

Data Gaps Report

Former Fire Training Pit and Big Gulch Creek Study Areas
Initial Data Gaps Investigation, Snohomish County Airport
Everett, Washington

for
Snohomish County Airports

October 9, 2024

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File No. 5530-015-00
October 9, 2024

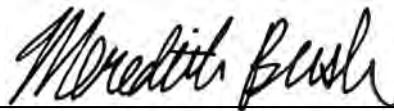
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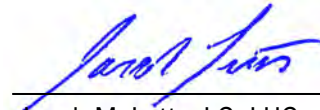
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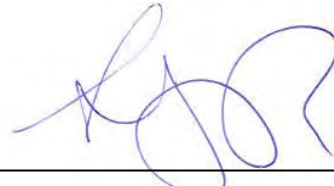
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List of Abbreviations and Acronyms

AFFF	aqueous film forming foam
AST	aboveground storage tank
ASTM	ASTM International
ATS	Aviation Technical Services, Inc.
BGC	Big Gulch Creek
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
CAP	Cleanup Action Plan
CDM	Camp Dresser & McKee Inc.
CID	contained-in determination
COCs	contaminants of concern
CRECs	Controlled Recognized Environmental Conditions
CSM	Conceptual Site Model
CUL	cleanup level
CVOCs	chlorinated volatile organic compounds
DOT	Department of Transportation
Ecology	Washington State Department of Ecology
EPA	United States Environmental Protection Agency
ESA	Environmental Site Assessment
FTP	Fire Training Pit
F&B	Friedman & Bruya Inc.
FS	Feasibility Study
GPR	ground penetrating radar
HCID	hydrocarbon identification
HFPO-DA (GenX)	hexafluoropropylene oxide dimer acid, or ammonium (2,3,3,3-tetrafluoro-2-(heptafluoropropoxy) propanoate
HSA	hollow-stem auger
IDW	investigation derived waste
MEK	2-butanone, methyl ethyl ketone
µg/kg	micrograms per kilogram
mg/kg	milligrams per kilogram
mg/m ³	milligrams per cubic meter
msl	mean sea level
MTCA	Model Toxics Control Act
mV	millivolts
NAVD 88	North American Vertical Datum of 1988
N-EtFOSAA	N-ethylperfluorooctanesulfonamidoacetic acid

N-MeFOSAA	N-methylperfluorooctanesulfonamidoacetic acid
NFA	no further action
PCBs	polychlorinated biphenyls
PCE	tetrachloroethylene/perchloroethylene
PCULs	preliminary cleanup levels
PFAS	per- and polyfluoroalkyl substances
PFBS	perfluorobutanesulfonic acid, or perfluorobutane sulfonate
PFHxA	perfluorohexanoic acid, or perfluorohexanoate
PFHxS	perfluorohexane sulfonic acid, or perfluorohexane sulfonate
PFNA	perfluorononanoic acid, or perfluorononanoate
PFOA	perfluorooctanoic acid, or perfluorooctanoate
PFOS	perfluorooctane sulfonic acid, or perfluorooctane sulfonate
PID	photoionization detector
ppm	parts per million
PVC	polyvinyl chloride
RECs	Recognized Environmental Conditions
RI	Remedial Investigation
ROW	right-of-way
Site	C-1 Building and C-1 Hangar Properties and surrounding area
SLs	screening levels
TCA	1,1,2-trichloroethane
TCE	trichloroethene
TEE	Terrestrial Ecological Evaluation
TPH	total petroleum hydrocarbons
TPH-D	Diesel-range total petroleum hydrocarbons
TPH-G	Gasoline-range total petroleum hydrocarbons
TPH-O	Heavy oil-range total petroleum hydrocarbons
UST	underground storage tank
VI	Vapor Intrusion
VCP	Voluntary Cleanup Program
VOCs	volatile organic compounds
WAC	Washington Administrative Code

Executive Summary

This Data Gaps Report presents the results of investigations completed in 2024 at the former Fire Training Pit and Big Gulch Creek Study Areas (study areas) located at Snohomish County/Paine Field Airport (Paine Field/Airport) in Everett, Washington. Historical operations at the Airport have resulted in releases of Aqueous Film Forming Foam (AFFF) that contained per- and polyfluoroalkyl substances (PFAS) to soil, groundwater and surface water at two areas at Paine Field Airport that have been identified by the Washington State Department of Ecology (Ecology) as Cleanup Sites (Sites). The former Fire Training Pit is listed by Ecology as the “Paine Field Fire Training Pit PFAS” Site (FTP Study Area; Cleanup Site ID: 16912 and Facility/Site ID: 49626114). The Big Gulch Creek Site is listed by Ecology as the “Big Gulch Creek Subbasin 9” Site (BGC Study Area; Cleanup Site ID: 16778 and Facility/Site ID: 99999116). PFAS-impacted surface water originating from source areas at the former Fire Training Pit and Big Gulch Creek Sites has become commingled near the western Airport property boundary, impacting stormwater leaving Airport property. PFAS-impacted surface water migrating through wetlands in the northern portion of the study area also leaves Airport property through a stormwater inlet in that area. The results of investigations completed at the two study areas are summarized in this report to provide a basis for evaluating the fate and transport of PFAS originating from each Site. The results of prior investigations are also summarized in this report to inform about the nature and extent of PFAS at the two Sites.

This report has been prepared consistent with the Initial Data Gaps Investigation Work Plan to document the investigations completed to evaluate the nature and extent of PFAS at the two Sites. The results of the investigations will be used as the basis for the Remedial Investigation/Feasibility Study (RIFS) that will identify and evaluate remedial alternatives and recommend a preferred cleanup action to address impacts to the media of concern and prepare a Cleanup Action Plan (CAP) in accordance with the mandated requirements of the Model Toxics Control Act (MTCA; and its implementing regulation Washington Administrative Code [WAC] 173-340-750).

Environmental investigations completed at the FTP Study Area between 2018 and 2024 and at the BGC Study Area in 2022 included sampling and laboratory analysis of soil, groundwater and/or surface water for PFAS. The 2024 sampling locations for soil, groundwater, and surface water at the two study areas were selected based on the results of previous investigations, historical land use, potential source(s) and potential ecological receptors. The nature and extent of impacts at the two Sites were evaluated using preliminary soil, groundwater, and surface water cleanup levels (PCULs) established by Ecology for eight PFAS compounds (Ecology 2023 and 2024).

A summary of prior land uses, potential contaminant sources and the nature and extent of known impacts at each study area are as follows:

- **Historical Fire Training Exercises (Fire Training Pit Site)** – Paine Field and other local fire departments conducted training exercises at the former Fire Training Pit and surrounding area using PFAS-containing AFFF, as required by the Federal Aviation Administration (FAA).
 - PFAS contamination is present in soil and groundwater beneath and hydraulically downgradient of the former Fire Training Pit at concentrations greater than the PCULs.
 - Concentrations of PFAS detected in surface water samples collected downgradient of the former Fire Training Pit along the western Airport property boundary exceed Ecology’s PCULs. Concentrations of PFAS in groundwater and surface water west of the Airport property boundary have not been assessed.

- **Historical Fire Truck Calibration and Federal Aviation Administration (FAA) Compliance Testing (Fire Training Pit Site)** – Paine Field Fire Department calibrated and performed FAA compliance testing of fire truck systems near the soil mound located adjacent to Taxi Lane K-6, releasing PFAS-containing AFFF to surrounding soil, groundwater, and surface water.
 - PFAS impacts are present in soil, groundwater and surface water beneath and hydraulically downgradient of the fire truck calibration area at concentrations greater than the PCULs. PFAS have also migrated into the wetland area located north of the soil mound and into surface water.
 - The extent of PFAS-impacted soil, groundwater and surface water has not been assessed and is therefore a data gap.
- **AFFF Releases to Stormwater Conveyance System (Big Gulch Creek Site)** – AFFF releases from the EMC Building and the ATS Hangar 1 Building, located in the southeastern portion of the Airport, entered the stormwater conveyance system, drained to adjacent wetlands, and migrated downgradient in surface water and through the stormwater conveyance system.
 - PFAS are present in soil and surface water in Wetland 25, located south of the EMC Building,
 - PFAS were detected in soil samples collected adjacent to stormwater pipes and catch basins located in Wetlands 24 and 25, indicating that the PFAS released to the stormwater system migrated to both wetland areas. The extent of PFAS in surface water has not been delineated.
 - Groundwater at the Big Gulch Creek Site has not been assessed and is therefore a data gap.

The results of the Initial Data Gaps Investigation document the nature and source(s) for PFAS, and identify data gaps in the extent of PFAS that will require additional investigation to identify and evaluate cleanup alternatives for impacted media at the Sites and prepare the FS and CAP.

1.0 Introduction

This Initial Data Gaps Investigation Report (Data Gaps Report) summarizes the results of environmental drilling and sampling conducted in 2024 at the former Fire Training Pit (FTP) and Big Gulch Creek (BGC) Study Areas located at Paine Field/Snohomish County Airport (Paine Field/Airport) in Everett, Washington (Figure 1) to further characterize and address data gaps for the two Sites. The Data Gaps Report includes relevant data from previous investigations to inform the nature and extent of impacts and the preliminary conceptual site model (CSM) for the two Sites. Throughout this report, the term “study area” is used to describe the two areas of investigation at the Airport, and the term “Site” is used to describe the areas where per- and polyfluoroalkyl substances (PFAS) have been detected in soil, groundwater or surface water at concentrations greater than applicable cleanup standards.

The FTP Study Area is located at the southwestern boundary of Paine Field adjacent to the Mukilteo Speedway and the Big Gulch Creek Study Area is located at the southern end of the Airport runway (Figures 1 and 2). The FTP Study Area has been the subject of several environmental investigations since at least 1989. Prior investigations completed at the FTP Study Area between 1989 and 2006 identified total petroleum hydrocarbons (TPH) and lead in soil. Remedial actions were completed at the former fire training pit (i.e., the FTP) in 2006 to address TPH and lead in soil at concentrations greater than the applicable Ecology Model Toxics Control Act (MTCA) cleanup levels (CULs), and the Site received a No Further Action (NFA) determination from Ecology in 2007 (Cleanup Site ID: 3234). Sections 1.0 and 2.0 of this report summarize the regulatory framework and property conditions for the two study areas.

Subsequent investigations completed at the FTP Study Area by others in 2018 and 2022/2023 identified per- and polyfluoroalkyl substances (PFAS) in soil and groundwater, which were attributed to the historical use of PFAS-containing aqueous film forming foam (AFFF). A 2022 investigation at the BGC Study Area detected several PFAS compounds in soil, which were attributed to releases of AFFF from the adjacent EMC Building and the ATS Hangar 1 Building located northeast of the EMC Building. The results of the 2018 and 2022/2023 FTP Study Area investigations and the 2022 Big Gulch Creek Study Area investigation are summarized in Section 3.0. Based on the findings of the investigations, Ecology assigned a new Cleanup Site ID (“Paine Field Fire Training Pit PFAS”; Cleanup Site ID: 16912).

The purpose of the 2024 Initial Data Gaps Investigation was to evaluate and document the nature and extent of PFAS in soil, groundwater and surface water, and identify remaining data gaps to complete characterization of the two Sites and develop a preliminary CSM for the Sites (Section 4.0) in accordance with MTCA requirements. The preliminary cleanup levels presented in Ecology’s Cleanup Levels and Risk Calculation (CLARC) database (Ecology 2024; Section 5.0) are used to assess and document the nature and extent of PFAS (Section 6.0), the need for remedial action, and identify remaining data gaps (Section 7.0). The work was conducted as an independent action that is the substantial equivalent of an Ecology supervised action pending Paine Field/Snohomish County’s entry into Ecology’s Voluntary Cleanup Program or Ecology issuance of an Agreed Order. Paine Field plans to complete a remedial investigation (RI), feasibility study (FS) and ultimately a Cleanup Action Plan (CAP) for the Sites consistent with Ecology’s MTCA requirements (Washington Administrative Code [WAC] 173-340).

1.1 OBJECTIVES

The objectives for the initial data gaps investigation were to further characterize and assess known and potential sources of PFAS, evaluate PFAS fate and transport through environmental evaluation of soil, catch basin, groundwater and surface water samples, and support the development of a CSM for the FTP and BGC Study Areas, as follows:

■ FTP Study Area

- Document the extent of PFAS detected in soil and groundwater during previous investigations at the FTP Study Area. Assess and document groundwater quality and flow direction by installing permanent monitoring wells.
- Evaluate surface water conditions at the FTP Study Area, including in adjacent wetlands and in the stormwater detention pond and groundwater seeps located west of the former FTP.

■ BGC Study Area:

- Evaluate surface water conditions in Wetlands 24 and 25, which receive stormwater from the Boeing EMC Building and the western portion of the ATS Hangar 1 Building where historical releases of AFFF have been documented. Evaluate soil and surface water conditions at stormwater outfalls connecting the two wetlands to the stormwater detention pond located at the western end of the FTP Study Area.

A summary of investigations completed for the FTP and BGC Study Areas is presented in Section 3.0.

1.2 REGULATORY FRAMEWORK

Investigations completed at the two study areas between 2018 and 2024 were conducted as independent actions that are the substantial equivalent of an Ecology supervised action. Paine Field reported the results of a 2023 investigation completed at the FTP Site to Ecology in May 2023 that documented PFAS in soil and groundwater (Shannon & Wilson 2023). Ecology completed an Initial Investigation Field Report (IIFR) on July 19, 2023, for the Paine Field Fire Training Pit PFAS Site following review of the 2023 sampling data. The IIFR recommended the Site be added to the Confirmed and Suspected Contaminated Sites list. Ecology issued an Early Notice Letter for the Paine Field Fire Training Pit PFAS Site on December 19, 2023, and assigned Cleanup Site ID: 16912; Facility/Site ID: 49626114.

Paine Field reported the results of a 2022 investigation completed at the BGC Study Area to Ecology in September 2022 that documented the presence of PFAS in soil and surface water in that area (Shannon & Wilson 2022). Ecology completed an IIFR on December 27, 2022, for the Big Gulch Creek Subbasin 9 Site following review of the 2022 sampling data. The IIFR recommended the Site be added to the Confirmed and Suspected Contaminated Sites list. Ecology issued an Early Notice Letter for the Big Gulch Creek Subbasin 9 Site on April 18, 2023, and assigned Cleanup Site ID: 16778; Facility/Site ID: 99999116.

The Paine Field/Snohomish County Airport plans to complete an RI, FS, and ultimately a CAP for the Sites consistent with Ecology's MTCA requirements (Washington Administrative Code [WAC] 173-340) and is evaluating interim remedial actions for the FTP Site.

2.0 Property Conditions

The FTP and BGC Study Areas are located in the southern portion of Paine Field/Snohomish County Airport (Figure 1). The Airport is zoned by Snohomish County for light industrial use. The two study areas are generally undeveloped, vegetated land surrounded by Airport runway/taxiway and other paved surfaces and associated Airport stormwater infrastructure (Figure 2). Stormwater captured on Airport property in the two study areas is collected in catch basins and conveyed in a series of stormwater pipes and wetlands that discharge to Big Gulch Creek and ultimately Puget Sound.

2.1 FIRE TRAINING PIT STUDY AREA

2.1.1 *Location and Current Land Use*

The FTP Study Area is located at the western boundary of Paine Field adjacent to the Mukilteo Speedway (Figure 3). Most of the study area is situated on an elevated plateau that was constructed by placement of fill soil during construction of the Airport runways. Taxi Lane K-6 is located at the eastern end of the study area and private/commercial airplane hangars are located along the southern boundary. A steep slope at the western edge of the study area leads to a stormwater detention pond, located adjacent to Mukilteo Speedway, which collects stormwater from the surrounding area and other areas of the Airport (see Figures 2 and 3). The outlet of this pond directs stormwater into Big Gulch Creek. The southern portion of the FTP Study Area generally consists of a grass-covered field that gently slopes toward the west. The northern portion of the study area is heavily vegetated and includes several wetlands that include seasonal ponds and drainage ditches that drain toward the northwest. An approximately 20-foot-tall triangular soil mound is located northeast of the former FTP location, which was constructed of fill soil removed during various construction activities at other areas of the Airport.

2.1.2 *Historical Land Use*

Historical land uses at the FTP Study Area included firefighting training exercises for Paine Field and other local fire departments and fire truck calibration and FAA compliance testing. Fire training exercises historically conducted at the former FTP included filling a pit dug into the ground (i.e., the FTP; see Figure 4) with water, petroleum and other flammable fuels/materials, igniting the materials and extinguishing the flames using PFAS-containing AFFF (CDM Smith 2007). In 2006, the FTP was excavated and backfilled during remedial activities to cleanup petroleum contamination, as discussed in Section 3.1.

Paine Field Fire Department also conducted fire truck calibration and FAA compliance testing at the FTP Study Area on an annual basis as required by Federal Aviation Administration (FAA) fire apparatus calibration standards. During calibration activities, Airport fire trucks sprayed AFFF on the ground near the soil mound (see Figure 3) to calibrate AFFF concentrations in the fire suppression system. Fire truck calibration and FAA compliance testing methods were modified in June 2019 after the Airport purchased a testing system that does not discharge AFFF to the ground.

2.1.3 *Stormwater Utility Network*

Utility infrastructure at the FTP Study Area includes enclosed pipes, catch basins and a stormwater detention pond that discharges stormwater into Big Gulch Creek to the west of Mukilteo Speedway (Figure 3). The stormwater detention pond at the base of the slope west of the former FTP receives outfall from enclosed pipes and open channels on the western side of the Airport that collect stormwater from the

undeveloped fields surrounding the former FTP and mound, Taxiway K-6 and additional infrastructure on the western side of the Airport. Stormwater originating from portions of the BGC Study Area is also discharged to the stormwater detention pond in the FTP Study Area (see Figure 2), as discussed in Section 2.2.3. From the detention pond, water is directed to the west into an enclosed pipe below Mukilteo Speedway and into Big Gulch Creek.

The northern portion of the FTP Study Area includes several small wetlands identified by the Airport as Wetlands 16, 17, 19, 23, 26, 27, 29 and 30 that collect stormwater from surrounding areas. Surface water in these wetlands generally flows to the north and west, moving through open channels and into Wetland 17 near the northwestern corner of the FTP Study Area, before discharging to the stormwater conveyance system beneath Mukilteo Speedway near the northwestern corner of the FTP Study Area and into Big Gulch Creek (Figure 3). Big Gulch Creek flows north and west through Mukilteo and enters surface water in Puget Sound approximately 10,000 feet downstream.

2.2 BIG GULCH CREEK STUDY AREA

2.2.1 Location and Current Land Use

The BGC Study Area is located adjacent to the southern end of the main runway, south and west of the Boeing Everett Modification Center (EMC) building, and includes Airport Wetlands 47, 41, 42, 24, 25, 47 and streams “C” and “D”. The wetland areas are undeveloped and heavily vegetated with small ponds. Stormwater originating from portions of the EMC Building discharges to Wetland 47 and into stream “D”, flowing through Wetland 41, into Wetland 25 then to Wetland 24 and toward the northwest. Stormwater originating from the western portion of the EMC Building and the western portion of the ATS Hangar 1 Building discharges directly to the northern portion of Wetland 25. The drainage area that includes the BGC Study Area is designated as “Big Gulch Creek Sub-Basin 9.”

2.2.2 Historical Land Use

The BGC Study Area is primarily comprised of wetlands, and Airport stormwater infrastructure that discharge stormwater originating from surrounding areas, including the Airport runway, taxi ways and paved surfaces surrounding Airport hangars, manufacturing facilities and other buildings (Figure 5). The wetland areas are heavily vegetated and undeveloped except for the stormwater infrastructure.

2.2.3 Stormwater Utility Network

Stormwater originating from the BGC Study Area discharges to Wetland 25 and the surrounding woodland area. Inputs to Wetland 25 include stormwater outfalls that capture surface runoff from the southwestern portion of the Airport, including the western portion of the ATS Hangar 1 Building and grounds, and the Boeing EMC Building (former Hangar 3) and grounds. Stormwater from these locations is conveyed through a network of enclosed pipes, closed detentions, and open channels to Wetland 25 at outfall locations shown in Figure 5. Stormwater originating from the western end of the EMC Building, the Airport runway/taxiway and the western portion of the ATS Hangar 1 Building is routed to an outfall located at the northern end of Wetland 25. Stormwater originating from the southern portion of the EMC Building discharges to an outfall located at the edge of the wooded area along Falcon Drive/Navajo Road.

Surface water in Wetland 25 generally flows southwest and discharges to Wetland 24 through a stormwater pipe running under the southern runway approach. Inputs to Wetland 24 include the outfall from Wetland 25 as well as several closed pipes connecting to the southwest parts of the airport, surrounding paved surfaces, the Mukilteo Speedway and the Airport runway/taxiway. Wetland 24 flows to the northwest and enters a series of open channels and closed pipes along Bernie Webber Road. Surface water is then conveyed through stormwater pipes to the north to the stormwater detention pond located at the western end of the FTP Study Area, which discharges to Big Gulch Creek as described above (Figure 2).

3.0 Site Characterization and Remedial Actions

A summary of the relevant findings of the environmental investigations completed at the FTP and Big Gulch Creek Study Areas is included in the following sections. Historical sample locations are shown in Figures 3 and 4 for the FTP Study Area and Figure 5 for the BGC Study Area. The Initial Data Gaps Investigation exploration locations are shown in Figures 6 through 8. Figures 9 and 10 summarize 2024 groundwater and surface water analytical results for select PFAS compounds and are discussed in Sections 4.0 and 6.0. Historical soil and groundwater data are presented in Tables 1 through 3 and data from the 2024 Initial Data Gaps Investigation are included in Tables 5 and 6.

3.1 FIRE TRAINING PIT STUDY AREA

Prior investigations completed at the FTP between 1989 and 2006 identified TPH in soil and surface water sampled within the FTP. Remedial actions were completed at the FTP in 2006 to address TPH and lead in soil at concentrations greater than the applicable MTCA CULs, and the FTP received an NFA determination from Ecology in 2007. Subsequent investigations completed at the FTP Study Area by others in 2018, 2022 and 2023 identified PFAS in soil and groundwater. An in-situ pilot study was conducted between 2023 and 2024 to evaluate the treatability of PFAS in soil. The FTP Site is listed by Ecology as the Paine Field Fire Training Pit PFAS Site (Cleanup Site ID: 16912; Facility/Site ID: 49626114).

3.1.1 *Early Environmental Investigations (Pre-2000)*

Free-phase petroleum hydrocarbons and metals were detected in surface water samples collected within the FTP by Dames & Moore in 1989. Petroleum was also detected in a soil sample collected from 5.5 feet below ground surface (bgs) within the FTP footprint. Subsequent soil and groundwater sampling was performed at the location of the former FTP by AGI Technologies in 1998, which identified lead and diesel-range and heavy oil-range total petroleum hydrocarbons at concentrations greater than MTCA Method A CULs. Copies of reports published before 2000 were not available for review but are summarized by others (CDM 2018 and SWI 2023).

3.1.2 *FTP Soil Remediation Summary Report (CDM 2007)*

Paine Field Airport completed soil remediation activities at the FTP in Fall 2006. Approximately 170 cubic yards of soil containing petroleum hydrocarbons and lead were removed from the former FTP footprint and disposed of off-site at Roosevelt Landfill in Roosevelt, Washington (CDM 2007). The oval-shaped fire pit measured approximately 40 feet by 80 feet and was approximately 1 to 2 feet deep with no observed evidence of a liner. When soil remediation was complete, the excavation pit measured 60 feet long by 50 feet wide and 1 foot deep. Following the excavation, the area was backfilled with clean sandy soil sourced from another Paine Field location. Ecology issued an NFA determination for the site in 2007 (Ecology 2007).

3.1.3 *PFAS Investigation (CDM Smith 2018)*

Paine Field Airport completed a PFAS investigation in August 2018. The investigation consisted of the completion of six direct-push soil borings adjacent to the former FTP, collection of soil samples, installation of temporary monitoring wells, and collection of grab groundwater samples (CDM Smith 2018). Borings were completed to a maximum depth of 25 feet bgs at the locations shown in Figure 3. Multiple PFAS compounds were detected in the soil and groundwater samples analyzed. Soil and groundwater analytical results are tabulated in Table 1 and screened against the applicable preliminary cleanup levels at that time. The primary PFAS compounds detected at the highest concentrations and appearing most frequently in samples included perfluorooctanoic acid (PFOA), perfluorooctane sulfonic acid (PFOS), perfluorononanoic acid (PFNA) and perfluorohexane sulfonic acid (PFHxS).

3.1.4 *Supplemental PFAS Investigation (SWI 2023)*

An investigation was completed between March 2022 and March 2023 by Shannon and Wilson Inc. (SWI) to evaluate groundwater conditions and analyze soil and groundwater samples for the presence of PFAS compounds. The investigation was conducted to further assess areas where PFAS were detected during the 2018 investigation, including the vicinity of the FTP. The locations of these borings are shown in Figures 3 and 4. Analytical data are screened against Ecology's preliminary cleanup levels for soil and groundwater in Tables 2 and 3, respectively.

In March 2022, 34 soil samples were collected from 16 borings within and adjacent to the former FTP. Soil samples were collected from depths of approximately 0.2 to 11.6 feet bgs within fill soil, except one sample that was collected from a depth of 105 feet bgs within the glacial till unit. Concentrations of PFAS were detected in all soil samples analyzed except the glacial till sample collected from 105 feet bgs in boring FP MW4. Higher concentrations of PFAS were generally found closer to the FTP, with PFAS concentrations decreasing in samples further from the former pit location.

Fifteen groundwater samples were collected from Site monitoring wells during June and November/December 2022. PFAS were detected in all groundwater samples analyzed. The PFAS with the highest detected concentrations were PFOA, PFOS, PFNA, PFHxS and perfluorobutane sulfonic acid (PFBS). The highest concentrations were encountered near and downgradient of the former FTP. Seasonal groundwater fluctuations were reported to range from 0.6 to 5.9 feet across the FTP Study Area, as measured between March 2022 and March 2023 (SWI 2023).

