	1
PFDS	335-77-3	ND	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:43	1
PFDoA	307-55-1	3.14	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:43	1
PFTTrDA	72629-94-8	ND	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:43	1
PFTeDA	376-06-7	ND	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:43	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	125	60 - 130		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:43	1
13C3-PFPeA	IS	76.5	60 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 22:19	1
13C3-PFBS	IS	88.1	60 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:43	1
13C2-4:2 FTS	IS	83.6	20 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:43	1
13C2-PFHxA	IS	79.0	70 - 130		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:43	1
13C4-PFHpA	IS	81.3	60 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:43	1
13C3-PFHxS	IS	88.1	60 - 130		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:43	1
13C2-6:2 FTS	IS	81.8	40 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 22:19	1
13C5-PFNA	IS	82.4	50 - 130		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:43	1
13C8-PFOSA	IS	54.1	20 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:43	1
13C2-PFOA	IS	80.5	60 - 130		B0F0009	05-Jun-20	0.244 L	09-Jun-20 22:19	1
13C8-PFOS	IS	78.5	60 - 130		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:43	1
13C2-PFDA	IS	79.1	60 - 130		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:43	1

Sample ID: 6					PFAS Isotope Dilution Method					
Client Data Name: Apex Companies, LLC Project: PDX Fire Training Facility					Laboratory Data Lab Sample: 2001176-04 Date Received: 02-Jun-20 09:29 Column: BEH C18					
Matrix: Surface Water Date Collected: 30-May-20 16:40										
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-8:2 FTS	IS	82.0	40 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:43	1	
d3-MeFOSAA	IS	73.5	50 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:43	1	
13C2-PFUnA	IS	76.9	60 - 130		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:43	1	
d5-EtFOSAA	IS	72.3	50 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:43	1	
13C2-PFDoA	IS	75.4	30 - 130		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:43	1	
13C2-PFTeDA	IS	55.8	20 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:43	1	

RL - Reporting limit

Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: 5

PFAS Isotope Dilution Method

Client Data					Laboratory Data				
Name:	Apex Companies, LLC	Matrix:	Surface Water		Lab Sample:	2001176-05	Column:	BEH C18	
Project:	PDX Fire Training Facility	Date Collected:	30-May-20 16:55		Date Received:	02-Jun-20 09:29			

Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	5.06	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:53	1
PFPeA	2706-90-3	12.6	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 22:30	1
PFBS	375-73-5	ND	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:53	1
4:2 FTS	757124-72-4	ND	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:53	1
PFHxA	307-24-4	21.6	1.12		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:53	1
PFPeS	2706-91-4	ND	1.24		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:53	1
PFHpA	375-85-9	5.40	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:53	1
PFHxS	355-46-4	ND	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:53	1
6:2 FTS	27619-97-2	261	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 22:30	1
PFOA	335-67-1	8.30	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 22:30	1
PFHpS	375-92-8	ND	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:53	1
PFNA	375-95-1	2.28	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:53	1
PFOSA	754-91-6	ND	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:53	1
PFOS	1763-23-1	1.88	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:53	1
PFDA	335-76-2	3.16	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:53	1
8:2 FTS	39108-34-4	69.3	1.06		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:53	1
PFNS	68259-12-1	ND	1.98		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:53	1
MeFOSAA	2355-31-9	ND	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:53	1
EtFOSAA	2991-50-6	ND	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:53	1
PFA	2058-94-8	1.22	1.02	Q	B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:53	1
PFDS	335-77-3	ND	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:53	1
PFDoA	307-55-1	1.43	1.02	Q	B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:53	1
PFTTrDA	72629-94-8	ND	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:53	1
PFTeDA	376-06-7	ND	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:53	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	136	60 - 130	H	B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:53	1
13C3-PFPeA	IS	84.7	60 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 22:30	1
13C3-PFBS	IS	97.6	60 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:53	1
13C2-4:2 FTS	IS	91.4	20 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:53	1
13C2-PFHxA	IS	88.3	70 - 130		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:53	1
13C4-PFHpA	IS	93.1	60 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:53	1
13C3-PFHxS	IS	104	60 - 130		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:53	1
13C2-6:2 FTS	IS	87.0	40 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 22:30	1
13C5-PFNA	IS	91.6	50 - 130		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:53	1
13C8-PFOA	IS	61.1	20 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:53	1
13C2-PFOA	IS	89.3	60 - 130		B0F0009	05-Jun-20	0.244 L	09-Jun-20 22:30	1
13C8-PFOS	IS	91.6	60 - 130		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:53	1
13C2-PFDA	IS	94.9	60 - 130		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:53	1

Sample ID: 5					PFAS Isotope Dilution Method					
Client Data Name: Apex Companies, LLC Project: PDX Fire Training Facility					Laboratory Data Lab Sample: 2001176-05 Date Received: 02-Jun-20 09:29 Column: BEH C18					
Matrix: Surface Water Date Collected: 30-May-20 16:55										
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-8:2 FTS	IS	86.8	40 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:53	1	
d3-MeFOSAA	IS	79.6	50 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:53	1	
13C2-PFUnA	IS	85.5	60 - 130		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:53	1	
d5-EtFOSAA	IS	74.8	50 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:53	1	
13C2-PFDoA	IS	85.6	30 - 130		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:53	1	
13C2-PFTeDA	IS	58.3	20 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 02:53	1	

RL - Reporting limit

Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: 7

PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Apex Companies, LLC	Matrix:	Surface Water	Lab Sample:	2001176-06	Column:	BEH C18
Project:	PDX Fire Training Facility	Date Collected:	30-May-20 17:15	Date Received:	02-Jun-20 09:29		

Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	7.32	1.01		B0F0009	05-Jun-20	0.248 L	09-Jun-20 03:04	1
PFPeA	2706-90-3	9.67	1.01		B0F0009	05-Jun-20	0.248 L	09-Jun-20 22:40	1
PFBS	375-73-5	ND	1.01		B0F0009	05-Jun-20	0.248 L	09-Jun-20 03:04	1
4:2 FTS	757124-72-4	ND	1.01		B0F0009	05-Jun-20	0.248 L	09-Jun-20 03:04	1
PFHxA	307-24-4	3.35	1.10	Q	B0F0009	05-Jun-20	0.248 L	09-Jun-20 03:04	1
PFPeS	2706-91-4	ND	1.22		B0F0009	05-Jun-20	0.248 L	09-Jun-20 03:04	1
PFHpA	375-85-9	ND	1.01		B0F0009	05-Jun-20	0.248 L	09-Jun-20 03:04	1
PFHxS	355-46-4	ND	1.01		B0F0009	05-Jun-20	0.248 L	09-Jun-20 03:04	1
6:2 FTS	27619-97-2	7.29	1.01		B0F0009	05-Jun-20	0.248 L	09-Jun-20 22:40	1
PFOA	335-67-1	2.58	1.01		B0F0009	05-Jun-20	0.248 L	09-Jun-20 22:40	1
PFHpS	375-92-8	ND	1.01		B0F0009	05-Jun-20	0.248 L	09-Jun-20 03:04	1
PFNA	375-95-1	1.47	1.01	Q	B0F0009	05-Jun-20	0.248 L	09-Jun-20 03:04	1
PFOSA	754-91-6	ND	1.01		B0F0009	05-Jun-20	0.248 L	09-Jun-20 03:04	1
PFOS	1763-23-1	1.60	1.01		B0F0009	05-Jun-20	0.248 L	09-Jun-20 03:04	1
PFDA	335-76-2	4.74	1.01		B0F0009	05-Jun-20	0.248 L	09-Jun-20 03:04	1
8:2 FTS	39108-34-4	3.93	1.04		B0F0009	05-Jun-20	0.248 L	09-Jun-20 03:04	1
PFNS	68259-12-1	ND	1.95		B0F0009	05-Jun-20	0.248 L	09-Jun-20 03:04	1
MeFOSAA	2355-31-9	ND	1.01		B0F0009	05-Jun-20	0.248 L	09-Jun-20 03:04	1
EtFOSAA	2991-50-6	ND	1.01		B0F0009	05-Jun-20	0.248 L	09-Jun-20 03:04	1
PFUnA	2058-94-8	1.53	1.01		B0F0009	05-Jun-20	0.248 L	09-Jun-20 03:04	1
PFDS	335-77-3	ND	1.01		B0F0009	05-Jun-20	0.248 L	09-Jun-20 03:04	1
PFDoA	307-55-1	2.65	1.01	Q	B0F0009	05-Jun-20	0.248 L	09-Jun-20 03:04	1
PFTTrDA	72629-94-8	ND	1.01		B0F0009	05-Jun-20	0.248 L	09-Jun-20 03:04	1
PFTeDA	376-06-7	ND	1.01		B0F0009	05-Jun-20	0.248 L	09-Jun-20 03:04	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	76.6	60 - 130		B0F0009	05-Jun-20	0.248 L	09-Jun-20 03:04	1
13C3-PFPeA	IS	72.5	60 - 150		B0F0009	05-Jun-20	0.248 L	09-Jun-20 22:40	1
13C3-PFBS	IS	96.5	60 - 150		B0F0009	05-Jun-20	0.248 L	09-Jun-20 03:04	1
13C2-4:2 FTS	IS	85.8	20 - 150		B0F0009	05-Jun-20	0.248 L	09-Jun-20 03:04	1
13C2-PFHxA	IS	83.4	70 - 130		B0F0009	05-Jun-20	0.248 L	09-Jun-20 03:04	1
13C4-PFHpA	IS	66.6	60 - 150		B0F0009	05-Jun-20	0.248 L	09-Jun-20 03:04	1
13C3-PFHxS	IS	92.5	60 - 130		B0F0009	05-Jun-20	0.248 L	09-Jun-20 03:04	1
13C2-6:2 FTS	IS	79.7	40 - 150		B0F0009	05-Jun-20	0.248 L	09-Jun-20 22:40	1
13C5-PFNA	IS	84.1	50 - 130		B0F0009	05-Jun-20	0.248 L	09-Jun-20 03:04	1
13C8-PFOA	IS	57.5	20 - 150		B0F0009	05-Jun-20	0.248 L	09-Jun-20 03:04	1
13C2-PFOA	IS	79.9	60 - 130		B0F0009	05-Jun-20	0.248 L	09-Jun-20 22:40	1
13C8-PFOS	IS	93.1	60 - 130		B0F0009	05-Jun-20	0.248 L	09-Jun-20 03:04	1
13C2-PFDA	IS	84.7	60 - 130		B0F0009	05-Jun-20	0.248 L	09-Jun-20 03:04	1

Sample ID: 7					PFAS Isotope Dilution Method					
Client Data Name: Apex Companies, LLC Project: PDX Fire Training Facility					Laboratory Data Lab Sample: 2001176-06 Date Received: 02-Jun-20 09:29 Column: BEH C18					
Matrix: Surface Water Date Collected: 30-May-20 17:15										
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-8:2 FTS	IS	87.4	40 - 150		B0F0009	05-Jun-20	0.248 L	09-Jun-20 03:04	1	
d3-MeFOSAA	IS	79.5	50 - 150		B0F0009	05-Jun-20	0.248 L	09-Jun-20 03:04	1	
13C2-PFUnA	IS	79.7	60 - 130		B0F0009	05-Jun-20	0.248 L	09-Jun-20 03:04	1	
d5-EtFOSAA	IS	78.2	50 - 150		B0F0009	05-Jun-20	0.248 L	09-Jun-20 03:04	1	
13C2-PFDoA	IS	76.4	30 - 130		B0F0009	05-Jun-20	0.248 L	09-Jun-20 03:04	1	
13C2-PFTeDA	IS	63.9	20 - 150		B0F0009	05-Jun-20	0.248 L	09-Jun-20 03:04	1	

RL - Reporting limit

Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: Ditch B
PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Apex Companies, LLC	Matrix:	Surface Water	Lab Sample:	2001176-07	Column:	BEH C18
Project:	PDX Fire Training Facility	Date Collected:	30-May-20 17:45	Date Received:	02-Jun-20 09:29		

Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	8.20	1.03		B0F0009	05-Jun-20	0.244 L	09-Jun-20 03:14	1
PFPeA	2706-90-3	16.7	1.03		B0F0009	05-Jun-20	0.244 L	09-Jun-20 22:51	1
PFBS	375-73-5	2.51	1.03		B0F0009	05-Jun-20	0.244 L	09-Jun-20 03:14	1
4:2 FTS	757124-72-4	ND	1.03		B0F0009	05-Jun-20	0.244 L	09-Jun-20 03:14	1
PFHxA	307-24-4	11.3	1.12		B0F0009	05-Jun-20	0.244 L	09-Jun-20 03:14	1
PFPeS	2706-91-4	ND	1.24		B0F0009	05-Jun-20	0.244 L	09-Jun-20 03:14	1
PFHpA	375-85-9	6.30	1.03		B0F0009	05-Jun-20	0.244 L	09-Jun-20 03:14	1
PFHxS	355-46-4	6.35	1.03		B0F0009	05-Jun-20	0.244 L	09-Jun-20 03:14	1
6:2 FTS	27619-97-2	ND	1.03		B0F0009	05-Jun-20	0.244 L	09-Jun-20 22:51	1
PFOA	335-67-1	16.0	1.03		B0F0009	05-Jun-20	0.244 L	09-Jun-20 22:51	1
PFHpS	375-92-8	ND	1.03		B0F0009	05-Jun-20	0.244 L	09-Jun-20 03:14	1
PFNA	375-95-1	ND	1.03		B0F0009	05-Jun-20	0.244 L	09-Jun-20 03:14	1
PFOSA	754-91-6	ND	1.03		B0F0009	05-Jun-20	0.244 L	09-Jun-20 03:14	1
PFOS	1763-23-1	ND	1.03		B0F0009	05-Jun-20	0.244 L	09-Jun-20 03:14	1
PFDA	335-76-2	ND	1.03		B0F0009	05-Jun-20	0.244 L	09-Jun-20 03:14	1
8:2 FTS	39108-34-4	ND	1.06		B0F0009	05-Jun-20	0.244 L	09-Jun-20 03:14	1
PFNS	68259-12-1	ND	1.99		B0F0009	05-Jun-20	0.244 L	09-Jun-20 03:14	1
MeFOSAA	2355-31-9	ND	1.03		B0F0009	05-Jun-20	0.244 L	09-Jun-20 03:14	1
EtFOSAA	2991-50-6	ND	1.03		B0F0009	05-Jun-20	0.244 L	09-Jun-20 03:14	1
PFUnA	2058-94-8	ND	1.03		B0F0009	05-Jun-20	0.244 L	09-Jun-20 03:14	1
PFDS	335-77-3	ND	1.03		B0F0009	05-Jun-20	0.244 L	09-Jun-20 03:14	1
PFDoA	307-55-1	ND	1.03		B0F0009	05-Jun-20	0.244 L	09-Jun-20 03:14	1
PFTTrDA	72629-94-8	ND	1.03		B0F0009	05-Jun-20	0.244 L	09-Jun-20 03:14	1
PFTeDA	376-06-7	ND	1.03		B0F0009	05-Jun-20	0.244 L	09-Jun-20 03:14	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	129	60 - 130		B0F0009	05-Jun-20	0.244 L	09-Jun-20 03:14	1
13C3-PFPeA	IS	87.0	60 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 22:51	1
13C3-PFBS	IS	95.0	60 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 03:14	1
13C2-4:2 FTS	IS	98.2	20 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 03:14	1
13C2-PFHxA	IS	88.7	70 - 130		B0F0009	05-Jun-20	0.244 L	09-Jun-20 03:14	1
13C4-PFHpA	IS	89.5	60 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 03:14	1
13C3-PFHxS	IS	103	60 - 130		B0F0009	05-Jun-20	0.244 L	09-Jun-20 03:14	1
13C2-6:2 FTS	IS	92.8	40 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 22:51	1
13C5-PFNA	IS	91.5	50 - 130		B0F0009	05-Jun-20	0.244 L	09-Jun-20 03:14	1
13C8-PFOSA	IS	64.9	20 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 03:14	1
13C2-PFOA	IS	90.5	60 - 130		B0F0009	05-Jun-20	0.244 L	09-Jun-20 22:51	1
13C8-PFOS	IS	96.2	60 - 130		B0F0009	05-Jun-20	0.244 L	09-Jun-20 03:14	1
13C2-PFDA	IS	96.9	60 - 130		B0F0009	05-Jun-20	0.244 L	09-Jun-20 03:14	1

Sample ID: Ditch B					PFAS Isotope Dilution Method					
Client Data Name: Apex Companies, LLC Project: PDX Fire Training Facility					Laboratory Data Lab Sample: 2001176-07 Date Received: 02-Jun-20 09:29 Column: BEH C18					
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-8:2 FTS	IS	90.3	40 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 03:14	1	
d3-MeFOSAA	IS	86.4	50 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 03:14	1	
13C2-PFUnA	IS	85.1	60 - 130		B0F0009	05-Jun-20	0.244 L	09-Jun-20 03:14	1	
d5-EtFOSAA	IS	79.9	50 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 03:14	1	
13C2-PFDoA	IS	82.1	30 - 130		B0F0009	05-Jun-20	0.244 L	09-Jun-20 03:14	1	
13C2-PFTeDA	IS	47.4	20 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 03:14	1	

RL - Reporting limit

Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: 1N

PFAS Isotope Dilution Method

Client Data					Laboratory Data				
Name:	Apex Companies, LLC	Matrix:	Surface Water		Lab Sample:	2001176-08	Column:	BEH C18	
Project:	PDX Fire Training Facility	Date Collected:	30-May-20 15:50		Date Received:	02-Jun-20 09:29			

Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	66.2	1.03		B0F0009	05-Jun-20	0.242 L	09-Jun-20 03:25	1
PFPeA	2706-90-3	278	1.03		B0F0009	05-Jun-20	0.242 L	09-Jun-20 23:01	1
PFBS	375-73-5	16.8	1.03		B0F0009	05-Jun-20	0.242 L	09-Jun-20 03:25	1
4:2 FTS	757124-72-4	4.00	1.03		B0F0009	05-Jun-20	0.242 L	09-Jun-20 03:25	1
PFHxA	307-24-4	235	1.13		B0F0009	05-Jun-20	0.242 L	09-Jun-20 03:25	1
PFPeS	2706-91-4	20.9	1.25	Q	B0F0009	05-Jun-20	0.242 L	09-Jun-20 03:25	1
PFHpA	375-85-9	95.2	1.03		B0F0009	05-Jun-20	0.242 L	09-Jun-20 03:25	1
PFHxS	355-46-4	151	1.03		B0F0009	05-Jun-20	0.242 L	09-Jun-20 03:25	1
6:2 FTS	27619-97-2	1130	1.03		B0F0009	05-Jun-20	0.242 L	09-Jun-20 23:01	1
PFOA	335-67-1	247	1.03		B0F0009	05-Jun-20	0.242 L	09-Jun-20 23:01	1
PFHpS	375-92-8	4.19	1.03	Q	B0F0009	05-Jun-20	0.242 L	09-Jun-20 03:25	1
PFNA	375-95-1	17.5	1.03		B0F0009	05-Jun-20	0.242 L	09-Jun-20 03:25	1
PFOSA	754-91-6	ND	1.03		B0F0009	05-Jun-20	0.242 L	09-Jun-20 03:25	1
PFOS	1763-23-1	429	1.03		B0F0009	05-Jun-20	0.242 L	09-Jun-20 03:25	1
PFDA	335-76-2	1.89	1.03	Q	B0F0009	05-Jun-20	0.242 L	09-Jun-20 03:25	1
8:2 FTS	39108-34-4	94.6	1.06		B0F0009	05-Jun-20	0.242 L	09-Jun-20 03:25	1
PFNS	68259-12-1	ND	2.00		B0F0009	05-Jun-20	0.242 L	09-Jun-20 03:25	1
MeFOSAA	2355-31-9	ND	1.03		B0F0009	05-Jun-20	0.242 L	09-Jun-20 03:25	1
EtFOSAA	2991-50-6	ND	1.03		B0F0009	05-Jun-20	0.242 L	09-Jun-20 03:25	1
PFUnA	2058-94-8	ND	1.03		B0F0009	05-Jun-20	0.242 L	09-Jun-20 03:25	1
PFDS	335-77-3	ND	1.03		B0F0009	05-Jun-20	0.242 L	09-Jun-20 03:25	1
PFDoA	307-55-1	ND	1.03		B0F0009	05-Jun-20	0.242 L	09-Jun-20 03:25	1
PFTTrDA	72629-94-8	ND	1.03		B0F0009	05-Jun-20	0.242 L	09-Jun-20 03:25	1
PFTeDA	376-06-7	ND	1.03		B0F0009	05-Jun-20	0.242 L	09-Jun-20 03:25	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	112	60 - 130		B0F0009	05-Jun-20	0.242 L	09-Jun-20 03:25	1
13C3-PFPeA	IS	79.6	60 - 150		B0F0009	05-Jun-20	0.242 L	09-Jun-20 23:01	1
13C3-PFBS	IS	92.9	60 - 150		B0F0009	05-Jun-20	0.242 L	09-Jun-20 03:25	1
13C2-4:2 FTS	IS	96.0	20 - 150		B0F0009	05-Jun-20	0.242 L	09-Jun-20 03:25	1
13C2-PFHxA	IS	85.5	70 - 130		B0F0009	05-Jun-20	0.242 L	09-Jun-20 03:25	1
13C4-PFHpA	IS	86.2	60 - 150		B0F0009	05-Jun-20	0.242 L	09-Jun-20 03:25	1
13C3-PFHxS	IS	98.6	60 - 130		B0F0009	05-Jun-20	0.242 L	09-Jun-20 03:25	1
13C2-6:2 FTS	IS	76.4	40 - 150		B0F0009	05-Jun-20	0.242 L	09-Jun-20 23:01	1
13C5-PFNA	IS	82.2	50 - 130		B0F0009	05-Jun-20	0.242 L	09-Jun-20 03:25	1
13C8-PFOSA	IS	61.6	20 - 150		B0F0009	05-Jun-20	0.242 L	09-Jun-20 03:25	1
13C2-PFOA	IS	85.2	60 - 130		B0F0009	05-Jun-20	0.242 L	09-Jun-20 23:01	1
13C8-PFOS	IS	87.1	60 - 130		B0F0009	05-Jun-20	0.242 L	09-Jun-20 03:25	1
13C2-PFDA	IS	84.8	60 - 130		B0F0009	05-Jun-20	0.242 L	09-Jun-20 03:25	1