3.1.5 *Summary Report for SourceStop Treatment (REGENESIS 2023, 2024)*

In January 2023, REGENESIS conducted a soil treatment pilot study to evaluate the potential effectiveness of their remedial technology to address PFAS in soil adjacent to the former FTP (Figure 4). The pilot study consisted of excavation of soil adjacent to the former FTP, application of powdered activated carbon (PAC) and SourceStop (a proprietary PFAS treatment product) to assist in the sequestration of PFAS and reduce leachable PFAS into groundwater, installation of lysimeters inside and outside the treatment area, and the collection of soil and porewater samples for laboratory analysis. Soil was excavated over a 225-square-foot area to a depth of 10 feet, generating approximately 83 cubic yards of soil, which was stockpiled near the excavation. The SourceStop and PAC blend (9,200 pounds total) was applied to the base of the excavation and mixed into the stockpiled soil, which was subsequently returned to the excavation and compacted to match existing grade. Lysimeters were sampled prior to application of PAC and SourceStop to evaluate baseline concentrations of PFAS in porewater. The locations of borings, lysimeters and samples collected in this study are presented in Figure 4.

Post-treatment follow-up investigations were conducted in July 2023 and February 2024 to evaluate PFAS concentrations in porewater inside and outside the treatment area. This study also analyzed one groundwater sample from beneath the treatment area, and soil samples collected in the treatment area footprint via the Synthetic Precipitation Leaching Procedure (SPLP) for PFAS. The pilot study demonstrated that the PFAS concentration in soil leachate decreased by greater than 99 percent following the source zone soil treatment (REGENESIS 2024). In the control area (i.e., upgradient area outside of the treatment area), concentrations of PFAS in porewater remained greater than detection limits for 12 of the 17 PFAS compounds analyzed. In the treatment area, the number of PFAS compounds detected in porewater was reduced from 13 compounds in July 2023 to four compounds in February 2024. The concentration of PFAS in groundwater collected beneath the treated soil zone decreased 12 months after treatment, with 13 PFAS detections and three PFAS concentrations less than the reporting limit. Four soil samples were collected for evaluation via SPLP, to evaluate the leachability of PFAS related to infiltration from precipitation. PFOS was the only detected PFAS compound in February 2024, 12 months after the soil treatment. These post-treatment studies identified reduction of PFAS in porewater, groundwater and SPLP leachate. The long-term effectiveness of this remedial technology is not known because the technology is relatively new.

3.1.6 Initial Data Gaps Investigation – FTP Study Area (2024)

The objectives of the 2024 Initial Data Gaps Investigation included completing additional field investigations, sampling and laboratory analysis to address data gaps in the nature and extent of the PFAS impacts in soil and groundwater, evaluate surface water conditions and further develop the CSM for the former FTP Site. Drilling and monitoring well installation activities and soil, groundwater, and surface water sampling activities were conducted between February 5 and 14, and March 26 and 28, 2024. Drilling and monitoring well installation activities were completed by a licensed driller, Holocene Drilling of Puyallup, Washington. Soil, groundwater and surface water samples were delivered to SGS Laboratories (SGS) in Orlando, Florida for analysis of PFAS via EPA Method 1633. Exploration locations are shown in Figure 6. Soil boring and monitoring well construction logs are presented in Appendix A, groundwater sampling field data are presented in Appendix B, laboratory analytical reports are included in Appendix C, and field procedures are presented in Appendix D.

The Initial Data Gaps Investigation was completed to address the following data gaps, which were identified based on a review of available data and the results of previous investigations:

1. **Extent of PFAS in Soil and Groundwater.** Soil and groundwater sampling completed during prior investigations did not delineate the lateral or vertical extents of PFAS-impacted soil and groundwater in the vicinity of the former FTP footprint and surrounding area.
2. **Surface Water Conditions.** Groundwater inferred to originate from the FTP area was observed seeping out of the hillside into the detention pond during the 2022 investigation. Surface water in the detention pond as well as in the wetlands in the northern portion of the FTP Study Area had not been evaluated for presence of PFAS.

3.1.6.1 SOIL BORINGS

Ten soil borings were advanced to assess and document the lateral and vertical extent of PFAS in soil at the FTP Study Area (Figure 6). Nine soil borings (FP-B1, FP-B2 and FP-MW7 through FP-MW13) were drilled to depths between 20 and 30 feet bgs using hollow-stem auger (HSA) techniques. GeoEngineers staff completed an additional soil boring (FP-B3) to a depth of 1.0-foot bgs using a hand auger.

Up to five soil samples were collected from each soil boring at selected depth intervals between 5 and 30 feet bgs for laboratory analysis. Forty-nine soil samples (47 plus two duplicates) collected from the FTP Study Area were submitted to SGS for analysis of PFAS compounds via EPA Method 1633. Soil analytical results are summarized and compared to Ecology PCULs in Table 5.

3.1.6.2 GROUNDWATER MONITORING WELLS

Groundwater monitoring wells were installed in seven soil borings (FP-MW7 through FP-MW13; see Figure 6) to assess groundwater conditions in areas of the study area that had not been previously evaluated. The monitoring wells were constructed with 2-inch-diameter polyvinyl chloride (PVC) casing and completed with flush-mount monuments. The monitoring wells were installed to depths between 15 and 25 feet bgs with a 10- or 15-foot-long 0.010-slot screen, based on groundwater conditions encountered during drilling. Monitoring well construction details are shown in the Table 4.

The casing rim elevation of each new monitoring well was surveyed relative to North American Vertical Datum of 1988 (NAVD 88). Depth to groundwater was measured during sampling of the newly installed monitoring wells, and a site-wide groundwater elevation survey was completed on May 14, 2024. The May 2024 groundwater elevations used to evaluate the groundwater flow direction and gradient at the study area are shown in Table 4 and in Figure 7.

Groundwater samples were collected for laboratory analysis from the seven newly installed monitoring wells (FP-MW7 through FP-MW13) as part of the investigation. Eight groundwater samples (seven samples plus one duplicate) were submitted to SGS for analysis of PFAS via U.S. Environmental Protection Agency (EPA) Method 1633. The analytical results are summarized and compared to Ecology PCULs in Table 6. A discussion of applicable cleanup standards is presented in Section 5.0.

3.1.6.3 SURFACE WATER INVESTIGATION

In February and March 2024, surface water samples were collected for laboratory analysis from five surface water locations (FP-SW1 through FP-SW5) in the wetlands surrounding the former FTP (Figure 6). Additionally, one groundwater seep sample (FP-SEEP) was collected where groundwater was observed emerging from the hillside east of the stormwater detention pond. Seven surface water samples (six samples plus one duplicate) were submitted to SGS for PFAS analysis via EPA Method 1633. The analytical results are summarized and compared to Ecology PCULs in Table 6.

3.2 BIG GULCH CREEK STUDY AREA

A prior investigation was completed at the BGC Study Area in 2022 to evaluate the potential presence of PFAS in soil within the subbasin drainage areas related to the historical AFFF releases documented at the EMC and ATS Hangar 1 Building. The 2024 Initial Data Gaps Investigation further evaluated soil at the study area and also evaluated surface water conditions in two wetlands. The Big Gulch Creek Site is listed by Ecology as the Big Gulch Creek Sub-Basin 9 (Cleanup Site ID: 16778; Facility/Site ID: 99999116) with the status listed as “awaiting cleanup.”

3.2.1 Focused Soil Investigations at Big Gulch Creek (SWI 2022)

A focused soil investigation was conducted between May and September 2022 at the BGC Study Area to evaluate the presence of PFAS in areas that may have been historically affected by releases of AFFF from the EMC and ATS Hangar 1 Building (SWI 2022). In May 2022, soil samples were collected at three locations downstream of stormwater outfalls southwest of the EMC Building and in Wetland 25 (see Figure 5).

Analytical results identified PFAS compounds in all BGC Study Area soil samples analyzed. PFAS compounds were detected at higher concentrations in samples collected closest to the EMC Building. The specific compounds with the highest detected concentrations were PFOA, PFOS, PFNA and PFHxS.

Results of the investigations at the BGC Study Area indicated that the documented releases of AFFF at the EMC and ATS Hangar 1 Buildings impacted soil near stormwater outfalls in and adjacent to Wetland 25. The summary report presenting these findings recommended further investigation to evaluate and document the extent of the PFAS impacts in soil and potential for inter-media contaminant transport (SWI 2022).

3.2.2 Initial Data Gaps Investigation (2024)

The objectives of the 2024 Initial Data Gaps Investigation included the following: complete additional field investigation, sampling, and laboratory analysis to address data gaps in the nature and extent of the PFAS impacts in soil, evaluate surface water conditions and further develop the CSM for the Big Gulch Creek Site. Groundwater samples were not collected at the BGC Study Area during the 2024 investigation. Exploration locations are shown in Figure 8. Boring logs are presented in Appendix A, laboratory analytical reports are included in Appendix C, and field procedures are presented in Appendix D.

The Big Gulch Creek Site data gaps presented below were identified based on a review of available data and the results of the 2022 focused soil investigation described above (SWI 2022):

1. Extent of PFAS in Soil. Soil sampling completed in 2022 near three stormwater outfalls identified PFAS-impacted soil at the stormwater outfall into Wetland 25. A depth-profile and vertical extent of the PFAS-impacted soil had not been evaluated at the sub-basin.
2. Surface Water Conditions in Wetlands 24 and 25. Wetland 25 is fed by the stormwater outfalls at the northwestern and northeastern corners of the wetland. Surface water in wetland 25 discharges to Wetland 24. The surface water in the two wetlands downgradient of the EMC and ATS Hangar 1 Building stormwater outfalls had not been evaluated for the presence of PFAS.

3.2.2.1 SOIL BORINGS

Six soil borings were advanced to assess and document the lateral and vertical extent of PFAS impacts in soil at the BGC Study Area (Figure 8). Soil exploration activities were conducted in February 2024. Two soil borings (BGC-B1 and BGC-B2) were drilled using a limited-access direct push drill rig operated by Holocene Drilling to a depth of 10 feet bgs and 7 feet bgs, respectively. GeoEngineers staff completed an additional six soil borings (BGC-B3, BGC-B4, BGC-B5, BGC-B6, FP-B4 and FP-B5) using a hand auger. These borings were advanced to depths between 0.5 and 3.0 feet bgs.

Two soil samples were collected from each soil boring at selected depth intervals between 0.5 and 3.0 feet bgs for laboratory analysis. Fourteen soil samples were submitted to SGS for analysis of PFAS compounds via EPA Method 1633. Analytical results are summarized and compared to Ecology PCULs in Table 5.

3.2.2.2 CATCH BASIN SAMPLING

One sediment sample (BGC-CB1) was collected from a stormwater catch basin located north of the EMC Building that received discharge from a prior AFFF Release from ATS Hangar 1 (Figure 10). Chemical analytical results are summarized and compared to Ecology PCULs in Table 5.

3.2.2.3 SURFACE WATER INVESTIGATION

Surface water samples were collected from five surface water locations (BGC-SW1 through BGC-SW3, FP-SW4 and FP-SW5; see Figure 8) and submitted to SGS for analysis of PFAS compounds via EPA Method 1633. The analytical results are summarized and compared to Ecology PCULs in Table 6. A discussion of cleanup standards is presented in Section 5.0.

3.3 INVESTIGATION DERIVED WASTE

Investigation derived waste (IDW), including soil and water generated during the Initial Data Gaps Investigation drilling and sampling activities, was containerized in Department of Transportation (DOT)-approved 55-gallon drums and temporarily stored on site pending characterization and disposal. Soil and purge water IDW were characterized using the soil and groundwater sample data presented in Tables 5 and 6. Disposal of IDW at an off-site facility licensed to receive the material is pending completion of waste profiling.

4.0 Preliminary Conceptual Site Model

This section presents the preliminary CSM developed for the FTP and BGC Sites. As discussed above, PFAS-impacted surface water from the two Sites commingles and therefore, the CSM includes both Sites. The CSM was developed based on the results of the 2018 through 2024 investigations and will be refined, as warranted, following additional investigations. Figure 11 shows the extent of PFOS detected in groundwater and surface water samples collected at the FTP Site. Figure 12 is a cross section showing FTP Site geology and hydrogeology, isoconcentration contours for PFOS in groundwater, PFOS detections in soil, and site features. As discussed in Section 6.0, PFOS is the compound with the highest detected concentrations at the FTP Site and is generally collocated with other PFAS compounds, providing a basis for evaluating the overall nature and extent of PFAS impacts and PFAS fate and transport for the FTP Site.

4.1 PHYSICAL SETTING

The two study areas are located at Paine Field/Snohomish County Airport in Everett, Washington at an elevation of approximately 600 feet above mean sea level (msl). Local surface topography in the vicinity of the study areas is relatively flat, with localized depressions in wetland and drainage areas. In the western portion of the FTP Study Area, topography slopes to the west toward Big Gulch Creek, which discharges into Puget Sound. The FTP Study Area is primarily developed with airport buildings, runways and taxiways, paved parking, roads and landscaped areas. The BGC Study Area is primarily undeveloped and heavily vegetated in wetland areas and is surrounded by Airport buildings, the Airport runway and commercial/manufacturing buildings.

4.2 GEOLOGY AND HYDROGEOLOGY

Soil conditions encountered at the FTP Site generally consist of a fill layer comprised of a mixture of sand and silt, with varying amounts of gravel. The fill ranges in thickness from approximately 4 feet near the northern end of the Site at boring FP-MW13 to approximately 20 feet near the central portion of the Site near the former FTP. The fill unit at the FTP Site overlies glacial till comprised of dense to very dense sand with interbedded silt and varying amounts of gravel. The upper portion of the till (generally 5 to 10 feet) is weathered and less dense than the underlying, unweathered till.

Groundwater at the FTP Site occurs within the fill and upper portion of the weathered till and appears to be perched on top of the unweathered till. Groundwater was encountered in borings FP-MW7, FP-MW8, FP-MW9, FP-MW10, FP-MW11, FP-MW12 and FP-MW13 during the 2024 Data Gaps Investigation. The groundwater flow direction is inferred to be generally toward the southwest across the central portion of the Site, becoming westerly near the western end of the Site based on the results of 2024 groundwater monitoring (Figure 7). A groundwater seep was observed during the 2024 investigation near the base of the slope adjacent to the stormwater pond, and groundwater originating from the area near the former FTP is inferred to exit the slope in this area and feed into the stormwater pond (Figure 12). Deeper groundwater likely flows beneath the pond and to the west based on the observed groundwater flow direction.

At the BGC Site, soils generally consist of silty sand with occasional gravel and high organic content. The soils are formed in modern deposits overlying the regional deposits of glacial till. Soils at the BGC Site are formed along the boundaries of wetlands and are generally saturated. Surface water originating in the BGC Site flows into Wetlands 24 and 25.

A regional aquifer is interpreted to be present within advance outwash deposits beneath the airport and vicinity at depths of greater than 130 feet bgs with a regional groundwater flow direction toward the north (CDM 2000). Exploration logs are presented in Appendix A.

4.3 SURFACE WATER HYDROLOGY

Surface water at the FTP Site includes several wetlands located at the northern portion of the Site (Wetlands 16, 17 and 19) and a stormwater detention pond located at the western end of the Site (see Figure 6).

Surface water at the BGC Site includes Wetlands 24 and 25, which are connected by a stormwater conveyance system running beneath the southern portion of the Airport runway approach (Figure 8). The two wetlands are heavily vegetated with areas of ponded water. The surface water flow direction is from Wetland 25 into Wetland 24 and north to the stormwater conveyance system that feeds into the stormwater detention pond at the FTP Site, as described in Section 2.2.3.

4.4 STORMWATER NETWORK

As discussed in Sections 2.1.3 and 2.2.3, a network of stormwater inlets, pipes and outfalls conveys stormwater from surface areas at the BGC Site into surface water in wetlands and to the outlet west of the FTP Site. The stormwater utility network is a component of the CSM because it is a primary pathway for transport of PFAS in stormwater and surface water at the two Sites, as discussed in Section 4.6.

4.5 SOURCES OF PFAS IMPACTS

This section presents the findings of prior investigations that have identified the following confirmed or likely contaminant sources for each of the two Sites:

- **FTP Site:** PFAS-containing AFFF released to the soil in the FTP during historical fire training exercises migrated down to the water table and toward the west-southwest with the prevailing groundwater flow direction. Releases of AFFF also occurred along the K-6 Taxiway during annual fire truck calibration and FAA compliance testing activities. Local dispersion of AFFF impacted the soil mound and surrounding grass field (see Figure 6) and surface runoff in areas adjacent to the FTP resulted in PFAS-impacted soil in the vicinity of the soil mound and in soil and surface water in the north-adjacent wetland area. Releases of AFFF in this area stopped in June 2019 when truck system testing, and FAA calibration was completed through a non-discharging system.
- **BGC Site:** Releases of AFFF were documented at the EMC and ATS Hangar 1 Buildings in the 1990s and 2000s, with the most recent release documented in 2023 (ERTS No. 724485). AFFF reportedly discharged inside the EMC Building due to a malfunction of the fire suppression system, entered the stormwater system outside the building, and discharged to Wetland 25.

4.6 CONTAMINANT FATE AND TRANSPORT

Factors influencing the fate and transport of PFAS at the FTP and BGC Sites include the location of PFAS sources, geology and hydrogeology, surface water hydrology and stormwater utility networks. The fate and transport for PFAS-containing AFFF and PFAS impacted water for the FTP and BGC Sites is informed by the results of investigations conducted to date and is described below.

4.6.1 *Fire Training Pit Site*

4.6.1.1 FORMER FIRE TRAINING PIT

AFFF discharged to the former FTP during historical fire training exercises mixed with water inside the pit where PFAS migrated vertically down through the vadose zone to the water table. The AFFF discharged in this area consisted primarily of legacy or first generation AFFF that contained PFOS and PFHxS, and a fluorotelomer-based AFFF that contained 6:2 fluorotelomer sulfonate (6:2 FTS), as indicated by the chemical analytical results discussed in Section 6.0. PFAS-containing AFFF released to the former FTP migrated in groundwater through advective flow toward the west with the prevailing groundwater flow direction (Figures 7 and 9). PFAS in groundwater entered the stormwater detention pond located at the western end of the Site through groundwater seeps where the water table intersects the steep slope immediately east and adjacent to the pond (Figures 11 and 12). PFAS in groundwater at the western edge of the FTP Site (Figure 9) may have migrated to groundwater in this area from deeper groundwater moving beneath the pond, or from surface water in the adjacent pond.

PFAS in surface water also migrated from the BGC Site, as discussed in Section 4.6.2, and commingled with surface water in the stormwater detention pond that originated from the FTP Site. PFAS-containing groundwater and stormwater is inferred to migrate westward off the Airport property based on the observed groundwater flow direction and flow paths for the stormwater conveyance system. PFAS in soil in the former FTP source area likely continues to leach to groundwater based on the results of the 2023 through 2024 treatability study (Regenesys 2024).

4.6.1.2 HISTORICAL FIRE TRUCK CALIBRATION AND FAA COMPLIANCE TESTING

AFFF was historically released to ground surface in the area east of the soil mound (see Figure 6) during annual mobile fire suppression system calibration activities conducted by the Airport Fire Department. PFAS migrated downward through the vadose zone to the water table and was transported through advection in a southwest to westerly direction with the groundwater gradient. PFAS in groundwater commingled with PFAS originating from releases at the former FTP, ultimately migrating westward into the stormwater detention pond to the edge of the FTP Site and off-property to the west.

AFFF also became airborne and was transported by wind across the area through dispersion. Airborne AFFF was deposited on Taxi Lane K-6 and likely washed into the wetland areas to the north during precipitation. The AFFF discharged near the soil mound and into the adjacent wetland areas consisted primarily of a fluorotelomer-based AFFF that contained 6:2 fluorotelomer sulfonate (6:2 FTS) (Section 6.0). AFFF also discharged to the stormwater system surrounding the taxi way, entering the stormwater detention pond through an outlet located at the southern end of the pond (see Figures 6 and 9). Airborne AFFF was also likely dispersed to the north-adjacent network of wetlands where PFAS leached into surface water, flowed northwesterly toward the stormwater outlet located at the western end of Wetland 17, and entered the stormwater lines draining to Big Gulch Creek (See Figure 9).

4.6.2 Big Gulch Creek Site

PFAS-containing AFFF released inside the EMC and ATS Hangar 1 Buildings flowed into the stormwater catch basins located adjacent to the building, entered the stormwater utility network, and was discharged through stormwater outfalls located south and southwest of the EMC Building and west of ATS Hangar 1. The AFFF discharged inside the building likely consisted of two AFFF formulations: a legacy AFFF that contained PFOS and PFHxS and a fluorotelomer-based AFFF that contained 6:2 fluorotelomer sulfonate (6:2 FTS) (Section 6.0). AFFF that discharged from a stormwater outfall located south of the EMC Building near the intersection of Falcon Drive and Navajo Road (Figure 10) migrated through dispersion down an unpaved drainage swale (wetland and small stream) and into Wetland 25 where PFAS leached into shallow soil and surface water in the wetland. PFAS migration to and adsorption to deeper soil in the drainage swale was likely limited due to short residence time in the swale and on the slope.

AFFF that discharged from the outfall located southwest of the EMC Building at the northern end of Wetland 25 was transported in surface water through the wetland to the stormwater outlet located at the western edge of Wetland 25, entering and flowing into Wetland 24 (Figure 10). PFAS-impacted surface water in Wetland 24 discharged through the stormwater inlet located at the northern end of the wetland and into the stormwater conveyance system that drains to the stormwater detention pond at the western end of the FTP Site. PFAS originating from releases at the EMC and ATS Hangar 1 Building have commingled in stormwater with PFAS originating from releases at the FTP Site. Residual AFFF-impacted solids likely remain in the stormwater conveyance system.

5.0 Preliminary Cleanup Standards

The cleanup standards presented in this report are based on the currently available regulatory guidance with the understanding that regulations for an emerging contaminant group such as PFAS can create a challenge for evaluating data over the course of a project lifetime. In 2021, Ecology concluded that PFAS are hazardous substances under the MTCA. The Washington State Department of Health (DOH) issued drinking water State Action Levels (SALs) for the following five PFAS compounds, which became effective on January 1, 2022 (DOH 2022): PFOA, PFOS, PFNA, PFHxS and PFBS. Ecology adopted the SALs for these five PFAS compounds as the appropriate groundwater and surface water cleanup levels and also calculated PCULs for PFBA, PFHxA and HFPO-DA (GenX). Recommended soil cleanup levels protective of groundwater (vadose and saturated zone soil) and of direct contact were also calculated by Ecology for the eight PFAS compounds listed above using the SALs, the MTCA procedures for deriving soil concentrations for groundwater protection, and the default soil characteristics in the MTCA Cleanup Rule. In June 2023, Ecology published guidance for investigating and remediating PFAS contamination that included recommended cleanup levels for these eight compounds (Ecology 2023).

On April 10, 2024, the EPA announced the final National Primary Drinking Water Regulation (NPDWR), which established Maximum Contaminant Levels (MCLs) for drinking water for the following five PFAS: PFOA, PFOS, PFHxS, PFNA, and HFPO-DA. Additionally, a Hazard Index MCL was established for mixtures containing two or more of PFHxS, PFNA, HFPO-DA, and PFBS. Ecology revised the June 2023 groundwater PCULs to match the new EPA MCLs and calculated new soil PCULs considering the EPA MCLs. The revised soil and groundwater PCULs were published in Ecology's Cleanup Levels and Risk Calculation (CLARC) data tables in July 2024.

Surface water cleanup levels are assumed to be based on the protection of potable water if surface water is or could potentially be used as a drinking water source (Ecology 2023). Default standard Methods B and C cleanup levels for PFAS chemicals in surface water are not available because chemical-specific bioconcentration factors have not been published by the EPA. Surface water at the FTP and BGC Sites is not currently used as a source of drinking water and is unlikely to be used as a future source of drinking water based on the findings of a Beneficial Water Users Survey completed in 2023 (Shannon & Wilson 2023). Potential future surface water uses in Big Gulch Creek west of the Airport boundary have not been evaluated.

The applicability of PCULs for surface water at the FTP and BGC Sites was evaluated using the criteria published in WAC 173-201A-600 (Use Designations for Fresh Waters), and 173-201A-612 (Use Designations for Marine Waters). The Use Designations for Marine Waters classify marine waters in Mukilteo and all North Puget Sound west of longitude 122°39' as extraordinary aquatic life use marine waters. Because Big Gulch Creek receives stormwater discharge from the FTP and BGC Study Areas, it is a tributary to extraordinary aquatic life use marine waters and could potentially be used as a drinking water source at locations downgradient of the Airport; the most conservative potable water-based PCULs for groundwater are applied to surface water in this report.

The PCULs for the eight PFAS compounds listed above are used to evaluate the nature and extent of impacts at the FTP and BGC Sites in this report. Recommended cleanup levels have not been established for other PFAS compounds. The PCULs for soil are shown in Tables 1, 2 and 5, and the PCULs for groundwater and surface water are shown in Tables 1, 3 and 6.

6.0 Nature and Extent of Impacts

The following section describes the nature and extent of PFAS in soil, groundwater, and surface water at the FTP and BGC Sites based on the results of the 2024 Initial Data Gaps Investigation and other investigations completed at the Sites between 2018 and 2022. As discussed in Section 5, Ecology has established PCULs for the following eight PFAS compounds: PFOA, PFOS, PFNA, PFHxS, HFPO-DA, PFHxA, PFBS and PFBA. The nature and extent of PFAS impacts in soil, groundwater and surface water at the two Sites described in this section is based on the PCULs for these eight PFAS compounds. Additionally, the extent of PFAS that do not have established PCULs are discussed in this section, where appropriate, to inform and support sources of and the fate and transport of PFAS previously discussed in Sections 4.5 and 4.6. Analytical data for soil and groundwater samples collected during the 2018 and 2022 investigations are presented in Tables 1 through 3 and analytical data for soil, groundwater, and surface water samples collected during the 2024 Initial Data Gaps Investigation are presented in Tables 5 and 6.

PFOA, PFOS, PFNA and PFHxS have been detected in soil, groundwater and surface water at concentrations exceeding their respective PCULs during investigations completed at the FTP and BGC Sites between 2018 and 2024. Additionally, PFHxA was detected in soil at two locations at the BGC Site at concentrations exceeding its PCUL. PFOS is the compound with the highest detected concentrations at both the FTP and BGC Sites. Other PFAS compounds were detected in soil, groundwater and/or surface water at both Sites, but the detected concentrations were either less than their respective PCULs, or the compound has no established PCUL.

Figure 9 shows the detected PFOA, PFOS, PFNA and PFHxS¹ concentrations in groundwater and surface water for the 2024 Initial Data Gaps Investigation at the FTP Site. Figure 10 shows the detected PFOA, PFOS, PFNA and PFHxS concentrations in surface water during the 2024 Initial Data Gaps Investigation at the BGC Site. Figure 11 is an isoconcentration map for detected PFOS concentrations in groundwater during the 2022 and 2024 investigations at the FTP Site. Figure 12 is a geologic cross section depicting PFOS detections in soil and isoconcentration contours for PFOS in groundwater at the FTP Site.

6.1 FIRE TRAINING PIT SITE

PFAS have been detected at concentrations exceeding the PCULs in soil and groundwater at the FTP Site beneath and downgradient of the former FTP and the soil mound. Soil and groundwater PFAS concentrations are generally highest, closest to the former FTP. PFOS is the analyte with the highest detected concentrations in soil and groundwater at the FTP Site.

As shown in Figure 11, the PFOS groundwater plume is elongated in the downgradient (southwesterly) direction with the leading edge of the delineated plume situated at the western Airport boundary. Groundwater flows into the stormwater detention pond in this area through groundwater seeps along the hillside above the detention pond. Water in the detention pond is routed through storm lines into Big Gulch Creek, discharging into Puget Sound west of the Airport boundary.

¹ PFOA, PFOS, PFNA, and PFHxS are shown on Figure 9 because these compounds have established PCULs and are present in groundwater and/or surface water at the FTP and/or BGC Sites at concentrations greater than their respective PCULs.

6.1.1 Former Fire Training Pit Area

This area includes the former FTP footprint, areas hydraulically downgradient, extending to the edge of the slope adjacent to the stormwater detention pond, and to the northwest to the edge of Wetland 16, which are the areas most likely to have been affected by activities at the former FTP. The AFFF discharged in this area consisted primarily of legacy or first generation AFFF that contained PFOS and PFHxS and a fluorotelomer-based AFFF that contained 6:2 fluorotelomer sulfonate (6:2 FTS) and 8:2 fluorotelomer sulfonate (8:2 FTS), as indicated by the analytical results discussed below.

6.1.1.1 SOIL

PFOA, PFOS, PFNA and PFHxS at concentrations greater than the PCULs are present in soil in the vicinity of the former fire training pit at depths between approximately 0.4 to 16 feet bgs. The depth of PFAS exceeding PCULs in the vicinity of the former FTP likely extends deeper than 16 feet based on the detected concentrations in samples collected from that depth and the results of soil sampling completed in areas downgradient of the former FTP. The detected concentrations of PFOS in soil within the former FTP footprint (boring FP-1) range from 716 micrograms per kilogram ($\mu\text{g}/\text{kg}$) at a depth of 4.5 feet bgs to 165 $\mu\text{g}/\text{kg}$ at a depth of 10 feet bgs and increase to 645 $\mu\text{g}/\text{kg}$ at a depth of 16 feet bgs. The detected concentrations of PFOA in soil samples collected from boring FP-1 range from 5.07 $\mu\text{g}/\text{kg}$ at a depth of 4.5 feet bgs to 1.85 $\mu\text{g}/\text{kg}$ at a depth of 16 feet bgs. PFNA was detected at concentrations of 38.2 $\mu\text{g}/\text{kg}$, 6.9 $\mu\text{g}/\text{kg}$ and 15.2 $\mu\text{g}/\text{kg}$ at depths of 4.5, 10 and 16 feet bgs, respectively. PFHxS concentrations in soil samples collected from boring FP-1 range from 19.2 $\mu\text{g}/\text{kg}$ to 9.69 $\mu\text{g}/\text{kg}$ at depths between 4.5 and 16 feet bgs. The detected concentrations of PFOS, PFOA, PFNA, and PFHxS exceed their respective vadose zone PCULs (Table 1).

PFAS concentrations in soil decrease downgradient and to the west of the former FTP, as indicated by soil samples collected from borings FP-MW1 and FP-P8 (see Figure 4 and Table 2). PFOS concentrations in soil samples collected from boring FP-MW1, located approximately 40 feet downgradient of the former FTP footprint range from 75 $\mu\text{g}/\text{kg}$ at a depth of 0.4 feet bgs to 200 $\mu\text{g}/\text{kg}$ at a depth of 7.6 feet bgs. The highest detected concentrations of PFOS in soil samples collected in 2024 were from boring FP-B2, located approximately 70 feet south of the former FTP footprint; PFOS was detected at concentrations exceeding the soil PCUL at depths of 5 feet (92.5 $\mu\text{g}/\text{kg}$), 10 feet (37.1 $\mu\text{g}/\text{kg}$), 15 feet (51.2 $\mu\text{g}/\text{kg}$), 20 feet (6.4 $\mu\text{g}/\text{kg}$), and 25 feet (1.5 $\mu\text{g}/\text{kg}$) bgs. PFOA, PFNA and PFHxS were also detected in soil from this boring at concentrations greater than their respective PCULs. Other PFAS detected in soil at depths of 5 feet and 10 feet bgs include 6:2 FTS (1.7 $\mu\text{g}/\text{kg}$ and 0.97 $\mu\text{g}/\text{kg}$, respectively) and 8:2 FTS (62.5 $\mu\text{g}/\text{kg}$ and 31.1 $\mu\text{g}/\text{kg}$, respectively) (Table 5). The combination of PFOS, PFOA, PFNA, PFHxS as well as 6:2 FTS and 8:2 FTS detected in soil near the former FTP indicate the release of both legacy or first generation AFFF and a fluorotelomer-based AFFF that contained 6:2 FTS and 8:2 FTS.

6.1.1.2 GROUNDWATER

PFOA, PFOS, PFNA and PFHxS at concentrations greater than the PCULs are present in groundwater in the vicinity of the former fire training pit and extending downgradient to the western edge of the Airport property (Figure 9). PFOS was the analyte with the greatest detected concentrations in groundwater samples collected in 2022 from monitoring wells FP-MW1 and FP-MW4, located immediately downgradient of the former FTP footprint, and extending to the southwest to monitoring well FP-MW3 (Figure 11). PFOS concentrations in groundwater within the former FTP footprint ranged from 26,000 nanograms per liter (ng/L) to 37,000 ng/L in groundwater samples collected from monitoring well FP-MW4 in 2022, which

exceed the PCUL of 4.0 ng/L (Table 3). Concentrations of PFOA were 840 ng/L and 440 ng/L in the groundwater samples collected from monitoring well FP-MW4 in June and November 2022, respectively. PFNA concentrations detected in the June and November 2022 samples were 4,600 ng/L and 2,300 ng/L, respectively, and PFHxS concentrations were 8,000 ng/L and 4,800 ng/L during the two 2022 sampling events. Immediately downgradient of the former FTP footprint. PFOS concentrations in groundwater samples collected from monitoring well FP-MW1, located immediately downgradient of the FTP footprint, ranged from 80,000 ng/L to 120,000 ng/L in the two groundwater samples collected in 2022 (Table 3).

PFAS concentrations in groundwater generally decrease downgradient of the former FTP and in the cross-gradient northwestern direction toward monitoring well FP-MW8, though the detected concentrations exceed the PCULs. PFOS concentrations in groundwater from monitoring well FP-MW8 and near-by surface water sample FP-SW1 were 270 ng/L and 151 ng/L, respectively. PFBS was detected at a concentration of 302 ng/L in the groundwater sample collected from monitoring well FP-MW8, which is the highest detected concentration of PFBS at the FTP Site. PFBA was detected at a concentration of 240 ng/L. The migration of shorter chain PFAS compounds PFBS and PFBA in groundwater is typically not as retarded by organic matter in the soil compared to other long chain PFAS compounds like PFOS, and higher concentrations of PFBS/PFBA may indicate the leading edge of the groundwater plume. PFOS concentrations in two groundwater samples collected in 2022 from monitoring well FP-MW3, located approximately 350 feet downgradient of the former FTP footprint, ranged from 27,000 ng/L to 54,000 ng/L (Table 3). The detected PFOS concentration in the 2024 groundwater sample collected from monitoring well FP-MW11, located approximately 200 feet east of monitoring well FP-MW3 and 200 feet southwest of the former FTP footprint, was 416 ng/L; the lower detected PFOS concentration in groundwater from FP-MW11 relative to FP-MW3 is due to FP-MW3 being situated directly downgradient of the former FTP, as shown in Figure 11.

6.1.2 Soil Mound/Historical Fire Truck Calibration and FAA Compliance Testing Area

This area is situated between Taxi Lane K-6 and the wetland area, extending southwest to the former FTP footprint and northeast to West Perimeter Road (Figure 9). The AFFF discharged in this area consisted primarily of a fluorotelomer-based AFFF that contained 6:2 FTS, with a lesser contribution of legacy first generation AFFF that contained PFOS and PFHxS, as indicated by the results of laboratory analysis of soil and groundwater samples collected from FP-MW9.

6.1.2.1 SOIL

PFOA, PFOS, PFNA and/or PFHxS at concentrations greater than the PCULs are present in soil in the vicinity of the soil mound and extending approximately 350 feet to the northeast (boring FP-P1) and 200 feet to the southwest (boring FP-P4) of the soil mound. PFOS concentrations were greatest in soil samples collected closest to the soil mound. Soil samples collected from depths of 0.5 feet bgs in borings FP-SH1 and FP-SH2, located immediately adjacent to the base of the soil mound (see Figure 3), had PFOS concentrations of 5.10 µg/kg and 4.70 µg/kg, respectively, which exceed the vadose zone PCUL of 0.046 µg/kg (Table 2).

6.1.2.2 GROUNDWATER

PFOA, PFOS and PFHxS were detected in groundwater samples collected in the soil mound vicinity in 2022. Of these three PFAS, PFOS was detected at the highest concentrations. PFHxS was detected in groundwater grab samples collected in 2022 from borings in this area at concentrations ranging from 130 ng/L (boring FP-B3) to 530 ng/L (boring FP-P2) (Table 3). The greater detected concentrations of PFHxS relative to PFOS may be indicative of different AFFF formulations or retardation of the PFOS plume due to sorption to organics in soil. The 2024 groundwater sample collected from monitoring well FP-MW9 had the highest detected concentration of 6:2 FTS at the FTP Site (4,380 ng/L), indicating a different formulation of AFFF relative to the PFOS-based AFFF released at the former FTP southwest of this location. Several 6:2 FTS breakdown products were also detected in the FP-MW9 groundwater sample, including PFBA (418 ng/L), PFPeA (2,620 ng/L) and PFHxA (1,350 ng/L), though these PFAS do not have established PCULs.

6.1.3 Wetland 19/Northwest Site Area

This area includes the wetland area north of the soil mound and the northern-most portion of the FTP Study Area near Wetland 17 (Figure 9). PFAS detected in soil and surface water in this area likely migrated from the soil mound area through wind dispersion and stormwater runoff. The AFFF released at the soil mound consisted primarily of a fluorotelomer-based AFFF that contained 6:2 FTS, with a lesser contribution of legacy first generation AFFF that contained PFOS and PFHxS, as discussed in Section 6.1.2. However, 6:2 FTS was not detected in surface water in Wetland 19 likely due to transformation to other PFAS, as indicated by detections of breakdown products PFBA (105 ng/L), PFPeA (573 ng/L) and PFHxA (244 ng/L) in surface water sample FP-SW3.

6.1.3.1 SOIL

PFOS and PFHxS were detected in the soil sample collected from a depth of 1-foot bgs in boring FP-B3 at concentrations of 0.19 µg/kg and 0.40 µg/kg, respectively, which exceeds the PCULs for vadose zone soil (Table 5). No other PFAS were detected in soil at concentrations exceeding the PCULs. PFAS were not detected at concentrations greater than laboratory reporting limits in the four soil samples collected from boring FP-MW13 at depths of 5, 10, 15 and 20 feet bgs (Table 5). The detection of PFAS in shallow soil from boring FP-B3 and lack of PFAS detections in deeper soil samples collected from FP-MW13 indicate the detected PFAS in shallow soil are likely associated with migration of PFAS in surface water from the soil mound area through the wetland area and sorption of PFAS to shallow soil in the wetland at the location of FP-B3.

6.1.3.2 SURFACE WATER AND GROUNDWATER

PFHxS was detected in the 2024 surface water sample collected from Wetland 19 (FP-SW3) at a concentration of 89 ng/L, which exceeds the PCUL of 10 ng/L (Figure 9). PFHxS was detected in the 2024 groundwater sample collected from monitoring well FP-MW13 at concentration (61.2 ng/L) that exceeds the PCUL of 10 ng/L. Surface water in this area flows under the access road and enters Wetland 17 before being discharged offsite/off-property through the stormwater conveyance system.

6.1.4 South of Taxi Lane K-6

This area is situated south of Taxi Lane K-6 and west of the Airport runway. The AFFF discharged in this area likely originated from activities at the former FTP and were likely a mix of legacy or first generation AFFF that contained PFOS and PFHxS, and a fluorotelomer-based AFFF that contained 6:2 FTS.

6.1.4.1 SOIL

PFOA, PFOS, PFNA and/or PFHxS are present in soil at concentrations greater than their PCULs in the area southeast of Taxi Lane K-6. PFOS was the analyte with the highest detected concentrations in soil. Soil samples collected from 2022 boring FP-P9 at depths of 0.5 feet and 6.5 feet bgs had detectable PFOS concentrations of 74 µg/kg and 82 µg/kg, respectively, which exceed the PCUL for vadose zone soil of 0.046 µg/kg (Table 2). Soil samples collected from 2024 boring FP-MW12 had detectable PFOS concentrations exceeding the PCUL at depths of 5 feet (75.4 µg/kg), 10 feet (15.8 µg/kg) and 15 feet (35.3 µg/kg) bgs; no PFAS were detected at concentrations greater than laboratory reporting limits in the soil samples collected from depths of 20 and 25 feet bgs in this boring (Table 5).

6.1.4.2 GROUNDWATER

PFOA, PFOS and PFHxS were detected at concentrations exceeding their respective PCULs in groundwater samples collected from this area. PFOS and PFHxS were detected at concentrations of 290 ng/L and 120 ng/L, respectively, in a grab groundwater sample collected from 2022 boring FP-P9 (Table 3). PFOA and PFHxS were detected in the groundwater sample collected from monitoring well FP-MW12 at concentrations of 30.8 ng/L and 1,290 ng/L, which exceed their respective PCULs (Table 6). PFOS was detected in the groundwater sample at a concentration of 11.5 ng/L, which is less than the PCUL of 4.0 ng/L. PFBS was detected at a concentration of 189 ng/L in the groundwater sample collected from monitoring well FP-MW12, which is the second highest detected concentration of PFBS at the FTP Site. PFBS migration in groundwater is typically not as retarded by organic matter in soil, as compared to other longer chain PFAS, and greater concentrations of PFBS may indicate the leading edge of the groundwater plume.

6.1.5 *Stormwater Detention Pond Area/Western Airport Boundary*

As discussed in Section 4.6.1, PFAS-impacted stormwater originating from the FTP Site and from the BGC Site enters the stormwater detention pond at the western end of the FTP area and commingles in surface water prior to discharging offsite through the stormwater conveyance system. Soil and surface water in this area was first assessed during the 2024 Initial Data Gaps Investigation. AFFF that migrated to this location consisted of legacy or first generation AFFF that contained PFOS and PFHxS, and a legacy fluorotelomer-based AFFF that contained 6:2 FTS that originated from the former FTP area and the BGC Site.

6.1.5.1 SOIL

The only PFAS detected in soil from the two borings with analyzed soil samples (FP-MW7 and FP-MW10) was PFOS, which was detected in soil samples collected from boring FP-MW10 at depths of 15 feet bgs (0.18 µg/kg) and 20 feet bgs (0.3 µg/kg), which were situated below the groundwater table; the detected concentrations exceed the PCUL for saturated soil of 0.0026 µg/kg (Table 5). No PFAS were detected at concentrations greater than laboratory reporting limits in the four soil samples collected at depths between 5 and 20 feet bgs from boring FP-MW7.

6.1.5.2 GROUNDWATER

PFOA, PFOS and PFHxS at concentrations greater than the PCULs were detected in the 2024 groundwater sample collected from monitoring well FP-MW10, located west of the stormwater detention pond at the western Airport property boundary (Figure 9). The analytes with the highest detected concentrations were PFOS (420 ng/L) and PFHxS (426 ng/L), which exceed the PCULs of 4 ng/L and 10 ng/L, respectively (Table 6). 6:2 FTS was also detected in the groundwater sample collected from FP-MW10 (627 ng/L), indicating a component of fluorotelomer-based AFFF contributed to the PFAS composition in groundwater in this area in addition to the legacy PFOS and PFHxS-based AFFF.

PFAS concentrations in groundwater in this area are likely influenced by input from surface water in the adjacent stormwater detention pond (discussed below) as well as PFAS migrating in groundwater from the FTP area upgradient to the east. PFAS were not detected at concentrations greater than the PCULs in the 2024 groundwater sample collected from monitoring well FP-MW7, which also had no PFAS detected in the soil samples collected from the boring. Based on these results, the northern extent of PFAS in soil and groundwater at concentrations exceeding the PCULs in this area is delineated by the soil and groundwater samples collected from FP-MW7.

6.1.5.3 SURFACE WATER

PFOA, PFOS, PFNA and PFHxS were detected at concentrations exceeding the PCULs in the groundwater seep sample collected on the slope east of the stormwater detention pond (FP-SEEP) and in the surface water sample collected from the pond (FP-SW2). The concentration of PFOS detected in the groundwater seep sample (1,160 ng/L) was greater than the detected PFOS concentrations in the groundwater samples collected during the 2024 Initial Data Gaps Investigation (Table 6). 6:2 FTS was also detected in surface water sample FP-SW2 (4,300 ng/L), indicating a component of fluorotelomer-based AFFF contributed to the PFAS composition in surface water in this area in addition to the legacy PFOS and PFHxS-based AFFF. The presence of relatively high concentrations of 6:2 FTS breakdown products PFBA (827 ng/L), PFPeA (4,500 ng/L) and PFHxA (2,020 ng/L) as compared to the concentrations of these PFAS in groundwater in this area (i.e., samples FP-MW10 and FP-SEEP) may indicate transformation of 6:2 FTS in surface water in this area.

Although the seep sample location is located downgradient of the former FTP, it should be noted that the seep sample consisted of a grab sample collected from the side of the slope and may have been affected by turbidity. Surface water sample FP-SW2 was collected from the ponded water in the stormwater detention pond and is considered representative of water that is exiting the pond through the stormwater conveyance system and discharging to Big Gulch Creek to the west (Figure 9).

6.2 BIG GULCH CREEK SITE

PFOA, PFOS, PFNA and PFHxS have been detected at the BGC Site in soil and surface water collected from Wetlands 24 and 25 at concentrations exceeding their respective PCULs. Additionally, PFHxA was detected in soil collected from two locations in Wetland 25 at concentrations exceeding the PCUL for saturated soil. The AFFF discharged the EMC and ATS Hangar 1 Buildings likely consisted of two AFFF formulations: a legacy AFFF that contained PFOS and PFHxS and a fluorotelomer-based AFFF that contained 6:2 FTS. Soil and surface water PFAS concentrations are generally highest in the northwestern corner of Wetland 25

adjacent to the northern stormwater outfall that connects to areas along the western end of the EMC Building and the Airport taxi way and buildings to the north (ATS Hangar 1). PFOS is the analyte with the highest detected concentrations in soil and groundwater at the BGC Site (Tables 5 and 6). Soil samples collected at the BGC Site did not exceed a depth of 3 feet bgs due to the method of sampling (hand auger), with exception for borings BGC-B1 and BGC-B2, which were completed within the drainage swale located south of Falcon Drive using a limited-access direct-push drill rig.

Surface water discharging to Wetland 25 from areas to the north and east flows south through the wetland and into the stormwater conveyance system discharging to Wetland 24 (Figure 2). As shown in Figure 10, PFOA, PFOS, PFNA and PFHxS concentrations in surface water generally decrease from the stormwater outfall at the northwestern corner of Wetland 25 (sample BGC-SW2) moving through Wetland 25 and to the northern edge of Wetland 24 (sample FP-SW4)².

6.2.1 Wetland 25 - Drainage Swale/Falcon Drive and Navajo Road

This area is located immediately south of the intersection of Falcon Drive and Navajo Road, south of the EMC Building (Figure 10).

6.2.1.1 SOIL

PFOS was the most frequently detected analyte exceeding the PCUL in soil in the area immediately south of the EMC Building and Falcon Drive. PFOS concentrations detected in soil samples collected in this area in 2022 and 2024 ranged from 0.37 µg/kg to 1.60 µg/kg, which exceeds the saturated soil PCUL of 0.0026 µg/kg (Tables 2 and 5). PFOA, PFNA and PFHxS were detected in one 2022 soil sample (BFG SH2) at concentrations exceeding their respective PCULs (Table 2). In general, PFAS concentrations detected in soil in this area were less than PFAS concentrations detected in soil at the northern end of Wetland 25, as described below.

6.2.1.2 SURFACE WATER

Surface water sample BGC-SW1 contained PFOA at a concentration of 4.8 ng/L, which is greater than the PCUL of 4.0 ng/L. No other PFAS were detected at concentrations greater than their respective PCULs (Table 6). The relatively low concentrations of PFOS (3.4 ng/L) and PFHxS (1.6 ng/L) in addition to the absence of 6:2 FTS and presence of 6:2 FTS breakdown products in surface water sample BGC-SW1 indicates the legacy PFOS and PFHxS-based AFFF and the fluorotelomer-based AFFF discharged to this area have likely migrated downstream through the wetland and/or been transformed to breakdown products. Surface water at this location generally flows southwest toward the Wetland 24 inlet described below.

6.2.2 Wetland 25 – Northern Outfall

The northern outfall is located east of the southern Airport runway approach and immediately south of South Perimeter Road (Figure 10).

² PFOA, PFOS, PFNA, and PFHxS are shown on figure 10 because these compounds have established PCULs and are present in surface water at the FTP and/or BGC Sites at concentrations greater than their respective PCULs.

6.2.2.1 SOIL

PFOA, PFOS, PFNA, PFHxS and/or PFHxA were detected in soil samples collected from depths ranging from 0.5 to 3-feet bgs in borings BGC-B4 and BGC-B5 near the northern Wetland 25 outfall at concentrations exceeding the PCULs. PFOS was the analyte with the highest detected concentrations, ranging from 6.3 µg/kg to 18.5 µg/kg, which exceed the PCUL for saturated soil of 0.0026 µg/kg (Tables 2 and 5). Additionally, 6:2 FTS and 8:2 FTS were detected in the 1- and 3-foot soil samples collected from boring BGC-B4, located adjacent to the Wetland 25 Northern Outfall, at concentrations ranging from 34.8 µg/kg and 52.5 µg/kg, indicating a fluorotelomer-based AFFF release discharged to this location.

6.2.2.2 SURFACE WATER

PFOA, PFOS and PFHxS were detected in surface water sample BGC-SW2 at concentrations exceeding the PCULs (Figure 10). The detected concentrations of PFOA (23 ng/L), PFOS (268 ng/L), PFNA (8.7 ng/L) and PFHxS (218 ng/L) in surface water sample BGC-SW2 were the greatest detected PFAS concentrations in surface water at the BGC Site (Table 6). 6:2 FTS and 8:2 FTS were also detected in surface water sample BGC-SW2 at concentrations of 208 ng/L and 17.6 ng/L, respectively, indicating a fluorotelomer-based AFFF release discharged to this location. Surface water at this location generally flows south to the Wetland 24 inlet described below.

6.2.3 *Wetland 25 – Stormwater Inlet to Wetland 24*

The stormwater inlet to Wetland 24 is situated at the western edge of Wetland 25 immediately east of South Perimeter Road (Figure 10).

6.2.3.1 SOIL

The greatest PFAS concentrations detected in soil in Wetland 25 were in samples collected from boring BGC-B6 located adjacent to the inlet to Wetland 24 (Figure 10). PFOS concentrations detected in soil samples collected from boring BGC-B6 at depths of 1-foot bgs (46.2 µg/kg) and 3-feet bgs (11.9 µg/kg) exceed the PCUL for saturated soil of 0.0026 µg/kg and were greater than PFOS concentrations detected in soil from the Wetland 25 Northern Outfall or the drainage swale areas. Detected concentrations of PFOA, PFNA and PFHxS also exceed their respective PCULs (Table 5).

6.2.3.2 SURFACE WATER

PFOS was detected in surface water sample BGC-SW3, collected at the inlet to Wetland 24, at a concentration of 46.7 ng/L, which exceeds the PCUL of 4 ng/L. PFOA and PFHxS were detected in BGC-SW3 at concentrations of 8.8 ng/L and 28.8 ng/L, respectively, which exceed their respective PCULs. The presence of PFOS and PFHxS in surface water sample BGC-SW3 indicate a legacy PFOS/PFHxS-based AFFF released from the EMC and ATS Hangar 1 Buildings migrated to this area. 6:2 FTS and 8:2 FTS were also detected in surface water sample BGC-SW3 at concentrations of 38.8 ng/L and 6.5 ng/L, respectively, indicating a fluorotelomer-based AFFF release from the EMC and ATS Hangar 1 Building also migrated to this location. Other PFAS were also detected at concentrations less than their PCULs.

6.2.4 *Wetland 24 – Southern Outfall*

The southern outfall to Wetland 24 is located west of the southern Airport runway approach, immediately west of West Perimeter Road (Figure 10).

6.2.4.1 SOIL

PFOA, PFOS and PFNA were detected in the soil sample collected from a depth of 0.5 feet bgs in boring FP-B5 located adjacent to the outfall into Wetland 24 (Figure 10). The detected concentrations ranged from 0.31 µg/kg to 2.9 µg/kg, which exceed their respective PCULs (Table 5).