Sample ID: 1N					PFAS Isotope Dilution Method					
Client Data Name: Apex Companies, LLC Project: PDX Fire Training Facility					Laboratory Data Lab Sample: 2001176-08 Date Received: 02-Jun-20 09:29 Column: BEH C18					
Matrix: Surface Water Date Collected: 30-May-20 15:50										
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-8:2 FTS	IS	78.0	40 - 150		B0F0009	05-Jun-20	0.242 L	09-Jun-20 03:25	1	
d3-MeFOSAA	IS	84.4	50 - 150		B0F0009	05-Jun-20	0.242 L	09-Jun-20 03:25	1	
13C2-PFUnA	IS	82.2	60 - 130		B0F0009	05-Jun-20	0.242 L	09-Jun-20 03:25	1	
d5-EtFOSAA	IS	72.8	50 - 150		B0F0009	05-Jun-20	0.242 L	09-Jun-20 03:25	1	
13C2-PFDoA	IS	79.2	30 - 130		B0F0009	05-Jun-20	0.242 L	09-Jun-20 03:25	1	
13C2-PFTeDA	IS	63.7	20 - 150		B0F0009	05-Jun-20	0.242 L	09-Jun-20 03:25	1	

RL - Reporting limit

Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: 1ES

PFAS Isotope Dilution Method

Client Data					Laboratory Data				
Name:	Apex Companies, LLC	Matrix:	Surface Water	Lab Sample:	2001176-09	Column:	BEH C18		
Project:	PDX Fire Training Facility	Date Collected:	30-May-20 16:10	Date Received:	02-Jun-20 09:29				

Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	11.6	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 04:07	1
PFPeA	2706-90-3	30.7	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 23:43	1
PFBS	375-73-5	3.22	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 04:07	1
4:2 FTS	757124-72-4	ND	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 04:07	1
PFHxA	307-24-4	24.2	1.12		B0F0009	05-Jun-20	0.244 L	09-Jun-20 04:07	1
PFPeS	2706-91-4	2.32	1.24	Q	B0F0009	05-Jun-20	0.244 L	09-Jun-20 04:07	1
PFHpA	375-85-9	13.3	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 04:07	1
PFHxS	355-46-4	18.9	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 04:07	1
6:2 FTS	27619-97-2	2.99	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 23:43	1
PFOA	335-67-1	26.0	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 23:43	1
PFHpS	375-92-8	ND	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 04:07	1
PFNA	375-95-1	2.52	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 04:07	1
PFOSA	754-91-6	ND	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 04:07	1
PFOS	1763-23-1	12.0	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 04:07	1
PFDA	335-76-2	2.59	1.02	Q	B0F0009	05-Jun-20	0.244 L	09-Jun-20 04:07	1
8:2 FTS	39108-34-4	ND	1.05		B0F0009	05-Jun-20	0.244 L	09-Jun-20 04:07	1
PFNS	68259-12-1	ND	1.98		B0F0009	05-Jun-20	0.244 L	09-Jun-20 04:07	1
MeFOSAA	2355-31-9	ND	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 04:07	1
EtFOSAA	2991-50-6	ND	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 04:07	1
PFOA	2058-94-8	ND	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 04:07	1
PFDS	335-77-3	ND	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 04:07	1
PFDoA	307-55-1	ND	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 04:07	1
PFTTrDA	72629-94-8	ND	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 04:07	1
PFTeDA	376-06-7	ND	1.02		B0F0009	05-Jun-20	0.244 L	09-Jun-20 04:07	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	104	60 - 130		B0F0009	05-Jun-20	0.244 L	09-Jun-20 04:07	1
13C3-PFPeA	IS	78.3	60 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 23:43	1
13C3-PFBS	IS	93.0	60 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 04:07	1
13C2-4:2 FTS	IS	94.4	20 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 04:07	1
13C2-PFHxA	IS	83.1	70 - 130		B0F0009	05-Jun-20	0.244 L	09-Jun-20 04:07	1
13C4-PFHpA	IS	83.8	60 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 04:07	1
13C3-PFHxS	IS	89.2	60 - 130		B0F0009	05-Jun-20	0.244 L	09-Jun-20 04:07	1
13C2-6:2 FTS	IS	80.5	40 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 23:43	1
13C5-PFNA	IS	84.0	50 - 130		B0F0009	05-Jun-20	0.244 L	09-Jun-20 04:07	1
13C8-PFOA	IS	52.0	20 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 04:07	1
13C2-PFOA	IS	79.1	60 - 130		B0F0009	05-Jun-20	0.244 L	09-Jun-20 23:43	1
13C8-PFOS	IS	84.0	60 - 130		B0F0009	05-Jun-20	0.244 L	09-Jun-20 04:07	1
13C2-PFDA	IS	84.4	60 - 130		B0F0009	05-Jun-20	0.244 L	09-Jun-20 04:07	1

Sample ID: 1ES					PFAS Isotope Dilution Method					
Client Data Name: Apex Companies, LLC Project: PDX Fire Training Facility					Laboratory Data Lab Sample: 2001176-09 Date Received: 02-Jun-20 09:29 Column: BEH C18					
Matrix: Surface Water Date Collected: 30-May-20 16:10										
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-8:2 FTS	IS	92.1	40 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 04:07	1	
d3-MeFOSAA	IS	78.5	50 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 04:07	1	
13C2-PFUnA	IS	77.6	60 - 130		B0F0009	05-Jun-20	0.244 L	09-Jun-20 04:07	1	
d5-EtFOSAA	IS	71.0	50 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 04:07	1	
13C2-PFDoA	IS	72.0	30 - 130		B0F0009	05-Jun-20	0.244 L	09-Jun-20 04:07	1	
13C2-PFTeDA	IS	37.3	20 - 150		B0F0009	05-Jun-20	0.244 L	09-Jun-20 04:07	1	

RL - Reporting limit

Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: 8
PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Apex Companies, LLC	Matrix:	Surface Water	Lab Sample:	2001176-10	Column:	BEH C18
Project:	PDX Fire Training Facility	Date Collected:	30-May-20 16:40	Date Received:	02-Jun-20 09:29		

Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	2.35	1.02		B0F0009	05-Jun-20	0.246 L	09-Jun-20 04:17	1
PFPeA	2706-90-3	ND	1.02		B0F0009	05-Jun-20	0.246 L	09-Jun-20 23:54	1
PFBS	375-73-5	1.52	1.02		B0F0009	05-Jun-20	0.246 L	09-Jun-20 04:17	1
4:2 FTS	757124-72-4	ND	1.02		B0F0009	05-Jun-20	0.246 L	09-Jun-20 04:17	1
PFHxA	307-24-4	ND	1.11		B0F0009	05-Jun-20	0.246 L	09-Jun-20 04:17	1
PFPeS	2706-91-4	ND	1.23		B0F0009	05-Jun-20	0.246 L	09-Jun-20 04:17	1
PFHpA	375-85-9	ND	1.02		B0F0009	05-Jun-20	0.246 L	09-Jun-20 04:17	1
PFHxS	355-46-4	ND	1.02		B0F0009	05-Jun-20	0.246 L	09-Jun-20 04:17	1
6:2 FTS	27619-97-2	ND	1.02		B0F0009	05-Jun-20	0.246 L	09-Jun-20 23:54	1
PFOA	335-67-1	ND	1.02		B0F0009	05-Jun-20	0.246 L	09-Jun-20 23:54	1
PFHpS	375-92-8	ND	1.02		B0F0009	05-Jun-20	0.246 L	09-Jun-20 04:17	1
PFNA	375-95-1	ND	1.02		B0F0009	05-Jun-20	0.246 L	09-Jun-20 04:17	1
PFOSA	754-91-6	ND	1.02		B0F0009	05-Jun-20	0.246 L	09-Jun-20 04:17	1
PFOS	1763-23-1	ND	1.02		B0F0009	05-Jun-20	0.246 L	09-Jun-20 04:17	1
PFDA	335-76-2	ND	1.02		B0F0009	05-Jun-20	0.246 L	09-Jun-20 04:17	1
8:2 FTS	39108-34-4	ND	1.05		B0F0009	05-Jun-20	0.246 L	09-Jun-20 04:17	1
PFNS	68259-12-1	ND	1.97		B0F0009	05-Jun-20	0.246 L	09-Jun-20 04:17	1
MeFOSAA	2355-31-9	ND	1.02		B0F0009	05-Jun-20	0.246 L	09-Jun-20 04:17	1
EtFOSAA	2991-50-6	ND	1.02		B0F0009	05-Jun-20	0.246 L	09-Jun-20 04:17	1
PFA	2058-94-8	ND	1.02		B0F0009	05-Jun-20	0.246 L	09-Jun-20 04:17	1
PFDS	335-77-3	ND	1.02		B0F0009	05-Jun-20	0.246 L	09-Jun-20 04:17	1
PFDoA	307-55-1	ND	1.02		B0F0009	05-Jun-20	0.246 L	09-Jun-20 04:17	1
PFTTrDA	72629-94-8	ND	1.02		B0F0009	05-Jun-20	0.246 L	09-Jun-20 04:17	1
PFTeDA	376-06-7	ND	1.02		B0F0009	05-Jun-20	0.246 L	09-Jun-20 04:17	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	140	60 - 130	H	B0F0009	05-Jun-20	0.246 L	09-Jun-20 04:17	1
13C3-PFPeA	IS	90.4	60 - 150		B0F0009	05-Jun-20	0.246 L	09-Jun-20 23:54	1
13C3-PFBS	IS	102	60 - 150		B0F0009	05-Jun-20	0.246 L	09-Jun-20 04:17	1
13C2-4:2 FTS	IS	100	20 - 150		B0F0009	05-Jun-20	0.246 L	09-Jun-20 04:17	1
13C2-PFHxA	IS	97.2	70 - 130		B0F0009	05-Jun-20	0.246 L	09-Jun-20 04:17	1
13C4-PFHpA	IS	94.1	60 - 150		B0F0009	05-Jun-20	0.246 L	09-Jun-20 04:17	1
13C3-PFHxS	IS	106	60 - 130		B0F0009	05-Jun-20	0.246 L	09-Jun-20 04:17	1
13C2-6:2 FTS	IS	98.2	40 - 150		B0F0009	05-Jun-20	0.246 L	09-Jun-20 23:54	1
13C5-PFNA	IS	96.7	50 - 130		B0F0009	05-Jun-20	0.246 L	09-Jun-20 04:17	1
13C8-PFOA	IS	70.7	20 - 150		B0F0009	05-Jun-20	0.246 L	09-Jun-20 04:17	1
13C2-PFOA	IS	91.9	60 - 130		B0F0009	05-Jun-20	0.246 L	09-Jun-20 23:54	1
13C8-PFOS	IS	99.9	60 - 130		B0F0009	05-Jun-20	0.246 L	09-Jun-20 04:17	1
13C2-PFDA	IS	92.9	60 - 130		B0F0009	05-Jun-20	0.246 L	09-Jun-20 04:17	1

Sample ID: 8					PFAS Isotope Dilution Method					
Client Data Name: Apex Companies, LLC Project: PDX Fire Training Facility					Laboratory Data Lab Sample: 2001176-10 Date Received: 02-Jun-20 09:29 Column: BEH C18					
Matrix: Surface Water Date Collected: 30-May-20 16:40										
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-8:2 FTS	IS	92.1	40 - 150		B0F0009	05-Jun-20	0.246 L	09-Jun-20 04:17	1	
d3-MeFOSAA	IS	92.7	50 - 150		B0F0009	05-Jun-20	0.246 L	09-Jun-20 04:17	1	
13C2-PFUnA	IS	95.6	60 - 130		B0F0009	05-Jun-20	0.246 L	09-Jun-20 04:17	1	
d5-EtFOSAA	IS	82.4	50 - 150		B0F0009	05-Jun-20	0.246 L	09-Jun-20 04:17	1	
13C2-PFDoA	IS	94.4	30 - 130		B0F0009	05-Jun-20	0.246 L	09-Jun-20 04:17	1	
13C2-PFTeDA	IS	75.5	20 - 150		B0F0009	05-Jun-20	0.246 L	09-Jun-20 04:17	1	

RL - Reporting limit

Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: 8 DUP

PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Apex Companies, LLC	Matrix:	Surface Water	Lab Sample:	2001176-11	Column:	BEH C18
Project:	PDX Fire Training Facility	Date Collected:	30-May-20 16:40	Date Received:	02-Jun-20 09:29		

Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	2.82	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:28	1
PFPeA	2706-90-3	ND	1.04		B0F0009	05-Jun-20	0.241 L	10-Jun-20 00:04	1
PFBS	375-73-5	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:28	1
4:2 FTS	757124-72-4	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:28	1
PFHxA	307-24-4	1.24	1.13		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:28	1
PFPeS	2706-91-4	ND	1.25		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:28	1
PFHpA	375-85-9	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:28	1
PFHxS	355-46-4	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:28	1
6:2 FTS	27619-97-2	ND	1.04		B0F0009	05-Jun-20	0.241 L	10-Jun-20 00:04	1
PFOA	335-67-1	ND	1.04		B0F0009	05-Jun-20	0.241 L	10-Jun-20 00:04	1
PFHpS	375-92-8	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:28	1
PFNA	375-95-1	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:28	1
PFOSA	754-91-6	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:28	1
PFOS	1763-23-1	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:28	1
PFDA	335-76-2	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:28	1
8:2 FTS	39108-34-4	ND	1.07		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:28	1
PFNS	68259-12-1	ND	2.00		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:28	1
MeFOSAA	2355-31-9	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:28	1
EtFOSAA	2991-50-6	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:28	1
PFUnA	2058-94-8	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:28	1
PFDS	335-77-3	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:28	1
PFDoA	307-55-1	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:28	1
PFTTrDA	72629-94-8	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:28	1
PFTeDA	376-06-7	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:28	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	137	60 - 130	H	B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:28	1
13C3-PFPeA	IS	82.4	60 - 150		B0F0009	05-Jun-20	0.241 L	10-Jun-20 00:04	1
13C3-PFBS	IS	94.5	60 - 150		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:28	1
13C2-4:2 FTS	IS	103	20 - 150		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:28	1
13C2-PFHxA	IS	88.9	70 - 130		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:28	1
13C4-PFHpA	IS	92.0	60 - 150		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:28	1
13C3-PFHxS	IS	104	60 - 130		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:28	1
13C2-6:2 FTS	IS	87.7	40 - 150		B0F0009	05-Jun-20	0.241 L	10-Jun-20 00:04	1
13C5-PFNA	IS	91.1	50 - 130		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:28	1
13C8-PFOSA	IS	66.1	20 - 150		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:28	1
13C2-PFOA	IS	89.9	60 - 130		B0F0009	05-Jun-20	0.241 L	10-Jun-20 00:04	1
13C8-PFOS	IS	105	60 - 130		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:28	1
13C2-PFDA	IS	93.2	60 - 130		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:28	1

Sample ID: 8 DUP					PFAS Isotope Dilution Method					
Client Data Name: Apex Companies, LLC Project: PDX Fire Training Facility					Laboratory Data Lab Sample: 2001176-11 Date Received: 02-Jun-20 09:29 Column: BEH C18					
Matrix: Surface Water Date Collected: 30-May-20 16:40										
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-8:2 FTS	IS	86.3	40 - 150		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:28	1	
d3-MeFOSAA	IS	90.5	50 - 150		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:28	1	
13C2-PFUnA	IS	89.6	60 - 130		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:28	1	
d5-EtFOSAA	IS	82.6	50 - 150		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:28	1	
13C2-PFDoA	IS	90.1	30 - 130		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:28	1	
13C2-PFTeDA	IS	71.5	20 - 150		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:28	1	

RL - Reporting limit

Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: 9 **PFAS Isotope Dilution Method**

Client Data				Laboratory Data			
Name:	Apex Companies, LLC	Matrix:	Surface Water	Lab Sample:	2001176-12	Column:	BEH C18
Project:	PDX Fire Training Facility	Date Collected:	30-May-20 17:29	Date Received:	02-Jun-20 09:29		

Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	4.52	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:38	1
PFPeA	2706-90-3	ND	1.04		B0F0009	05-Jun-20	0.241 L	10-Jun-20 00:15	1
PFBS	375-73-5	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:38	1
4:2 FTS	757124-72-4	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:38	1
PFHxA	307-24-4	2.80	1.13		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:38	1
PFPeS	2706-91-4	ND	1.26		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:38	1
PFHpA	375-85-9	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:38	1
PFHxS	355-46-4	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:38	1
6:2 FTS	27619-97-2	ND	1.04		B0F0009	05-Jun-20	0.241 L	10-Jun-20 00:15	1
PFOA	335-67-1	1.84	1.04		B0F0009	05-Jun-20	0.241 L	10-Jun-20 00:15	1
PFHpS	375-92-8	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:38	1
PFNA	375-95-1	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:38	1
PFOSA	754-91-6	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:38	1
PFOS	1763-23-1	1.59	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:38	1
PFDA	335-76-2	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:38	1
8:2 FTS	39108-34-4	ND	1.07		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:38	1
PFNS	68259-12-1	ND	2.01		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:38	1
MeFOSAA	2355-31-9	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:38	1
EtFOSAA	2991-50-6	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:38	1
PFUnA	2058-94-8	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:38	1
PFDS	335-77-3	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:38	1
PFDoA	307-55-1	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:38	1
PFTTrDA	72629-94-8	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:38	1
PFTeDA	376-06-7	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:38	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	140	60 - 130	H	B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:38	1
13C3-PFPeA	IS	89.9	60 - 150		B0F0009	05-Jun-20	0.241 L	10-Jun-20 00:15	1
13C3-PFBS	IS	105	60 - 150		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:38	1
13C2-4:2 FTS	IS	99.1	20 - 150		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:38	1
13C2-PFHxA	IS	94.2	70 - 130		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:38	1
13C4-PFHpA	IS	92.4	60 - 150		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:38	1
13C3-PFHxS	IS	104	60 - 130		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:38	1
13C2-6:2 FTS	IS	93.1	40 - 150		B0F0009	05-Jun-20	0.241 L	10-Jun-20 00:15	1
13C5-PFNA	IS	95.1	50 - 130		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:38	1
13C8-PFOSA	IS	63.2	20 - 150		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:38	1
13C2-PFOA	IS	88.0	60 - 130		B0F0009	05-Jun-20	0.241 L	10-Jun-20 00:15	1
13C8-PFOS	IS	103	60 - 130		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:38	1
13C2-PFDA	IS	96.2	60 - 130		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:38	1

Sample ID: 9					PFAS Isotope Dilution Method					
Client Data Name: Apex Companies, LLC Project: PDX Fire Training Facility					Laboratory Data Lab Sample: 2001176-12 Date Received: 02-Jun-20 09:29 Column: BEH C18					
Matrix: Surface Water Date Collected: 30-May-20 17:29										
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-8:2 FTS	IS	99.5	40 - 150		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:38	1	
d3-MeFOSAA	IS	88.1	50 - 150		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:38	1	
13C2-PFUnA	IS	89.8	60 - 130		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:38	1	
d5-EtFOSAA	IS	78.4	50 - 150		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:38	1	
13C2-PFDoA	IS	90.7	30 - 130		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:38	1	
13C2-PFTeDA	IS	67.7	20 - 150		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:38	1	

RL - Reporting limit

Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: SW-2

PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Apex Companies, LLC	Matrix:	Surface Water	Lab Sample:	2001176-13	Column:	BEH C18
Project:	PDX Fire Training Facility	Date Collected:	30-May-20 17:50	Date Received:	02-Jun-20 09:29		

Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	4.52	1.03		B0F0009	05-Jun-20	0.243 L	09-Jun-20 04:49	1
PFPeA	2706-90-3	9.78	1.03		B0F0009	05-Jun-20	0.243 L	10-Jun-20 00:25	1
PFBS	375-73-5	ND	1.03		B0F0009	05-Jun-20	0.243 L	09-Jun-20 04:49	1
4:2 FTS	757124-72-4	ND	1.03		B0F0009	05-Jun-20	0.243 L	09-Jun-20 04:49	1
PFHxA	307-24-4	11.1	1.12		B0F0009	05-Jun-20	0.243 L	09-Jun-20 04:49	1
PFPeS	2706-91-4	ND	1.24		B0F0009	05-Jun-20	0.243 L	09-Jun-20 04:49	1
PFHpA	375-85-9	4.26	1.03		B0F0009	05-Jun-20	0.243 L	09-Jun-20 04:49	1
PFHxS	355-46-4	5.20	1.03		B0F0009	05-Jun-20	0.243 L	09-Jun-20 04:49	1
6:2 FTS	27619-97-2	10.3	1.03		B0F0009	05-Jun-20	0.243 L	10-Jun-20 00:25	1
PFOA	335-67-1	9.87	1.03		B0F0009	05-Jun-20	0.243 L	10-Jun-20 00:25	1
PFHpS	375-92-8	ND	1.03		B0F0009	05-Jun-20	0.243 L	09-Jun-20 04:49	1
PFNA	375-95-1	1.53	1.03	Q	B0F0009	05-Jun-20	0.243 L	09-Jun-20 04:49	1
PFOSA	754-91-6	ND	1.03		B0F0009	05-Jun-20	0.243 L	09-Jun-20 04:49	1
PFOS	1763-23-1	29.0	1.03		B0F0009	05-Jun-20	0.243 L	09-Jun-20 04:49	1
PFDA	335-76-2	ND	1.03		B0F0009	05-Jun-20	0.243 L	09-Jun-20 04:49	1
8:2 FTS	39108-34-4	2.65	1.06		B0F0009	05-Jun-20	0.243 L	09-Jun-20 04:49	1
PFNS	68259-12-1	ND	1.99		B0F0009	05-Jun-20	0.243 L	09-Jun-20 04:49	1
MeFOSAA	2355-31-9	ND	1.03		B0F0009	05-Jun-20	0.243 L	09-Jun-20 04:49	1
EtFOSAA	2991-50-6	ND	1.03		B0F0009	05-Jun-20	0.243 L	09-Jun-20 04:49	1
PFUnA	2058-94-8	ND	1.03		B0F0009	05-Jun-20	0.243 L	09-Jun-20 04:49	1
PFDS	335-77-3	ND	1.03		B0F0009	05-Jun-20	0.243 L	09-Jun-20 04:49	1
PFDoA	307-55-1	ND	1.03		B0F0009	05-Jun-20	0.243 L	09-Jun-20 04:49	1
PFTTrDA	72629-94-8	ND	1.03		B0F0009	05-Jun-20	0.243 L	09-Jun-20 04:49	1
PFTeDA	376-06-7	ND	1.03		B0F0009	05-Jun-20	0.243 L	09-Jun-20 04:49	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	113	60 - 130		B0F0009	05-Jun-20	0.243 L	09-Jun-20 04:49	1
13C3-PFPeA	IS	90.1	60 - 150		B0F0009	05-Jun-20	0.243 L	10-Jun-20 00:25	1
13C3-PFBS	IS	103	60 - 150		B0F0009	05-Jun-20	0.243 L	09-Jun-20 04:49	1
13C2-4:2 FTS	IS	95.5	20 - 150		B0F0009	05-Jun-20	0.243 L	09-Jun-20 04:49	1
13C2-PFHxA	IS	90.4	70 - 130		B0F0009	05-Jun-20	0.243 L	09-Jun-20 04:49	1
13C4-PFHpA	IS	91.4	60 - 150		B0F0009	05-Jun-20	0.243 L	09-Jun-20 04:49	1
13C3-PFHxS	IS	97.2	60 - 130		B0F0009	05-Jun-20	0.243 L	09-Jun-20 04:49	1
13C2-6:2 FTS	IS	89.3	40 - 150		B0F0009	05-Jun-20	0.243 L	10-Jun-20 00:25	1
13C5-PFNA	IS	86.9	50 - 130		B0F0009	05-Jun-20	0.243 L	09-Jun-20 04:49	1
13C8-PFOSA	IS	64.4	20 - 150		B0F0009	05-Jun-20	0.243 L	09-Jun-20 04:49	1
13C2-PFOA	IS	90.6	60 - 130		B0F0009	05-Jun-20	0.243 L	10-Jun-20 00:25	1
13C8-PFOS	IS	100	60 - 130		B0F0009	05-Jun-20	0.243 L	09-Jun-20 04:49	1
13C2-PFDA	IS	94.7	60 - 130		B0F0009	05-Jun-20	0.243 L	09-Jun-20 04:49	1

Sample ID: SW-2					PFAS Isotope Dilution Method					
Client Data Name: Apex Companies, LLC Project: PDX Fire Training Facility					Laboratory Data Lab Sample: 2001176-13 Date Received: 02-Jun-20 09:29 Column: BEH C18					
Matrix: Surface Water Date Collected: 30-May-20 17:50										
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-8:2 FTS	IS	92.1	40 - 150		B0F0009	05-Jun-20	0.243 L	09-Jun-20 04:49	1	
d3-MeFOSAA	IS	95.4	50 - 150		B0F0009	05-Jun-20	0.243 L	09-Jun-20 04:49	1	
13C2-PFUnA	IS	88.7	60 - 130		B0F0009	05-Jun-20	0.243 L	09-Jun-20 04:49	1	
d5-EtFOSAA	IS	74.3	50 - 150		B0F0009	05-Jun-20	0.243 L	09-Jun-20 04:49	1	
13C2-PFDoA	IS	82.7	30 - 130		B0F0009	05-Jun-20	0.243 L	09-Jun-20 04:49	1	
13C2-PFTeDA	IS	59.5	20 - 150		B0F0009	05-Jun-20	0.243 L	09-Jun-20 04:49	1	

RL - Reporting limit

Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: SW-3

PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Apex Companies, LLC	Matrix:	Surface Water	Lab Sample:	2001176-14	Column:	BEH C18
Project:	PDX Fire Training Facility	Date Collected:	30-May-20 18:11	Date Received:	02-Jun-20 09:29		

Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	2.02	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:59	1
PFPeA	2706-90-3	3.70	1.04		B0F0009	05-Jun-20	0.241 L	10-Jun-20 00:36	1
PFBS	375-73-5	1.48	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:59	1
4:2 FTS	757124-72-4	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:59	1
PFHxA	307-24-4	4.31	1.13		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:59	1
PFPeS	2706-91-4	ND	1.26		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:59	1
PFHpA	375-85-9	1.40	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:59	1
PFHxS	355-46-4	3.49	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:59	1
6:2 FTS	27619-97-2	2.54	1.04		B0F0009	05-Jun-20	0.241 L	10-Jun-20 00:36	1
PFOA	335-67-1	6.37	1.04		B0F0009	05-Jun-20	0.241 L	10-Jun-20 00:36	1
PFHpS	375-92-8	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:59	1
PFNA	375-95-1	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:59	1
PFOSA	754-91-6	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:59	1
PFOS	1763-23-1	8.54	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:59	1
PFDA	335-76-2	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:59	1
8:2 FTS	39108-34-4	ND	1.07		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:59	1
PFNS	68259-12-1	ND	2.01		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:59	1
MeFOSAA	2355-31-9	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:59	1
EtFOSAA	2991-50-6	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:59	1
PFUnA	2058-94-8	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:59	1
PFDS	335-77-3	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:59	1
PFDoA	307-55-1	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:59	1
PFTTrDA	72629-94-8	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:59	1
PFTeDA	376-06-7	ND	1.04		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:59	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	131	60 - 130	H	B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:59	1
13C3-PFPeA	IS	86.7	60 - 150		B0F0009	05-Jun-20	0.241 L	10-Jun-20 00:36	1
13C3-PFBS	IS	102	60 - 150		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:59	1
13C2-4:2 FTS	IS	100	20 - 150		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:59	1
13C2-PFHxA	IS	94.7	70 - 130		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:59	1
13C4-PFHpA	IS	92.8	60 - 150		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:59	1
13C3-PFHxS	IS	102	60 - 130		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:59	1
13C2-6:2 FTS	IS	90.3	40 - 150		B0F0009	05-Jun-20	0.241 L	10-Jun-20 00:36	1
13C5-PFNA	IS	93.8	50 - 130		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:59	1
13C8-PFOA	IS	61.9	20 - 150		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:59	1
13C2-PFOA	IS	92.5	60 - 130		B0F0009	05-Jun-20	0.241 L	10-Jun-20 00:36	1
13C8-PFOS	IS	99.8	60 - 130		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:59	1
13C2-PFDA	IS	95.1	60 - 130		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:59	1

Sample ID: SW-3					PFAS Isotope Dilution Method					
Client Data Name: Apex Companies, LLC Project: PDX Fire Training Facility					Laboratory Data Lab Sample: 2001176-14 Date Received: 02-Jun-20 09:29 Column: BEH C18					
Matrix: Surface Water Date Collected: 30-May-20 18:11										
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-8:2 FTS	IS	88.3	40 - 150		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:59	1	
d3-MeFOSAA	IS	91.4	50 - 150		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:59	1	
13C2-PFUnA	IS	86.6	60 - 130		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:59	1	
d5-EtFOSAA	IS	88.4	50 - 150		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:59	1	
13C2-PFDoA	IS	80.3	30 - 130		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:59	1	
13C2-PFTeDA	IS	51.1	20 - 150		B0F0009	05-Jun-20	0.241 L	09-Jun-20 04:59	1	

RL - Reporting limit

Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: Field Blank
PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Apex Companies, LLC	Matrix:	Water	Lab Sample:	2001176-15	Column:	BEH C18
Project:	PDX Fire Training Facility	Date Collected:	30-May-20 18:00	Date Received:	02-Jun-20 09:29		

Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	ND	1.00		B0F0009	05-Jun-20	0.250 L	09-Jun-20 05:10	1
PFPeA	2706-90-3	ND	1.00		B0F0009	05-Jun-20	0.250 L	10-Jun-20 00:46	1
PFBS	375-73-5	ND	1.00		B0F0009	05-Jun-20	0.250 L	09-Jun-20 05:10	1
4:2 FTS	757124-72-4	ND	1.00		B0F0009	05-Jun-20	0.250 L	09-Jun-20 05:10	1
PFHxA	307-24-4	ND	1.09		B0F0009	05-Jun-20	0.250 L	09-Jun-20 05:10	1
PFPeS	2706-91-4	ND	1.21		B0F0009	05-Jun-20	0.250 L	09-Jun-20 05:10	1
PFHpA	375-85-9	ND	1.00		B0F0009	05-Jun-20	0.250 L	09-Jun-20 05:10	1
PFHxS	355-46-4	ND	1.00		B0F0009	05-Jun-20	0.250 L	09-Jun-20 05:10	1
6:2 FTS	27619-97-2	ND	1.00		B0F0009	05-Jun-20	0.250 L	10-Jun-20 00:46	1
PFOA	335-67-1	ND	1.00		B0F0009	05-Jun-20	0.250 L	10-Jun-20 00:46	1
PFHpS	375-92-8	ND	1.00		B0F0009	05-Jun-20	0.250 L	09-Jun-20 05:10	1
PFNA	375-95-1	ND	1.00		B0F0009	05-Jun-20	0.250 L	09-Jun-20 05:10	1
PFOSA	754-91-6	ND	1.00		B0F0009	05-Jun-20	0.250 L	09-Jun-20 05:10	1
PFOS	1763-23-1	ND	1.00		B0F0009	05-Jun-20	0.250 L	09-Jun-20 05:10	1
PFDA	335-76-2	ND	1.00		B0F0009	05-Jun-20	0.250 L	09-Jun-20 05:10	1
8:2 FTS	39108-34-4	ND	1.03		B0F0009	05-Jun-20	0.250 L	09-Jun-20 05:10	1
PFNS	68259-12-1	ND	1.94		B0F0009	05-Jun-20	0.250 L	09-Jun-20 05:10	1
MeFOSAA	2355-31-9	ND	1.00		B0F0009	05-Jun-20	0.250 L	09-Jun-20 05:10	1
EtFOSAA	2991-50-6	ND	1.00		B0F0009	05-Jun-20	0.250 L	09-Jun-20 05:10	1
PFA	2058-94-8	ND	1.00		B0F0009	05-Jun-20	0.250 L	09-Jun-20 05:10	1
PFDS	335-77-3	ND	1.00		B0F0009	05-Jun-20	0.250 L	09-Jun-20 05:10	1
PFDoA	307-55-1	ND	1.00		B0F0009	05-Jun-20	0.250 L	09-Jun-20 05:10	1
PFTTrDA	72629-94-8	ND	1.00		B0F0009	05-Jun-20	0.250 L	09-Jun-20 05:10	1
PFTeDA	376-06-7	ND	1.00		B0F0009	05-Jun-20	0.250 L	09-Jun-20 05:10	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	152	60 - 130	H	B0F0009	05-Jun-20	0.250 L	09-Jun-20 05:10	1
13C3-PFPeA	IS	92.8	60 - 150		B0F0009	05-Jun-20	0.250 L	10-Jun-20 00:46	1
13C3-PFBS	IS	99.7	60 - 150		B0F0009	05-Jun-20	0.250 L	09-Jun-20 05:10	1
13C2-4:2 FTS	IS	101	20 - 150		B0F0009	05-Jun-20	0.250 L	09-Jun-20 05:10	1
13C2-PFHxA	IS	90.0	70 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 05:10	1
13C4-PFHpA	IS	92.4	60 - 150		B0F0009	05-Jun-20	0.250 L	09-Jun-20 05:10	1
13C3-PFHxS	IS	99.7	60 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 05:10	1
13C2-6:2 FTS	IS	92.3	40 - 150		B0F0009	05-Jun-20	0.250 L	10-Jun-20 00:46	1
13C5-PFNA	IS	89.5	50 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 05:10	1
13C8-PFOA	IS	52.8	20 - 150		B0F0009	05-Jun-20	0.250 L	09-Jun-20 05:10	1
13C2-PFOA	IS	92.4	60 - 130		B0F0009	05-Jun-20	0.250 L	10-Jun-20 00:46	1
13C8-PFOS	IS	99.5	60 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 05:10	1
13C2-PFDA	IS	95.1	60 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 05:10	1

Sample ID: Field Blank					PFAS Isotope Dilution Method					
Client Data Name: Apex Companies, LLC Project: PDX Fire Training Facility					Laboratory Data Lab Sample: 2001176-15 Date Received: 02-Jun-20 09:29 Column: BEH C18					
Matrix: Water Date Collected: 30-May-20 18:00										
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-8:2 FTS	IS	89.6	40 - 150		B0F0009	05-Jun-20	0.250 L	09-Jun-20 05:10	1	
d3-MeFOSAA	IS	82.0	50 - 150		B0F0009	05-Jun-20	0.250 L	09-Jun-20 05:10	1	
13C2-PFUnA	IS	89.9	60 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 05:10	1	
d5-EtFOSAA	IS	71.6	50 - 150		B0F0009	05-Jun-20	0.250 L	09-Jun-20 05:10	1	
13C2-PFDoA	IS	80.0	30 - 130		B0F0009	05-Jun-20	0.250 L	09-Jun-20 05:10	1	
13C2-PFTeDA	IS	66.4	20 - 150		B0F0009	05-Jun-20	0.250 L	09-Jun-20 05:10	1	

RL - Reporting limit

Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: Equip Blank					PFAS Isotope Dilution Method				
Client Data Name: Apex Companies, LLC Project: PDX Fire Training Facility Matrix: Water Date Collected: 30-May-20 17:55					Laboratory Data Lab Sample: 2001176-16 Date Received: 02-Jun-20 09:29 Column: BEH C18				
Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	ND	0.985		B0F0009	05-Jun-20	0.254 L	09-Jun-20 05:20	1
PFPeA	2706-90-3	ND	0.985		B0F0009	05-Jun-20	0.254 L	10-Jun-20 00:57	1
PFBS	375-73-5	ND	0.985		B0F0009	05-Jun-20	0.254 L	09-Jun-20 05:20	1
4:2 FTS	757124-72-4	ND	0.985		B0F0009	05-Jun-20	0.254 L	09-Jun-20 05:20	1
PFHxA	307-24-4	ND	1.07		B0F0009	05-Jun-20	0.254 L	09-Jun-20 05:20	1
PFPeS	2706-91-4	ND	1.19		B0F0009	05-Jun-20	0.254 L	09-Jun-20 05:20	1
PFHpA	375-85-9	ND	0.985		B0F0009	05-Jun-20	0.254 L	09-Jun-20 05:20	1
PFHxS	355-46-4	ND	0.985		B0F0009	05-Jun-20	0.254 L	09-Jun-20 05:20	1
6:2 FTS	27619-97-2	ND	0.985		B0F0009	05-Jun-20	0.254 L	10-Jun-20 00:57	1
PFOA	335-67-1	ND	0.985		B0F0009	05-Jun-20	0.254 L	10-Jun-20 00:57	1
PFHpS	375-92-8	ND	0.985		B0F0009	05-Jun-20	0.254 L	09-Jun-20 05:20	1
PFNA	375-95-1	ND	0.985		B0F0009	05-Jun-20	0.254 L	09-Jun-20 05:20	1
PFOSA	754-91-6	ND	0.985		B0F0009	05-Jun-20	0.254 L	09-Jun-20 05:20	1
PFOS	1763-23-1	ND	0.985		B0F0009	05-Jun-20	0.254 L	09-Jun-20 05:20	1
PFDA	335-76-2	ND	0.985		B0F0009	05-Jun-20	0.254 L	09-Jun-20 05:20	1
8:2 FTS	39108-34-4	ND	1.01		B0F0009	05-Jun-20	0.254 L	09-Jun-20 05:20	1
PFNS	68259-12-1	ND	1.91		B0F0009	05-Jun-20	0.254 L	09-Jun-20 05:20	1
MeFOSAA	2355-31-9	ND	0.985		B0F0009	05-Jun-20	0.254 L	09-Jun-20 05:20	1
EtFOSAA	2991-50-6	ND	0.985		B0F0009	05-Jun-20	0.254 L	09-Jun-20 05:20	1
PFUnA	2058-94-8	ND	0.985		B0F0009	05-Jun-20	0.254 L	09-Jun-20 05:20	1
PFDS	335-77-3	ND	0.985		B0F0009	05-Jun-20	0.254 L	09-Jun-20 05:20	1
PFDoA	307-55-1	ND	0.985		B0F0009	05-Jun-20	0.254 L	09-Jun-20 05:20	1
PFTTrDA	72629-94-8	ND	0.985		B0F0009	05-Jun-20	0.254 L	09-Jun-20 05:20	1
PFTeDA	376-06-7	ND	0.985		B0F0009	05-Jun-20	0.254 L	09-Jun-20 05:20	1
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	148	60 - 130	H	B0F0009	05-Jun-20	0.254 L	09-Jun-20 05:20	1
13C3-PFPeA	IS	88.5	60 - 150		B0F0009	05-Jun-20	0.254 L	10-Jun-20 00:57	1
13C3-PFBS	IS	103	60 - 150		B0F0009	05-Jun-20	0.254 L	09-Jun-20 05:20	1
13C2-4:2 FTS	IS	110	20 - 150		B0F0009	05-Jun-20	0.254 L	09-Jun-20 05:20	1
13C2-PFHxA	IS	92.9	70 - 130		B0F0009	05-Jun-20	0.254 L	09-Jun-20 05:20	1
13C4-PFHpA	IS	94.0	60 - 150		B0F0009	05-Jun-20	0.254 L	09-Jun-20 05:20	1
13C3-PFHxS	IS	94.6	60 - 130		B0F0009	05-Jun-20	0.254 L	09-Jun-20 05:20	1
13C2-6:2 FTS	IS	98.9	40 - 150		B0F0009	05-Jun-20	0.254 L	10-Jun-20 00:57	1
13C5-PFNA	IS	93.7	50 - 130		B0F0009	05-Jun-20	0.254 L	09-Jun-20 05:20	1
13C8-PFOA	IS	53.5	20 - 150		B0F0009	05-Jun-20	0.254 L	09-Jun-20 05:20	1
13C2-PFOA	IS	87.8	60 - 130		B0F0009	05-Jun-20	0.254 L	10-Jun-20 00:57	1
13C8-PFOS	IS	104	60 - 130		B0F0009	05-Jun-20	0.254 L	09-Jun-20 05:20	1
13C2-PFDA	IS	97.5	60 - 130		B0F0009	05-Jun-20	0.254 L	09-Jun-20 05:20	1

Sample ID: Equip Blank					PFAS Isotope Dilution Method					
Client Data Name: Apex Companies, LLC Project: PDX Fire Training Facility					Laboratory Data Lab Sample: 2001176-16 Date Received: 02-Jun-20 09:29 Column: BEH C18					
Matrix: Water Date Collected: 30-May-20 17:55										
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-8:2 FTS	IS	96.3	40 - 150		B0F0009	05-Jun-20	0.254 L	09-Jun-20 05:20	1	
d3-MeFOSAA	IS	84.1	50 - 150		B0F0009	05-Jun-20	0.254 L	09-Jun-20 05:20	1	
13C2-PFUnA	IS	90.2	60 - 130		B0F0009	05-Jun-20	0.254 L	09-Jun-20 05:20	1	
d5-EtFOSAA	IS	76.4	50 - 150		B0F0009	05-Jun-20	0.254 L	09-Jun-20 05:20	1	
13C2-PFDoA	IS	78.1	30 - 130		B0F0009	05-Jun-20	0.254 L	09-Jun-20 05:20	1	
13C2-PFTeDA	IS	60.3	20 - 150		B0F0009	05-Jun-20	0.254 L	09-Jun-20 05:20	1	

RL - Reporting limit

Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

DATA QUALIFIERS & ABBREVIATIONS

B	This compound was also detected in the method blank
Conc.	Concentration
CRS	Cleanup Recovery Standard
D	Dilution
DL	Detection limit
E	The associated compound concentration exceeded the calibration range of the instrument
H	Recovery and/or RPD was outside laboratory acceptance limits
I	Chemical Interference
IS	Internal Standard
J	The amount detected is below the Reporting Limit/LOQ
LOD	Limit of Detection
LOQ	Limit of Quantitation
M	Estimated Maximum Possible Concentration (CA Region 2 projects only)
NA	Not applicable
ND	Not Detected
OPR	Ongoing Precision and Recovery sample
P	The reported concentration may include contribution from chlorinated diphenyl ether(s).
Q	The ion transition ratio is outside of the acceptance criteria.
RL	Reporting Limit
TEQ	Toxic Equivalency
U	Not Detected (specific projects only)
*	See Cover Letter

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

Vista Analytical Laboratory Certifications

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	19-013-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777-23
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2018017
Massachusetts Department of Environmental Protection	N/A
Michigan Department of Environmental Quality	9932
Minnesota Department of Health	1521520
New Hampshire Environmental Accreditation Program	207718-B
New Jersey Department of Environmental Protection	190001
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-010
Pennsylvania Department of Environmental Protection	016
Texas Commission on Environmental Quality	T104704189-19-10
Vermont Department of Health	VT-4042
Virginia Department of General Services	10272
Washington Department of Ecology	C584-19
Wisconsin Department of Natural Resources	998036160

Current certificates and lists of licensed parameters are located in the Quality Assurance office and are available upon request.