6.2.4.2 SURFACE WATER

PFOA, PFOS and PFHxS were detected in the surface water sample (FP-SW5) collected adjacent to the outfall in Wetland 24 at concentrations greater than their respective PCULs (Table 6; Figure 10). 6:2 FTS and 8:2 FTS were also detected in surface water sample FP-SW5 at concentrations of 130 ng/L and 12.4-ng/L, respectively. Surface water at this location generally flows toward the north to the stormwater inlet located at the northern end of Wetland 24.

6.2.5 *Wetland 24 – Northern Inlet/Discharge to FTP Area*

The northern inlet/discharge to the stormwater conveyance system leading to the FTP area is located at the northern edge of Wetland 24, immediately south of Bernie Webber Road (Figure 10).

6.2.5.1 SOIL

PFOS was detected in the soil sample collected a depth of 0.5 feet bgs from boring FP-B4 located at the stormwater inlet that discharges water from Wetland 24 (Figure 10). The detected concentration (0.29 µg/kg) exceeds the saturated soil PCUL of 0.0026 µg/kg (Table 5). No other PFAS were detected in soil at this location indicating other PFAS compounds have either transformed or are migrating in surface water and not sorbing to soil at this location.

6.2.5.2 SURFACE WATER

PFOA, PFOS and PFHxS were detected in surface water sample FP-SW4, collected at the inlet that discharges surface water from Wetland 24, at concentrations greater than their respective PCULs (Table 6). The detected concentrations ranged from 15.7 ng/L (PFOA) to 88 ng/L (PFOS) and were less than the concentrations of PFOA, PFOS and PFHxS detected in surface water at the southern outfall into Wetland 24 (Figure 10), indicating PFAS is likely transforming in surface water in Wetland 24. Surface water at the northern portion of Wetland 24 drains to the inlet, which discharges to the stormwater conveyance system leading to the stormwater detention pond located at the FTP Site.

7.0 Data Gaps

The following data gaps were identified during the 2024 Initial Data Gaps Investigation and will be addressed during future investigations to supplement Site data necessary to complete the RIFS for the former FTS and BGC Sites.

7.1 FIRE TRAINING PIT SITE

Additional investigation is needed to evaluate the extent of PFAS documented in soil, groundwater and surface water at the FTP Site. Data gaps remaining for the FTP Site are described below and identified by corresponding data gap number listed below in Figure 11.

1. **Extent of PFAS Greater than PCULs in Soil.** One or more PFAS were detected at all 2022 and 2024 exploration locations at concentrations greater than the PCULs except for three (FP-MW4, FP-MW7 and FP-MW13). Borings FP-MW7 and FP-MW13 were completed along the western Airport boundary, north of the FTP, and appear to be situated north of the FTP Site PFAS groundwater plume (see Figure 11). The soil sample collected from boring FP-MW4 was collected from a depth of 105 feet bgs, a depth unlikely to have detectable concentrations of PFAS based on the current CSM (Figure 12). The lateral and vertical extent of PFAS in soil has not been delineated at the Site based on the results of investigations completed to date.
2. **Extent of PFAS Greater than PCULs in Groundwater.** One or more PFAS at concentrations greater than the PCULs were detected in groundwater samples collected from all Site monitoring wells except for three (FP-MW5, FP-MW7 and FP-MW13). Monitoring wells FP-MW5, FP-MW7 and FP-MW13 appear to be situated north of the FTP Site PFAS groundwater plume (See Figure 11). The extent of PFAS in groundwater at the FTP Site has not been delineated based on the results of investigations completed to date, including in the area south of monitoring well FP-MW10 where groundwater migrates westward and off Airport property.
3. **Extent of PFAS in Surface Water.** The surface water sample collected from the stormwater detention pond along the western Airport boundary had detectable PFAS at concentrations greater than the PCULs. The extent of PFAS in surface water beyond the Airport boundary has not been evaluated.
4. **Solids in Stormwater Conveyance System.** Solids within the stormwater conveyance system have not been evaluated for the presence of PFAS. If stormwater pipes are constructed of concrete, PFAS could potentially adsorb to the surface or absorb into the concrete. Solids and stormwater utility pipes are a potential secondary source for PFAS in surface water.

7.2 BIG GULCH CREEK SITE

Additional investigation is needed to determine the extent of PFAS documented in soil and surface water at the BGC Site. Groundwater conditions at the BGC Site have not been evaluated. Data gaps remaining for the FTP Site are described below and identified by data gap number in Figure 9.

1. **Extent of PFAS Greater than PCULs in Soil.** One or more PFAS were detected at concentrations greater than the PCULs in soil from all 2022 and 2024 exploration locations except for one (BGC-B2). The lateral and vertical extent of PFAS in soil has not been delineated at the Site based on the results of investigations completed to date.
2. **Groundwater Conditions.** Groundwater at the BGC Site has not been evaluated for the presence of PFAS. Sampling completed at the BGC Study Area has consisted of shallow soil and surface water sampling.
3. **Extent of PFAS in Surface Water.** Surface water conditions have not been evaluated in the southern portion of Wetland 25. Surface water entering Wetland 25 generally flows to the south and west to the inlet to Wetland 24; however, other potential sources for PFAS may exist south of this location.
4. **Solids in Stormwater Conveyance System.** Solids within the stormwater conveyance system have not been evaluated for the presence of PFAS except for one stormwater catch basin located north of the EMC Building (sample BGC-CB1; see Figure 10). Solids within the stormwater conveyance system are a potential secondary source for PFAS in surface water.

8.0 Summary and Conclusions

Investigations completed between 2018 and 2024 have confirmed the presence of PFAS in soil, groundwater and surface water at concentrations greater than the PCULs within the FTP and BGC Sites. PFAS-impacted surface water originating from both areas commingles at the western Airport property before discharging off-property to Big Gulch Creek. The extent of PFAS in soil, groundwater and surface water at concentrations greater than the PCULs have not been delineated in either Site.

The analytical results from the 2024 Data Gaps Investigation indicate differences in the PFAS compounds detected in soil, groundwater and surface water for various locations in the FTP and BGC Study Areas that are indicative of releases of different AFFF formulations. First generation legacy AFFF was released at the former FTP and at the EMC and ATS Hangar 1 Buildings as indicated by the presence of PFOS and PFHxS in soil, groundwater, and surface water and a fluorotelomer-based AFFF was released near the soil mound in the FTP Study Area and at the EMC and Hangar 1 Building as indicated by the presence of 6:2 FTS and 8:2 FTS and associated breakdown PFAS compounds in those areas. Future sampling events to further define the nature and extent of these different PFAS compounds may help to inform the overall fate and transport of PFAS for the FTP and BGC Sites.

The depth of PFAS in soil exceeding the PCULs at the FTP and BGC Sites was not determined during the investigations completed to date. Vertical delineation of soil was achieved at one location (FP-MW4) where a soil sample collected from a depth of 105 feet bgs did not have detectable concentrations of PFAS. PFAS are unlikely to have penetrated deep into the dense glacial till and are more likely to have concentrated in soil in the upper portions of the glacial till and migrated with the prevailing groundwater flow direction to the west. Vertical delineation of PFAS in soil at the BGC Site may be impractical due to the heavy vegetation and soft/saturated soils in the two wetland areas. Based on the sloped topography of the wetlands, the lateral delineation for PFAS in soil is assumed to be the upland margins of the two wetlands; AFFF releases discharging from the EMC and ATS Hangar 1 Buildings have not likely impacted soils outside the wetland boundaries due to the surrounding paved surfaces and enclosed stormwater conveyance system.

The PFAS groundwater plume originating from the former FTP and the former fire suppression system calibration area appears to move generally from the two source areas toward the southwest and west and off Airport property (Figures 7 and 11). Groundwater along the Airport boundary north of monitoring well FP-MW7 does not contain PFAS at concentrations greater than the PCULs based on the results of sampling to date. Groundwater conditions south of monitoring well FP-MW10, where groundwater is flowing westward and off Airport property, have not been evaluated (Figure 9).

Surface water in the FTP Site stormwater detention pond, which receives stormwater input from the FTP and BGC Sites, as well as groundwater seeps east of the pond, exits the pond through a stormwater inlet and into Big Gulch Creek west of Mukilteo Speedway and off Airport property (Figures 9 and 12). Future evaluation for potential remedial actions at this location may be warranted based on the results of sampling and observations at the Site during the 2024 investigation.

PFAS in surface water at the northwest corner in Wetland 19 appear to be related to the fire system calibration activities near the soil mound, which likely impacted near-surface soils and surface water in the southern portion of the wetland area through dispersion and windfall. PFAS-impacted surface water has likely migrated to the north and into Wetland 17 since the releases (Figure 9). PFAS was not detected in any soil samples collected from FP-MW13 and PFAS concentrations in groundwater at this location were

less than the PCULs, indicating PFAS impacts in this area of the FTP Site are likely limited to surface water and near-surface soils. The surface swale associated with Wetland 17 (see Figure 9) is the primary drainage for surface water originating from the area of the FP-SW3 surface water sample, where PFHxS was detected at a concentration greater than the PCUL. Future evaluation for potential remedial actions at this location may be warranted based on the results of sampling and observations at the Site during the 2024 investigation.

The data gaps identified in Section 7.0 of this report will be further investigated and addressed as required for development of the RIFS for the Site. Paine Field will work in coordination with Ecology to determine appropriate interim measures, as needed, prior to implementation.

9.0 Limitations

We have prepared this report for the exclusive use of the Snohomish County Airport and their authorized agents and regulatory agencies. Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted environmental science practices in this area at the time this report was prepared. The conclusions and opinions presented in this report are based on our professional knowledge, judgment, and experience. No warranty or other conditions, express or implied, should be understood.

Any electronic form, facsimile, or hard copy of the original document (email, text, table and/or figure), if provided, and any attachments should be considered a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.

Please refer to Appendix E, Report Limitations and Guidelines for Use, for additional information pertaining to use of this report.

10.0 References

AGI Technologies, 1998. Preliminary Geotechnical Engineering Study, proposed Kilo Ramp Development, Snohomish County, Everett, Washington. Report prepared by AGI Technologies, Project No. 15,512.307 dated April 23, 1998.

CDM Smith (CDM) 2000. "Aquifer Investigation All Fab (Former), Snohomish County Airport, Everett, Washington," prepared by CDM Smith dated December 12, 2000.

CDM Smith 2007. Soil Remediation Summary Report, FTP, Snohomish County Airport, Everett, Washington. Prepared by CDM Smith dated February 26, 2007.

CDM Smith 2018. Former Fire Pit PFAS Investigation. Prepared by CDM Smith dated October 29, 2018.

Shannon & Wilson (SWI) 2022. Sampling Data Report: Big Gulch Creek Drainage Sub-Basin 9 and Swamp Creek Drainage Sub-Basin 8, Snohomish County Airport, Everett, Washington. Prepared by SWI dated September 6, 2022.

Shannon & Wilson (SWI) 2023. Data Report: Former Fire Training Pit, Snohomish County Airport, Everett, Washington. Prepared by SWI dated May 1, 2023.

REGENESIS 2023. Sustainable and Low-Cost PFAS Source Treatment; Pilot Studies Incorporating SourceStop Horizontal Barrier Treatments Demonstrate Reduction of Leaching. Prepared by REGENESIS dated July 11, 2023.

REGENESIS 2024. Summary Report for SourceStop 12-Month Post-Treatment Sampling Event. Prepared by REGENESIS dated May 30, 2024.

Washington State Department of Ecology (Ecology) 2007. No Further Action Determination Under WAC 173340-515(5): SCA FTP, Snohomish County Airport, Everett, WA, Facility/Site no. 49626114; VCP No. 1750. Published June 27, 2007.

Washington State Department of Ecology (Ecology) 2014. Environmental Report Tracking system (ERTS) Notification #648864. Release of AFFF to stormwater system at 3100 112th Street Southwest, Everett, Washington. Reported by The Boeing Company on May 21, 2014.

Washington State Department of Ecology (Ecology) 2022a. Focus on: PFAS Cleanup Levels. Publication No. 22-09-075. Published July 2022.

Washington State Department of Ecology (Ecology) 2022b. Initial Investigation Field Report. ERTS No. 718130. Published by Kim Wooten on December 27, 2022.

Washington State Department of Ecology (Ecology) 2023. Guidance for Investigating and Remediating PFAS Contamination in Washington State. Publication No. 22-09-058. Updated June 2023.

Washington State Department of Ecology (Ecology) 2024. Cleanup Levels and Risk Calculation Master Spreadsheet. Updated July 2024.

Washington State Department of Health (DOH) 2022. Revision to Group A Public Water Supplies Rules to establish PFAS state action levels effective January 1, 2022. Chapter 246-290 Washington Administrative Code (WAC).

United States Environmental Protection Agency (EPA) 2024. Per- and Polyfluoroalkyl Substances (PFAS) - Final PFAS National Primary Drinking Water Regulation. April 10, 2024.

Tables

Table 1
2018 Soil and Groundater Chemical Analytical Results (CDM 2018)¹
Per- and Polyfluoroalkyl Substances (PFAS)
Former Fire Training Pit and Big Gulch Creek Study Areas at Snohomish County Airport
Everett, Washington

Sample Identification ²	Sample Date	Sample Depth (feet bgs)	Sample Type ³	Analyte Group	Per- and Polyfluoroalkyl Substances													
					Washington PCUL							Carboxylic Acids						
				Perfluoroalkyl Carboxylic Acids														
				Analyte Name	Perfluorooctan oic acid	Perfluorooctane sulfonic acid	Perfluoronona noic acid	Perfluorohexan esulfonic acid	Perfluorobuta nesulfonic acid	Perfluorobuta noate	Perfluorohexa noic acid	Perfluoropent anoate	Perfluorohept anoic acid	Perfluorodeca noic acid	Perfluorounde canoic acid	Perfluorodode canoic acid	Perfluorotride canoic acid	Perfluorotetra decanoic acid
Abbreviation	PFOA	PFOS	PFNA	PFHxS	PFBS	PFBA	PFHxA	PFPeA	PFHpA	PFDA	PFUnA	PFDoA	PFTTrDA	PFTeA				
Soil Samples (µg/kg)																		
FP1	FP1-4.5	8/15/2018	4.5	Vadose	5.07	716	38.2	19.2	0.631	0.864 U	1.87	0.432 U	0.477	1.83	5.63	0.211 U	2.09	0.211 U
	FP1-10	8/15/2018	10.0	Vadose	1.52	165	6.9	10.9	0.562	0.864 U	1.45	0.432 U	0.216 U	0.296	3.42	0.304	10.3	0.235
	FP1-16	8/15/2018	16.0	Vadose	1.85	645	15.2	9.69	0.271	0.934 U	1.45	0.467 U	0.234 U	0.982	14.7	0.991	24.1	0.433
Soil Protective of Potable Groundwater - Preliminary Cleanup Level (µg/kg) - Vadose ⁴					0.025	0.046	0.089	0.062	25	44	35	NE	NE	NE	NE	NE	NE	NE
Soil Protective of Potable Groundwater - Preliminary Cleanup Level (µg/kg) - Saturated ⁴					0.0016	0.0026	0.0053	0.004	1.7	2.9	2.5	NE	NE	NE	NE	NE	NE	NE
Water Samples (ng/L)																		
FP1	FP1-GW	8/15/2018	NA	Groundwater Grab (CDM)	348	33,300	1,900	5,680	523	138 U	506	292	107	33.7 UD	33.7 UD	33.7 UD	33.7 UD	33.7 UD
FP2	FP2-GW	8/15/2018	NA	Groundwater Grab (CDM)	508	4,970	250	5,430	758	99.8	514	371	144	3.24 U	19.8	3.24 U	4.12	3.24 U
FP3	FP3-GW	8/15/2018	NA	Groundwater Grab (CDM)	115	1,310	108	2,250	363	51.8	215	185	73.9	2.95	15.8	1.97 U	1.97 U	1.97 U
Preliminary Groundwater Cleanup Level (ng/L) ⁴					4.0	4.0	10	10	4,800	8,000	8,000	NE	NE	NE	NE	NE	NE	NE

Sample Identification ²		Sample Date	Sample Depth (feet bgs)	Sample Type ³	Analyte Group	Per- and Polyfluoroalkyl Substances (continued)													
						Sulfonic Acids													
					Perfluoroalkyl Sulfonic Acids					Fluorotelomer Sulfonic Acids			Perfluorooctane Sulfonamides/Amidoacetic Acids/Sulfonamido Ethanols						
Analyte Name	Perfluoropentanesulfonate	Perfluoroheptanesulfonate	Perfluorononanesulfonate	Perfluorodecanesulfonate	Perfluorododecanesulfonate	4:2 fluorotelomersulfonate	6:2 fluorotelomersulfonate	8:2 fluorotelomersulfonate	Perfluorooctanesulfonamide	N-Methylperfluorooctanesulfonamide	N-Methylperfluorooctanesulfonamidoacetic acid	N-Methylperfluorooctanesulfonamidoethanol	N-Ethylperfluorooctanesulfonamide	N-Ethylperfluorooctanesulfonamidoacetic acid	N-Ethylperfluorooctanesulfonamidoethanol				
Abbreviation	PFPeS	PFHpS	PFNS	PFDS	PFDoS	4:2 FTS	6:2 FTS	8:2 FTS	PFOSA	N-MeFOSA	NMeFOSAA	N-MeFOSE	N-EtFOSA	N-EtFOSAA	N-EtFOSE				
Soil Samples (µg/kg)																			
FP1	FP1-4.5	8/15/2018	4.5	Vadose	1.36	2.06	2.09	0.216 U	0.2 U	0.843 U	0.759 U	1.06	0.527 U	0.211 U	0.872	2.15 U	0.211 U	0.242 U	1.61 U
	FP1-10	8/15/2018	10.0	Vadose	0.821	0.815	0.491	0.216 U	0.2 U	0.843 U	0.759 U	0.843 U	0.527 U	0.211 U	2.76	2.15 U	0.211 U	0.242 U	1.61 U
	FP1-16	8/15/2018	16.0	Vadose	0.677	1.38	1.64	0.331	0.216 U	0.911 U	1.26	6.64	0.57 U	0.228 U	8.38	2.32 U	0.228 U	0.262 U	1.74 U
Soil Protective of Potable Groundwater - Preliminary Cleanup Level (µg/kg) - Vadose ⁴						NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Soil Protective of Potable Groundwater - Preliminary Cleanup Level (µg/kg) - Saturated ⁴						NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Water Samples (ng/L)																			
FP1	FP1-GW	8/15/2018	NA	Groundwater Grab (CDM)	943	304	32 U	34.5 U	32 U	135 U	131	135 U	84.2 U	33.7 U	38.7 UD	344 U	33.7 U	34.5 UD	258 U
FP2	FP2-GW	8/15/2018	NA	Groundwater Grab (CDM)	933	563	3.08 U	3.33 U	3.08 U	13 U	205	13 U	8.11 U	3.24 U	3.73 U	33.1 U	3.24 U	4.76	24.8 U
FP3	FP3-GW	8/15/2018	NA	Groundwater Grab (CDM)	508	77.8	1.87 UD	2.02 UD	1.87 UD	7.87 UD	181	7.87 UD	4.92 UD	1.97 UD	2.26 UD	20.1 UD	1.97 UD	13.4	15 UD
Preliminary Groundwater Cleanup Level (ng/L) ⁴						NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE

Notes:

¹ Chemical analyses performed by SGS AXYS for CDM Smith.

² The approximate sample locations are shown on Figures 3 and 4.

³ The interpretation of vadose and saturated soil samples was determined by GeoEngineers based on the information presented in the field logs.

⁴ Preliminary cleanup levels for PFOA, PFOS, PFNA, PFHxS, PFBS, PFBA, PFHxA, and HFPO-DA (GenX) were established by the Washington State Department of Ecology (July 2024).

bgs = below ground surface

µg/kg = micrograms per kilogram

ng/L = nanograms per liter

U = Analyte not detected at a concentration greater than the listed reporting limit.

D = Analyte not detected at the listed concentrations. Reporting limit elevated due to dilution.

– = Not analyzed

NE = Not established

Bolded value indicates analyte detected at the concentration shown.

Gray shaded value indicates the detected concentration is greater than the Preliminary Cleanup Level.

Italicized value indicates the analyte was not detected but the reporting limit is greater than the Preliminary Cleanup Level.

Table 2
2022 Soil Chemical Analytical Results (SWI 2023)¹
Per- and Polyfluoroalkyl Substances (PFAS)
Former Fire Training Pit and Big Gulch Creek Study Areas at Snohomish County Airport
Everett, Washington

Sample Location	Sample Identification ²	Sample Date	Sample Depth (feet bgs)	Vadose or Saturated Samples ³	Analyte Group	Per- and Polyfluoroalkyl Substances (µg/kg)						
						Washington PCUL ⁴						
					Analyte Name	Perfluorooctanoic acid	Perfluorooctanesulfonic acid	Perfluorononanoic acid	Perfluorohexanesulfonic acid	Perfluorobutanesulfonic acid	Perfluorohexanoic acid	Hexafluoropropylene oxide dimer acid
					Abbreviation	PFOA	PFOS	PFNA	PFHxS	PFBS	PFHxA	HFPO-DA (GenX)
Former Fire Training Pit												
FP-MW1	FP-MW1:0.4	5/24/2022	0.4	Vadose		0.22	75 E J*	0.47	2.70	0.21 U	0.24	0.21 U
	FP-MW100:0.4	5/24/2022	0.4	Vadose		0.25	94 E J*	0.48	2.60	0.21 U	0.25	0.21 U
	FP-MW1:7.6	5/24/2022	7.6	Vadose		0.26	200 B	4.90	7.50	0.14 J	0.34	0.22 U
FP-MW2	FP-MW2:0.5	5/25/2022	0.5	Vadose		0.06 J	0.39	0.21 U	0.04 J	0.21 U	0.053 J	0.21 U
	FP-MW101:0.5	5/25/2022	0.5	Vadose		0.22 U	0.25	0.22 U	0.04 J	0.22 U	0.034 J	0.22 U
	FP-MW2:7.0	5/25/2022	7.0	Vadose		0.22 U	0.22	0.22 U	0.16 J	0.22 U	0.22 U	0.22 U
FP-MW3	FP-MW3:0.5	5/25/2022	0.5	Vadose		0.16 J*	18.00	0.16 J*	3.60	0.21 U	0.12 J*	0.21 U
	FP-MW102:0.5	5/25/2022	0.5	Vadose		0.11 J*	5.00	0.09 J*	2.50	0.22 U	0.072 J*	0.22 U
	FP-MW3:2.7	5/25/2022	2.7	Vadose		0.12 J	3.10	0.085 J	1.00	0.20 U	0.30	0.23 U
FP-MW4	FP-MW4:105.0	5/27/2022	105.0	Vadose		0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
FP-SH1	FP-SH1:0.5	5/23/2022	0.5	Vadose		0.70	5.10	1.20	0.20 J	0.22 U	5.90	0.22 U
FP-SH2	FP-SH2:0.5	5/23/2022	0.5	Vadose		0.50	4.70	1.80	0.26	0.21 U	2.00	0.21 U
FP-HA1	FP-HA1:0.8	5/25/2022	0.8	Vadose		0.15 J	1.20	1.10	0.06 J	0.21 U	1.50	0.21 U
	FP-HA1:4.0	5/25/2022	4.0	Vadose		0.084 J	0.38	0.13 J	0.12 J	0.22 U	3.10	0.22 U
FP-P1	FP-P1:0.2	5/23/2022	0.2	Vadose		0.22 U	0.35	0.16 J	0.032 J	0.22 U	0.057 J	0.22 U
	FP-P1:10.2	5/23/2022	10.2	Vadose		0.24 U	0.26 I,J*	0.24 U	0.051 J	0.24 U	0.24 U	0.24 U
FP-P2	FP-P2:0.2	5/23/2022	0.2	Vadose		0.20 U	0.53	0.20 U	0.14 J	0.20 U	0.075 J	0.20 U
	FP-P2:5.3	5/23/2022	5.3	Vadose		1.20	1.60	0.22 U	24.0	0.24	1.10	0.22 U
FP-P3	FP-P3:1.2	5/23/2022	1.2	Vadose		0.082 J	7.30	0.083 J	0.11 I,J*	0.27 U	6.00	0.27 U
	FP-P3:6.3	5/23/2022	6.3	Vadose		0.23 U	0.11 J	0.23 U	0.14 J	0.23 U	3.00	0.23 U
FP-P4	FP-P4:1.4	5/23/2022	1.4	Vadose		0.48	3.00	0.47	0.24	0.20 U	0.58	0.20 U
	FP-P4:11.6	5/23/2022	11.6	Vadose		0.53	0.12 J	0.028 J	0.27	0.25 U	3.00	0.25 U
FP-P5	FP-P5:0.5	5/24/2022	0.5	Vadose		0.17 J	5.30	0.31	0.36	0.20 U	0.049 J	0.20 U
	FP-P5:7.5	5/24/2022	7.5	Vadose		1.20	0.23 U	0.23 U	2.40	0.14 J	0.29	0.23 U
FP-P6	FP-P6:0.5	5/24/2022	0.5	Vadose		0.22 U	28.00	0.35	0.27	0.22 U	0.058 J	0.22 U
	FP-P6:3.4	5/24/2022	3.4	Vadose		0.17 J	0.89	0.032 J	0.58	0.25 U	0.1 J	0.25 U

Sample	Sample	Sample	Sample Depth	Vadose or Saturated	Analyte Group	Per- and Polyfluoroalkyl Substances (µg/kg)						
					Analyte Name	Washington PCUL ⁴						
						Perfluorooctanoic acid	Perfluorooctanesulfonic acid	Perfluorononanoic acid	Perfluorohexanesulfonic acid	Perfluorobutanesulfonic acid	Perfluorohexanoic acid	Hexafluoropropylene oxide dimer acid
FP-P7	FP-P7:0.5	5/24/2022	0.5	Vadose		1.5 JH*	820 B	6.7 JH*	10.00	0.26	0.63 JH*	0.20 U
	FP-P100:0.5	5/24/2022	0.5	Vadose		1.4 JH*	720 B	6.5 JH*	9.00	0.20	0.49 JH*	0.20 U
	FP-P7:7.0	5/24/2022	7.0	Vadose		0.82	270 B	3.80	7.10	0.18 J	0.63	0.22 U
FP-P8	FP-P8:1.5	5/24/2022	1.5	Vadose		0.13 J	14 B J*	0.78 J*	0.18 J*	0.21 U	0.14 J	0.21 U
	FP-P101:1.5	5/24/2022	1.5	Vadose		0.19 J	25 B J*	1.6 J*	0.39 J*	0.21 U	0.21	0.21 U
	FP-P8:6.3	5/24/2022	6.3	Vadose		0.31	1.20	0.049 J	0.22	0.22 U	0.17 J	0.22 U
FP-P9	FP-P9:0.5	5/23/2022	0.5	Vadose		0.11 J	74.00	0.12 J	2.90	0.06 J	0.24	0.21 U
	FP-P9:6.5	5/23/2022	6.5	Vadose		0.40	82.00	0.12 J	6.70	0.20 J	0.59	0.24 U
Big Gulch Creek Drainage Sub-Basin 9												
BFG-HA1	BFG-HA1:0.5	5/18/2022	0.5	Saturated		0.23 U	0.11 J	0.23 U	0.046 J	0.23 U	0.081 J	0.23 U
BFG-SH1	BFG-SH1:0.5	5/18/2022	0.5	Saturated		0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
	BFG-SH1:1.0	5/18/2022	1.0	Saturated		0.35 U	0.70	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U
BFG-SH2	BFG-SH2:0.5	5/18/2022	0.5	Saturated		0.30 U	0.37 J*	0.30 U	0.30 U	0.30 U	0.053 J	0.30 U
	BFG-SH2:1.0	5/18/2022	1.0	Saturated		0.096 J	1.60	0.047 J	0.096 J	0.31 U	0.17 J	0.31 U
Soil Protective of Groundwater - Preliminary Cleanup Level (µg/kg) - Vadose ⁴						0.025	0.046	0.089	0.062	25	35.00	0.12
Soil Protective of Groundwater - Preliminary Cleanup Level (µg/kg) - Saturated ⁴						0.0016	0.0026	0.0053	0.0040	1.7	2.5	0.0069

Sample Location	Sample Identification ²	Sample Date	Sample Depth (feet bgs)	Vadose or Saturated Samples ³	Analyte Group	Per- and Polyfluoroalkyl Substances (continued) (µg/kg)										
						Carboxylic Acids						Sulfonic Acids				
						Analyte Name	Perfluoroalkyl Carboxylic Acids						Perfluoroalkyl Carboxylic Acids	Per- and Polyfluoroether Sulfonic Acids		Perfluorooctane Sulfonamides/Amidoacetic Acids/Sulfonamido Ethanols
					Perfluoroheptanoic acid		Perfluorodecanoic acid	Perfluoroundecanoic acid	Perfluorododecanoic acid	Perfluorotridecanoic acid	Perfluorotetradecanoic acid	4.8-Dioxa-3H-perfluorononanoic acid	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	N-Ethyl perfluorooctane sulonamidoacetic acid	N-Methyl perfluorooctane sulfonamidoacitic acid
Abbreviation	PFHpA	PFDA	PFUnA	PFDoA	PFTTrDA	PFTeA	DONA	9CI-PF3ONS	11CI-PF3OUdS	NEtFOSAA	NMeFOSAA					
Former Fire Training Pit																
FP-MW1	FP-MW1:0.4	5/24/2022	0.4	Vadose		0.053 J	0.29	14.00	0.41	11 J*	0.19 J*	0.21 U	0.21 U	0.21 U	0.087 J	0.039 J
	FP-MW100:0.4	5/24/2022	0.4	Vadose		0.054 J	0.40	11.00	0.27	5.6 J*	0.067 J*	0.21 U	0.21 U	0.21 U	0.058 J	0.21 U
	FP-MW1:7.6	5/24/2022	7.6	Vadose		0.05 J	0.055 J	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
FP-MW2	FP-MW2:0.5	5/25/2022	0.5	Vadose		0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
	FP-MW101:0.5	5/25/2022	0.5	Vadose		0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
	FP-MW2:7.0	5/25/2022	7.0	Vadose		0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
FP-MW3	FP-MW3:0.5	5/25/2022	0.5	Vadose		0.067 J	0.21 U	0.14 J	0.21 U	0.06 J	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
	FP-MW102:0.5	5/25/2022	0.5	Vadose		0.049 J	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
	FP-MW3:2.7	5/25/2022	2.7	Vadose		0.18 J	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.21 U	0.22 U	0.20 U	0.20 U
FP-MW4	FP-MW4:105.0	5/27/2022	105.0	Vadose		0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
FP-SH1	FP-SH1:0.5	5/23/2022	0.5	Vadose		0.97	1.90	0.74	0.32	0.097 J	0.087 J	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
FP-SH2	FP-SH2:0.5	5/23/2022	0.5	Vadose		0.84	3.50	1.40	0.26	0.085 J	0.068 J	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
FP-HA1	FP-HA1:0.8	5/25/2022	0.8	Vadose		0.81	0.40	0.26	0.037 J	0.066 J	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
	FP-HA1:4.0	5/25/2022	4.0	Vadose		1.30	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
FP-P1	FP-P1:0.2	5/23/2022	0.2	Vadose		0.041 J	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
	FP-P1:10.2	5/23/2022	10.2	Vadose		0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
FP-P2	FP-P2:0.2	5/23/2022	0.2	Vadose		0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
	FP-P2:5.3	5/23/2022	5.3	Vadose		0.40	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
FP-P3	FP-P3:1.2	5/23/2022	1.2	Vadose		2.80	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
	FP-P3:6.3	5/23/2022	6.3	Vadose		0.63	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U
FP-P4	FP-P4:1.4	5/23/2022	1.4	Vadose		0.62	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
	FP-P4:11.6	5/23/2022	11.6	Vadose		1.30	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
FP-P5	FP-P5:0.5	5/24/2022	0.5	Vadose		0.045 J	0.076 J	0.14 J	0.20 U	0.071 J	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
	FP-P5:7.5	5/24/2022	7.5	Vadose		0.22 J	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U
FP-P6	FP-P6:0.5	5/24/2022	0.5	Vadose		0.055 J	0.11 J	1.40	0.035 J	0.51	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
	FP-P6:3.4	5/24/2022	3.4	Vadose		0.087 J	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U

Sample	Sample	Sample	Sample Depth	Vadose or Saturated	Analyte Group	Per- and Polyfluoroalkyl Substances (continued) (µg/kg)										
						Carboxylic Acids						Sulfonic Acids				
						Perfluoroalkyl Carboxylic Acids						Per- and Polyfluoroether Sulfonic Acids		Perfluorooctane Sulfonamides/Amidoacetic Acids/Sulfonamido Ethanols		
					Analyte Name	Perfluoroheptanoic acid	Perfluorodecanoic acid	Perfluoroundecanoic acid	Perfluorododecanoic acid	Perfluorotridecanoic acid	Perfluorotetradecanoic acid	4,8-Dioxa-3H-perfluorononanoic acid	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	N-Ethyl perfluorooctane sulonamidoacetic acid	N-Methyl perfluorooctane sulfonamidoacitic acid
FP-P7	FP-P7:0.5	5/24/2022	0.5	Vadose		0.14 J	0.83	29.00	0.48	11.00	0.32 J*	0.20 U	0.20 U	0.20 U	0.32	0.13 I JH*
	FP-P100:0.5	5/24/2022	0.5	Vadose		0.11 J	0.73	23.00	0.42	7.70	0.19 J*	0.20 U	0.20 U	0.20 U	0.33	0.093 I JH*
	FP-P7:7.0	5/24/2022	7.0	Vadose		0.11 J	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
FP-P8	FP-P8:1.5	5/24/2022	1.5	Vadose		0.075 J	0.21 U	0.13 J	0.21 U	0.14 J	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
	FP-P101:1.5	5/24/2022	1.5	Vadose		0.093 J	0.21 U	0.13 J	0.21 U	0.14 J	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
	FP-P8:6.3	5/24/2022	6.3	Vadose		0.09 J	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
FP-P9	FP-P9:0.5	5/23/2022	0.5	Vadose		0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
	FP-P9:6.5	5/23/2022	6.5	Vadose		0.052 J	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
Big Gulch Creek Drainage Sub-Basin 9																
BFG-HA1	BFG-HA1:0.5	5/18/2022	0.5	Saturated		0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U
BFG-SH1	BFG-SH1:0.5	5/18/2022	0.5	Saturated		0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.075 J	0.24 U
	BFG-SH1:1.0	5/18/2022	1.0	Saturated		0.35 U	0.35 U	0.35 U	0.072 J	0.084 J	0.081 J	0.35 U	0.35 U	0.35 U	2.10	0.85
BFG-SH2	BFG-SH2:0.5	5/18/2022	0.5	Saturated		0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.20 J	0.12 J
	BFG-SH2:1.0	5/18/2022	1.0	Saturated		0.062 J	0.11 J	0.098 J	0.073 J	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.68	0.31
Soil Protective of Groundwater - Preliminary Cleanup Level (µg/kg) - Vadose ⁴						NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Soil Protective of Groundwater - Preliminary Cleanup Level (µg/kg) - Saturated ⁴						NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE

Notes:

- ¹ Chemical analyses performed by Eurofins for Shannon & Wilson
- ² The approximate sample locations are shown on Figures 3 through 5.
- ³ The interpretation of vadose and saturated soil samples was determined by GeoEngineers based on the information presented in the field logs.
- ⁴ Preliminary cleanup levels for PFOA, PFOS, PFNA, PFHxS, PFBS, PFBA, PFHxA, and HFPO-DA (GenX) were established by the Washington State Department of Ecology (July 2024).
- bgs = below ground surface
- µg/kg = micrograms per kilogram
- U = Analyte not detected at a concentration greater than the listed reporting limit.
- B = Analyte found in the lab blank and sample. Flag applied by laboratory.
- J = Analyte detected at less than reporting level but greater than or equal to the method detection limit and the concentration is an approximate value. Flag applied by the laboratory.
- J* = Analyte reported as an estimated value, no direction of bias, due to a quality control failure. Flag applied by Shannon & Wilson (*).
- JH* = Analyte reported as an estimated concentration, biased high due to quality control failures. Flag applied by Shannon & Wilson (*).
- = Not analyzed
- NE = Not established
- Bolded** value indicates analyte detected at the concentration shown.
- Gray shaded value indicates the detected concentration is greater than the Preliminary Cleanup Level.
- Italicized* value indicates the analyte was not detected but the reporting limit is greater than the Preliminary Cleanup Level.

Table 3
2022 Groundwater Chemical Analytical Results (SWI 2023)¹
Per- and Polyflouralkyl Substances (PFAS)
Former Fire Training Pit and Big Gulch Creek Study Areas at Snohomish County Airport
Everett, Washington

Sample Location	Sample Identification ²	Sample Date	Sample Type (Collected By)	Analyte Group	Per- and Polyfluoroalkyl Substances (ng/L)											
												Carboxylic Acids				
				Analyte Name	Washington PCULs							Perfluoroalkyl Carboxylic Acids				
					Perfluorooctanoic acid	Perfluorooctanesulfonic acid	Perfluorononanoic acid	Perfluorohexanesulfonic acid	Perfluorobutanesulfonic acid	Perfluorohexanoic acid	Hexafluoropropylene oxide dimer acid	Perfluoroheptanoic acid	Perfluorodecanoic acid	Perfluoroundecanoic acid	Perfluorododecanoic acid	Perfluorotridecanoic acid
Abbreviation	PFOA	PFOS	PFNA	PFHxS	PFBS	PFHxA	HFPO-DA	PFHpA	PFDA	PFUnA	PFDoA	PFTTrDA				
FP-MW1	FP-MW1:GW	6/2/2022	Low-flow (SWI)		2,300	89,000 E,B,J*	10,000	13,000	1,100	2,900	3.8 U	780	20	3.0	1.9 U	1.9 U
	FP-MW100:GW	6/2/2022	Low-flow (SWI)		2,600	120,000 E,B,J*	10,000	13,000	970	2,900	3.7 U	630	18	3.0	1.8 U	1.8 U
	FP-MW1-12142022	12/14/2022	Low-flow (SWI)		1,300	80,000 E,J*	5,100	9,400	670	2,000	3.6 U	520	18	1.1 J	1.8 U	1.8 U
FP-MW2	FP-MW2:GW	6/2/2022	Low-flow (SWI)		230	1,000 B	28	1,800	340	1,100	4.0 U	360	2.0 U	2.0 U	2.0 U	2.0 U
	FP-MW2-11232022	11/23/2022	Low-flow (SWI)		380	1,700	64	3,500	630	730	3.6 U	280	1.8 U	1.8 U	1.8 U	1.8 U
FP-MW3	FP-MW3:GW	6/2/2022	Low-flow (SWI)		1,100	27,000 B	1,600	4,100	320	580	3.6 U	220	6.5	4.4	1.8 U	1.8 U
	FP-MW3-11232022	11/23/2022	Low-flow (SWI)		2,100	54,000 E,J*	3,800	9,300	750	1,300	3.6 U	510	16	9.1	1.8 U	1.8 U
FP-MW4	FP-MW4:GW	6/2/2022	Low-flow (SWI)		840	37,000 E,B,J*	4,600	8,000	660	1,400	3.7 U	300	15	3.2	1.8 U	1.8 U
	FP-MW4-11212022	11/21/2022	Low-flow (SWI)		440	26,000	2,300	4,800	570	880	3.7 U	190	7.4	1.1 J	1.8 U	1.8 U
	FP-MW100-11212022	11/21/2022	Low-flow (SWI)		410	27,000	2,100	6,800	540	980	3.7 U	190	7.4	1.2 J	1.8 U	1.8 U
FP-MW5	FP-MW5-11212022	11/21/2022	Low-flow (SWI)		1.8 J	3.5	0.49 J	1.8 J	2.2	2.5	3.7 U	1.9	1.9 U	1.9 U	1.9 U	1.9 U
FP-P2	FP-P2:GW	5/23/2022	Grab (SWI)		3.8	19	1.8 U	530	55	99	3.6 U	23	1.8 U	1.8 U	1.8 U	1.8 U
FP-P3	FP-P3:GW	5/23/2022	Grab (SWI)		12	1.9	1.7 U	130 J*	9.4	3,500	3.5 U	660	1.7 U	1.7 U	1.7 U	1.7 U
FP-P4	FP-P4:GW	5/23/2022	Grab (SWI)		180	89	7.1	440	79	1,000	3.6 U	320	1.8 U	1.8 U	1.8 U	1.8 U
FP-P9	FP-P9:GW	5/23/2022	Grab (SWI)		6.8	290	0.92 J	120	7.3	11	3.6 U	1.3 J	1.8 U	1.8 U	1.8 U	1.8 U
Groundwater - Preliminary Cleanup Level (ng/L) ³					4.0	4.0	10	10	4,800	8,000	10	NE	NE	NE	NE	NE

Sample Location	Sample Identification ²	Sample Date	Sample Type (Collected By)	Analyte Group	Per- and Polyfluoroalkyl Substances (continued) (ng/L)					
					Carboxylic Acids		Sulfonic Acids			
					Perfluoroalkyl Carboxylic Acids (continued)	Per- and Polyfluoroether Carboxylic Acids	Per- and Polyfluoroether Sulfonic Acids		Perfluorooctane Sulfonamides/Amidoacetic Acids/Sulfonamido Ethanols	
				Analyte Name	Perfluorotetradecanoic acid	4.8-Dioxa-3H-perfluorononanoic acid	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	N-Methyl perfluorooctane sulfonamidoacetic acid	N-Ethyl perfluorooctane sulonamidoacetic acid
				Abbreviation	PFTeA	DONA	9Cl-PF30NS	11Cl-PF30UdS	NMeFOSAA	NEtFOSAA
FP-MW1	FP-MW1:GW	6/2/2022	Low-flow (SWI)		1.9 U	1.9 U	1.9 U	1.9 U	4.7 U	4.7 U
	FP-MW100:GW	6/2/2022	Low-flow (SWI)		1.8 U	1.8 U	1.8 U	1.8 U	4.6 U	4.6 U
	FP-MW1-12142022	12/14/2022	Low-flow (SWI)		1.8 U	1.8 U	1.8 U	1.8 U	73	75
FP-MW2	FP-MW2:GW	6/2/2022	Low-flow (SWI)		2.0 U	2.0 U	2.0 U	2.0 U	5.0 U	5.0 U
	FP-MW2-11232022	11/23/2022	Low-flow (SWI)		1.8 U	1.8 U	1.8 U	1.8 U	4.4 U	4.4 U
FP-MW3	FP-MW3:GW	6/2/2022	Low-flow (SWI)		1.8 U	1.8 U	1.8 U	1.8 U	4.5 U	4.5 U
	FP-MW3-11232022	11/23/2022	Low-flow (SWI)		1.8 U	1.8 U	1.8 U	1.8 U	4.5 U	4.5 U
FP-MW4	FP-MW4:GW	6/2/2022	Low-flow (SWI)		1.8 U	1.8 U	1.8 U	1.8 U	4.6 U	4.6 U
	FP-MW4-11212022	11/21/2022	Low-flow (SWI)		1.8 U	1.8 U	1.8 U	1.8 U	4.6 U	4.6 U
	FP-MW100-11212022	11/21/2022	Low-flow (SWI)		1.8 U	1.8 U	1.8 U	1.8 U	4.6 U	4.6 U
FP-MW5	FP-MW5-11212022	11/21/2022	Low-flow (SWI)		1.9 U	1.9 U	1.9 U	1.9 U	4.7 U	4.7 U
FP-P2	FP-P2:GW	5/23/2022	Grab (SWI)		1.8 U	1.8 U	1.8 U	1.8 U	4.5 U	4.5 U
FP-P3	FP-P3:GW	5/23/2022	Grab (SWI)		1.7 U	1.7 U	1.7 U	1.7 U	4.4 U	4.4 U
FP-P4	FP-P4:GW	5/23/2022	Grab (SWI)		1.8 U	1.8 U	1.8 U	1.8 U	4.5 U	4.5 U
FP-P9	FP-P9:GW	5/23/2022	Grab (SWI)		1.8 U	1.8 U	1.8 U	1.8 U	4.5 U	4.5 U
Groundwater - Preliminary Cleanup Level (ng/L) ³					NE	NE	NE	NE	NE	NE

Notes:

- ¹ Chemical analyses performed by Eurofins for Shannon & Wilson
- ² The approximate sample locations are shown on Figures 3 through 5.
- ³ Preliminary cleanup levels for PFOA, PFOS, PFNA, PFHxS, PFBS, PFBA, PFHxA, and HFPO-DA (GenX) were established by the Washington State Department of Ecology (July 2024).
- B = Compound was found in the lab blank and sample. Flag applied by the laboratory.
- bgs = below ground surface
- J = Result is less than the reporting level but greater than or equal to the method detection limit and the concentration is an approximate value. Flag applied by the laboratory.
- J* = Result is reported as an estimated value, no direction of bias, due to a quality control failure. Flag applied by SWI.
- JH* = Estimated concentration, biased high due to quality control failures. Flag applied by SWI.
- ng/L = nanograms per liter
- U = Analyte not detected at a concentration greater than the listed reporting limit.
- UD = Analyte not detected at a concentration greater than the listed reporting limit. Reporting limit elevated due to dilution (CDM Smith 2018)
- = Not analyzed; NA = Not available; NE = Not established
- Bolded** value indicates analyte detected at the concentration shown.

Gray shaded value indicates the detected concentration is greater than the Preliminary Cleanup Level.

Italicized value indicates the analyte was not detected but the reporting limit is greater than the Preliminary Cleanup Level.

Table 4
FTP Study Area Monitoring Well Construction Details and Groundwater Elevations
Former Fire Training Pit Study Area at Snohomish County Airport
Everett, Washington

Well Identification	Top of Casing Elevation	Screened Interval (ft bgs)	Top of Screen Elevation (ft NAVD 88)	Base of Screen Elevation (ft NAVD 88)	Date Installed	Date Measured	Groundwater Depth (ft BTOC)	Groundwater Elevation (ft NAVD 88)	Ecology Well ID
FP-MW1	564.95	15.0 - 24.8	550.3	540.6	5/24/2022	2/8/2024	13.89	551.06	BPK-751
						5/14/2024	16.95	548.00	
FP-MW2	559.19	30.0 - 39.8	550.3	520.0	5/25/2022	2/8/2024	31.33	527.86	BPK-752
						5/14/2024	32.29	526.90	
FP-MW3	559.55	33.0 - 42.8	526.6	516.8	5/25/2022	2/8/2024	30.49	529.06	BPK-753
						5/14/2024	32.01	527.54	
FP-MW4	565.97	22.0 - 31.8	544.4	534.6	5/27/2022	2/8/2024	14.51	551.46	BNL-692
						5/14/2024	17.08	548.89	
FP-MW5	523.24	8.7 - 18.5	514.7	504.9	10/24/2022	2/8/2024	9.55	513.69	BPL-660
						5/14/2024	10.75	512.49	
FP-MW6	521.91	4.0 - 13.8	518.2	508.4	10/24/2022	2/8/2024	9.75	512.16	BPL-661
						5/14/2024	11.40	510.51	
FP-MW7	523.68	10.0 - 20.0	513.7	503.7	2/7/2024	2/8/2024	13.75	509.93	BPX-733
						5/14/2024	14.89	508.79	
FP-MW8	564.00	17.0 - 27.0	547.0	537.0	2/6/2024	2/8/2024	11.44	552.56	BPX-732
						5/14/2024	14.24	549.76	
FP-MW9	569.08	10.0 - 25.0	559.1	544.1	2/6/2024	2/8/2024	8.90	560.18	BPX-731
						5/14/2024	11.20	557.88	
FP-MW10	522.17	10.0 - 20.0	512.2	502.2	2/7/2024	2/8/2024	10.89	511.28	BPX-734
						5/14/2024	11.88	510.29	
FP-MW11	562.66	20.0 - 30.0	542.7	532.7	2/5/2024	2/8/2024	19.53	543.13	BPX-729
						5/14/2024	20.06	542.60	
FP-MW12	572.24	10.0 - 25.0	562.2	547.2	2/5/2024	2/8/2024	14.41	557.83	BPX-730
						5/14/2024	dry	dry	
FP-MW13	528.54	5.0 - 20.0	523.8	508.8	3/26/2024	3/28/2024	3.21	525.33	BQB-615
						5/14/2024	4.18	524.36	

Notes:

¹ Approximate locations shown on Figure 6. MW1-MW6 installed during previous investigations. MW7-MW12 installed and surveyed by GeoEngineers, 2024.