NELAP Accredited Test Methods

MATRIX: Air	
Description of Test	Method
Determination of Polychlorinated p-Dioxins & Polychlorinated Dibenzofurans	EPA 23
Determination of Polychlorinated p-Dioxins & Polychlorinated Dibenzofurans	EPA TO-9A

MATRIX: Biological Tissue	
Description of Test	Method
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

MATRIX: Drinking Water	
Description of Test	Method
2,3,7,8-Tetrachlorodibenzo- p-dioxin (2,3,7,8-TCDD) GC/HRMS	EPA 1613/1613B
1,4-Dioxane (1,4-Diethyleneoxide) analysis by GC/HRMS	EPA 522
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	ISO 25101 2009

MATRIX: Non-Potable Water	
Description of Test	Method
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Dioxin by GC/HRMS	EPA 613
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

MATRIX: Solids	
Description of Test	Method
Tetra-Octa Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

CHAIN OF CUSTODY

For Laboratory Use Only

Work Order #: 2001176 Temp: 3.3 °C
Storage ID: R-131WR-2 Storage Secured: Yes ☒ No ☐

Project ID: PDX Fire Training Facility PO#: 2550-00 Sampler: Kyle Kline
(name)

TAT Standard: ☐ 21 days
(check one): Rush (surcharge may apply)
☒ 14 days ☐ 7 days Specify: _____

Invoice to: Name Company Address City State Ph# Fax#
Heather Gosack Apex Companies 3015 SW 1st Ave Portland OR 503-924-4704

Relinquished by (printed name and signature) Date Time Received by (printed name and signature) Date Time
Kyle Kline Kyle Kline 6/1/20 0730 Kinsey Scardina Kinsey Scardina 06/02/20 0929
Relinquished by (printed name and signature) Date Time Received by (printed name and signature) Date Time

SHIP TO: Vista Analytical Laboratory
1104 Windfield Way
El Dorado Hills, CA 95762
(916) 673-1520 * Fax (916) 673-0106

ATTN: _____

Method of Shipment: _____

Tracking No.: _____

Add Analysis(es) Requested

Container(s)

Mod. EPA
Method 537

EPA Method
537(DW
only)

Sample ID	Date	Time	Location/Sample Description	Quantity	Type	Matrix	ADONA Gen-X, F33-B	TOP Assay	537 List: 24	Full List of 26	Other: Please List Below	PFOA/PFOS	UCMR3 PFAS List 8	PFAS List: 14	Comments
2	5/30/20	1545		2	P	SW		X							
3	5/30/20	1610		2	P	SW		X							
4	5/30/20	1630		4	P	SW		X							
6	5/30/20	1640		2	P	SW		X							
5	5/30/20	1655		2	P	SW		X							
7	5/30/20	1715		2	P	SW		X							
Ditch B	5/30/20	1745		2	P	SW		X							
1N	5/30/20	1550		2	P	SW		X							
1ES	5/30/20	1610		2	P	SW		X							
8	5/30/20	1640		2	P	SW		X							

Special Instructions/Comments: _____

SEND
DOCUMENTATION
AND RESULTS TO:

Name: Heather Gosack and Kelsi Evans
Company: see above
Address: _____
City: _____ State: _____ Zip: _____
Phone: _____ Fax: _____
Email: Heather.Gosack@apexc.com; kelsi.evans@apexc.com

Container Types: P= HDPE, PJ= HDPE Jar
O = Other: _____

Bottle Preservation Type: T = Thiosulfate,
TZ = Trizma: _____

Matrix Types: AQ = Aqueous, DW = Drinking Water, EF = Effluent, PP = Pulp/Paper, SD = Sediment,
SL = Sludge, SO = Soil, WW = Wastewater, B = Blood/Serum, O = Other: _____

CHAIN OF CUSTODY

For Laboratory Use Only

Work Order #: 2001176 Temp: 3.3 °C
Storage ID: R-13 /WR-2 Storage Secured: Yes ☒ No ☐

Project ID: PDX Fire Training Facility PO#: 2550-00 Sampler: Kyle Kline
(name)

TAT Standard: ☐ 21 days
(check one): Rush (surcharge may apply)
☒ 14 days ☐ 7 days Specify: _____

Invoice to: Name Company Address City State Ph# Fax#
Heather Gosack Apex Companies 3015 SW 1st Ave Portland OR 503-924-4704

Relinquished by (printed name and signature) Date Time Received by (printed name and signature) Date Time
Kyle Kline [Signature] 6/1/20 0730 Kinsey Scardina [Signature] 06/02/20 0929
Relinquished by (printed name and signature) Date Time Received by (printed name and signature) Date Time

SHIP TO: Vista Analytical Laboratory
1104 Windfield Way
El Dorado Hills, CA 95762
(916) 673-1520 * Fax (916) 673-0106

ATTN: _____

Method of Shipment: _____

Tracking No.: _____

Add Analysis(es) Requested

Container(s)

Mod. EPA
Method 537

EPA Method
537(DW
only)

Sample ID	Date	Time	Location/Sample Description	Quantity	Type	Matrix	ADONA, Gen-X, F53-B	TOP Assay	537 List: 24	Full List of 26	Other: Please List Below	PFCA/PFOA	UCMR3 PFAS List: 8	PFAS List: 14	Comments
8 DUP	5/30/20	1640		2	P	SW			X						
9	5/30/20	1729		2	P	SW			X						
SW-2	5/30/20	1750		2	P	SW			X						
SW-3	5/30/20	1811		2	P	SW			X						
Field Blank	5/30/20	1800		2	P	W			X						
Equip Blank	5/30/20	1755		2	P	W			X						

Special Instructions/Comments: _____

SEND
DOCUMENTATION
AND RESULTS TO:

Name: Heather Gosack and Kelsi Evans
Company: see above
Address: _____
City: _____ State: _____ Zip: _____
Phone: _____ Fax: _____
Email: Heather.Gosack@apexc.com; kelsi.evans@apexc.com

Container Types: P= HDPE, PJ= HDPE Jar
O = Other: _____

Bottle Preservation Type: T = Thiosulfate,
TZ = Trizma: _____

Matrix Types: AQ = Aqueous, DW = Drinking Water, EF = Effluent, PP = Pulp/Paper, SD = Sediment,
SL = Sludge, SO = Soil, WW = Wastewater, B = Blood/Serum, O = Other: _____

Sample Log-In Checklist

 Page # 1 of 1

 Vista Work Order #: 2001176

 TAT 14

Samples Arrival:	Date/Time <u>06/02/20</u> <u>0929</u>		Initials: <u>KS</u>		Location: <u>WR-2</u>		
					Shelf/Rack: <u>N/A</u>		
Delivered By:	<u>FedEx</u>	UPS	On Trac	GLS	DHL	Hand Delivered	Other
Preservation:	<u>Ice</u>	Blue Ice		Dry Ice		None	
Temp °C: <u>3.3</u> (uncorrected)	Probe used: Y / <u>N</u>			Thermometer ID: <u>1R-4</u>			
Temp °C: <u>3.3</u> (corrected)							

	YES	NO	NA
Shipping Container(s) Intact?	☒		
Shipping Custody Seals Intact?	☒		
Airbill <u>—</u> Trk # <u>7765 9254 2490</u>	☒		
Shipping Documentation Present?	☒		
Shipping Container	Vista	<u>Client</u>	Retain
		<u>Return</u>	Dispose
Chain of Custody / Sample Documentation Present?	☒		
Chain of Custody / Sample Documentation Complete?	☒		
Holding Time Acceptable?	☒		
Logged In:	Date/Time <u>06/02/20</u> <u>1018</u>	Initials: <u>KS</u>	Location: <u>R-13</u> <u>WR-2</u>
			Shelf/Rack: <u>A-2</u> <u>E-2</u>
COC Anomaly/Sample Acceptance Form completed?		☒	☒

Comments:

CoC/Label Reconciliation Report WO# 2001176

LabNumber	CoC Sample ID	SampleAlias	Sample Date/Time	Container	BaseMatrix	Sample Comments
2001176-01	A 2	☒	30-May-20 15:45	☒	HDPE Bottle, 250 mL	Aqueous
2001176-01	B 2	☒	30-May-20 15:45	☒	HDPE Bottle, 250 mL	Aqueous
2001176-02	A 3	☒	30-May-20 16:10	☒	HDPE Bottle, 250 mL	Aqueous
2001176-02	B 3	☒	30-May-20 16:10	☒	HDPE Bottle, 250 mL	Aqueous
2001176-03	A 4	☒	30-May-20 16:30	☒	HDPE Bottle, 250 mL	Aqueous
2001176-03	B 4	☒	30-May-20 16:30	☒	HDPE Bottle, 250 mL	Aqueous
2001176-04	A 6	☒	30-May-20 16:40	☒	HDPE Bottle, 250 mL	Aqueous
2001176-04	B 6	☒	30-May-20 16:40	☒	HDPE Bottle, 250 mL	Aqueous
2001176-05	A 5	☒	30-May-20 16:55	☒	HDPE Bottle, 250 mL	Aqueous
2001176-05	B 5	☒	30-May-20 16:55	☒	HDPE Bottle, 250 mL	Aqueous
2001176-06	A 7	☒	30-May-20 17:15	☒	HDPE Bottle, 250 mL	Aqueous
2001176-06	B 7	☒	30-May-20 17:15	☒	HDPE Bottle, 250 mL	Aqueous
2001176-07	A Ditch B	☒	30-May-20 17:45	☒	HDPE Bottle, 250 mL	Aqueous
2001176-07	B Ditch B	☒	30-May-20 17:45	☒	HDPE Bottle, 250 mL	Aqueous
2001176-08	A 1N	☒	30-May-20 15:50	☒	HDPE Bottle, 250 mL	Aqueous
2001176-08	B 1N	☒	30-May-20 15:50	☒	HDPE Bottle, 250 mL	Aqueous
2001176-09	A 1ES	☒	30-May-20 16:10	☒	HDPE Bottle, 250 mL	Aqueous
2001176-09	B 1ES	☒	30-May-20 16:10	☒	HDPE Bottle, 250 mL	Aqueous
2001176-10	A 8	☒	30-May-20 16:40	☒	HDPE Bottle, 250 mL	Aqueous
2001176-10	B 8	☒	30-May-20 16:40	☒	HDPE Bottle, 250 mL	Aqueous
2001176-11	A 8 DUP	☒	30-May-20 16:40	☒	HDPE Bottle, 250 mL	Aqueous
2001176-11	B 8 DUP	☒	30-May-20 16:40	☒	HDPE Bottle, 250 mL	Aqueous
2001176-12	A 9	☒	30-May-20 17:29	☒	HDPE Bottle, 250 mL	Aqueous
2001176-12	B 9	☒	30-May-20 17:29	☒	HDPE Bottle, 250 mL	Aqueous
2001176-13	A SW-2	☒	30-May-20 17:50	☒	HDPE Bottle, 250 mL	Aqueous
2001176-13	B SW-2	☒	30-May-20 17:50	☒	HDPE Bottle, 250 mL	Aqueous
2001176-14	A SW-3	☒	30-May-20 18:11	☒	HDPE Bottle, 250 mL	Aqueous
2001176-14	B SW-3	☒	30-May-20 18:11	☒	HDPE Bottle, 250 mL	Aqueous
2001176-15	A Field Blank	☒	30-May-20 18:00	☒	HDPE Bottle, 250 mL	Aqueous

2001176-15 B Field Blank

30-May-20 18:00 ☒

HDPE Bottle, 250 mL

Aqueous

2001176-16 A Equip Blank

30-May-20 17:55 ☒

HDPE Bottle, 250 mL

Aqueous

2001176-16 B Equip Blank

30-May-20 17:55 ☒

HDPE Bottle, 250 mL

Aqueous

Checkmarks indicate that information on the COC reconciled with the sample label.

Any discrepancies are noted in the following columns.

	Yes	No	NA
Sample Container Intact?	✓		
Sample Custody Seals Intact?			✓
Adequate Sample Volume?	✓		
Container Type Appropriate for Analysis(es)	✓		
Preservation Documented: Na2S2O3 Trizma None Other		✓	✓
If Chlorinated or Drinking Water Samples, Acceptable Preservation?			✓

Comments:

* Sample ID written in location section of sample label

Verified by/Date: KS 06/02/20



September 14, 2020

Vista Work Order No. 2001779

Ms. Heather Gosack
Apex Companies, LLC
3015 SW First Avenue
Portland, OR 97201

Dear Ms. Gosack,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on August 19, 2020 under your Project Name 'PDX Fire Training Facility'.

Vista Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at mmaier@vista-analytical.com.

Thank you for choosing Vista as part of your analytical support team.

Sincerely,

Martha Maier
Laboratory Director



Vista Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. Results relate only to the samples as received by the laboratory. This report should not be reproduced except in full without the written approval of Vista.

Vista Work Order No. 2001779

Case Narrative

Sample Condition on Receipt:

Thirteen surface water samples and two water samples were received in good condition and within the method temperature requirements. The samples were received and stored securely in accordance with Vista standard operating procedures and EPA methodology.

Analytical Notes:

PFAS Isotope Dilution Method

The following samples contained particulate and were centrifuged prior to extraction:

<u>Laboratory ID</u>	<u>Sample Name</u>
2001779-02	SW-2
2001779-05	4
2001779-06	6
2001779-07	9
2001779-08	8
2001779-11	1 ES

The samples were extracted and analyzed for a selected list of PFAS using Vista's PFAS Isotope Dilution Method. The results for PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Results for all other analytes include the linear isomers only.

Holding Times

The samples were extracted and analyzed within the hold times.

Quality Control

The Initial Calibration and Continuing Calibration Verifications met the acceptance criteria.

A Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with the preparation batch. No analytes were detected in the Method Blank above the Reporting Limit. The OPR recoveries were within the method acceptance criteria.

The recoveries of all internal standards in the QC and field samples were within the acceptance criteria.

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Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
2001779-01	SW-3	17-Aug-20 08:40	19-Aug-20 11:26	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
2001779-02	SW-2	17-Aug-20 08:55	19-Aug-20 11:26	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
2001779-03	5	17-Aug-20 09:20	19-Aug-20 11:26	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
2001779-04	3	17-Aug-20 09:50	19-Aug-20 11:26	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
2001779-05	4	17-Aug-20 11:05	19-Aug-20 11:26	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
2001779-06	6	17-Aug-20 11:25	19-Aug-20 11:26	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
2001779-07	9	17-Aug-20 11:50	19-Aug-20 11:26	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
2001779-08	8	17-Aug-20 12:10	19-Aug-20 11:26	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
2001779-09	7	17-Aug-20 12:25	19-Aug-20 11:26	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
2001779-10	2	17-Aug-20 12:45	19-Aug-20 11:26	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
2001779-11	1 ES	17-Aug-20 13:00	19-Aug-20 11:26	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
2001779-12	1 N	17-Aug-20 13:30	19-Aug-20 11:26	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
2001779-13	Dup-1	17-Aug-20 00:00	19-Aug-20 11:26	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
2001779-14	Field Blank	17-Aug-20 13:45	19-Aug-20 11:26	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
2001779-15	Equip Blank	17-Aug-20 13:40	19-Aug-20 11:26	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL

ANALYTICAL RESULTS

Sample ID: Method Blank					PFAS Isotope Dilution Method					
Client Data				Laboratory Data						
Name:	Apex Companies, LLC		Matrix:	Aqueous		Lab Sample:	B0H0214-BLK1		Column:	BEH C18
Project:	PDX Fire Training Facility									
Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
PFBA	375-22-4	ND	1.00		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
PFPeA	2706-90-3	ND	1.00		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
PFBS	375-73-5	ND	1.00		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
4:2 FTS	757124-72-4	ND	1.00		B0H0214	26-Aug-20	0.250 L	28-Aug-20 18:26	1	
PFHxA	307-24-4	ND	1.09		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
PFPeS	2706-91-4	ND	1.21		B0H0214	26-Aug-20	0.250 L	28-Aug-20 18:26	1	
PFHpA	375-85-9	ND	1.00		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
PFHxS	355-46-4	ND	1.00		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
6:2 FTS	27619-97-2	ND	1.00		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
PFOA	335-67-1	ND	1.00		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
PFHpS	375-92-8	ND	1.00		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
PFNA	375-95-1	ND	1.00		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
PFOSA	754-91-6	ND	1.00		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
PFOS	1763-23-1	ND	1.00		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
PFDA	335-76-2	ND	1.00		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
8:2 FTS	39108-34-4	ND	1.03		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
PFNS	68259-12-1	ND	1.94		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
MeFOSAA	2355-31-9	ND	1.00		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
EtFOSAA	2991-50-6	ND	1.00		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
PFUnA	2058-94-8	ND	1.00		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
PFDS	335-77-3	ND	1.00		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
PFDoA	307-55-1	ND	1.00		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
PFTTrDA	72629-94-8	ND	1.00		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
PFTeDA	376-06-7	ND	1.00		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C3-PFBA	IS	85.5	60 - 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
13C3-PFPeA	IS	71.5	60 - 150		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
13C3-PFBS	IS	82.1	60 - 150		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
13C2-4:2 FTS	IS	80.8	20 - 150		B0H0214	26-Aug-20	0.250 L	28-Aug-20 18:26	1	
13C2-PFHxA	IS	79.6	70 - 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
13C4-PFHpA	IS	72.6	60 - 150		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
13C3-PFHxS	IS	76.3	60 - 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
13C2-6:2 FTS	IS	87.9	40 - 150		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
13C5-PFNA	IS	76.5	50 - 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
13C8-PFOSA	IS	40.4	20 - 150		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
13C2-PFOA	IS	75.6	60 - 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
13C8-PFOS	IS	82.5	60 - 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
13C2-PFDA	IS	70.4	60 - 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	

Sample ID: Method Blank					PFAS Isotope Dilution Method					
Client Data Name: Apex Companies, LLC Project: PDX Fire Training Facility					Laboratory Data Lab Sample: B0H0214-BLK1 Column: BEH C18					
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-8:2 FTS	IS	65.9	40 - 150		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
d3-MeFOSAA	IS	64.5	50 - 150		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
13C2-PFUnA	IS	75.3	60 - 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
d5-EtFOSAA	IS	50.4	50 - 150		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
13C2-PFDoA	IS	56.6	30 - 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	
13C2-PFTeDA	IS	52.7	20 - 150		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:21	1	