² MW7 through MW12 well screen elevations are approximated based on surveyed top of casing elevations.

bgs = below ground surface; ft = feet

BTOC = below top of casing

Table 5
2024 Initial Data Gaps Investigation Soil Chemical Analytical Results¹
Per- and Polyfluoroalkyl Substances (PFAS)
Former Fire Training Pit and Big Gulch Creek Study Areas at Snohomish County Airport
Everett, Washington

Sample Location ²	Sample Identification	Sample Date	Sample Depth (feet bgs)	Vadose or Saturated Samples ³	Analyte Group	Per- and Polyfluoroalkyl Substances (µg/kg)										
						Washington PCUL ⁴									Carboxylic Acids	
					Analyte Name	Perfluorooctanoic acid	Perfluorooctanesulfonic acid	Perfluorononanoic acid	Perfluorohexanesulfonic acid	Perfluorobutanesulfonic acid	Perfluorobutanoic acid	Perfluorohexanoic acid	Hexafluoropropylene oxide dimer acid	Perfluoropentanoic acid	Perfluoroheptanoic acid	Perfluorodecanoic acid
Abbreviation	PFOA	PFOS	PFNA	PFHxS	PFBS	PFBA	PFHxA	HFPO-DA (GenX)	PFPeA	PFHpA	PFDA					
Former Fire Training Pit																
FP-B1	FP-B1-5.0	02/08/2024	5.0	Vadose		0.26	34.6	0.25	4.8	0.12 U	0.60 U	0.45	0.35 U	0.44 J	0.12 U	0.12 U
	FP-B1-10.0	02/08/2024	10.0	Vadose		0.11 U	7.4	0.13 U	1.4	0.11 U	0.57 U	0.11 U	0.33 U	0.11 U	0.11 U	0.11 U
	FP-B1-15.0	02/08/2024	15.0	Vadose		0.12 U	0.27	0.14 U	2.3	0.12 U	0.59 U	0.12 U	0.34 U	0.12 U	0.12 U	0.12 U
	FP-B1-20.0	02/08/2024	20.0	Vadose		0.11 U	0.11 U	0.13 U	0.46	0.11 U	0.55 U	0.11 U	0.32 U	0.11 U	0.11 U	0.11 U
	FP-B1-25.0	02/08/2024	25.0	Vadose		0.11 U	0.11 U	0.13 U	1.5	0.11 U	0.56 U	0.11 U	0.32 U	0.11 U	0.11 U	0.11 U
	FP-B1-30.0	02/08/2024	30.0	Vadose		0.11 U	5.2	0.13 U	1.5	0.11 U	0.56 U	0.11 U	0.32 U	0.11 U	0.11 U	0.11 U
FP-B2	FP-B2-5.0	02/08/2024	5.0	Vadose		1.5	92.5	1.9	1.9	0.11 U	0.56 U	0.27	0.32 U	0.35 J	0.37	1.5
	FP-B2-10.0	02/08/2024	10.0	Vadose		0.88	37.1	0.63	1.3	0.11 U	0.54 U	0.33	0.31 U	0.32 J	0.44	0.15 J
	FP-B2-15.0	02/08/2024	15.0	Vadose		0.67	51.2	1.7	1.3	0.12 U	0.58 U	0.18 J	0.33 U	0.18 J	0.16 J	0.12 U
	FP-B2-15 as S DUP-2-20240206	02/08/2024	15	Vadose		0.77	37.8	1.6	1.3	0.12 U	0.58 U	0.24	0.33 U	0.20 J	0.19 J	0.12 U
	FP-B2-20.0	02/08/2024	20.0	Vadose		0.42	6.4	0.14 U	0.78	0.12 U	0.61 U	0.12 U	0.36 U	0.12 U	0.12 U	0.12 U
	FP-B2-25.0	02/08/2024	25.0	Vadose		0.31	1.5	0.13 U	0.45	0.11 U	0.56 U	0.11 U	0.32 U	0.11 U	0.11 U	0.11 U
FP-B3	FP-B3-1.0	03/28/2024	1.0	Vadose		0.13 U	0.19 J	0.15 U	0.40	0.13 U	0.65 U	0.45	0.38 U	1.3	0.20 J	0.13 U
	SDUP-240328	03/28/2024	1.0	Vadose		0.13 U	0.13 J	0.15 U	0.38	0.13 U	0.66 U	0.43	0.38 U	1.1	0.22 J	0.13 U
FP-MW7	FP-MW-7-5.0	02/07/2024	5.0	Vadose		0.11 U	0.11 U	0.13 U	0.17 U	0.11 U	0.55 U	0.11 U	0.32 U	0.11 U	0.11 U	0.11 U
	FP-MW-7-10.0	02/07/2024	10.0	Vadose		0.11 U	0.11 U	0.13 U	0.18 U	0.11 U	0.56 U	0.11 U	0.32 U	0.11 U	0.11 U	0.11 U
	FP-MW-7-15.0	02/07/2024	15.0	Saturated		0.11 U	0.11 U	0.13 U	0.18 U	0.11 U	0.57 U	0.11 U	0.33 U	0.11 U	0.11 U	0.11 U
	FP-MW-7-20.0	02/07/2024	20.0	Saturated		0.11 U	0.11 U	0.13 U	0.18 U	0.11 U	0.55 U	0.11 U	0.32 U	0.11 U	0.11 U	0.11 U
FP-MW8	FP-MW-8-5.0	02/06/2024	5.0	Vadose		0.12 U	1.6	0.13 U	0.18 U	0.12 U	0.58 U	0.13 J	0.33 U	0.18 J	0.12 U	0.12 U
	FP-MW8-5 as S DUP-1-20240206	02/06/2024	5.0	Vadose		0.12 U	1.6	0.13 U	0.18 U	0.12 U	0.58 U	0.15 J	0.33 U	0.12 U	0.12 U	0.12 U
	FP-MW-8-10.0	02/06/2024	10.0	Vadose		0.11 U	0.18 J	0.13 U	0.18 U	0.11 U	0.57 U	0.12 J	0.33 U	0.19 J	0.11 U	0.11 U
	FP-MW-8-15.0	02/06/2024	15.0	Saturated		0.12 U	0.12 U	0.13 U	0.18 U	0.12 U	0.58 U	0.12 U	0.33 U	0.13 J	0.12 U	0.12 U
	FP-MW-8-20.0	02/06/2024	20.0	Saturated		0.12 U	0.12 U	0.13 U	0.23	0.12 U	0.58 U	0.13 J	0.33 U	0.19 J	0.12 U	0.12 U
	FP-MW-8-25.0	02/06/2024	25.0	Saturated		0.12 U	0.12 U	0.14 U	0.25	0.12 U	0.59 U	0.13 J	0.34 U	0.20 J	0.12 U	0.12 U
	FP-MW-8-27.5	02/06/2024	27.5	Saturated		0.11 U	0.11 U	0.13 U	0.18 U	0.11 U	0.57 U	0.17 J	0.33 U	0.28 J	0.11 U	0.11 U

					Analyte Group	Per- and Polyfluoroalkyl Substances (µg/kg)										
						Washington PCUL ⁴								Carboxylic Acids		
														Perfluoroalkyl Carboxylic Acids		
						Analyte Name	Perfluorooctanoic acid	Perfluorooctanesulfonic acid	Perfluorononanoic acid	Perfluorohexanesulfonic acid	Perfluorobutanesulfonic acid	Perfluorobutanoic acid	Perfluorohexanoic acid	Hexafluoropropylene oxide dimer acid	Perfluoropentanoic acid	Perfluoroheptanoic acid
FP-MW9	FP-MW-9-5.0	02/06/2024	5.0	Vadose		0.13 U	2.9	0.15 U	0.29	0.13 U	0.64 U	0.13 U	0.37 U	0.26 J	0.13 U	0.13 U
	FP-MW-9-10.0	02/06/2024	10.0	Saturated		0.12 U	0.12 U	0.14 U	0.19 U	0.12 U	0.59 U	0.16 J	0.34 U	0.31 J	0.12 U	0.12 U
	FP-MW-9-15.0	02/06/2024	15.0	Saturated		0.12 U	0.12 U	0.13 U	0.18 U	0.12 U	0.58 U	0.23	0.33 U	0.47	0.12 U	0.12 U
	FP-MW-9-20.0	02/06/2024	20.0	Saturated		0.11 U	0.11 U	0.13 U	0.18 U	0.11 U	0.55 U	0.12 J	0.32 U	0.24 J	0.11 U	0.11 U
	FP-MW-9-25.0	02/06/2024	25.0	Saturated		0.11 U	0.11 U	0.13 U	0.18 U	0.11 U	0.57 U	0.15 J	0.33 U	0.26 J	0.11 U	0.11 U
FP-MW10	FP-MW-10-5.0	02/07/2024	5.0	Vadose		0.11 U	0.11 U	0.13 U	0.18 U	0.11 U	0.56 U	0.11 U	0.32 U	0.11 U	0.11 U	0.11 U
	FP-MW-10-10.0	02/07/2024	10.0	Vadose		0.12 U	0.12 U	0.14 U	0.19 U	0.12 U	0.59 U	0.12 U	0.34 U	0.12 U	0.12 U	0.12 U
	FP-MW-10-15.0	02/07/2024	15.0	Saturated		0.12 U	0.18 J	0.13 U	0.18 U	0.12 U	0.58 U	0.12 U	0.33 U	0.12 U	0.12 U	0.12 U
	FP-MW-10-20.0	02/07/2024	20.0	Saturated		0.11 U	0.3	0.13 U	0.18 U	0.11 U	0.56 U	0.11 U	0.33 U	0.11 U	0.11 U	0.11 U
FP-MW11	FP-MW-11-5.0	02/05/2024	5.0	Vadose		0.11 U	1.5	0.13 U	0.18 U	0.11 U	0.57 U	0.11 U	0.33 U	0.11 U	0.11 U	0.11 U
	FP-MW-11-10.0	02/05/2024	10.0	Vadose		0.12 U	3.5	0.13 U	0.18 U	0.12 U	0.58 U	0.12 U	0.33 U	0.18 J	0.12 U	0.12 U
	FP-MW-11-15.0	02/05/2024	15.0	Vadose		0.11 U	1.8	0.13 U	0.18 U	0.11 U	0.56 U	0.11 U	0.32 U	0.11 U	0.11 U	0.11 U
	FP-MW-11-20.0	02/05/2024	20.0	Saturated		0.11 U	0.15 J	0.13 U	0.18 U	0.11 U	0.56 U	0.11 U	0.32 U	0.11 U	0.11 U	0.11 U
FP-MW12	FP-MW-12-5.0	02/05/2024	5.0	Vadose		0.14 J	75.4	0.14 U	5.7	0.16 J	0.60 U	0.17 J	0.34 U	0.17 J	0.12 U	0.12 U
	FP-MW-12-10.0	02/05/2024	10.0	Vadose		0.11 U	15.8	0.13 U	1.4	0.11 U	0.57 U	0.11 U	0.33 U	0.11 U	0.11 U	0.11 U
	FP-MW-12-15.0	02/05/2024	15.0	Saturated		0.12 U	35.3	0.14 U	2.6	0.12 U	0.60 U	0.12 U	0.34 U	0.19 J	0.12 U	0.12 U
	FP-MW-12-20.0	02/05/2024	20.0	Saturated		0.12 U	0.12 U	0.13 U	0.19 U	0.12 U	0.58 U	0.12 U	0.34 U	0.12 U	0.12 U	0.12 U
	FP-MW-12-25.0	02/05/2024	25.0	Saturated		0.11 U	0.11 U	0.13 U	0.18 U	0.11 U	0.57 U	0.11 U	0.33 U	0.11 U	0.11 U	0.11 U
FP-MW13	FP-MW-13-5.0	03/26/2024	5.0	Saturated		0.12 U	0.12 U	0.14 U	0.19 U	0.12 U	0.60 U	0.12 U	0.35 U	0.12 U	0.12 U	0.12 U
	FP-MW-13-10.0	03/26/2024	10.0	Saturated		0.11 U	0.11 U	0.13 U	0.18 U	0.11 U	0.55 U	0.11 U	0.32 U	0.11 U	0.11 U	0.11 U
	FP-MW-13-15.0	03/26/2024	15.0	Saturated		0.12 U	0.12 U	0.13 U	0.18 U	0.12 U	0.58 U	0.12 U	0.33 U	0.12 U	0.12 U	0.12 U
	FP-MW-13-20.0	03/26/2024	20.0	Saturated		0.11 U	0.11 U	0.12 U	0.17 U	0.11 U	0.54 U	0.11 U	0.31 U	0.11 U	0.11 U	0.11 U
Big Gulch Creek Drainage Sub-Basin 9																
BGC-B1	BGC-B1-1.0	02/09/2024	1.0	Saturated		0.12 U	0.28	0.14 U	0.19 U	0.12 U	0.6 U	0.12 U	0.34 U	0.12 U	0.12 U	0.12 U
	BGC-B1-3.0	02/09/2024	3.0	Saturated		0.12 U	0.12 U	0.13 U	0.18 U	0.12 U	0.58 U	0.12 U	0.33 U	0.12 U	0.12 U	0.12 U
BGC-B2	BGC-B2-1.5	02/09/2024	1.5	Saturated		0.12 U	0.12 U	0.14 U	0.19 U	0.12 U	0.59 U	0.12 U	0.34 U	0.12 U	0.12 U	0.12 U
	BGC-B2-5.0	02/09/2024	5.0	Saturated		0.11 U	0.11 U	0.13 U	0.18 U	0.11 U	0.56 U	0.11 U	0.32 U	0.11 U	0.11 U	0.11 U
BGC-B3	BGC-B3-1.0	02/09/2024	1.0	Saturated		0.12 U	1.5	0.14 U	0.2 U	0.12 U	0.62 U	0.17 J	0.36 U	0.45 J	0.12 U	0.2 J
	BGC-B3-3.0	02/09/2024	3.0	Saturated		0.12 U	0.63	0.14 U	0.19 U	0.12 U	0.59 U	0.12 U	0.34 U	0.12 U	0.12 U	0.12 U
BGC-B4	BGC-B4-1.0	02/09/2024	1.0	Saturated		3.4	6.3	0.39	0.32	0.13 U	1.8	4.7	0.37 U	4.7	1.4	0.34
	BGC-B4-3.0	02/09/2024	3.0	Saturated		3.8	18.5	0.63	0.55	0.12 U	0.69 J	2.6	0.36 U	2.6	1.1	0.37
BGC-B5	BGC-B5-1.0	02/09/2024	1.0	Saturated		1.6	11.8	0.95	0.53	0.12 U	0.62 U	1.2	0.36 U	1.7	0.77	0.12 U
	BGC-B5-3.0	02/09/2024	3.0	Saturated		1.2	10.3	0.3	0.54	0.13 U	0.63 U	1.2	0.36 U	1.6	0.62	0.13 U
BGC-B6	BGC-B6-1.0	02/09/2024	1.0	Saturated		12.6	46.2	5.8	7.9	0.24 U	2	6.2	0.71 U	8.9	3.1	1.3
	BGC-B6-3.0	02/09/2024	3.0	Saturated		2.1	11.9	0.57	1.5	0.16 U	0.82 U	0.77	0.47 U	0.62 J	0.42	0.17 J
BGC-CB1	BGC-CB1	02/12/2024	--	--		0.12 U	0.12 U	0.14 U	0.2 U	0.12 U	0.61 U	0.12 U	0.36 U	0.12 U	0.12 U	0.12 U
FP-B4	FP-B4-0.5	03/28/2024	0.5	Saturated		0.12 U	0.29	0.14 U	0.19 U	0.12 U	0.60 U	0.12 U	0.35 U	0.12 U	0.12 U	0.12 U
FP-B5	FP-B5-0.5	03/28/2024	0.5	Saturated		0.38	2.9	0.31 J	0.26 U	0.16 U	0.82 U	0.54	0.47 U	1.1	0.24 J	0.17 J
Soil Protective of Groundwater PCUL (mg/kg) - Vadose						0.000025	0.000046	0.000089	0.000062	0.025	0.044	0.035	0.00012	NE	NE	NE
Soil Protective of Groundwater PCUL (mg/kg) - Saturated						0.0000016	0.0000026	0.0000053	0.000004	0.0017	0.0029	0.0025	0.0000069	NE	NE	NE
Soil Protective of Potable Groundwater-Preliminary Cleanup Level (µg/kg)-Vadose ⁴						0.025	0.046	0.089	0.062	25	44	35	0.12	NE	NE	NE
Soil Protective of Potable Groundwater - Preliminary Cleanup Level (µg/kg)-Saturated						0.0016	0.0026	0.0053	0.0040	1.7	2.9	2.5	0.0069	NE	NE	NE

Sample Location ²	Sample Identification	Sample Date	Sample Depth (feet bgs)	Vadose or Saturated Samples ³	Analyte Group	Per- and Polyfluoroalkyl Substances (continued) (µg/kg)										
						Carboxylic Acids (continued)										
					Analyte Name	Perfluoroalkyl Carboxylic Acids (continued)				Fluorotelomer Carboxylic Acids			Per- and Polyfluoroether Carboxylic Acids			
						Perfluoroundecanoic acid	Perfluorododecanoic acid	Perfluorotridecanoic acid	Perfluorotetradecanoic acid	3:3 Fluorotelomer carboxylate	5:3 Fluorotelomer carboxylate	7:3 Fluorotelomer carboxylate	4,8-Dioxa-3H-perfluorononanoic acid	Nonafluoro-3,6-dioxaheptanoic acid	Perfluoro-3-methoxypropanoic acid	Perfluoro-4-methoxybutanoic acid
Abbreviation						PFUnA	PFDODA	PFTDA	PFTeDA	3:3FTCA	5:3FTCA	7:3FTCA	ADONA	NFDHA	PFMPA	PFMBA
Former Fire Training Pit																
FP-B1	FP-B1-5.0	02/08/2024	5.0	Vadose		0.55	0.12 U	0.12 U	0.12 U	0.61 U	1.4 U	1.5 U	0.40 U	0.29 U	0.24 U	0.24 U
	FP-B1-10.0	02/08/2024	10.0	Vadose		0.15 U	0.11 U	0.12 U	0.11 U	0.58 U	1.3 U	1.4 U	0.38 U	0.28 U	0.23 U	0.23 U
	FP-B1-15.0	02/08/2024	15.0	Vadose		0.16 U	0.12 U	0.12 U	0.12 U	0.60 U	1.4 U	1.5 U	0.40 U	0.29 U	0.24 U	0.24 U
	FP-B1-20.0	02/08/2024	20.0	Vadose		0.15 U	0.11 U	0.11 U	0.11 U	0.56 U	1.3 U	1.4 U	0.37 U	0.27 U	0.22 U	0.22 U
	FP-B1-25.0	02/08/2024	25.0	Vadose		0.15 U	0.11 U	0.11 U	0.11 U	0.57 U	1.3 U	1.4 U	0.38 U	0.27 U	0.22 U	0.22 U
	FP-B1-30.0	02/08/2024	30.0	Vadose		0.15 U	0.11 U	0.11 U	0.11 U	0.57 U	1.3 U	1.4 U	0.38 U	0.27 U	0.22 U	0.22 U
FP-B2	FP-B2-5.0	02/08/2024	5.0	Vadose		1.3	0.11 J	0.95	0.11 U	0.57 U	1.3 U	1.4 U	0.37 U	0.27 U	0.22 U	0.22 U
	FP-B2-10.0	02/08/2024	10.0	Vadose		0.17 J	0.11 U	0.13 J	0.11 U	0.55 U	1.3 U	1.4 U	0.37 U	0.27 U	0.22 U	0.22 U
	FP-B2-15.0	02/08/2024	15.0	Vadose		0.15 U	0.12 U	0.12 U	0.12 U	0.59 U	1.3 U	1.5 U	0.39 U	0.28 U	0.23 U	0.23 U
	FP-B2-15 as S DUP-2-20240206	02/08/2024	15	Vadose		0.15 U	0.12 U	0.12 U	0.12 U	0.59 U	1.3 U	1.5 U	0.39 U	0.28 U	0.23 U	0.23 U
	FP-B2-20.0	02/08/2024	20.0	Vadose		0.16 U	0.12 U	0.13 U	0.12 U	0.63 U	1.4 U	1.6 U	0.41 U	0.30 U	0.25 U	0.25 U
	FP-B2-25.0	02/08/2024	25.0	Vadose		0.15 U	0.11 U	0.11 U	0.11 U	0.57 U	1.3 U	1.4 U	0.38 U	0.27 U	0.22 U	0.22 U
FP-B3	FP-B3-1.0	03/28/2024	1.0	Vadose		0.17 U	0.13 U	0.13 U	0.13 U	0.67 U	1.5 U	1.7 U	0.44 U	0.32 U	0.26 U	0.26 U
	SDUP-240328	03/28/2024	1.0	Vadose		0.18 U	0.13 U	0.14 U	0.13 U	0.67 U	1.5 U	1.7 U	0.45 U	0.32 U	0.27 U	0.27 U
FP-MW7	FP-MW-7-5.0	02/07/2024	5.0	Vadose		0.15 U	0.11 U	0.11 U	0.11 U	0.56 U	1.3 U	1.4 U	0.37 U	0.27 U	0.22 U	0.22 U
	FP-MW-7-10.0	02/07/2024	10.0	Vadose		0.15 U	0.11 U	0.11 U	0.11 U	0.57 U	1.3 U	1.4 U	0.37 U	0.27 U	0.22 U	0.22 U
	FP-MW-7-15.0	02/07/2024	15.0	Saturated		0.15 U	0.11 U	0.12 U	0.11 U	0.58 U	1.3 U	1.4 U	0.38 U	0.28 U	0.23 U	0.23 U
	FP-MW-7-20.0	02/07/2024	20.0	Saturated		0.15 U	0.11 U	0.11 U	0.11 U	0.56 U	1.3 U	1.4 U	0.37 U	0.27 U	0.22 U	0.22 U
FP-MW8	FP-MW-8-5.0	02/06/2024	5.0	Vadose		0.15 U	0.12 U	0.12 U	0.12 U	0.59 U	1.3 U	1.5 U	0.39 U	0.28 U	0.23 U	0.23 U
	FP-MW8-5 as S DUP-1-20240206	02/06/2024	5.0	Vadose		0.15 U	0.12 U	0.12 U	0.12 U	0.59 U	1.3 U	1.5 U	0.39 U	0.28 U	0.23 U	0.23 U
	FP-MW-8-10.0	02/06/2024	10.0	Vadose		0.15 U	0.11 U	0.12 U	0.11 U	0.58 U	1.3 U	1.4 U	0.38 U	0.28 U	0.23 U	0.23 U
	FP-MW-8-15.0	02/06/2024	15.0	Saturated		0.15 U	0.12 U	0.12 U	0.12 U	0.59 U	1.3 U	1.5 U	0.39 U	0.28 U	0.23 U	0.23 U
	FP-MW-8-20.0	02/06/2024	20.0	Saturated		0.15 U	0.12 U	0.12 U	0.12 U	0.59 U	1.3 U	1.5 U	0.39 U	0.28 U	0.23 U	0.23 U
	FP-MW-8-25.0	02/06/2024	25.0	Saturated		0.16 U	0.12 U	0.12 U	0.12 U	0.60 U	1.4 U	1.5 U	0.40 U	0.29 U	0.24 U	0.24 U
	FP-MW-8-27.5	02/06/2024	27.5	Saturated		0.15 U	0.11 U	0.12 U	0.11 U	0.58 U	1.3 U	1.4 U	0.38 U	0.28 U	0.23 U	0.23 U

					Analyte Group	Per- and Polyfluoroalkyl Substances (continued) (µg/kg)										
						Carboxylic Acids (continued)										
						Perfluoroalkyl Carboxylic Acids (continued)				Fluorotelomer Carboxylic Acids			Per- and Polyfluoroether Carboxylic Acids			
						Analyte Name	Perfluoroundecanoic acid	Perfluorododecanoic acid	Perfluorotridecanoic acid	Perfluorotetradecanoic acid	3:3 Fluorotelomer carboxylate	5:3 Fluorotelomer carboxylate	7:3 Fluorotelomer carboxylate	4,8-Dioxo-3H-perfluorononanoic acid	Nonafluoro-3,6-dioxoheptanoic acid	Perfluoro-3-methoxypropanoic acid
FP-MW9	FP-MW-9-5.0	02/06/2024	5.0	Vadose		0.31	0.13 U	0.28	0.13 U	0.65 U	1.5 U	1.6 U	0.43 U	0.31 U	0.25 U	0.25 U
	FP-MW-9-10.0	02/06/2024	10.0	Saturated		0.16 U	0.12 U	0.12 U	0.12 U	0.60 U	1.4 U	1.5 U	0.40 U	0.29 U	0.24 U	0.24 U
	FP-MW-9-15.0	02/06/2024	15.0	Saturated		0.15 U	0.12 U	0.12 U	0.12 U	0.59 U	1.3 U	1.5 U	0.39 U	0.28 U	0.23 U	0.23 U
	FP-MW-9-20.0	02/06/2024	20.0	Saturated		0.15 U	0.11 U	0.11 U	0.11 U	0.56 U	1.3 U	1.4 U	0.37 U	0.27 U	0.22 U	0.22 U
	FP-MW-9-25.0	02/06/2024	25.0	Saturated		0.15 U	0.11 U	0.12 U	0.11 U	0.58 U	1.3 U	1.5 U	0.38 U	0.28 U	0.23 U	0.23 U
FP-MW10	FP-MW-10-5.0	02/07/2024	5.0	Vadose		0.15 U	0.11 U	0.11 U	0.11 U	0.57 U	1.3 U	1.4 U	0.38 U	0.27 U	0.22 U	0.22 U
	FP-MW-10-10.0	02/07/2024	10.0	Vadose		0.16 U	0.12 U	0.12 U	0.12 U	0.60 U	1.4 U	1.5 U	0.39 U	0.29 U	0.24 U	0.24 U
	FP-MW-10-15.0	02/07/2024	15.0	Saturated		0.15 U	0.12 U	0.12 U	0.12 U	0.59 U	1.3 U	1.5 U	0.39 U	0.28 U	0.23 U	0.23 U
	FP-MW-10-20.0	02/07/2024	20.0	Saturated		0.15 U	0.11 U	0.11 U	0.11 U	0.57 U	1.3 U	1.4 U	0.38 U	0.27 U	0.23 U	0.23 U
FP-MW11	FP-MW-11-5.0	02/05/2024	5.0	Vadose		0.15 U	0.11 U	0.12 U	0.11 U	0.58 U	1.3 U	1.5 U	0.39 U	0.28 U	0.23 U	0.23 U
	FP-MW-11-10.0	02/05/2024	10.0	Vadose		0.15 U	0.12 U	0.12 U	0.12 U	0.59 U	1.3 U	1.5 U	0.39 U	0.28 U	0.23 U	0.23 U
	FP-MW-11-15.0	02/05/2024	15.0	Vadose		0.15 U	0.11 U	0.11 U	0.11 U	0.57 U	1.3 U	1.4 U	0.37 U	0.27 U	0.22 U	0.22 U
	FP-MW-11-20.0	02/05/2024	20.0	Saturated		0.15 U	0.11 U	0.11 U	0.11 U	0.57 U	1.3 U	1.4 U	0.37 U	0.27 U	0.22 U	0.22 U
FP-MW12	FP-MW-12-5.0	02/05/2024	5.0	Vadose		0.16 U	0.12 U	0.12 U	0.12 U	0.61 U	1.4 U	1.5 U	0.40 U	0.29 U	0.24 U	0.24 U
	FP-MW-12-10.0	02/05/2024	10.0	Vadose		0.15 U	0.11 U	0.12 U	0.11 U	0.58 U	1.3 U	1.4 U	0.38 U	0.28 U	0.23 U	0.23 U
	FP-MW-12-15.0	02/05/2024	15.0	Saturated		0.16 U	0.12 U	0.12 U	0.12 U	0.61 U	1.4 U	1.5 U	0.40 U	0.29 U	0.24 U	0.24 U
	FP-MW-12-20.0	02/05/2024	20.0	Saturated		0.16 U	0.12 U	0.12 U	0.12 U	0.59 U	1.3 U	1.5 U	0.39 U	0.28 U	0.23 U	0.23 U
	FP-MW-12-25.0	02/05/2024	25.0	Saturated		0.15 U	0.11 U	0.12 U	0.11 U	0.58 U	1.3 U	1.4 U	0.38 U	0.28 U	0.23 U	0.23 U
FP-MW13	FP-MW-13-5.0	03/26/2024	5.0	Saturated		0.16 U	0.12 U	0.12 U	0.12 U	0.61 U	1.4 U	1.5 U	0.41 U	0.29 U	0.24 U	0.24 U
	FP-MW-13-10.0	03/26/2024	10.0	Saturated		0.15 U	0.11 U	0.11 U	0.11 U	0.56 U	1.3 U	1.4 U	0.37 U	0.27 U	0.22 U	0.22 U
	FP-MW-13-15.0	03/26/2024	15.0	Saturated		0.15 U	0.12 U	0.12 U	0.12 U	0.59 U	1.3 U	1.5 U	0.39 U	0.28 U	0.23 U	0.23 U
	FP-MW-13-20.0	03/26/2024	20.0	Saturated		0.14 U	0.11 U	0.11 U	0.11 U	0.55 U	1.3 U	1.4 U	0.37 U	0.27 U	0.22 U	0.22 U
Big Gulch Creek Drainage Sub-Basin 9																
BGC-B1	BGC-B1-1.0	02/09/2024	1.0	Saturated		0.29	0.36	0.2 J	0.17 J	0.61 U	1.4 U	1.5 U	0.4 U	0.29 U	0.24 U	0.24 U
	BGC-B1-3.0	02/09/2024	3.0	Saturated		0.15 U	0.12 U	0.12 U	0.12 U	0.59 U	1.3 U	1.5 U	0.39 U	0.28 U	0.23 U	0.23 U
BGC-B2	BGC-B2-1.5	02/09/2024	1.5	Saturated		0.16 U	0.12 U	0.12 U	0.12 U	0.6 U	1.4 U	1.5 U	0.4 U	0.29 U	0.24 U	0.24 U
	BGC-B2-5.0	02/09/2024	5.0	Saturated		0.15 U	0.11 U	0.11 U	0.11 U	0.57 U	1.3 U	1.4 U	0.38 U	0.27 U	0.22 U	0.22 U
BGC-B3	BGC-B3-1.0	02/09/2024	1.0	Saturated		0.17 U	0.19 J	0.13 U	0.12 U	0.63 U	1.4 U	1.6 U	0.42 U	0.3 U	0.25 U	0.25 U
	BGC-B3-3.0	02/09/2024	3.0	Saturated		0.16 U	0.12 U	0.12 U	0.12 U	0.6 U	1.4 U	1.5 U	0.4 U	0.29 U	0.24 U	0.24 U
BGC-B4	BGC-B4-1.0	02/09/2024	1.0	Saturated		0.17 U	0.16 J	0.25 J	0.13 U	0.66 U	1.5 U	2.4 J	0.43 U	0.31 U	0.26 U	0.26 U
	BGC-B4-3.0	02/09/2024	3.0	Saturated		0.16 U	0.12 U	0.13 U	0.12 U	0.63 U	1.4 U	1.6 U	0.41 U	0.3 U	0.25 U	0.25 U
BGC-B5	BGC-B5-1.0	02/09/2024	1.0	Saturated		0.17 U	0.12 U	0.13 U	0.12 U	0.63 U	1.4 U	1.6 U	0.42 U	0.3 U	0.25 U	0.25 U
	BGC-B5-3.0	02/09/2024	3.0	Saturated		0.17 U	0.13 U	0.13 U	0.13 U	0.64 U	1.4 U	1.6 U	0.42 U	0.31 U	0.25 U	0.25 U
BGC-B6	BGC-B6-1.0	02/09/2024	1.0	Saturated		0.63	0.31 J	0.25 U	0.24 U	1.2 U	2.8 U	3.1 U	0.82 U	0.6 U	0.49 U	0.49 U
	BGC-B6-3.0	02/09/2024	3.0	Saturated		0.22 U	0.16 U	0.17 U	0.16 U	0.84 U	1.9 U	2.1 U	0.55 U	0.4 U	0.33 U	0.33 U
BGC-CB1	BGC-CB1	02/12/2024	–	–		0.16 U	0.12 U	0.13 U	0.12 U	0.63 U	1.4 U	1.6 U	0.41 U	0.3 U	0.25 U	0.25 U
FP-B4	FP-B4-0.5	03/28/2024	0.5	Saturated		0.16 U	0.12 U	0.12 U	0.12 U	0.61 U	1.4 U	1.5 U	0.40 U	0.29 U	0.24 U	0.24 U
FP-B5	FP-B5-0.5	03/28/2024	0.5	Saturated		0.37	0.25 J	0.17 U	0.16 U	0.83 U	1.9 U	2.1 U	0.55 U	0.40 U	0.33 U	0.33 U
Soil Protective of Groundwater PCUL (mg/kg) - Vadose						NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Soil Protective of Groundwater PCUL (mg/kg) - Saturated						NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Soil Protective of Potable Groundwater-Preliminary Cleanup Level (µg/kg)-Vadose ⁴						NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Soil Protective of Potable Groundwater - Preliminary Cleanup Level (µg/kg)-Saturated						NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE

Sample Location ²	Sample Identification	Sample Date	Sample Depth (feet bgs)	Vadose or Saturated Samples ³	Analyte Group	Per- and Polyfluoroalkyl Substances (continued) (µg/kg)																	
						Sulfonic Acids																	
						Perfluoroalkyl Sulfonic Acids					Fluorotelomer Sulfonic Acids			Per- and Polyfluoroether Sulfonic Acids			Perfluorooctane Sulfonamides/Amidoacetic Acids/Sulfonamido Ethanols						
						Analyte Name	Perfluoropentanesulfonic acid	Perfluorohexptanesulfonic acid	Perfluorononanesulfonic acid	Perfluorodecanesulfonic acid	Perfluorododecanesulfonic acid	4:2 Fluorotelomer sulfonate	6:2 Fluorotelomer sulfonate	8:2 Fluorotelomer sulfonate	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	Perfluoro(2-ethoxyethane)sulfonic acid	Perfluorooctanesulfonamide	N-Methylperfluorooctanesulfonamide	N-Methylperfluorooctanesulfonamide	N-Ethylperfluorooctanesulfonamide	N-Ethylperfluorooctanesulfonamide	N-Ethylperfluorooctanesulfonamide
					Abbreviation	PFPeS	PFHpS	PFNS	PFDS	PFDnDS	4:2FTS	6:2FTS	8:2FTS	9Cl-PF3ONS (F-53B Major)	11Cl-PF30UdS (F-53B Minor)	PFEESA	PFOSA	MeFOSA	MeFOSAA	MeFOSE	EtFOSA	EtFOSAA	EtFOSE
Former Fire Training Pit																							
FP-B1	FP-B1-5.0	02/08/2024	5.0	Vadose		0.19 U	0.37	0.93	0.20 J	0.18 U	0.48 U	0.48 U	0.72 U	0.53 U	0.48 U	0.24 U	0.45	0.16 U	0.19 U	1.2 U	0.12 U	0.24 U	1.2 U
	FP-B1-10.0	02/08/2024	10.0	Vadose		0.18 U	0.16 U	0.21 U	0.16 U	0.17 U	0.45 U	0.45 U	0.68 U	0.50 U	0.45 U	0.23 U	0.11 U	0.15 U	0.18 U	1.1 U	0.11 U	0.22 U	1.1 U
	FP-B1-15.0	02/08/2024	15.0	Vadose		0.18 U	0.17 U	0.21 U	0.17 U	0.18 U	0.47 U	0.47 U	0.71 U	0.52 U	0.47 U	0.24 U	0.12 U	0.16 U	0.19 U	1.2 U	0.12 U	0.23 U	1.2 U
	FP-B1-20.0	02/08/2024	20.0	Vadose		0.17 U	0.16 U	0.20 U	0.16 U	0.16 U	0.44 U	0.44 U	0.66 U	0.48 U	0.44 U	0.22 U	0.11 U	0.15 U	0.17 U	1.1 U	0.11 U	0.22 U	1.1 U
	FP-B1-25.0	02/08/2024	25.0	Vadose		0.18 U	0.16 U	0.20 U	0.16 U	0.17 U	0.45 U	0.45 U	0.67 U	0.49 U	0.45 U	0.22 U	0.11 U	0.15 U	0.18 U	1.1 U	0.11 U	0.22 U	1.1 U
	FP-B1-30.0	02/08/2024	30.0	Vadose		0.22	0.16 U	0.20 U	0.16 U	0.17 U	0.45 U	0.45 U	0.67 U	0.49 U	0.45 U	0.22 U	0.11 U	0.15 U	0.18 U	1.1 U	0.11 U	0.22 U	1.1 U
FP-B2	FP-B2-5.0	02/08/2024	5.0	Vadose		0.17 U	0.16 U	2.1	0.86	0.17 J	0.45 U	1.7	62.5	0.49 U	0.45 U	0.22 U	1.6	0.15 U	0.18 U	1.1 U	0.11 U	0.22 U	1.1 U
	FP-B2-10.0	02/08/2024	10.0	Vadose		0.17 U	0.16 U	0.33	0.16 U	0.16 U	0.44 U	0.97	31.1	0.48 U	0.44 U	0.22 U	0.36	0.15 U	0.17 U	1.1 U	0.11 U	0.21 U	1.1 U
	FP-B2-15.0	02/08/2024	15.0	Vadose		0.18 U	0.17 U	0.21 U	0.17 U	0.17 U	0.46 U	0.46 U	0.76 J	0.51 U	0.46 U	0.23 U	0.12 U	0.16 U	0.18 U	1.2 U	0.12 U	0.23 U	1.2 U
	FP-B2-15 as S DUP-2-20240206	02/08/2024	15	Vadose		0.18 U	0.17 U	0.21 U	0.16 U	0.17 U	0.46 U	0.46 U	0.69 U	0.51 U	0.46 U	0.23 U	0.12 U	0.16 U	0.18 U	1.2 U	0.12 U	0.23 U	1.2 U
	FP-B2-20.0	02/08/2024	20.0	Vadose		0.19 U	0.18 U	0.22 U	0.18 U	0.18 U	0.49 U	0.49 U	0.74 U	0.54 U	0.49 U	0.25 U	0.12 U	0.17 U	0.19 U	1.2 U	0.12 U	0.24 U	1.2 U
	FP-B2-25.0	02/08/2024	25.0	Vadose		0.18 U	0.16 U	0.20 U	0.16 U	0.17 U	0.45 U	0.45 U	0.67 U	0.49 U	0.45 U	0.22 U	0.11 U	0.15 U	0.18 U	1.1 U	0.11 U	0.22 U	1.1 U
FP-B3	FP-B3-1.0	03/28/2024	1.0	Vadose		0.21 U	0.19 U	0.24 U	0.19 U	0.20 U	0.52 U	0.52 U	0.79 U	0.57 U	0.52 U	0.26 U	0.13 U	0.18 U	0.21 U	1.3 U	0.13 U	0.26 U	1.3 U
	SDUP-240328	03/28/2024	1.0	Vadose		0.21 U	0.19 U	0.24 U	0.19 U	0.20 U	0.53 U	0.53 U	0.80 U	0.58 U	0.53 U	0.27 U	0.13 U	0.18 U	0.21 U	1.3 U	0.13 U	0.26 U	1.3 U
FP-MW7	FP-MW-7-5.0	02/07/2024	5.0	Vadose		0.17 U	0.16 U	0.20 U	0.16 U	0.16 U	0.44 U	0.44 U	0.66 U	0.48 U	0.44 U	0.22 U	0.11 U	0.15 U	0.17 U	1.1 U	0.11 U	0.22 U	1.1 U
	FP-MW-7-10.0	02/07/2024	10.0	Vadose		0.18 U	0.16 U	0.20 U	0.16 U	0.17 U	0.45 U	0.45 U	0.67 U	0.49 U	0.45 U	0.22 U	0.11 U	0.15 U	0.18 U	1.1 U	0.11 U	0.22 U	1.1 U
	FP-MW-7-15.0	02/07/2024	15.0	Saturated		0.18 U	0.16 U	0.21 U	0.16 U	0.17 U	0.45 U	0.45 U	0.68 U	0.50 U	0.45 U	0.23 U	0.11 U	0.15 U	0.18 U	1.1 U	0.11 U	0.22 U	1.1 U
	FP-MW-7-20.0	02/07/2024	20.0	Saturated		0.17 U	0.16 U	0.20 U	0.16 U	0.17 U	0.44 U	0.44 U	0.66 U	0.48 U	0.44 U	0.22 U	0.11 U	0.15 U	0.17 U	1.1 U	0.11 U	0.22 U	1.1 U
FP-MW8	FP-MW-8-5.0	02/06/2024	5.0	Vadose		0.18 U	0.17 U	0.21 U	0.16 U	0.17 U	0.46 U	0.46 U	0.69 U	0.51 U	0.46 U	0.23 U	0.12 U	0.16 U	0.18 U	1.2 U	0.12 U	0.23 U	1.2 U
	FP-MW8-5 as S DUP-1-20240206	02/06/2024	5.0	Vadose		0.18 U	0.17 U	0.21 U	0.16 U	0.17 U	0.46 U	0.46 U	0.69 U	0.51 U	0.46 U	0.23 U	0.12 U	0.16 U	0.18 U	1.2 U	0.12 U	0.23 U	1.2 U
	FP-MW-8-10.0	02/06/2024	10.0	Vadose		0.18 U	0.16 U	0.21 U	0.16 U	0.17 U	0.45 U	0.45 U	0.68 U	0.50 U	0.45 U	0.23 U	0.11 U	0.15 U	0.18 U	1.1 U	0.11 U	0.22 U	1.1 U
	FP-MW-8-15.0	02/06/2024	15.0	Saturated		0.18 U	0.17 U	0.21 U	0.17 U	0.17 U	0.46 U	0.46 U	0.69 U	0.51 U	0.46 U	0.23 U	0.12 U	0.16 U	0.18 U	1.2 U	0.12 U	0.23 U	1.2 U
	FP-MW-8-20.0	02/06/2024	20.0	Saturated		0.18 U	0.17 U	0.21 U	0.16 U	0.17 U	0.46 U	0.46 U	0.69 U	0.51 U	0.46 U	0.23 U	0.12 U	0.16 U	0.18 U	1.2 U	0.12 U	0.23 U	1.2 U
	FP-MW-8-25.0	02/06/2024	25.0	Saturated		0.19 U	0.17 U	0.21 U	0.17 U	0.18 U	0.47 U	0.47 U	0.71 U	0.52 U	0.47 U	0.24 U	0.12 U	0.16 U	0.19 U	1.2 U	0.12 U	0.23 U	1.2 U
	FP-MW-8-27.5	02/06/2024	27.5	Saturated		0.18 U	0.17 U	0.21 U	0.16 U	0.17 U	0.46 U	0.54 J	0.68 U	0.50 U	0.46 U	0.23 U	0.11 U	0.15 U	0.18 U	1.1 U	0.12 U	0.22 U	1.1 U

					Analyte Group	Per- and Polyfluoroalkyl Substances (continued) (µg/kg)																	
						Sulfonic Acids																	
						Perfluoroalkyl Sulfonic Acids					Fluorotelomer Sulfonic Acids			Per- and Polyfluoroether Sulfonic Acids			Perfluorooctane Sulfonamides/Amidoacetic Acids/Sulfonamido Ethanols						
Analyte Name	Perfluoropentanesulfonic acid	Perfluorohexanesulfonic acid	Perfluorononanesulfonic acid	Perfluorodecane sulfonic acid	Perfluorododecane sulfonic acid	4:2 Fluorotelomer sulfonate	6:2 Fluorotelomer sulfonate	8:2 Fluorotelomer sulfonate	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	Perfluoro(2-ethoxyethane)sulfonic acid	Perfluorooctanesulfonamide	N-Methylperfluorooctanesulfonamide	N-Methylperfluorooctanesulfonamide	N-Ethylperfluorooctanesulfonamide	N-Ethylperfluorooctanesulfonamide	N-Ethylperfluorooctanesulfonamide						
FP-MW9	FP-MW-9-5.0	02/06/2024	5.0	Vadose		0.20 U	0.18 U	0.23 U	0.18 U	0.19 U	0.51 U	0.51 U	0.76 U	0.56 U	0.51 U	0.25 U	0.13 U	0.17 U	0.20 U	1.3 U	0.13 U	0.25 U	1.3 U
	FP-MW-9-10.0	02/06/2024	10.0	Saturated		0.19 U	0.17 U	0.21 U	0.17 U	0.18 U	0.47 U	1.7	0.71 U	0.52 U	0.47 U	0.24 U	0.12 U	0.16 U	0.19 U	1.2 U	0.12 U	0.23 U	1.2 U
	FP-MW-9-15.0	02/06/2024	15.0	Saturated		0.18 U	0.17 U	0.21 U	0.16 U	0.17 U	0.46 U	0.99	0.69 U	0.51 U	0.46 U	0.23 U	0.12 U	0.16 U	0.18 U	1.2 U	0.12 U	0.23 U	1.2 U
	FP-MW-9-20.0	02/06/2024	20.0	Saturated		0.17 U	0.16 U	0.20 U	0.16 U	0.17 U	0.44 U	0.77 J	0.66 U	0.49 U	0.44 U	0.22 U	0.11 U	0.15 U	0.17 U	1.1 U	0.11 U	0.22 U	1.1 U
	FP-MW-9-25.0	02/06/2024	25.0	Saturated		0.18 U	0.17 U	0.21 U	0.16 U	0.17 U	0.46 U	0.75 J	0.69 U	0.50 U	0.46 U	0.23 U	0.11 U	0.16 U	0.18 U	1.1 U	0.12 U	0.23 U	1.1 U
FP-MW10	FP-MW-10-5.0	02/07/2024	5.0	Vadose		0.18 U	0.16 U	0.20 U	0.16 U	0.17 U	0.45 U	0.45 U	0.67 U	0.49 U	0.45 U	0.22 U	0.11 U	0.15 U	0.18 U	1.1 U	0.11 U	0.22 U	1.1 U
	FP-MW-10-10.0	02/07/2024	10.0	Vadose		0.18 U	0.17 U	0.21 U	0.17 U	0.18 U	0.47 U	0.47 U	0.71 U	0.52 U	0.47 U	0.24 U	0.12 U	0.16 U	0.19 U	1.2 U	0.12 U	0.23 U	1.2 U
	FP-MW-10-15.0	02/07/2024	15.0	Saturated		0.18 U	0.17 U	0.21 U	0.16 U	0.17 U	0.46 U	0.46 U	0.69 U	0.51 U	0.46 U	0.23 U	0.12 U	0.16 U	0.18 U	1.2 U	0.12 U	0.23 U	1.2 U
	FP-MW-10-20.0	02/07/2024	20.0	Saturated		0.18 U	0.16 U	0.20 U	0.16 U	0.17 U	0.45 U	0.45 U	0.68 U	0.49 U	0.45 U	0.23 U	0.11 U	0.15 U	0.18 U	1.1 U	0.11 U	0.22 U	1.1 U
FP-MW11	FP-MW-11-5.0	02/05/2024	5.0	Vadose		0.18 U	0.17 U	0.21 U	0.16 U	0.17 U	0.46 U	0.46 U	0.69 U	0.50 U	0.46 U	0.23 U	0.11 U	0.16 U	0.18 U	1.1 U	0.12 U	0.23 U	1.1 U
	FP-MW-11-10.0	02/05/2024	10.0	Vadose		0.18 U	0.17 U	0.21 U	0.17 U	0.17 U	0.46 U	0.46 U	0.69 U	0.51 U	0.46 U	0.23 U	0.12 U	0.16 U	0.18 U	1.2 U	0.12 U	0.23 U	1.2 U
	FP-MW-11-15.0	02/05/2024	15.0	Vadose		0.18 U	0.16 U	0.20 U	0.16 U	0.17 U	0.45 U	0.45 U	0.67 U	0.49 U	0.45 U	0.22 U	0.11 U	0.15 U	0.18 U	1.1 U	0.11 U	0.22 U	1.1 U
	FP-MW-11-20.0	02/05/2024	20.0	Saturated		0.18 U	0.16 U	0.20 U	0.16 U	0.17 U	0.45 U	0.45 U	0.67 U	0.49 U	0.45 U	0.22 U	0.11 U	0.15 U	0.18 U	1.1 U	0.11 U	0.22 U	1.1 U
FP-MW12	FP-MW-12-5.0	02/05/2024	5.0	Vadose		0.34	0.93	0.22 U	0.17 U	0.18 U	0.48 U	0.48 U	0.71 U	0.52 U	0.48 U	0.24 U	0.12 U	0.16 U	0.19 U	1.2 U	0.12 U	0.23 U	1.2 U
	FP-MW-12-10.0	02/05/2024	10.0	Vadose		0.18 U	0.19 J	0.21 U	0.16 U	0.17 U	0.45 U	0.45 U	0.68 U	0.50 U	0.45 U	0.23 U	0.11 U	0.15 U	0.18 U	1.1 U	0.11 U	0.22 U	1.1 U
	FP-MW-12-15.0	02/05/2024	15.0	Saturated		0.19 U	0.31	0.22 U	0.18 J	0.18 U	0.48 U	0.48 U	0.72 U	0.52 U	0.48 U	0.24 U	0.12 U	0.16 U	0.19 U	1.2 U	0.12 U	0.23 U	1.2 U
	FP-MW-12-20.0	02/05/2024	20.0	Saturated		0.18 U	0.17 U	0.21 U	0.17 U	0.17 U	0.47 U	0.47 U	0.70 U	0.51 U	0.47 U	0.23 U	0.12 U	0.16 U	0.18 U	1.2 U	0.12 U	0.23 U	1.2 U
	FP-MW-12-25.0	02/05/2024	25.0	Saturated		0.18 U	0.17 U	0.21 U	0.16 U	0.17 U	0.46 U	0.46 U	0.68 U	0.50 U	0.46 U	0.23 U	0.11 U	0.16 U	0.18 U	1.1 U	0.12 U	0.22 U	1.1 U
FP-MW13	FP-MW-13-5.0	03/26/2024	5.0	Saturated		0.19 U	0.17 U	0.22 U	0.17 U	0.18 U	0.48 U	0.48 U	0.72 U	0.53 U	0.48 U	0.24 U	0.12 U	0.16 U	0.19 U	1.2 U	0.12 U	0.24 U	1.2 U
	FP-MW-13-10.0	03/26/2024	10.0	Saturated		0.17 U	0.16 U	0.20 U	0.16 U	0.17 U	0.44 U	0.44 U	0.66 U	0.49 U	0.44 U	0.22 U	0.11 U	0.15 U	0.17 U	1.1 U	0.11 U	0.22 U	1.1 U
	FP-MW-13-15.0	03/26/2024	15.0	Saturated		0.18 U	0.17 U	0.21 U	0.17 U	0.17 U	0.46 U	0.46 U	0.69 U	0.51 U	0.46 U	0.23 U	0.12 U	0.16 U	0.18 U	1.2 U	0.12 U	0.23 U	1.2 U
	FP-MW-13-20.0	03/26/2024	20.0	Saturated		0.17 U	0.16 U	0.20 U	0.16 U	0.16 U	0.43 U	0.43 U	0.65 U	0.48 U	0.43 U	0.22 U	0.11 U	0.15 U	0.17 U	1.1 U	0.11 U	0.21 U	1.1 U
Big Gulch Creek Drainage Sub-Basin 9																							
BGC-B1	BGC-B1-1.0	02/09/2024	1.0	Saturated		0.19 U	0.17 U	0.22 U	0.17 U	0.18 U	0.48 U	0.48 U	0.72 U	0.52 U	0.48 U	0.24 U	0.12 U	0.16 U	0.19 U	1.2 U	0.12 U	0.23 U	1.2 U
	BGC-B1-3.0	02/09/2024	3.0	Saturated		0.18 U	0.17 U	0.21 U	0.16 U	0.17 U	0.46 U	0.46 U	0.69 U	0.51 U	0.46 U	0.23 U	0.12 U	0.16 U	0.18 U	1.2 U	0.12 U	0.23 U	1.2 U
BGC-B2	BGC-B2-1.5	02/09/2024	1.5	Saturated		0.19 U	0.17 U	0.21 U	0.17 U	0.18 U	0.47 U	0.47 U	0.71 U	0.52 U	0.47 U	0.24 U	0.12 U	0.16 U	0.19 U	1.2 U	0.12 U	0.23 U	1.2 U
	BGC-B2-5.0	02/09/2024	5.0	Saturated		0.18 U	0.16 U	0.2 U	0.16 U	0.17 U	0.45 U	0.45 U	0.67 U	0.49 U	0.45 U	0.22 U	0.11 U	0.15 U	0.18 U	1.1 U	0.11 U	0.22 U	1.1 U
BGC-B3	BGC-B3-1.0	02/09/2024	1.0	Saturated		0.2 U	0.18 U	0.23 U	0.78	0.19 U	0.5 U	0.5 U	0.75 U	0.55 U	0.5 U	0.25 U	0.12 U	0.17 U	0.2 U	1.2 U	0.13 U	0.24 U	1.2 U
	BGC-B3-3.0	02/09/2024	3.0	Saturated		0.19 U	0.17 U	0.21 U	0.17 U	0.18 U	0.47 U	0.47 U	0.71 U	0.52 U	0.47 U	0.24 U	0.12 U	0.16 U	0.19 U	1.2 U	0.12 U	0.23 U	1.2 U
BGC-B4	BGC-B4-1.0	02/09/2024	1.0	Saturated		0.2 U	0.19 U	0.23 U	1.3	0.19 U	0.52 U	47	52.5	0.57 U	0.52 U	0.26 U	1	0.18 U	0.2 U	1.3 U	0.13 U	0.25 U	1.3 U
	BGC-B4-3.0	02/09/2024	3.0	Saturated		0.19 U	0.18 U	0.22 U	0.48	0.18 U	0.49 U	37.5	34.8	0.54 U	0.49 U	0.25 U	0.65	0.17 U	0.19 U	1.2 U	0.12 U	0.24 U	1.2 U
BGC-B5	BGC-B5-1.0	02/09/2024	1.0	Saturated		0.2 U	0.18 U	0.23 U	0.18 U	0.19 U	0.5 U	1.4	0.75 U	0.55 U	0.5 U	0.25 U	0.12 U	0.17 U	0.2 U	1.2 U	0.13 U	0.25 U	1.2 U
	BGC-B5-3.0	02/09/2024	3.0	Saturated		0.2 U	0.18 U	0.23 U	0.18 U	0.19 U	0.5 U	1.8	0.92 J	0.55 U	0.5 U	0.25 U	0.13 U	0.17 U	0.2 U	1.3 U	0.13 U	0.25 U	1.3 U
BGC-B6	BGC-B6-1.0	02/09/2024	1.0	Saturated		0.54	0.53	0.44 U	0.35 U	0.37 U	0.98 U	3.7	1.5 U	1.1 U	0.98 U	0.49 U	0.24 U	0.33 U	0.39 U	2.4 U	0.25 U	0.48 U	2.4 U
	BGC-B6-3.0	02/09/2024	3.0	Saturated		0.26 U	0.24 U	0.3 U	0.23 U	0.25 U	0.66 U	2.9	1.3	0.72 U	0.66 U	0.33 U	0.16 U	0.22 U	0.26 U	1.6 U	0.17 U	0.32 U	1.6 U
BGC-CB1	BGC-CB1	02/12/2024	--	--		0.19 U	0.18 U	0.22 U	0.18 U	0.18 U	0.49 U	0.49 U	0.74 U	0.54 U	0.49 U	0.25 U	0.12 U	0.17 U	0.19 U	1.2 U	0.12 U	0.24 U	1.2 U
FP-B4	FP-B																						

Notes:

¹ Chemical analyses performed by SGS of Orlando, Florida. PFAS compounds were analyzed by EPA Method 1633.