RL - Reporting limit

Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: OPR						PFAS Isotope Dilution Method					
Client Data						Laboratory Data					
Name:	Apex Companies, LLC		Matrix:	Aqueous		Lab Sample:	B0H0214-BS1		Column:	BEH C18	
Project:	PDX Fire Training Facility										
Analyte	CAS Number	Amt Found (ng/L)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	49.1	40.0	123	70 - 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
PFPeA	2706-90-3	49.3	40.0	123	70 - 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
PFBS	375-73-5	50.3	40.0	126	70 - 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
4:2 FTS	757124-72-4	46.2	40.0	116	60 - 130		B0H0214	26-Aug-20	0.250 L	28-Aug-20 18:37	1
PFHxA	307-24-4	47.7	40.0	119	70 - 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
PFPeS	2706-91-4	43.9	40.0	110	70 - 130		B0H0214	26-Aug-20	0.250 L	28-Aug-20 18:37	1
PFHpA	375-85-9	47.2	40.0	118	70 - 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
PFHxS	355-46-4	48.0	40.0	120	70 - 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
6:2 FTS	27619-97-2	47.6	40.0	119	60 - 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
PFOA	335-67-1	47.6	40.0	119	70 - 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
PFHpS	375-92-8	41.4	40.0	104	60 - 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
PFNA	375-95-1	50.1	40.0	125	70 - 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
PFOSA	754-91-6	45.1	40.0	113	70 - 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
PFOS	1763-23-1	48.2	40.0	120	70 - 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
PFDA	335-76-2	51.6	40.0	129	70 - 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
8:2 FTS	39108-34-4	46.7	40.0	117	60 - 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
PFNS	68259-12-1	41.6	40.0	104	70 - 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
MeFOSAA	2355-31-9	48.3	40.0	121	70 - 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
EtFOSAA	2991-50-6	50.4	40.0	126	70 - 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
PFUnA	2058-94-8	43.3	40.0	108	70 - 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
PFDS	335-77-3	38.2	40.0	95.5	60 - 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
PFDoA	307-55-1	45.6	40.0	114	70 - 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
PFTTrDA	72629-94-8	48.2	40.0	121	60 - 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
PFTeDA	376-06-7	50.2	40.0	125	70 - 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
Labeled Standards	Type			% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS			87.1	60- 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
13C3-PFPeA	IS			72.4	60- 150		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
13C3-PFBS	IS			76.8	60- 150		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
13C2-4:2 FTS	IS			69.7	20- 150		B0H0214	26-Aug-20	0.250 L	28-Aug-20 18:37	1
13C2-PFHxA	IS			78.4	70- 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
13C4-PFHpA	IS			73.9	60- 150		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
13C3-PFHxS	IS			73.5	60- 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
13C2-6:2 FTS	IS			89.1	40- 150		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
13C5-PFNA	IS			76.5	50- 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
13C8-PFOSA	IS			43.4	20- 150		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1

Sample ID: OPR					PFAS Isotope Dilution Method				
Client Data Name: Apex Companies, LLC Project: PDX Fire Training Facility					Laboratory Data Lab Sample: B0H0214-BS1 Column: BEH C18				
Labeled Standards	Type	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFOA	IS	73.4	60- 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
13C8-PFOS	IS	91.5	60- 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
13C2-PFDA	IS	71.0	60- 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
13C2-8:2 FTS	IS	66.7	40- 150		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
d3-MeFOSAA	IS	60.4	50- 150		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
13C2-PFUnA	IS	72.1	60- 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
d5-EtFOSAA	IS	61.6	50- 150		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
13C2-PFDoA	IS	60.0	30- 130		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1
13C2-PFTeDA	IS	58.7	20- 150		B0H0214	26-Aug-20	0.250 L	03-Sep-20 18:32	1

Sample ID: SW-3
PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Apex Companies, LLC	Matrix:	Surface Water	Lab Sample:	2001779-01	Column:	BEH C18
Project:	PDX Fire Training Facility	Date Collected:	17-Aug-20 08:40	Date Received:	19-Aug-20 11:26		

Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	89.1	1.09		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1
PFPeA	2706-90-3	354	1.09		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1
PFBS	375-73-5	23.8	1.09		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1
4:2 FTS	757124-72-4	4.22	1.09		B0H0214	26-Aug-20	0.230 L	28-Aug-20 18:47	1
PFHxA	307-24-4	325	1.19		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1
PFPeS	2706-91-4	26.6	1.32		B0H0214	26-Aug-20	0.230 L	28-Aug-20 18:47	1
PFHpA	375-85-9	115	1.09		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1
PFHxS	355-46-4	233	1.09		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1
6:2 FTS	27619-97-2	951	1.09		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1
PFOA	335-67-1	288	1.09		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1
PFHpS	375-92-8	4.33	1.09		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1
PFNA	375-95-1	21.4	1.09		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1
PFOSA	754-91-6	ND	1.09		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1
PFOS	1763-23-1	425	1.09		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1
PFDA	335-76-2	1.90	1.09	Q	B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1
8:2 FTS	39108-34-4	16.9	1.12		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1
PFNS	68259-12-1	ND	2.11		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1
MeFOSAA	2355-31-9	ND	1.09		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1
EtFOSAA	2991-50-6	ND	1.09		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1
PFUnA	2058-94-8	ND	1.09		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1
PFDS	335-77-3	ND	1.09		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1
PFDoA	307-55-1	ND	1.09		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1
PFTTrDA	72629-94-8	ND	1.09		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1
PFTeDA	376-06-7	ND	1.09		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	76.2	60 - 130		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1
13C3-PFPeA	IS	72.2	60 - 150		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1
13C3-PFBS	IS	81.1	60 - 150		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1
13C2-4:2 FTS	IS	75.6	20 - 150		B0H0214	26-Aug-20	0.230 L	28-Aug-20 18:47	1
13C2-PFHxA	IS	75.4	70 - 130		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1
13C4-PFHpA	IS	78.1	60 - 150		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1
13C3-PFHxS	IS	76.2	60 - 130		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1
13C2-6:2 FTS	IS	65.5	40 - 150		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1
13C5-PFNA	IS	76.1	50 - 130		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1
13C8-PFOSA	IS	49.4	20 - 150		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1
13C2-PFOA	IS	72.4	60 - 130		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1
13C8-PFOS	IS	86.6	60 - 130		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1
13C2-PFDA	IS	72.6	60 - 130		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1

Sample ID: SW-3					PFAS Isotope Dilution Method					
Client Data Name: Apex Companies, LLC Project: PDX Fire Training Facility Matrix: Surface Water Date Collected: 17-Aug-20 08:40				Laboratory Data Lab Sample: 2001779-01 Date Received: 19-Aug-20 11:26 Column: BEH C18						
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-8:2 FTS	IS	72.4	40 - 150		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1	
d3-MeFOSAA	IS	78.7	50 - 150		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1	
13C2-PFUnA	IS	80.1	60 - 130		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1	
d5-EtFOSAA	IS	72.4	50 - 150		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1	
13C2-PFDoA	IS	65.8	30 - 130		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1	
13C2-PFTeDA	IS	57.2	20 - 150		B0H0214	26-Aug-20	0.230 L	03-Sep-20 18:42	1	

RL - Reporting limit

Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: SW-2

PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Apex Companies, LLC	Matrix:	Surface Water	Lab Sample:	2001779-02	Column:	BEH C18
Project:	PDX Fire Training Facility	Date Collected:	17-Aug-20 08:55	Date Received:	19-Aug-20 11:26		

Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	94.4	1.06		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1
PFPeA	2706-90-3	383	1.06		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1
PFBS	375-73-5	22.8	1.06		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1
4:2 FTS	757124-72-4	5.15	1.06		B0H0214	26-Aug-20	0.237 L	28-Aug-20 18:58	1
PFHxA	307-24-4	359	1.15		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1
PFPeS	2706-91-4	27.7	1.28		B0H0214	26-Aug-20	0.237 L	28-Aug-20 18:58	1
PFHpA	375-85-9	123	1.06		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1
PFHxS	355-46-4	262	1.06		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1
6:2 FTS	27619-97-2	1250	1.06		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1
PFOA	335-67-1	334	1.06		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1
PFHpS	375-92-8	6.39	1.06		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1
PFNA	375-95-1	25.5	1.06		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1
PFOSA	754-91-6	ND	1.06		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1
PFOS	1763-23-1	617	1.06		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1
PFDA	335-76-2	2.27	1.06		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1
8:2 FTS	39108-34-4	52.8	1.09		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1
PFNS	68259-12-1	ND	2.04		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1
MeFOSAA	2355-31-9	ND	1.06		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1
EtFOSAA	2991-50-6	ND	1.06		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1
PFUnA	2058-94-8	ND	1.06		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1
PFDS	335-77-3	ND	1.06		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1
PFDoA	307-55-1	ND	1.06		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1
PFTTrDA	72629-94-8	ND	1.06		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1
PFTeDA	376-06-7	ND	1.06		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	67.7	60 - 130		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1
13C3-PFPeA	IS	68.1	60 - 150		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1
13C3-PFBS	IS	82.5	60 - 150		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1
13C2-4:2 FTS	IS	74.7	20 - 150		B0H0214	26-Aug-20	0.237 L	28-Aug-20 18:58	1
13C2-PFHxA	IS	74.7	70 - 130		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1
13C4-PFHpA	IS	72.7	60 - 150		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1
13C3-PFHxS	IS	74.2	60 - 130		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1
13C2-6:2 FTS	IS	65.5	40 - 150		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1
13C5-PFNA	IS	75.7	50 - 130		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1
13C8-PFOSA	IS	51.1	20 - 150		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1
13C2-PFOA	IS	68.3	60 - 130		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1
13C8-PFOS	IS	86.3	60 - 130		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1
13C2-PFDA	IS	68.5	60 - 130		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1

Sample ID: SW-2					PFAS Isotope Dilution Method					
Client Data					Laboratory Data					
Name:	Apex Companies, LLC	Matrix:	Surface Water		Lab Sample:	2001779-02	Column:	BEH C18		
Project:	PDX Fire Training Facility	Date Collected:	17-Aug-20 08:55		Date Received:	19-Aug-20 11:26				
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-8:2 FTS	IS	65.1	40 - 150		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1	
d3-MeFOSAA	IS	73.9	50 - 150		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1	
13C2-PFUnA	IS	74.6	60 - 130		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1	
d5-EtFOSAA	IS	71.6	50 - 150		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1	
13C2-PFDoA	IS	64.8	30 - 130		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1	
13C2-PFTeDA	IS	48.3	20 - 150		B0H0214	26-Aug-20	0.237 L	03-Sep-20 18:52	1	

RL - Reporting limit

Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: 5 **PFAS Isotope Dilution Method**

Client Data				Laboratory Data			
Name:	Apex Companies, LLC	Matrix:	Surface Water	Lab Sample:	2001779-03	Column:	BEH C18
Project:	PDX Fire Training Facility	Date Collected:	17-Aug-20 09:20	Date Received:	19-Aug-20 11:26		

Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	4.88	1.05		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1
PFPeA	2706-90-3	7.22	1.05		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1
PFBS	375-73-5	2.88	1.05		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1
4:2 FTS	757124-72-4	ND	1.05		B0H0214	26-Aug-20	0.237 L	28-Aug-20 19:08	1
PFHxA	307-24-4	6.33	1.15		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1
PFPeS	2706-91-4	ND	1.27		B0H0214	26-Aug-20	0.237 L	28-Aug-20 19:08	1
PFHpA	375-85-9	6.29	1.05		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1
PFHxS	355-46-4	9.14	1.05		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1
6:2 FTS	27619-97-2	5.27	1.05		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1
PFOA	335-67-1	11.3	1.05		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1
PFHpS	375-92-8	ND	1.05		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1
PFNA	375-95-1	1.79	1.05		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1
PFOSA	754-91-6	ND	1.05		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1
PFOS	1763-23-1	30.2	1.05		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1
PFDA	335-76-2	1.48	1.05		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1
8:2 FTS	39108-34-4	8.20	1.08		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1
PFNS	68259-12-1	ND	2.04		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1
MeFOSAA	2355-31-9	ND	1.05		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1
EtFOSAA	2991-50-6	ND	1.05		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1
PFUnA	2058-94-8	ND	1.05		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1
PFDS	335-77-3	ND	1.05		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1
PFDoA	307-55-1	ND	1.05		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1
PFTTrDA	72629-94-8	ND	1.05		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1
PFTeDA	376-06-7	ND	1.05		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	78.1	60 - 130		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1
13C3-PFPeA	IS	67.2	60 - 150		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1
13C3-PFBS	IS	80.9	60 - 150		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1
13C2-4:2 FTS	IS	72.8	20 - 150		B0H0214	26-Aug-20	0.237 L	28-Aug-20 19:08	1
13C2-PFHxA	IS	74.5	70 - 130		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1
13C4-PFHpA	IS	69.2	60 - 150		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1
13C3-PFHxS	IS	74.1	60 - 130		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1
13C2-6:2 FTS	IS	86.5	40 - 150		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1
13C5-PFNA	IS	73.6	50 - 130		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1
13C8-PFOSA	IS	47.0	20 - 150		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1
13C2-PFOA	IS	69.3	60 - 130		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1
13C8-PFOS	IS	86.9	60 - 130		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1
13C2-PFDA	IS	67.7	60 - 130		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1

Sample ID: 5	PFAS Isotope Dilution Method
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Client Data	Laboratory Data
Name: Apex Companies, LLC	Lab Sample: 2001779-03
Project: PDX Fire Training Facility	Column: BEH C18
Matrix: Surface Water	Date Received: 19-Aug-20 11:26
Date Collected: 17-Aug-20 09:20	

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-8:2 FTS	IS	69.0	40 - 150		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1
d3-MeFOSAA	IS	64.8	50 - 150		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1
13C2-PFUnA	IS	74.3	60 - 130		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1
d5-EtFOSAA	IS	68.4	50 - 150		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1
13C2-PFDoA	IS	65.0	30 - 130		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1
13C2-PFTeDA	IS	59.2	20 - 150		B0H0214	26-Aug-20	0.237 L	03-Sep-20 19:03	1

RL - Reporting limit

Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: 3

PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Apex Companies, LLC	Matrix:	Surface Water	Lab Sample:	2001779-04	Column:	BEH C18
Project:	PDX Fire Training Facility	Date Collected:	17-Aug-20 09:50	Date Received:	19-Aug-20 11:26		

Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	11.9	1.08		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1
PFPeA	2706-90-3	17.1	1.08		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1
PFBS	375-73-5	1.95	1.08		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1
4:2 FTS	757124-72-4	ND	1.08		B0H0214	26-Aug-20	0.232 L	28-Aug-20 19:18	1
PFHxA	307-24-4	20.1	1.17		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1
PFPeS	2706-91-4	ND	1.30		B0H0214	26-Aug-20	0.232 L	28-Aug-20 19:18	1
PFHpA	375-85-9	16.2	1.08		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1
PFHxS	355-46-4	ND	1.08		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1
6:2 FTS	27619-97-2	31.1	1.08		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1
PFOA	335-67-1	27.2	1.08		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1
PFHpS	375-92-8	ND	1.08		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1
PFNA	375-95-1	7.22	1.08		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1
PFOSA	754-91-6	ND	1.08		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1
PFOS	1763-23-1	1.51	1.08		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1
PFDA	335-76-2	2.13	1.08		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1
8:2 FTS	39108-34-4	83.5	1.11		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1
PFNS	68259-12-1	ND	2.09		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1
MeFOSAA	2355-31-9	2.61	1.08		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1
EtFOSAA	2991-50-6	1.09	1.08		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1
PFUnA	2058-94-8	ND	1.08		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1
PFDS	335-77-3	ND	1.08		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1
PFDoA	307-55-1	ND	1.08		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1
PFTTrDA	72629-94-8	ND	1.08		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1
PFTeDA	376-06-7	ND	1.08		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	80.0	60 - 130		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1
13C3-PFPeA	IS	70.8	60 - 150		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1
13C3-PFBS	IS	80.0	60 - 150		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1
13C2-4:2 FTS	IS	62.7	20 - 150		B0H0214	26-Aug-20	0.232 L	28-Aug-20 19:18	1
13C2-PFHxA	IS	75.4	70 - 130		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1
13C4-PFHpA	IS	70.2	60 - 150		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1
13C3-PFHxS	IS	69.5	60 - 130		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1
13C2-6:2 FTS	IS	80.7	40 - 150		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1
13C5-PFNA	IS	76.1	50 - 130		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1
13C8-PFOSA	IS	36.3	20 - 150		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1
13C2-PFOA	IS	69.6	60 - 130		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1
13C8-PFOS	IS	84.2	60 - 130		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1
13C2-PFDA	IS	70.9	60 - 130		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1

Sample ID: 3					PFAS Isotope Dilution Method					
Client Data Name: Apex Companies, LLC Project: PDX Fire Training Facility					Laboratory Data Lab Sample: 2001779-04 Date Received: 19-Aug-20 11:26 Column: BEH C18					
Matrix: Surface Water Date Collected: 17-Aug-20 09:50										
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-8:2 FTS	IS	64.1	40 - 150		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1	
d3-MeFOSAA	IS	63.1	50 - 150		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1	
13C2-PFUnA	IS	71.8	60 - 130		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1	
d5-EtFOSAA	IS	67.9	50 - 150		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1	
13C2-PFDoA	IS	61.1	30 - 130		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1	
13C2-PFTeDA	IS	48.1	20 - 150		B0H0214	26-Aug-20	0.232 L	03-Sep-20 19:13	1	

RL - Reporting limit

Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: 4

PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Apex Companies, LLC	Matrix:	Surface Water	Lab Sample:	2001779-05	Column:	BEH C18
Project:	PDX Fire Training Facility	Date Collected:	17-Aug-20 11:05	Date Received:	19-Aug-20 11:26		

Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	16.5	1.05		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1
PFPeA	2706-90-3	35.6	1.05		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1
PFBS	375-73-5	3.61	1.05		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1
4:2 FTS	757124-72-4	ND	1.05		B0H0214	26-Aug-20	0.238 L	28-Aug-20 19:29	1
PFHxA	307-24-4	28.3	1.15		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1
PFPeS	2706-91-4	ND	1.27		B0H0214	26-Aug-20	0.238 L	28-Aug-20 19:29	1
PFHpA	375-85-9	26.9	1.05		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1
PFHxS	355-46-4	13.7	1.05		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1
6:2 FTS	27619-97-2	109	1.05		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1
PFOA	335-67-1	54.8	1.05		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1
PFHpS	375-92-8	ND	1.05		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1
PFNA	375-95-1	2.42	1.05		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1
PFOSA	754-91-6	ND	1.05		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1
PFOS	1763-23-1	12.7	1.05		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1
PFDA	335-76-2	ND	1.05		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1
8:2 FTS	39108-34-4	19.1	1.08		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1
PFNS	68259-12-1	ND	2.03		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1
MeFOSAA	2355-31-9	ND	1.05		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1
EtFOSAA	2991-50-6	ND	1.05		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1
PFUnA	2058-94-8	ND	1.05		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1
PFDS	335-77-3	ND	1.05		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1
PFDoA	307-55-1	ND	1.05		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1
PFTTrDA	72629-94-8	ND	1.05		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1
PFTeDA	376-06-7	ND	1.05		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	93.9	60 - 130		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1
13C3-PFPeA	IS	74.1	60 - 150		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1
13C3-PFBS	IS	92.8	60 - 150		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1
13C2-4:2 FTS	IS	79.1	20 - 150		B0H0214	26-Aug-20	0.238 L	28-Aug-20 19:29	1
13C2-PFHxA	IS	84.4	70 - 130		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1
13C4-PFHpA	IS	77.6	60 - 150		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1
13C3-PFHxS	IS	79.5	60 - 130		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1
13C2-6:2 FTS	IS	91.0	40 - 150		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1
13C5-PFNA	IS	81.9	50 - 130		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1
13C8-PFOSA	IS	49.4	20 - 150		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1
13C2-PFOA	IS	74.7	60 - 130		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1
13C8-PFOS	IS	97.2	60 - 130		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1
13C2-PFDA	IS	76.0	60 - 130		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1

Sample ID: 4					PFAS Isotope Dilution Method					
Client Data Name: Apex Companies, LLC Project: PDX Fire Training Facility					Laboratory Data Lab Sample: 2001779-05 Date Received: 19-Aug-20 11:26 Column: BEH C18					
Matrix: Surface Water Date Collected: 17-Aug-20 11:05										
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-8:2 FTS	IS	67.8	40 - 150		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1	
d3-MeFOSAA	IS	77.8	50 - 150		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1	
13C2-PFUnA	IS	80.8	60 - 130		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1	
d5-EtFOSAA	IS	75.0	50 - 150		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1	
13C2-PFDoA	IS	65.7	30 - 130		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1	
13C2-PFTeDA	IS	65.1	20 - 150		B0H0214	26-Aug-20	0.238 L	03-Sep-20 19:24	1	

RL - Reporting limit

Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: 6 **PFAS Isotope Dilution Method**

Client Data				Laboratory Data			
Name:	Apex Companies, LLC	Matrix:	Surface Water	Lab Sample:	2001779-06	Column:	BEH C18
Project:	PDX Fire Training Facility	Date Collected:	17-Aug-20 11:25	Date Received:	19-Aug-20 11:26		

Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	26.5	1.01		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1
PFPeA	2706-90-3	78.8	1.01		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1
PFBS	375-73-5	28.2	1.01		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1
4:2 FTS	757124-72-4	ND	1.01		B0H0214	26-Aug-20	0.248 L	29-Aug-20 19:34	1
PFHxA	307-24-4	86.8	1.10		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1
PFPeS	2706-91-4	29.4	1.22		B0H0214	26-Aug-20	0.248 L	29-Aug-20 19:34	1
PFHpA	375-85-9	33.3	1.01		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1
PFHxS	355-46-4	183	1.01		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1
6:2 FTS	27619-97-2	49.8	1.01		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1
PFOA	335-67-1	127	1.01		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1
PFHpS	375-92-8	6.41	1.01		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1
PFNA	375-95-1	7.29	1.01		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1
PFOSA	754-91-6	ND	1.01		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1
PFOS	1763-23-1	353	1.01		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1
PFDA	335-76-2	12.1	1.01		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1
8:2 FTS	39108-34-4	4.34	1.04		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1
PFNS	68259-12-1	ND	1.95		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1
MeFOSAA	2355-31-9	ND	1.01		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1
EtFOSAA	2991-50-6	ND	1.01		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1
PFUnA	2058-94-8	ND	1.01		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1
PFDS	335-77-3	ND	1.01		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1
PFDoA	307-55-1	ND	1.01		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1
PFTTrDA	72629-94-8	ND	1.01		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1
PFTeDA	376-06-7	ND	1.01		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	84.3	60 - 130		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1
13C3-PFPeA	IS	73.5	60 - 150		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1
13C3-PFBS	IS	82.0	60 - 150		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1
13C2-4:2 FTS	IS	77.4	20 - 150		B0H0214	26-Aug-20	0.248 L	29-Aug-20 19:34	1
13C2-PFHxA	IS	78.0	70 - 130		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1
13C4-PFHpA	IS	76.4	60 - 150		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1
13C3-PFHxS	IS	70.0	60 - 130		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1
13C2-6:2 FTS	IS	82.4	40 - 150		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1
13C5-PFNA	IS	75.6	50 - 130		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1
13C8-PFOSA	IS	50.9	20 - 150		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1
13C2-PFOA	IS	71.5	60 - 130		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1
13C8-PFOS	IS	83.4	60 - 130		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1
13C2-PFDA	IS	75.4	60 - 130		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1

Sample ID: 6					PFAS Isotope Dilution Method					
Client Data Name: Apex Companies, LLC Project: PDX Fire Training Facility					Laboratory Data Lab Sample: 2001779-06 Date Received: 19-Aug-20 11:26 Column: BEH C18					
Matrix: Surface Water Date Collected: 17-Aug-20 11:25										
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-8:2 FTS	IS	69.2	40 - 150		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1	
d3-MeFOSAA	IS	76.2	50 - 150		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1	
13C2-PFUnA	IS	82.8	60 - 130		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1	
d5-EtFOSAA	IS	76.2	50 - 150		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1	
13C2-PFDoA	IS	68.4	30 - 130		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1	
13C2-PFTeDA	IS	62.7	20 - 150		B0H0214	26-Aug-20	0.248 L	03-Sep-20 19:34	1	

RL - Reporting limit

Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: 9

PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Apex Companies, LLC	Matrix:	Surface Water	Lab Sample:	2001779-07	Column:	BEH C18
Project:	PDX Fire Training Facility	Date Collected:	17-Aug-20 11:50	Date Received:	19-Aug-20 11:26		

Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	5.80	0.996		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1
PFPeA	2706-90-3	9.82	0.996		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1
PFBS	375-73-5	3.96	0.996		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1
4:2 FTS	757124-72-4	ND	0.996		B0H0214	26-Aug-20	0.251 L	29-Aug-20 19:45	1
PFHxA	307-24-4	9.49	1.09		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1
PFPeS	2706-91-4	ND	1.21		B0H0214	26-Aug-20	0.251 L	29-Aug-20 19:45	1
PFHpA	375-85-9	3.48	0.996		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1
PFHxS	355-46-4	4.85	0.996		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1
6:2 FTS	27619-97-2	ND	0.996		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1
PFOA	335-67-1	6.17	0.996		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1
PFHpS	375-92-8	ND	0.996		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1
PFNA	375-95-1	1.09	0.996		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1
PFOSA	754-91-6	ND	0.996		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1
PFOS	1763-23-1	11.9	0.996		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1
PFDA	335-76-2	ND	0.996		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1
8:2 FTS	39108-34-4	ND	1.03		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1
PFNS	68259-12-1	ND	1.93		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1
MeFOSAA	2355-31-9	ND	0.996		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1
EtFOSAA	2991-50-6	ND	0.996		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1
PFUnA	2058-94-8	ND	0.996		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1
PFDS	335-77-3	ND	0.996		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1
PFDoA	307-55-1	ND	0.996		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1
PFTTrDA	72629-94-8	ND	0.996		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1
PFTeDA	376-06-7	ND	0.996		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	71.9	60 - 130		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1
13C3-PFPeA	IS	73.6	60 - 150		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1
13C3-PFBS	IS	87.6	60 - 150		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1
13C2-4:2 FTS	IS	80.6	20 - 150		B0H0214	26-Aug-20	0.251 L	29-Aug-20 19:45	1
13C2-PFHxA	IS	79.4	70 - 130		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1
13C4-PFHpA	IS	74.9	60 - 150		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1
13C3-PFHxS	IS	72.9	60 - 130		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1
13C2-6:2 FTS	IS	88.0	40 - 150		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1
13C5-PFNA	IS	80.3	50 - 130		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1
13C8-PFOSA	IS	40.8	20 - 150		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1
13C2-PFOA	IS	74.5	60 - 130		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1
13C8-PFOS	IS	92.8	60 - 130		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1
13C2-PFDA	IS	74.8	60 - 130		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1

Sample ID: 9					PFAS Isotope Dilution Method					
Client Data Name: Apex Companies, LLC Project: PDX Fire Training Facility					Laboratory Data Lab Sample: 2001779-07 Date Received: 19-Aug-20 11:26 Column: BEH C18					
Matrix: Surface Water Date Collected: 17-Aug-20 11:50										
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-8:2 FTS	IS	70.8	40 - 150		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1	
d3-MeFOSAA	IS	70.9	50 - 150		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1	
13C2-PFUnA	IS	76.6	60 - 130		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1	
d5-EtFOSAA	IS	73.8	50 - 150		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1	
13C2-PFDoA	IS	61.3	30 - 130		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1	
13C2-PFTeDA	IS	59.5	20 - 150		B0H0214	26-Aug-20	0.251 L	03-Sep-20 19:45	1	

RL - Reporting limit

Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: 8

PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Apex Companies, LLC	Matrix:	Surface Water	Lab Sample:	2001779-08	Column:	BEH C18
Project:	PDX Fire Training Facility	Date Collected:	17-Aug-20 12:10	Date Received:	19-Aug-20 11:26		

Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	4.59	1.03		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1
PFPeA	2706-90-3	ND	1.03		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1
PFBS	375-73-5	11.3	1.03		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1
4:2 FTS	757124-72-4	ND	1.03		B0H0214	26-Aug-20	0.242 L	29-Aug-20 19:55	1
PFHxA	307-24-4	3.58	1.13		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1
PFPeS	2706-91-4	ND	1.25		B0H0214	26-Aug-20	0.242 L	29-Aug-20 19:55	1
PFHpA	375-85-9	ND	1.03		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1
PFHxS	355-46-4	ND	1.03		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1
6:2 FTS	27619-97-2	ND	1.03		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1
PFOA	335-67-1	2.30	1.03		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1
PFHpS	375-92-8	ND	1.03		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1
PFNA	375-95-1	ND	1.03		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1
PFOSA	754-91-6	ND	1.03		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1
PFOS	1763-23-1	ND	1.03		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1
PFDA	335-76-2	ND	1.03		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1
8:2 FTS	39108-34-4	ND	1.06		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1
PFNS	68259-12-1	ND	2.00		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1
MeFOSAA	2355-31-9	ND	1.03		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1
EtFOSAA	2991-50-6	ND	1.03		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1
PFUnA	2058-94-8	ND	1.03		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1
PFDS	335-77-3	ND	1.03		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1
PFDoA	307-55-1	ND	1.03		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1
PFTTrDA	72629-94-8	ND	1.03		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1
PFTeDA	376-06-7	ND	1.03		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	62.2	60 - 130		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1
13C3-PFPeA	IS	67.8	60 - 150		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1
13C3-PFBS	IS	78.1	60 - 150		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1
13C2-4:2 FTS	IS	79.0	20 - 150		B0H0214	26-Aug-20	0.242 L	29-Aug-20 19:55	1
13C2-PFHxA	IS	75.6	70 - 130		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1
13C4-PFHpA	IS	69.9	60 - 150		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1
13C3-PFHxS	IS	75.6	60 - 130		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1
13C2-6:2 FTS	IS	85.0	40 - 150		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1
13C5-PFNA	IS	72.0	50 - 130		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1
13C8-PFOSA	IS	42.3	20 - 150		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1
13C2-PFOA	IS	67.9	60 - 130		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1
13C8-PFOS	IS	85.7	60 - 130		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1
13C2-PFDA	IS	71.5	60 - 130		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1

Sample ID: 8					PFAS Isotope Dilution Method					
Client Data Name: Apex Companies, LLC Project: PDX Fire Training Facility					Laboratory Data Lab Sample: 2001779-08 Date Received: 19-Aug-20 11:26 Column: BEH C18					
Matrix: Surface Water Date Collected: 17-Aug-20 12:10										
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-8:2 FTS	IS	65.8	40 - 150		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1	
d3-MeFOSAA	IS	70.4	50 - 150		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1	
13C2-PFUnA	IS	70.8	60 - 130		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1	
d5-EtFOSAA	IS	71.8	50 - 150		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1	
13C2-PFDoA	IS	60.4	30 - 130		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1	
13C2-PFTeDA	IS	41.3	20 - 150		B0H0214	26-Aug-20	0.242 L	03-Sep-20 19:55	1	

RL - Reporting limit

Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: 7

PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Apex Companies, LLC	Matrix:	Surface Water	Lab Sample:	2001779-09	Column:	BEH C18
Project:	PDX Fire Training Facility	Date Collected:	17-Aug-20 12:25	Date Received:	19-Aug-20 11:26		

Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	ND	1.05		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1
PFPeA	2706-90-3	ND	1.05		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1
PFBS	375-73-5	2.89	1.05	Q	B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1
4:2 FTS	757124-72-4	ND	1.05		B0H0214	26-Aug-20	0.238 L	29-Aug-20 20:05	1
PFHxA	307-24-4	18.8	1.15		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1
PFPeS	2706-91-4	ND	1.27		B0H0214	26-Aug-20	0.238 L	29-Aug-20 20:05	1
PFHpA	375-85-9	8.63	1.05		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1
PFHxS	355-46-4	ND	1.05		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1
6:2 FTS	27619-97-2	86.5	1.05		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1
PFOA	335-67-1	12.8	1.05		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1
PFHpS	375-92-8	ND	1.05		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1
PFNA	375-95-1	6.67	1.05		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1
PFOSA	754-91-6	ND	1.05		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1
PFOS	1763-23-1	ND	1.05		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1
PFDA	335-76-2	15.9	1.05		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1
8:2 FTS	39108-34-4	17.6	1.08		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1
PFNS	68259-12-1	ND	2.03		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1
MeFOSAA	2355-31-9	ND	1.05		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1
EtFOSAA	2991-50-6	ND	1.05		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1
PFUnA	2058-94-8	5.20	1.05		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1
PFDS	335-77-3	ND	1.05		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1
PFDoA	307-55-1	5.04	1.05		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1
PFTTrDA	72629-94-8	ND	1.05		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1
PFTeDA	376-06-7	ND	1.05		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	64.6	60 - 130		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1
13C3-PFPeA	IS	68.4	60 - 150		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1
13C3-PFBS	IS	82.2	60 - 150		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1
13C2-4:2 FTS	IS	70.7	20 - 150		B0H0214	26-Aug-20	0.238 L	29-Aug-20 20:05	1
13C2-PFHxA	IS	74.1	70 - 130		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1
13C4-PFHpA	IS	71.4	60 - 150		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1
13C3-PFHxS	IS	74.7	60 - 130		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1
13C2-6:2 FTS	IS	84.3	40 - 150		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1
13C5-PFNA	IS	74.4	50 - 130		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1
13C8-PFOSA	IS	39.4	20 - 150		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1
13C2-PFOA	IS	71.5	60 - 130		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1
13C8-PFOS	IS	87.5	60 - 130		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1
13C2-PFDA	IS	73.0	60 - 130		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1

Sample ID: 7					PFAS Isotope Dilution Method					
Client Data Name: Apex Companies, LLC Project: PDX Fire Training Facility					Laboratory Data Lab Sample: 2001779-09 Date Received: 19-Aug-20 11:26 Column: BEH C18					
Matrix: Surface Water Date Collected: 17-Aug-20 12:25										
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-8:2 FTS	IS	67.0	40 - 150		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1	
d3-MeFOSAA	IS	69.5	50 - 150		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1	
13C2-PFUnA	IS	78.1	60 - 130		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1	
d5-EtFOSAA	IS	71.4	50 - 150		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1	
13C2-PFDoA	IS	67.3	30 - 130		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1	
13C2-PFTeDA	IS	54.3	20 - 150		B0H0214	26-Aug-20	0.238 L	03-Sep-20 20:05	1	

RL - Reporting limit

Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: 2

PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Apex Companies, LLC	Matrix:	Surface Water	Lab Sample:	2001779-10	Column:	BEH C18
Project:	PDX Fire Training Facility	Date Collected:	17-Aug-20 12:45	Date Received:	19-Aug-20 11:26		

Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	25.3	1.02		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1
PFPeA	2706-90-3	84.9	1.02		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1
PFBS	375-73-5	3.04	1.02		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1
4:2 FTS	757124-72-4	ND	1.02		B0H0214	26-Aug-20	0.246 L	29-Aug-20 20:16	1
PFHxA	307-24-4	70.7	1.11		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1
PFPeS	2706-91-4	1.31	1.23		B0H0214	26-Aug-20	0.246 L	29-Aug-20 20:16	1
PFHpA	375-85-9	34.2	1.02		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1
PFHxS	355-46-4	25.5	1.02		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1
6:2 FTS	27619-97-2	68.1	1.02		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1
PFOA	335-67-1	36.4	1.02		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1
PFHpS	375-92-8	ND	1.02		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1
PFNA	375-95-1	4.23	1.02		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1
PFOSA	754-91-6	ND	1.02		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1
PFOS	1763-23-1	46.4	1.02		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1
PFDA	335-76-2	ND	1.02		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1
8:2 FTS	39108-34-4	7.66	1.05		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1
PFNS	68259-12-1	ND	1.97		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1
MeFOSAA	2355-31-9	ND	1.02		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1
EtFOSAA	2991-50-6	ND	1.02		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1
PFUnA	2058-94-8	ND	1.02		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1
PFDS	335-77-3	ND	1.02		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1
PFDoA	307-55-1	ND	1.02		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1
PFTTrDA	72629-94-8	ND	1.02		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1
PFTeDA	376-06-7	ND	1.02		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	95.7	60 - 130		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1
13C3-PFPeA	IS	80.5	60 - 150		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1
13C3-PFBS	IS	87.9	60 - 150		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1
13C2-4:2 FTS	IS	85.9	20 - 150		B0H0214	26-Aug-20	0.246 L	29-Aug-20 20:16	1
13C2-PFHxA	IS	84.1	70 - 130		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1
13C4-PFHpA	IS	82.3	60 - 150		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1
13C3-PFHxS	IS	83.8	60 - 130		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1
13C2-6:2 FTS	IS	90.4	40 - 150		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1
13C5-PFNA	IS	83.2	50 - 130		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1
13C8-PFOSA	IS	55.2	20 - 150		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1
13C2-PFOA	IS	78.5	60 - 130		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1
13C8-PFOS	IS	97.3	60 - 130		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1
13C2-PFDA	IS	81.7	60 - 130		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1

Sample ID: 2					PFAS Isotope Dilution Method					
Client Data Name: Apex Companies, LLC Project: PDX Fire Training Facility					Laboratory Data Lab Sample: 2001779-10 Date Received: 19-Aug-20 11:26 Column: BEH C18					
Matrix: Surface Water Date Collected: 17-Aug-20 12:45										
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-8:2 FTS	IS	73.5	40 - 150		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1	
d3-MeFOSAA	IS	81.3	50 - 150		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1	
13C2-PFUnA	IS	83.0	60 - 130		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1	
d5-EtFOSAA	IS	78.5	50 - 150		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1	
13C2-PFDoA	IS	73.5	30 - 130		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1	
13C2-PFTeDA	IS	71.3	20 - 150		B0H0214	26-Aug-20	0.246 L	03-Sep-20 20:47	1	

RL - Reporting limit

Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: 1 ES
PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Apex Companies, LLC	Matrix:	Surface Water	Lab Sample:	2001779-11	Column:	BEH C18
Project:	PDX Fire Training Facility	Date Collected:	17-Aug-20 13:00	Date Received:	19-Aug-20 11:26		

Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	11.8	1.02		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1
PFPeA	2706-90-3	28.8	1.02		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1
PFBS	375-73-5	2.79	1.02		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1
4:2 FTS	757124-72-4	ND	1.02		B0H0214	26-Aug-20	0.245 L	29-Aug-20 20:26	1
PFHxA	307-24-4	25.8	1.11		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1
PFPeS	2706-91-4	1.51	1.23		B0H0214	26-Aug-20	0.245 L	29-Aug-20 20:26	1
PFHpA	375-85-9	18.3	1.02		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1
PFHxS	355-46-4	21.7	1.02		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1
6:2 FTS	27619-97-2	7.42	1.02		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1
PFOA	335-67-1	31.9	1.02		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1
PFHpS	375-92-8	ND	1.02		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1
PFNA	375-95-1	4.06	1.02		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1
PFOSA	754-91-6	ND	1.02		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1
PFOS	1763-23-1	28.1	1.02		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1
PFDA	335-76-2	2.85	1.02		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1
8:2 FTS	39108-34-4	3.84	1.05		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1
PFNS	68259-12-1	ND	1.97		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1
MeFOSAA	2355-31-9	ND	1.02		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1
EtFOSAA	2991-50-6	ND	1.02		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1
PFUnA	2058-94-8	ND	1.02		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1
PFDS	335-77-3	ND	1.02		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1
PFDoA	307-55-1	ND	1.02		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1
PFTTrDA	72629-94-8	ND	1.02		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1
PFTeDA	376-06-7	ND	1.02		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	87.3	60 - 130		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1
13C3-PFPeA	IS	76.0	60 - 150		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1
13C3-PFBS	IS	87.4	60 - 150		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1
13C2-4:2 FTS	IS	96.1	20 - 150		B0H0214	26-Aug-20	0.245 L	29-Aug-20 20:26	1
13C2-PFHxA	IS	84.4	70 - 130		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1
13C4-PFHpA	IS	82.3	60 - 150		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1
13C3-PFHxS	IS	84.2	60 - 130		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1
13C2-6:2 FTS	IS	92.2	40 - 150		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1
13C5-PFNA	IS	81.1	50 - 130		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1
13C8-PFOSA	IS	51.1	20 - 150		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1
13C2-PFOA	IS	80.6	60 - 130		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1
13C8-PFOS	IS	84.5	60 - 130		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1
13C2-PFDA	IS	74.9	60 - 130		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1

Sample ID: 1 ES					PFAS Isotope Dilution Method					
Client Data Name: Apex Companies, LLC Project: PDX Fire Training Facility					Laboratory Data Lab Sample: 2001779-11 Date Received: 19-Aug-20 11:26 Column: BEH C18					
Matrix: Surface Water Date Collected: 17-Aug-20 13:00										
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-8:2 FTS	IS	77.7	40 - 150		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1	
d3-MeFOSAA	IS	77.7	50 - 150		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1	
13C2-PFUnA	IS	81.4	60 - 130		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1	
d5-EtFOSAA	IS	73.8	50 - 150		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1	
13C2-PFDoA	IS	69.4	30 - 130		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1	
13C2-PFTeDA	IS	52.0	20 - 150		B0H0214	26-Aug-20	0.245 L	03-Sep-20 20:57	1	

RL - Reporting limit

Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: 1 N

PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Apex Companies, LLC	Matrix:	Surface Water	Lab Sample:	2001779-12	Column:	BEH C18
Project:	PDX Fire Training Facility	Date Collected:	17-Aug-20 13:30	Date Received:	19-Aug-20 11:26		

Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	48.5	1.00		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1
PFPeA	2706-90-3	189	1.00		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1
PFBS	375-73-5	11.4	1.00		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1
4:2 FTS	757124-72-4	1.99	1.00		B0H0214	26-Aug-20	0.249 L	29-Aug-20 20:37	1
PFHxA	307-24-4	164	1.09		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1
PFPeS	2706-91-4	14.8	1.21		B0H0214	26-Aug-20	0.249 L	29-Aug-20 20:37	1
PFHpA	375-85-9	64.6	1.00		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1
PFHxS	355-46-4	111	1.00		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1
6:2 FTS	27619-97-2	620	1.00		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1
PFOA	335-67-1	157	1.00		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1
PFHpS	375-92-8	3.14	1.00		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1
PFNA	375-95-1	12.0	1.00		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1
PFOSA	754-91-6	ND	1.00		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1
PFOS	1763-23-1	322	1.00		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1
PFDA	335-76-2	ND	1.00		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1
8:2 FTS	39108-34-4	30.3	1.03		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1
PFNS	68259-12-1	ND	1.94		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1
MeFOSAA	2355-31-9	ND	1.00		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1
EtFOSAA	2991-50-6	ND	1.00		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1
PFUnA	2058-94-8	ND	1.00		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1
PFDS	335-77-3	ND	1.00		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1
PFDoA	307-55-1	ND	1.00		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1
PFTTrDA	72629-94-8	ND	1.00		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1
PFTeDA	376-06-7	ND	1.00		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	94.4	60 - 130		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1
13C3-PFPeA	IS	80.8	60 - 150		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1
13C3-PFBS	IS	95.3	60 - 150		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1
13C2-4:2 FTS	IS	91.8	20 - 150		B0H0214	26-Aug-20	0.249 L	29-Aug-20 20:37	1
13C2-PFHxA	IS	88.3	70 - 130		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1
13C4-PFHpA	IS	82.1	60 - 150		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1
13C3-PFHxS	IS	89.3	60 - 130		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1
13C2-6:2 FTS	IS	75.9	40 - 150		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1
13C5-PFNA	IS	86.4	50 - 130		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1
13C8-PFOSA	IS	48.0	20 - 150		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1
13C2-PFOA	IS	79.3	60 - 130		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1
13C8-PFOS	IS	91.1	60 - 130		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1
13C2-PFDA	IS	82.7	60 - 130		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1

Sample ID: 1 N					PFAS Isotope Dilution Method					
Client Data Name: Apex Companies, LLC Project: PDX Fire Training Facility					Laboratory Data Lab Sample: 2001779-12 Date Received: 19-Aug-20 11:26 Column: BEH C18					
Matrix: Surface Water Date Collected: 17-Aug-20 13:30										
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-8:2 FTS	IS	77.4	40 - 150		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1	
d3-MeFOSAA	IS	85.8	50 - 150		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1	
13C2-PFUnA	IS	90.0	60 - 130		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1	
d5-EtFOSAA	IS	76.7	50 - 150		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1	
13C2-PFDoA	IS	73.1	30 - 130		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1	
13C2-PFTeDA	IS	55.0	20 - 150		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:08	1	

RL - Reporting limit

Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: Dup-1
PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Apex Companies, LLC	Matrix:	Surface Water	Lab Sample:	2001779-13	Column:	BEH C18
Project:	PDX Fire Training Facility	Date Collected:	17-Aug-20 00:00	Date Received:	19-Aug-20 11:26		

Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	46.2	1.01		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1
PFPeA	2706-90-3	186	1.01		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1
PFBS	375-73-5	10.6	1.01		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1
4:2 FTS	757124-72-4	1.32	1.01		B0H0214	26-Aug-20	0.249 L	29-Aug-20 20:47	1
PFHxA	307-24-4	160	1.10		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1
PFPeS	2706-91-4	14.2	1.22		B0H0214	26-Aug-20	0.249 L	29-Aug-20 20:47	1
PFHpA	375-85-9	62.4	1.01		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1
PFHxS	355-46-4	112	1.01		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1
6:2 FTS	27619-97-2	603	1.01		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1
PFOA	335-67-1	161	1.01		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1
PFHpS	375-92-8	2.86	1.01		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1
PFNA	375-95-1	11.9	1.01		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1
PFOSA	754-91-6	ND	1.01		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1
PFOS	1763-23-1	294	1.01		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1
PFDA	335-76-2	ND	1.01		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1
8:2 FTS	39108-34-4	29.8	1.04		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1
PFNS	68259-12-1	ND	1.95		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1
MeFOSAA	2355-31-9	ND	1.01		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1
EtFOSAA	2991-50-6	ND	1.01		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1
PFUnA	2058-94-8	ND	1.01		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1
PFDS	335-77-3	ND	1.01		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1
PFDoA	307-55-1	ND	1.01		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1
PFTTrDA	72629-94-8	ND	1.01		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1
PFTeDA	376-06-7	ND	1.01		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	98.5	60 - 130		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1
13C3-PFPeA	IS	83.5	60 - 150		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1
13C3-PFBS	IS	96.9	60 - 150		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1
13C2-4:2 FTS	IS	99.4	20 - 150		B0H0214	26-Aug-20	0.249 L	29-Aug-20 20:47	1
13C2-PFHxA	IS	86.9	70 - 130		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1
13C4-PFHpA	IS	83.0	60 - 150		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1
13C3-PFHxS	IS	89.4	60 - 130		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1
13C2-6:2 FTS	IS	78.2	40 - 150		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1
13C5-PFNA	IS	92.5	50 - 130		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1
13C8-PFOSA	IS	49.0	20 - 150		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1
13C2-PFOA	IS	79.1	60 - 130		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1
13C8-PFOS	IS	96.9	60 - 130		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1
13C2-PFDA	IS	83.6	60 - 130		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1

Sample ID: Dup-1					PFAS Isotope Dilution Method					
Client Data Name: Apex Companies, LLC Project: PDX Fire Training Facility					Laboratory Data Lab Sample: 2001779-13 Date Received: 19-Aug-20 11:26 Column: BEH C18					
Matrix: Surface Water Date Collected: 17-Aug-20 00:00										
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-8:2 FTS	IS	72.7	40 - 150		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1	
d3-MeFOSAA	IS	82.3	50 - 150		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1	
13C2-PFUnA	IS	87.7	60 - 130		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1	
d5-EtFOSAA	IS	80.9	50 - 150		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1	
13C2-PFDoA	IS	74.3	30 - 130		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1	
13C2-PFTeDA	IS	58.3	20 - 150		B0H0214	26-Aug-20	0.249 L	03-Sep-20 21:18	1	

RL - Reporting limit

Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: Field Blank
PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Apex Companies, LLC	Matrix:	Water	Lab Sample:	2001779-14	Column:	BEH C18
Project:	PDX Fire Training Facility	Date Collected:	17-Aug-20 13:45	Date Received:	19-Aug-20 11:26		

Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	ND	0.995		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1
PFPeA	2706-90-3	ND	0.995		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1
PFBS	375-73-5	ND	0.995		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1
4:2 FTS	757124-72-4	ND	0.995		B0H0214	26-Aug-20	0.251 L	29-Aug-20 20:57	1
PFHxA	307-24-4	ND	1.08		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1
PFPeS	2706-91-4	ND	1.20		B0H0214	26-Aug-20	0.251 L	29-Aug-20 20:57	1
PFHpA	375-85-9	ND	0.995		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1
PFHxS	355-46-4	ND	0.995		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1
6:2 FTS	27619-97-2	ND	0.995		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1
PFOA	335-67-1	ND	0.995		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1
PFHpS	375-92-8	ND	0.995		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1
PFNA	375-95-1	ND	0.995		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1
PFOSA	754-91-6	ND	0.995		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1
PFOS	1763-23-1	ND	0.995		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1
PFDA	335-76-2	ND	0.995		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1
8:2 FTS	39108-34-4	ND	1.02		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1
PFNS	68259-12-1	ND	1.93		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1
MeFOSAA	2355-31-9	ND	0.995		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1
EtFOSAA	2991-50-6	ND	0.995		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1
PFUnA	2058-94-8	ND	0.995		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1
PFDS	335-77-3	ND	0.995		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1
PFDoA	307-55-1	ND	0.995		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1
PFTTrDA	72629-94-8	ND	0.995		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1
PFTeDA	376-06-7	ND	0.995		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	83.3	60 - 130		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1
13C3-PFPeA	IS	75.0	60 - 150		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1
13C3-PFBS	IS	85.8	60 - 150		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1
13C2-4:2 FTS	IS	80.1	20 - 150		B0H0214	26-Aug-20	0.251 L	29-Aug-20 20:57	1
13C2-PFHxA	IS	80.3	70 - 130		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1
13C4-PFHpA	IS	80.6	60 - 150		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1
13C3-PFHxS	IS	84.6	60 - 130		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1
13C2-6:2 FTS	IS	78.7	40 - 150		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1
13C5-PFNA	IS	82.5	50 - 130		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1
13C8-PFOSA	IS	37.9	20 - 150		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1
13C2-PFOA	IS	75.8	60 - 130		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1
13C8-PFOS	IS	95.7	60 - 130		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1
13C2-PFDA	IS	76.3	60 - 130		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1

Sample ID: Field Blank					PFAS Isotope Dilution Method					
Client Data Name: Apex Companies, LLC Project: PDX Fire Training Facility					Laboratory Data Lab Sample: 2001779-14 Date Received: 19-Aug-20 11:26 Column: BEH C18					
Matrix: Water Date Collected: 17-Aug-20 13:45										
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-8:2 FTS	IS	74.1	40 - 150		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1	
d3-MeFOSAA	IS	70.4	50 - 150		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1	
13C2-PFUnA	IS	85.2	60 - 130		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1	
d5-EtFOSAA	IS	71.3	50 - 150		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1	
13C2-PFDoA	IS	77.5	30 - 130		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1	
13C2-PFTeDA	IS	70.5	20 - 150		B0H0214	26-Aug-20	0.251 L	03-Sep-20 21:29	1	

RL - Reporting limit

Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: Equip Blank
PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Apex Companies, LLC	Matrix:	Water	Lab Sample:	2001779-15	Column:	BEH C18
Project:	PDX Fire Training Facility	Date Collected:	17-Aug-20 13:40	Date Received:	19-Aug-20 11:26		

Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	ND	0.992		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1
PFPeA	2706-90-3	ND	0.992		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1
PFBS	375-73-5	ND	0.992		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1
4:2 FTS	757124-72-4	ND	0.992		B0H0214	26-Aug-20	0.252 L	29-Aug-20 21:08	1
PFHxA	307-24-4	ND	1.08		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1
PFPeS	2706-91-4	ND	1.20		B0H0214	26-Aug-20	0.252 L	29-Aug-20 21:08	1
PFHpA	375-85-9	ND	0.992		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1
PFHxS	355-46-4	ND	0.992		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1
6:2 FTS	27619-97-2	ND	0.992		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1
PFOA	335-67-1	ND	0.992		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1
PFHpS	375-92-8	ND	0.992		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1
PFNA	375-95-1	ND	0.992		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1
PFOSA	754-91-6	ND	0.992		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1
PFOS	1763-23-1	ND	0.992		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1
PFDA	335-76-2	ND	0.992		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1
8:2 FTS	39108-34-4	ND	1.02		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1
PFNS	68259-12-1	ND	1.92		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1
MeFOSAA	2355-31-9	ND	0.992		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1
EtFOSAA	2991-50-6	ND	0.992		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1
PFUnA	2058-94-8	ND	0.992		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1
PFDS	335-77-3	ND	0.992		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1
PFDoA	307-55-1	ND	0.992		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1
PFTTrDA	72629-94-8	ND	0.992		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1
PFTeDA	376-06-7	ND	0.992		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	82.9	60 - 130		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1
13C3-PFPeA	IS	73.5	60 - 150		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1
13C3-PFBS	IS	77.5	60 - 150		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1
13C2-4:2 FTS	IS	73.8	20 - 150		B0H0214	26-Aug-20	0.252 L	29-Aug-20 21:08	1
13C2-PFHxA	IS	80.3	70 - 130		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1
13C4-PFHpA	IS	77.3	60 - 150		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1
13C3-PFHxS	IS	76.8	60 - 130		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1
13C2-6:2 FTS	IS	83.5	40 - 150		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1
13C5-PFNA	IS	73.3	50 - 130		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1
13C8-PFOSA	IS	47.9	20 - 150		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1
13C2-PFOA	IS	71.8	60 - 130		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1
13C8-PFOS	IS	96.1	60 - 130		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1
13C2-PFDA	IS	75.3	60 - 130		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1

Sample ID: Equip Blank					PFAS Isotope Dilution Method					
Client Data Name: Apex Companies, LLC Project: PDX Fire Training Facility					Laboratory Data Lab Sample: 2001779-15 Date Received: 19-Aug-20 11:26 Column: BEH C18					
Matrix: Water Date Collected: 17-Aug-20 13:40										
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-8:2 FTS	IS	68.1	40 - 150		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1	
d3-MeFOSAA	IS	68.7	50 - 150		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1	
13C2-PFUnA	IS	80.7	60 - 130		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1	
d5-EtFOSAA	IS	69.3	50 - 150		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1	
13C2-PFDoA	IS	71.0	30 - 130		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1	
13C2-PFTeDA	IS	65.4	20 - 150		B0H0214	26-Aug-20	0.252 L	03-Sep-20 21:39	1	

RL - Reporting limit

Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

DATA QUALIFIERS & ABBREVIATIONS

B	This compound was also detected in the method blank
Conc.	Concentration
CRS	Cleanup Recovery Standard
D	Dilution
DL	Detection Limit
E	The associated compound concentration exceeded the calibration range of the instrument
H	Recovery and/or RPD was outside laboratory acceptance limits
I	Chemical Interference
IS	Internal Standard
J	The amount detected is below the Reporting Limit/LOQ
LOD	Limit of Detection
LOQ	Limit of Quantitation
M	Estimated Maximum Possible Concentration (CA Region 2 projects only)
MDL	Method Detection Limit
NA	Not applicable
ND	Not Detected
OPR	Ongoing Precision and Recovery sample
P	The reported concentration may include contribution from chlorinated diphenyl ether(s).
Q	The ion transition ratio is outside of the acceptance criteria.
RL	Reporting Limit
TEQ	Toxic Equivalency
U	Not Detected (specific projects only)
*	See Cover Letter

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

Vista Analytical Laboratory Certifications

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	19-013-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777-23
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2018017
Massachusetts Department of Environmental Protection	N/A
Michigan Department of Environmental Quality	9932
Minnesota Department of Health	1521520
New Hampshire Environmental Accreditation Program	207718-B
New Jersey Department of Environmental Protection	190001
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-010
Pennsylvania Department of Environmental Protection	016
Texas Commission on Environmental Quality	T104704189-19-10
Vermont Department of Health	VT-4042
Virginia Department of General Services	10272
Washington Department of Ecology	C584-19
Wisconsin Department of Natural Resources	998036160

Current certificates and lists of licensed parameters are located in the Quality Assurance office and are available upon request.

NELAP Accredited Test Methods

MATRIX: Air	
Description of Test	Method
Determination of Polychlorinated p-Dioxins & Polychlorinated Dibenzofurans	EPA 23
Determination of Polychlorinated p-Dioxins & Polychlorinated Dibenzofurans	EPA TO-9A

MATRIX: Biological Tissue	
Description of Test	Method
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

MATRIX: Drinking Water	
Description of Test	Method
2,3,7,8-Tetrachlorodibenzo- p-dioxin (2,3,7,8-TCDD) GC/HRMS	EPA 1613/1613B
1,4-Dioxane (1,4-Diethyleneoxide) analysis by GC/HRMS	EPA 522
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	ISO 25101 2009

MATRIX: Non-Potable Water	
Description of Test	Method
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Dioxin by GC/HRMS	EPA 613
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

MATRIX: Solids	
Description of Test	Method
Tetra-Octa Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

CHAIN OF CUSTODY

For Laboratory Use Only
 Work Order #: 2001779 Temp: 0.1 °C
 Storage ID: R-13, WR-2 Storage Secured: Yes ☒ No ☐

Project ID: PDX Fire Training Facility PO#: 2550-00 Sampler: Kyle Kline (name)

TAT Standard: ☒ 21 days
 (check one): ☐ 14 days ☐ 7 days Specify: _____
 Rush (surcharge may apply)

Invoice to: Name Company Address City State Ph# Fax#
Heather Gosack Apex Companies 3015 SW 1st Ave Portland OR 503-924-4704

Relinquished by (printed name and signature) Date Time Received by (printed name and signature) Date Time
Kyle Kline 8/18/20 830 Bettina Benedict 08/19/20 1126
 Relinquished by (printed name and signature) Date Time Received by (printed name and signature) Date Time

SHIP TO: Vista Analytical Laboratory
 1104 Windfield Way
 El Dorado Hills, CA 95762
 (916) 673-1520 * Fax (916) 673-0106

ATTN: _____

Method of Shipment: _____

Tracking No.: _____

Add Analysis(es) Requested

Container(s)

Mod. EPA Method 537

EPA Method 537 (DW only)

Sample ID	Date	Time	Location/Sample Description	Quantity	Type	Matrix	ADONA, Gen-X, F53-B	TOP Assay	537 List: 24	Full List of 26	Other: Please List Below	PFOA/ PFOS	UCMR3 PFAS List 6	PFAS List: 14	Comments
SW-3	8/17/20	840		2	P	SW			X						
SW-2	8/17/20	855		2	P	SW			X						
5	8/17/20	920		2	P	SW			X						
3	8/17/20	950		2	P	SW			X						
4	8/17/20	1105		2	P	SW			X						
6	8/17/20	1125		2	P	SW			X						
9	8/17/20	1150		2	P	SW			X						
8	8/17/20	1210		2	P	SW			X						
7	8/17/20	1225		2	P	SW			X						
2	8/17/20	1245		2	P	SW			X						

Special Instructions/Comments: _____

SEND DOCUMENTATION AND RESULTS TO:

Name: Heather Gosack and Kelsi Evans
 Company: see above
 Address: _____
 City: _____ State: _____ Zip: _____
 Phone: _____ Fax: _____
 Email: Heather.Gosack@apexc.com; kelsi.evans@apexc.com

Container Types: P= HDPE, PJ= HDPE Jar
 O = Other: _____

Bottle Preservation Type: T = Thiosulfate,
 TZ = Trizma: _____

Matrix Types: AQ = Aqueous, DW = Drinking Water, EF = Effluent, PP = Pulp/Paper, SD = Sediment,
 SL = Sludge, SO = Soil, WW = Wastewater, B = Blood/Serum, O = Other: _____

Sample Log-In Checklist

 Page # 1 of 1

 Vista Work Order #: 2001779

 TAT std

Samples Arrival:	Date/Time <u>08/19/20 1126</u>		Initials: <u>BLB</u>		Location: <u>WR-2</u>		
					Shelf/Rack: <u>NA</u>		
Delivered By:	<u>FedEx</u>	UPS	On Trac	GLS	DHL	Hand Delivered	Other
Preservation:	<u>Ice</u>	Blue Ice		Techni Ice	Dry Ice	None	
Temp °C: <u>0.1</u>	(uncorrected)	Probe used: Y / <u>N</u>			Thermometer ID: <u>IR-3</u>		
Temp °C: <u>0.1</u>	(corrected)						

	YES	NO	NA
Shipping Container(s) Intact?	☒		
Shipping Custody Seals Intact?			☒
Airbill <u>—</u> Trk # <u>7 712 8914 6989</u>	☒		
Shipping Documentation Present?	☒		
Shipping Container	<u>Vista</u>	Client	<u>Retain</u>
Chain of Custody / Sample Documentation Present?	☒		
Chain of Custody / Sample Documentation Complete?	☒		
Holding Time Acceptable?	☒		

Logged In:	Date/Time <u>08/19/20 1523</u>	Initials: <u>WWS</u>	Location: <u>R-13, WR-2</u>
	Shelf/Rack: <u>2-3, E-4</u>		
COC Anomaly/Sample Acceptance Form completed?			☒ ☒

Comments:

CoC/Label Reconciliation Report WO# 2001779

LabNumber	CoC Sample ID	Sample Alias	Sample Date/Time	Container	BaseMatrix	Sample Comments
2001779-01	A SW-3	☒	17-Aug-20 08:40	☒	HDPE Bottle, 250 mL	Aqueous
2001779-01	B SW-3	☒	17-Aug-20 08:40	☒	HDPE Bottle, 250 mL	Aqueous
2001779-02	A SW-2	☒	17-Aug-20 08:55	☒	HDPE Bottle, 250 mL	Aqueous
2001779-02	B SW-2	☒	17-Aug-20 08:55	☒	HDPE Bottle, 250 mL	Aqueous
2001779-03	A 5	☒	17-Aug-20 09:20	☒	HDPE Bottle, 250 mL	Aqueous
2001779-03	B 5	☒	17-Aug-20 09:20	☒	HDPE Bottle, 250 mL	Aqueous
2001779-04	A 3	☒	17-Aug-20 09:50	☒	HDPE Bottle, 250 mL	Aqueous
2001779-04	B 3	☒	17-Aug-20 09:50	☒	HDPE Bottle, 250 mL	Aqueous
2001779-05	A 4	☒	17-Aug-20 11:05	☒	HDPE Bottle, 250 mL	Aqueous
2001779-05	B 4	☒	17-Aug-20 11:05	☒	HDPE Bottle, 250 mL	Aqueous
2001779-06	A 6	☒	17-Aug-20 11:25	☒	HDPE Bottle, 250 mL	Aqueous
2001779-06	B 6	☒	17-Aug-20 11:25	☒	HDPE Bottle, 250 mL	Aqueous
2001779-07	A 9	☒	17-Aug-20 11:50	☒	HDPE Bottle, 250 mL	Aqueous
2001779-07	B 9	☒	17-Aug-20 11:50	☒	HDPE Bottle, 250 mL	Aqueous
2001779-08	A 8	☒	17-Aug-20 12:10	☒	HDPE Bottle, 250 mL	Aqueous
2001779-08	B 8	☒	17-Aug-20 12:10	☒	HDPE Bottle, 250 mL	Aqueous
2001779-09	A 7	☒	17-Aug-20 12:25	☒	HDPE Bottle, 250 mL	Aqueous
2001779-09	B 7	☒	17-Aug-20 12:25	☒	HDPE Bottle, 250 mL	Aqueous
2001779-10	A 2	☒	17-Aug-20 12:45	☒	HDPE Bottle, 250 mL	Aqueous
2001779-10	B 2	☒	17-Aug-20 12:45	☒	HDPE Bottle, 250 mL	Aqueous
2001779-11	A 1 ES	☒	17-Aug-20 13:00	☒	HDPE Bottle, 250 mL	Aqueous
2001779-11	B 1 ES	☒	17-Aug-20 13:00	☒	HDPE Bottle, 250 mL	Aqueous
2001779-12	A 1 N	☒	17-Aug-20 13:30	☒	HDPE Bottle, 250 mL	Aqueous
2001779-12	B 1 N	☒	17-Aug-20 13:30	☒	HDPE Bottle, 250 mL	Aqueous
2001779-13	A Dup-1	☒	17-Aug-20 00:00	☒	HDPE Bottle, 250 mL	Aqueous
2001779-13	B Dup-1	☒	17-Aug-20 00:00	☒	HDPE Bottle, 250 mL	Aqueous
2001779-14	A Field Blank	☒	17-Aug-20 13:45	☒	HDPE Bottle, 250 mL	Aqueous
2001779-14	B Field Blank	☒	17-Aug-20 13:45	☒	HDPE Bottle, 250 mL	Aqueous
2001779-15	A Equip Blank	☒	17-Aug-20 13:40	☒	HDPE Bottle, 250 mL	Aqueous



Checkmarks indicate that information on the COC reconciled with the sample label.
Any discrepancies are noted in the following columns.

	Yes	No	NA
Sample Container Intact?	☒	☐	☐
Sample Custody Seals Intact?	☐	☐	☒
Adequate Sample Volume?	☒	☐	☐
Container Type Appropriate for Analysis(es)	☒	☐	☐
Preservation Documented: Na2S2O3 Trizma <u>None</u> Other	☐	☒	☐
If Chlorinated or Drinking Water Samples, Acceptable Preservation?	☐	☐	☒

Comments:

① The sample has color
③ Samples contain particulate

Verified by/Date: Ka 08/19/20

Attachment C

OANG Results

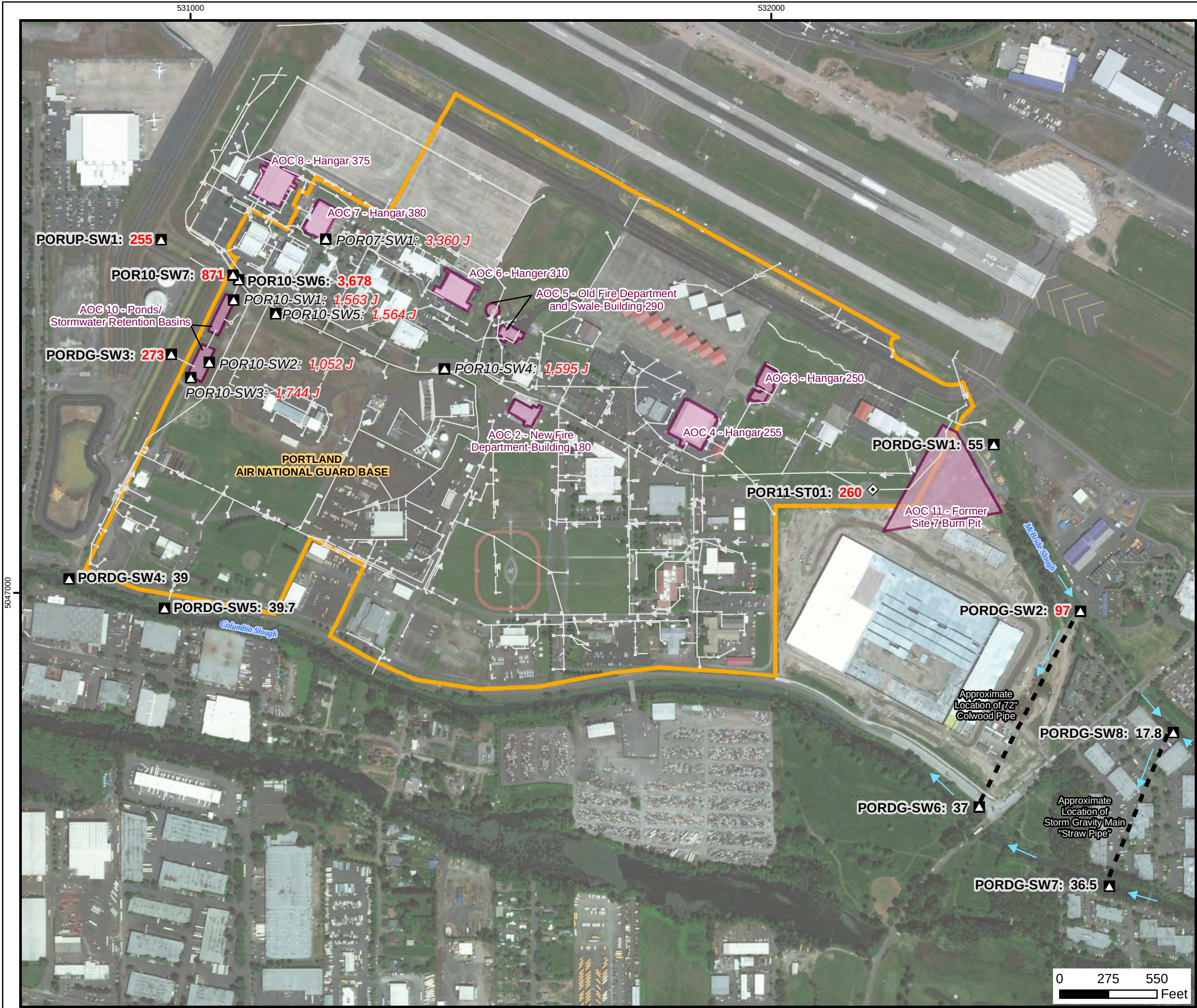


Figure 14
Surface Water and Stormwater
Analytical Results
Portland Air National Guard Base

Legend

Samples (**Red** value if exceedance):

- ◆ Stormwater Sample
- ▲ Surface Water Sample
- General Surface Water Flow Direction
- Stormwater System
- Area of Concern (AOC)
- Installation Boundary

-Italicized labels are from the SI (Leidos, 2019).
-Bold labels are from current ESI fieldwork.

-Value shown is the Sum of PFOA+PFOS (ng/L)
-Lifetime Health Advisory for Drinking Water = 70 ng/L

ESI = Expanded Site Inspection
SI = Site Inspection
J = Analyte detected, estimated concentration
ng/L = nanograms per liter
PFOA = perfluorooctanoic acid
PFOS = perfluorooctane sulfonate



DATA SOURCES
-Image: ESRI, 2017
-ANG Base: Installation Boundary, AOC Boundary
-Parsons: ESI samples and results
-Leidos: SI samples and results

		NATIONAL GUARD BUREAU ENVIRONMENTAL DIVISION RESTORATION BRANCH (NGB/A4VR)		
DESIGNED BY: RGS		Expanded Site Inspections for Perfluorinated Compounds at Multiple Air National Guard Installations		
DRAWN BY: RGS				
CHECKED BY: TM	SCALE: AS SHOWN	CONTRACT NUMBER: GS00Q140A DU127		
	DATE: 10/7/2020	DELIVERY ORDER NUMBER: W9133L-18-F-0052		
SUBMITTED BY: TM		Coordinate System: WGS 1984 UTM Zone 10N		

Table 8
Summary of Surface Water Analytical Results
Expanded Site Inspection Report for PFAS
Portland ANGB, Portland, Oregon

AOC	LOCID	Sample ID	Sample Date	Sample Type ^[1]	4:2FTS (ng/L)	6:2FTS (ng/L)	8:2FTS (ng/L)	NEtFOSAA (ng/L)	NMeFOSAA (ng/L)	PFBA (ng/L)	PFDA (ng/L)	PFDoA (ng/L)
Lifetime Health Advisory for Drinking Water					NA	NA	NA	NA	NA	NA	NA	NA
Screening Level					NA	NA	NA	NA	NA	NA	NA	NA
10	POR10-SW6	POR10-SW6	03/10/2020	N	<9.8 U	130	10 J	<9.8 U	<12 U	75	<9.8 U	<9.8 U
10	POR10-SW7	POR10-SW7	03/10/2020	N	<9.7 U	280	<19 U	<9.7 U	<12 U	61	<9.7 U	<9.7 U
Downgradient	PORDG-SW1	PORDG-SW1	03/10/2020	N	<0.84 U	<3.4 U	<1.7 U	0.46 J	<1.0 U	8.7	1.6 J	0.68 J
Downgradient	PORDG-SW2	PORDG-SW2	03/10/2020	N	0.51 J	4.8	1.1 J	<0.84 U	<1.0 U	8.2	1.7	<0.84 U
Downgradient	PORDG-SW3	PORDG-SW3	03/11/2020	N	<9.9 U	53	<20 U	<9.9 U	<12 U	81	<9.9 U	<9.9 U
Downgradient	PORDG-SW4	PORDG-SW4	03/10/2020	N	<0.85 U	2.0 J	1.2 J	<0.85 U	<1.0 U	2.8 J	0.46 J	<0.85 U
Downgradient	PORDG-SW5	PORDG-SW5	03/10/2020	N	<0.84 U	1.9 J	1.1 J	<0.84 U	<1.0 U	3.2 J	0.42 J	<0.84 U
Downgradient	PORDG-SW5	PORDG-SW95	03/10/2020	FD	<0.84 U	2.0 J	1.2 J	<0.84 U	<1.0 U	3.4 J	0.49 J	<0.84 U
Downgradient	PORDG-SW6	PORDG-SW6	06/02/2020	N	<0.79 R	<3.1 U	<1.6 U	<0.79 U	<0.94 U	4.0	<0.79 U	<0.79 U
Downgradient	PORDG-SW7	PORDG-SW7	06/02/2020	N	<0.83 R	<3.3 U	<1.7 U	<0.83 U	<1.0 U	3.2 J	0.50 J	<0.83 U
Downgradient	PORDG-SW8	PORDG-SW8	06/02/2020	N	<0.80 R	<3.2 UJ	<1.6 U	<0.80 U	<0.96 U	4.3	<0.80 U	<0.80 UJ
Upgradient	PORUP-SW1	PORUP-SW1	03/11/2020	N	<9.9 U	44 J	<20 U	<9.9 U	<12 U	56	5.4 J	<9.9 U

AOC	LOCID	Sample ID	Sample Date	Sample Type ^[1]	PFDS (ng/L)	PFHpA (ng/L)	PFHpS (ng/L)	PFHxA (ng/L)	PFHxS (ng/L)	PFNA (ng/L)	PFNS (ng/L)	PFOSA (ng/L)
Lifetime Health Advisory for Drinking Water					NA	NA	NA	NA	NA	NA	NA	NA
Screening Level					NA	NA	NA	NA	NA	NA	NA	NA
10	POR10-SW6	POR10-SW6	03/10/2020	N	<9.8 U	44	39	210	770	4.9 J	<9.8 U	<9.8 U
10	POR10-SW7	POR10-SW7	03/10/2020	N	<9.7 U	67	7.5 J	120	160	9.0 J	<9.7 U	<9.7 U
Downgradient	PORDG-SW1	PORDG-SW1	03/10/2020	N	<0.84 U	1.8	0.52 J	17	41	<0.84 U	<0.84 U	4.7 J
Downgradient	PORDG-SW2	PORDG-SW2	03/10/2020	N	<0.84 U	9.9	0.79 J	24	42	2.1	<0.84 U	1.3 J
Downgradient	PORDG-SW3	PORDG-SW3	03/11/2020	N	<9.9 U	24	<9.9 U	48	120	<9.9 U	<9.9 U	<9.9 U
Downgradient	PORDG-SW4	PORDG-SW4	03/10/2020	N	<0.85 U	3.4	<0.85 U	6.5	9.6	1.2 J	<0.85 U	0.71 J
Downgradient	PORDG-SW5	PORDG-SW5	03/10/2020	N	<0.84 U	3.4	0.45 J	6.6	9.4	1.1 J	<0.84 U	0.94 J
Downgradient	PORDG-SW5	PORDG-SW95	03/10/2020	FD	<0.84 U	3.3	0.44 J	6.4	9.4	1.3 J	<0.84 U	1.0 J
Downgradient	PORDG-SW6	PORDG-SW6	06/02/2020	N	<0.79 U	3.8	0.47 J	6.6	8.8	1.4 J	<0.79 U	0.44 J
Downgradient	PORDG-SW7	PORDG-SW7	06/02/2020	N	<0.83 U	3.2	0.54 J	6.1	8.0	1.3 J	<0.83 U	<0.83 UJ
Downgradient	PORDG-SW8	PORDG-SW8	06/02/2020	N	<0.80 U	1.8	<0.80 U	3.8	6.1	<0.80 U	<0.80 U	0.70 J
Upgradient	PORUP-SW1	PORUP-SW1	03/11/2020	N	<9.9 U	30	<9.9 U	61	90	6.3 J	<9.9 U	<9.9 U

Table 8
Summary of Surface Water Analytical Results
Expanded Site Inspection Report for PFAS
Portland ANGB, Portland, Oregon

AOC	LOCID	Sample ID	Sample Date	Sample Type ^[1]	PFPeA (ng/L)	PFPeS (ng/L)	PFTeA (ng/L)	PFTriA (ng/L)	PFUnA (ng/L)	PFBS (ng/L)	PFOA (ng/L)	PFOS (ng/L)	SUM of PFOA + PFOS (ng/L)
Lifetime Health Advisory for Drinking Water					NA	NA	NA	NA	NA	NA	70 ^[2]	70 ^[2]	70 ^[2]
Screening Level					NA	NA	NA	NA	NA	40,000 ^[2]	40 ^[3]	40 ^[3]	NA
10	POR10-SW6	POR10-SW6	03/10/2020	N	100	150	<9.8 U	<9.8 U	<9.8 U	150	78	3,600	3,678
10	POR10-SW7	POR10-SW7	03/10/2020	N	150	25	<9.7 U	<9.7 U	<9.7 U	22	81	790	871
Downgradient	PORDG-SW1	PORDG-SW1	03/10/2020	N	13	2.0	<0.84 U	<0.84 U	<0.84 U	7.7	12	43	55
Downgradient	PORDG-SW2	PORDG-SW2	03/10/2020	N	19	3.7	<0.84 U	<0.84 U	<0.84 U	4.9	49	48	97
Downgradient	PORDG-SW3	PORDG-SW3	03/11/2020	N	50	18 J	<9.9 U	<9.9 U	<9.9 U	19 J	63	210	273
Downgradient	PORDG-SW4	PORDG-SW4	03/10/2020	N	6.1	1.0 J	<0.85 U	<0.85 U	<0.85 U	3.8	10	29	39
Downgradient	PORDG-SW5	PORDG-SW5	03/10/2020	N	5.5	1.2 J	<0.84 U	<0.84 U	<0.84 U	3.9	9.7	30	39.7
Downgradient	PORDG-SW5	PORDG-SW95	03/10/2020	FD	6.0	1.2 J	<0.84 U	<0.84 U	<0.84 U	3.9	10	29	39
Downgradient	PORDG-SW6	PORDG-SW6	06/02/2020	N	6.4	1.2 J	<0.79 R	<0.79 U	<0.79 U	4.2	11	26	37
Downgradient	PORDG-SW7	PORDG-SW7	06/02/2020	N	5.9	0.95 J	<0.83 U	<0.83 U	<0.83 U	4.2	9.5	27	36.5
Downgradient	PORDG-SW8	PORDG-SW8	06/02/2020	N	3.8	1.1 J	<0.80 R	<0.80 UJ	<0.80 U	1.6	4.8	13	17.8
Upgradient	PORUP-SW1	PORUP-SW1	03/11/2020	N	69	17 J	<9.9 U	<9.9 U	<9.9 U	22	95	130	225

Notes:

[1] N - Normal field sample. FD - Field duplicate of sample above.

[2] USEPA LHA - USEPA Lifetime Health Advisory (May 2016); available at <https://www.epa.gov/ground-water-and-drinking-water/drinking-water-health-advisories-pfoa-and-pfos>. Value is for individual and combined concentrations of PFOS and PFOA.

[3] USEPA RSL Calc - USEPA Regional Screening Calculator, Tap Water, HQ=0.1, available at https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search.

ng/L - nanograms per liter.

NA - No screening level available.

U - Analyte not detected. Result reported as < LOD (Limit of Detection).

J - Analyte detected, estimated concentration.

UJ - Analyte not detected. LOD is approximate.

R - Rejected due to serious quality control deficiencies. Result is unusable.

Results equal to or exceeding the Screening Level are bolded.

Results equal to or exceeding the Lifetime Health Advisory are highlighted yellow.

Table 10
Summary of Stormwater Analytical Results
Expanded Site Inspection Report for PFAS
Portland ANGB, Portland, Oregon

AOC	LOCID	Sample ID	Sample Date	Sample Type ^[1]	4:2FTS (ng/L)	6:2FTS (ng/L)	8:2FTS (ng/L)	NEtFOSAA (ng/L)	NMeFOSAA (ng/L)	PFBA (ng/L)	PFDA (ng/L)	PFDoA (ng/L)
Lifetime Health Advisory for Drinking Water					NA	NA	NA	NA	NA	NA	NA	NA
Screening Level					NA	NA	NA	NA	NA	NA	NA	NA
11	POR11-ST1	POR11-ST1	01/19/2020	N	<0.91 U	<3.7 U	<1.8 U	<0.91 UJ	<1.1 UJ	3.4 J	<0.91 U	<0.91 R

AOC	LOCID	Sample ID	Sample Date	Sample Type ^[1]	PFDS (ng/L)	PFHpA (ng/L)	PFHpS (ng/L)	PFHxA (ng/L)	PFHxS (ng/L)	PFNA (ng/L)	PFNS (ng/L)	PFOSA (ng/L)
Lifetime Health Advisory for Drinking Water					NA	NA	NA	NA	NA	NA	NA	NA
Screening Level					NA	NA	NA	NA	NA	NA	NA	NA
11	POR11-ST1	POR11-ST1	01/19/2020	N	<0.91 U	6.6	2.7	55	610	0.78 J	<0.91 U	<0.91 UJ

AOC	LOCID	Sample ID	Sample Date	Sample Type ^[1]	PFPeA (ng/L)	PFPeS (ng/L)	PFTeA (ng/L)	PFTriA (ng/L)	PFUnA (ng/L)	PFBS (ng/L)	PFOA (ng/L)	PFOS (ng/L)	SUM of PFOA + PFOS (ng/L)
Lifetime Health Advisory for Drinking Water					NA	NA	NA	NA	NA	NA	70 ^[2]	70 ^[2]	70 ^[2]
Screening Level					NA	NA	NA	NA	NA	40,000 ^[2]	40 ^[3]	40 ^[3]	NA
11	POR11-ST1	POR11-ST1	01/19/2020	N	5.9	9.2	<0.91 R	<0.91 R	<0.91 UJ	13	40	220	260

Notes:

[1] N - Normal field sample.

[2] USEPA LHA - USEPA Lifetime Health Advisory (May 2016); available at <https://www.epa.gov/ground-water-and-drinking-water/drinking-water-health-advisories-pfoa-and-pfos>. Value is for individual and combined concentrations of PFOS and PFOA.

[3] USEPA RSL Calc - USEPA Regional Screening Calculator, Tap Water, HQ=0.1, available at https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search.

ng/L - nanograms per liter.

NA - No screening level available.

U - Analyte not detected. Result reported as < LOD (Limit of Detection).

J - Analyte detected, estimated concentration.

UJ - Analyte not detected. LOD is approximate.

R - Rejected due to serious quality control deficiencies. Result is unusable.

Results equal to or exceeding the Screening Level are bolded.

Results equal to or exceeding the Lifetime Health Advisory are highlighted yellow.