Chemical analytical laboratory reports are included in Appendix C.

² Approximate sample locations are shown on Figures 6 and 8.

³ The interpretation of vadose and saturated soil samples was determined by GeoEngineers using depth to groundwater measured at the time of well construction.

⁴ Preliminary cleanup levels were established by the Washington State Department of Ecology (July 2024).

bgs = below ground surface

µg/kg = micrograms per kilogram

U = Analyte not detected at a concentration greater than the listed reporting limit.

J = Analyte detected at less than reporting level but greater than or equal to the method detection limit and the concentration is an approximate value.

Flag applied by the laboratory.

NE = Not established

Bolded value indicates analyte detected at the concentration shown.

Gray shaded value indicates the detected concentration is greater than the Preliminary Cleanup Level.

Italicized value indicates the analyte was not detected but the reporting limit is greater than the Preliminary Cleanup Level.

Table 6
2024 Initial Data Gaps Investigation Groundwater Chemical Analytical Results¹
Per- and Polyfluoroalkyl Substances (PFAS)
Former Fire Training Pit and Big Gulch Creek Study Areas at Snohomish County Airport
Everett, Washington

Sample Location ²	Sample Identification	Sample Date	Analyte Group	Per- and Polyfluoroalkyl Substances (PFAS) (ng/L)								
				Washington PCUL								
			Analyte Name	Perfluorooctanoic acid	Perfluorooctanesulfonic acid	Perfluorononanoic acid	Perfluorohexanesulfonic acid	Perfluorobutanesulfonic acid	Perfluorobutanoic acid	Perfluorohexanoic acid	Hexafluoropropylene oxide dimer acid	Hazard Index (HI; unitless) ³
				Abbreviation	PFOA	PFOS	PFNA	PFHxS	PFBS	PFBA	PFHxA	
Former Fire Training Pit												
FP-SEEP	FP-SEEP-20240207	2/7/2024	Seep	185	1160	135	844	102	451	1,350	2.3 U	100
FP-SW1	FP-SW1-20240207	2/7/2024	Surface water	83.4	151	19.2	349	52.9	604	2,060	1.9 U	40
FP-SW2	FP-SW2-20240206	2/6/2024	Surface water	216	116	15.3	345	54.3	827	2,020	2.0 U	40
FP-SW3	FP-SW3-240328	3/28/2024	Surface water	4.2 U	8.3 U	5.1 U	89.1	17.8	105	244	8.3 U	10
FP-SW4	FP-SW4-240328	3/28/2024	Surface water	15.7	88	5.5	47.2	4.4	12.5	43.1	1.1 U	10
FP-SW5	FP-SW5-240328	3/28/2024	Surface water	16.5	97.1	4.5	66.7	4.2	16.6	45.5	1.2 U	10
	WDUP-240328	3/28/2024	Surface water	16.1	125	5.3	77.9	5.2	17	47.6	1.1 U	10
FP-MW7	FP-MW7-20240213	2/13/2024	Groundwater	0.44 U	1 J	0.54 U	2.9	0.88 U	3.5 U	0.44 U	1.8 U	0
FP-MW8	FP-MW8-20240213	2/13/2024	Groundwater	207	270	11.1	1410	302	240	737	1.9 U	100
FP-MW9	FP-MW9-20240213	2/13/2024	Groundwater	13.6	4.5	1.5 J	10.9	1.5 J	418	1,350	1.9 U	1
FP-MW10	FP-MW10-20240213	2/13/2024	Groundwater	90.2	420	5.9	426	48.1	66.6	156	1.8 U	40
FP-MW11	FP-MW11-20240214	2/14/2024	Groundwater	28.3	414	4.3	391	26.8	9.5	20.8	1.8 U	40
	FP-MWDUP-20240214	2/14/2024	Groundwater	28.5	416	4	375	26.6	9.7	21	1.8 U	40
FP-MW12	FP-MW12-20240214	2/14/2024	Groundwater	30.8	11.5	0.58 U	1290	189	8.6	46.2	1.9 U	100
FP-MW13	FP-MW13-240328	3/28/2024	Groundwater	2.5	1.2 U	0.71 U	61.2	13.9	85.5	231	1.2 U	10
Big Gulch Creek Drainage Sub-Basin 9												
BGC-SW1	BGC-SW1-20240209	2/9/2024	Surface water	4.8	3.4	1.7 J	1.6 J	1.3 J	7.2 J	10.1	1.9 U	0
BGC-SW2	BGC-SW2-20240209	2/9/2024	Surface water	23	268	8.7	218	13.2	30.6	77.6	1.9 U	20
BGC-SW3	BGC-SW3-20240209	2/9/2024	Surface water	8.8	46.7	2.4	28.8	3.4	10.6	20.3	2.2 U	3
Equipment Blanks												
	EB-20240209	2/9/2024	Blank	0.46 U	0.93 U	0.56 U	0.93 U	0.93 U	3.7 U	0.46 U	1.9 U	0
	EB-20240214	2/14/2024	Blank	0.45 U	0.89 U	0.54 U	0.89 U	0.89 U	3.6 U	0.45 U	1.8 U	0
	EB1-240328	3/28/2024	Blank	0.45 U	0.91 U	0.55 U	0.91 U	0.91 U	3.6 U	0.45 U	0.91 U	0
	FB-240328	3/28/2024	Blank	0.45 U	0.89 U	0.54 U	0.89 U	0.89 U	3.6 U	0.45 U	0.89 U	0
Preliminary Cleanup Level for Groundwater (ng/L) ⁴				4.0	4.0	10	10	4,800	8,000	8,000	10	1

Sample Location ²	Sample Identification	Sample Date	Analyte Group	Per- and Polyfluoroalkyl Substances (PFAS) (continued) (ng/L)													
				Carboxylic Acids													
			Analyte Name	Perfluoroalkyl Carboxylic Acids							Fluorotelomer Carboxylic Acids			Per- and Polyfluoroether Carboxylic Acids			
				Perfluoropentanoic acid	Perfluoroheptanoic acid	Perfluorodecanoic acid	Perfluoroundecanoic acid	Perfluorododecanoic acid	Perfluorotridecanoic acid	Perfluorotetradecanoic acid	3:3 Fluorotelomer carboxylate	5:3 Fluorotelomer carboxylate	7:3 Fluorotelomer carboxylate	4,8-Dioxa-3H-perfluorononanoic acid	Nonafluoro-3,6-dioxaheptanoic acid	Perfluoro-3-methoxypropanoic acid	Perfluoro-4-methoxybutanoic acid
Abbreviation				PFPeA	PFHpA	PFDA	PFUnA	PFDODA	PFTTrDA	PFTeDA	3:3FTCA	5:3FTCA	7:3FTCA	ADONA	NFDHA	PFMPA	PFMBA
Former Fire Training Pit																	
FP-SEEP	FP-SEEP-20240207	2/7/2024	Seep	2890	398	0.57 U	0.68 U	0.68 U	0.95 U	0.57 U	6.8 J	24.2 J	11 U	2.3 U	1.4 U	1.1 U	1.3 U
FP-SW1	FP-SW1-20240207	2/7/2024	Surface water	4560	518	0.47 U	0.57 U	0.57 U	0.79 U	0.47 U	8.4 J	16.7 J	9.4 U	1.9 U	1.1 U	0.94 U	1.1 U
FP-SW2	FP-SW2-20240206	2/6/2024	Surface water	4500	655	0.50 U	0.60 U	0.60 U	0.84 U	0.50 U	5.0 U	17.6 J	10 U	2.0 U	1.2 U	1.0 U	1.1 U
FP-SW3	FP-SW3-240328	3/28/2024	Surface water	573	84.5	4.2 U	5.0 U	5.0 U	7.0 U	4.2 U	42 U	83 U	83 U	17 U	10 U	8.3 U	9.5 U
FP-SW4	FP-SW4-240328	3/28/2024	Surface water	42.6	14.7	1.8 J	0.66 U	0.66 U	0.92 U	0.55 U	5.5 U	11 U	11 U	2.2 U	1.3 U	1.1 U	1.3 U
FP-SW5	FP-SW5-240328	3/28/2024	Surface water	57.1	16.6	0.92 J	0.72 U	0.72 U	1.0 U	0.60 U	6.0 U	12 U	12 U	2.4 U	1.4 U	1.2 U	1.4 U
	WDUP-240328	3/28/2024	Surface water	63	16.9	0.69 J	0.65 U	0.65 U	0.91 U	0.54 U	5.4 U	11 U	11 U	2.2 U	1.3 U	1.1 U	1.2 U
FP-MW7	FP-MW7-20240213	2/13/2024	Groundwater	0.88 U	0.44 U	0.44 U	0.53 U	0.53 U	0.74 U	0.44 U	4.4 U	8.8 U	8.8 U	1.8 U	1.1 U	0.88 U	1.0 U
FP-MW8	FP-MW8-20240213	2/13/2024	Groundwater	1160	360	0.48 U	0.58 U	0.58 U	0.81 U	0.48 U	4.8 U	11.5 J	9.6 U	1.9 U	1.2 U	0.96 U	1.1 U
FP-MW9	FP-MW9-20240213	2/13/2024	Groundwater	2620	224	0.46 U	0.56 U	0.56 U	0.78 U	0.46 U	4.6 U	26 J	9.3 U	1.9 U	1.1 U	0.93 U	1.1 U
FP-MW10	FP-MW10-20240213	2/13/2024	Groundwater	272	97.5	0.45 U	0.55 U	0.55 U	0.76 U	0.45 U	4.5 U	9.1 U	9.1 U	1.8 U	1.1 U	0.91 U	1.0 U
FP-MW11	FP-MW11-20240214	2/14/2024	Groundwater	22.5	10.8	0.45 U	0.54 U	0.54 U	0.75 U	0.45 U	4.5 U	8.9 U	8.9 U	1.8 U	1.1 U	0.89 U	1.0 U
	FP-MWDUP-20240214	2/14/2024	Groundwater	22.4	10.6	0.45 U	0.54 U	0.54 U	0.75 U	0.45 U	4.5 U	8.9 U	8.9 U	1.8 U	1.1 U	0.89 U	1.0 U
FP-MW12	FP-MW12-20240214	2/14/2024	Groundwater	14	6.9	0.47 U	0.57 U	0.57 U	0.79 U	0.47 U	4.7 U	9.4 U	9.4 U	1.9 U	1.1 U	0.94 U	1.1 U
FP-MW13	FP-MW13-240328	3/28/2024	Groundwater	536	48.1	0.58 U	0.70 U	0.70 U	0.98 U	0.58 U	5.8 U	12 U	12 U	2.3 U	1.4 U	1.2 U	1.3 U
Big Gulch Creek Drainage Sub-Basin 9																	
BGC-SW1	BGC-SW1-20240209	2/9/2024	Surface water	16.3	6.1	0.93 J	0.56 U	0.56 U	0.78 U	0.46 U	4.6 U	9.3 U	9.3 U	1.9 U	1.1 U	0.93 U	1.1 U
BGC-SW2	BGC-SW2-20240209	2/9/2024	Surface water	118	28.7	1.3 J	0.63 J	0.57 U	0.79 U	0.47 U	4.7 U	9.4 U	9.4 U	1.9 U	1.1 U	0.94 U	1.1 U
BGC-SW3	BGC-SW3-20240209	2/9/2024	Surface water	25.3	8.6	0.77 J	0.65 U	0.65 U	0.91 U	0.54 U	5.4 U	11 U	11 U	2.2 U	1.3 U	1.1 U	1.2 U
Equipment Blanks																	
	EB-20240209	2/9/2024	Blank	0.93 U	0.46 U	0.46 U	0.56 U	0.56 U	0.78 U	0.46 U	4.6 U	9.3 U	9.3 U	1.9 U	1.1 U	0.93 U	1.1 U
	EB-20240214	2/14/2024	Blank	0.89 U	0.45 U	0.45 U	0.54 U	0.54 U	0.75 U	0.45 U	4.5 U	8.9 U	8.9 U	1.8 U	1.1 U	0.89 U	1.0 U
	EB1-240328	3/28/2024	Blank	0.91 U	0.45 U	0.45 U	0.55 U	0.55 U	0.76 U	0.45 U	4.5 U	9.1 U	9.1 U	1.8 U	1.1 U	0.91 U	1.0 U
	FB-240328	3/28/2024	Blank	0.89 U	0.45 U	0.45 U	0.54 U	0.54 U	0.75 U	0.45 U	4.5 U	8.9 U	8.9 U	1.8 U	1.1 U	0.89 U	1.0 U
Preliminary Cleanup Level for Groundwater (ng/L) ⁴				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE

Sample Location ²	Sample Identification	Sample Date	Analyte Group	Per- and Polyfluoroalkyl Substances (PFAS) (continued) (ng/L)																	
				Sulfonic Acids																	
			Analyte Name	Perfluoroalkyl Sulfonic Acids					Fluorotelomer Sulfonic Acids			Per- and Polyfluoroether Sulfonic			Perfluorooctane Sulfonamides/Amidoacetic Acids/Sulfonamido Ethanols						
				Perfluoropentanesulfonic acid	Perfluorohexptanesulfonic acid	Perfluorononanesulfonic acid	Perfluorodecanesulfonic acid	Perfluorododecanesulfonic acid	4:2 Fluorotelomer sulfonate	6:2 Fluorotelomer sulfonate	8:2 Fluorotelomer sulfonate	Chlorohexadecafluoro-3-oxanonane-1-sulfonic	Chloroeicosafluoro-3-oxaundecane-1-sulfonic	Perfluoro(2-ethoxyethane)sulfonic acid	Perfluorooctanesulfonamide	N-Methylperfluorooctanesulfonamide	N-Methylperfluorooctanesulfonamidoacetic acid	N-Methylperfluorooctanesulfonamidoethanol	N-Ethylperfluorooctanesulfonamidoacetic acid	N-Ethylperfluorooctanesulfonamidoethanol	
				Abbreviation	PFPeS	PFHpS	PFNS	PFDS	PFDnDS	4:2FTS	6:2FTS	8:2FTS	PF3ONS (F-53B Major)	PF3OUdS (F-53B)	PFEESA	PFOSA	MeFOSA	MeFOSAA	MeFOSE	EtFOSA	EtFOSAA
Former Fire Training Pit																					
FP-SEEP	FP-SEEP-20240207	2/7/2024	Seep	130	42.7	1.1 U	1.1 U	1.3 U	4.5 U	992	4.7 U	2.3 U	2.3 U	1.1 U	1.1 U	1.1 U	1.1 U	11 U	1.1 U	1.5 U	11 U
FP-SW1	FP-SW1-20240207	2/7/2024	Surface water	60.5	15.4	0.94 U	0.94 U	1.1 U	3.8 U	1960	3.9 U	1.9 U	1.9 U	0.94 U	0.94 U	0.94 U	0.94 U	9.4 U	0.94 U	1.3 U	9.4 U
FP-SW2	FP-SW2-20240206	2/6/2024	Surface water	75.8	13.4	1.0 U	1.0 U	1.1 U	4.0 U	4300	4.1 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.3 U	10 U
FP-SW3	FP-SW3-240328	3/28/2024	Surface water	14.9 J	8.3 U	8.3 U	8.3 U	9.5 U	33 U	33 U	34 U	17 U	17 U	8.3 U	8.3 U	8.3 U	8.3 U	83 U	8.3 U	11 U	83 U
FP-SW4	FP-SW4-240328	3/28/2024	Surface water	4.7	1.4 J	1.1 U	1.1 U	1.3 U	4.4 U	55.4	4.5 U	2.2 U	2.2 U	1.1 U	1.1 U	1.1 U	1.1 U	11 U	1.1 U	1.5 U	11 U
FP-SW5	FP-SW5-240328	3/28/2024	Surface water	7.9	1.3 J	1.2 U	1.2 U	1.4 U	4.8 U	130	12.4	2.4 U	2.4 U	1.2 U	1.2 U	1.2 U	1.2 U	12 U	1.2 U	1.6 U	12 U
	WDUP-240328	3/28/2024	Surface water	7.1	2.8	1.1 U	1.1 U	1.2 U	4.3 U	103	11.2	2.2 U	2.2 U	1.1 U	1.1 U	1.1 U	1.1 U	11 U	1.1 U	1.4 U	11 U
FP-MW7	FP-MW7-20240213	2/13/2024	Groundwater	0.98 U	0.88 U	0.88 U	0.88 U	1.0 U	3.5 U	3.5 U	3.6 U	1.8 U	1.8 U	0.88 U	0.88 U	0.88 U	0.88 U	8.8 U	0.88 U	1.2 U	8.8 U
FP-MW8	FP-MW8-20240213	2/13/2024	Groundwater	448	48.7	0.96 U	0.96 U	1.1 U	3.8 U	1370	4.0 U	1.9 U	1.9 U	0.96 U	0.96 U	0.96 U	0.96 U	9.6 U	0.96 U	1.3 U	9.6 U
FP-MW9	FP-MW9-20240213	2/13/2024	Groundwater	1.7 J	0.93 U	0.93 U	0.93 U	1.1 U	3.7 U	4380	3.8 U	1.9 U	1.9 U	0.93 U	0.93 U	0.93 U	0.93 U	9.3 U	0.93 U	1.2 U	9.3 U
FP-MW10	FP-MW10-20240213	2/13/2024	Groundwater	57.4	12.4	0.91 U	0.91 U	1.0 U	3.6 U	627	3.7 U	1.8 U	1.8 U	0.91 U	0.91 U	0.91 U	0.91 U	9.1 U	0.91 U	1.2 U	9.1 U
FP-MW11	FP-MW11-20240214	2/14/2024	Groundwater	42.9	8.5	0.89 U	0.89 U	1.0 U	3.6 U	3.6 U	3.7 U	1.8 U	1.8 U	0.89 U	0.89 U	0.89 U	0.89 U	8.9 U	0.89 U	1.2 U	8.9 U
	FP-MWDUP-20240214	2/14/2024	Groundwater	39.7	8	0.89 U	0.89 U	1.0 U	3.6 U	3.6 U	3.7 U	1.8 U	1.8 U	0.89 U	0.89 U	0.89 U	0.89 U	8.9 U	0.89 U	1.2 U	8.9 U
FP-MW12	FP-MW12-20240214	2/14/2024	Groundwater	165	24	0.94 U	0.94 U	1.1 U	3.8 U	3.8 U	3.9 U	1.9 U	1.9 U	0.94 U	0.94 U	0.94 U	0.94 U	9.4 U	0.94 U	1.3 U	9.4 U
FP-MW13	FP-MW13-240328	3/28/2024	Groundwater	9.3	1.2 U	1.2 U	1.2 U	1.3 U	4.7 U	4.7 U	4.8 U	2.3 U	2.3 U	1.2 U	1.2 U	1.2 U	1.2 U	12 U	1.2 U	1.5 U	12 U
Big Gulch Creek Drainage Sub-Basin 9																					
BGC-SW1	BGC-SW1-20240209	2/9/2024	Surface water	1.0 U	0.93 U	0.93 U	0.93 U	1.1 U	3.7 U	3.7 U	3.8 U	1.9 U	1.9 U	0.93 U	0.93 U	0.93 U	0.93 U	9.3 U	0.93 U	1.2 U	9.3 U
BGC-SW2	BGC-SW2-20240209	2/9/2024	Surface water	23.6	5.3	1.3 J	0.94 U	1.1 U	3.8 U	208	17.6	1.9 U	1.9 U	0.94 U	1.4 J	0.94 U	0.94 U	9.4 U	0.94 U	1.3 U	9.4 U
BGC-SW3	BGC-SW3-20240209	2/9/2024	Surface water	3.0	1.1 U	1.1 U	1.1 U	1.2 U	4.3 U	38.8	6.5 J	2.2 U	2.2 U	1.1 U	1.1 U	1.1 U	1.1 U	11 U	1.1 U	1.4 U	11 U
Equipment Blanks																					
	EB-20240209	2/9/2024	Blank	1.0 U	0.93 U	0.93 U	0.93 U	1.1 U	3.7 U	3.7 U	3.8 U	1.9 U	1.9 U	0.93 U	0.93 U	0.93 U	0.93 U	9.3 U	0.93 U	1.2 U	9.3 U
	EB-20240214	2/14/2024	Blank	1.0 U	0.89 U	0.89 U	0.89 U	1.0 U	3.6 U	3.6 U	3.7 U	1.8 U	1.8 U	0.89 U	0.89 U	0.89 U	0.89 U	8.9 U	0.89 U	1.2 U	8.9 U
	EB1-240328	3/28/2024	Blank	1.0 U	0.91 U	0.91 U	0.91 U	1.0 U	3.6 U	3.6 U	3.7 U	1.8 U	1.8 U	0.91 U	0.91 U	0.91 U	0.91 U	9.1 U	0.91 U	1.2 U	9.1 U
	FB-240328	3/28/2024	Blank	1.0 U	0.89 U	0.89 U	0.89 U	1.0 U	3.6 U	3.6 U	3.7 U	1.8 U	1.8 U	0.89 U	0.89 U	0.89 U	0.89 U	8.9 U	0.89 U	1.2 U	8.9 U
Preliminary Cleanup Level for Groundwater (ng/L) ⁴				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE

Notes:

¹ Chemical analyses performed by SGS of Orlando, Florida. PFAS compounds were analyzed by EPA Method 1633. Chemical analytical laboratory reports are included in Appendix C.

² Approximate sample locations are shown in Figure 2.

³ Hazard Index as defined by PFAS National Primary Drinking Water Regulation (EPA, 2024) based on HFPO-DA, PFBS, PFHxS, and PFNA.

⁴ Washington State Department of Ecology Preliminary Cleanup Levels based on United States Environmental Protection Agency Maximum Contaminant Levels for PFOA, PFOS, PFNA, PFHxS, PFBS, PFBA, and HFPO-DA (GenX), adopted July 2024. Presenting Method B Cleanup Levels for PFBS, PFBA, and PFHxS.

bgs = below ground surface; ng/L = nanograms per liter

U = Analyte not detected at a concentration greater than the listed reporting limit.

J = Analyte detected at less than reporting level but greater than or equal to the method detection limit and the concentration is an approximate value. Flag applied by the laboratory.

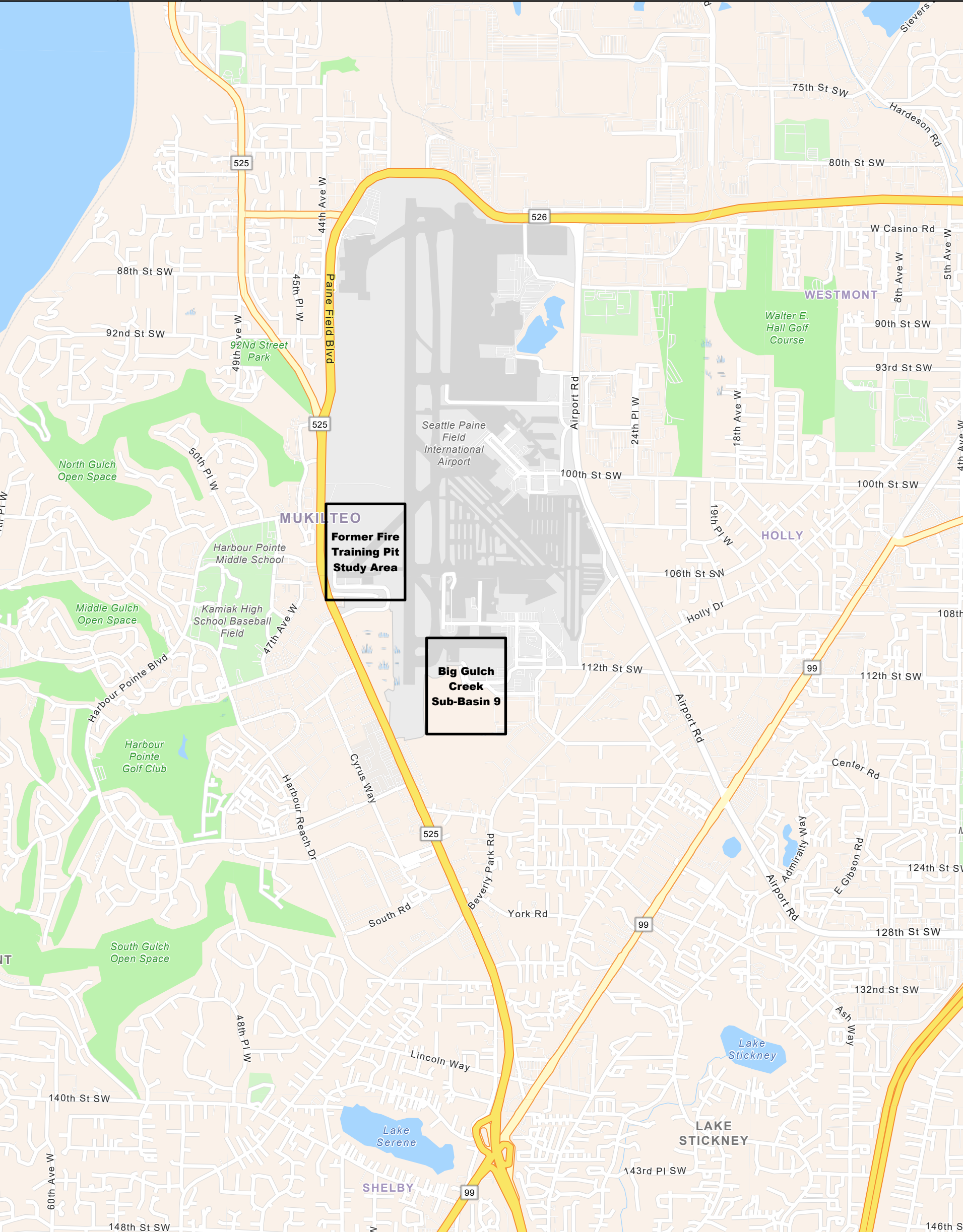
NE = Not established

Bolded value indicates analyte detected at the concentration shown.

Gray shaded value indicates the detected concentration is greater than the Washington Ecology Cleanup Level.

Italicized value indicates the analyte was not detected but the reporting limit is greater than the Preliminary Cleanup Level.

Figures



Source(s): ESRI

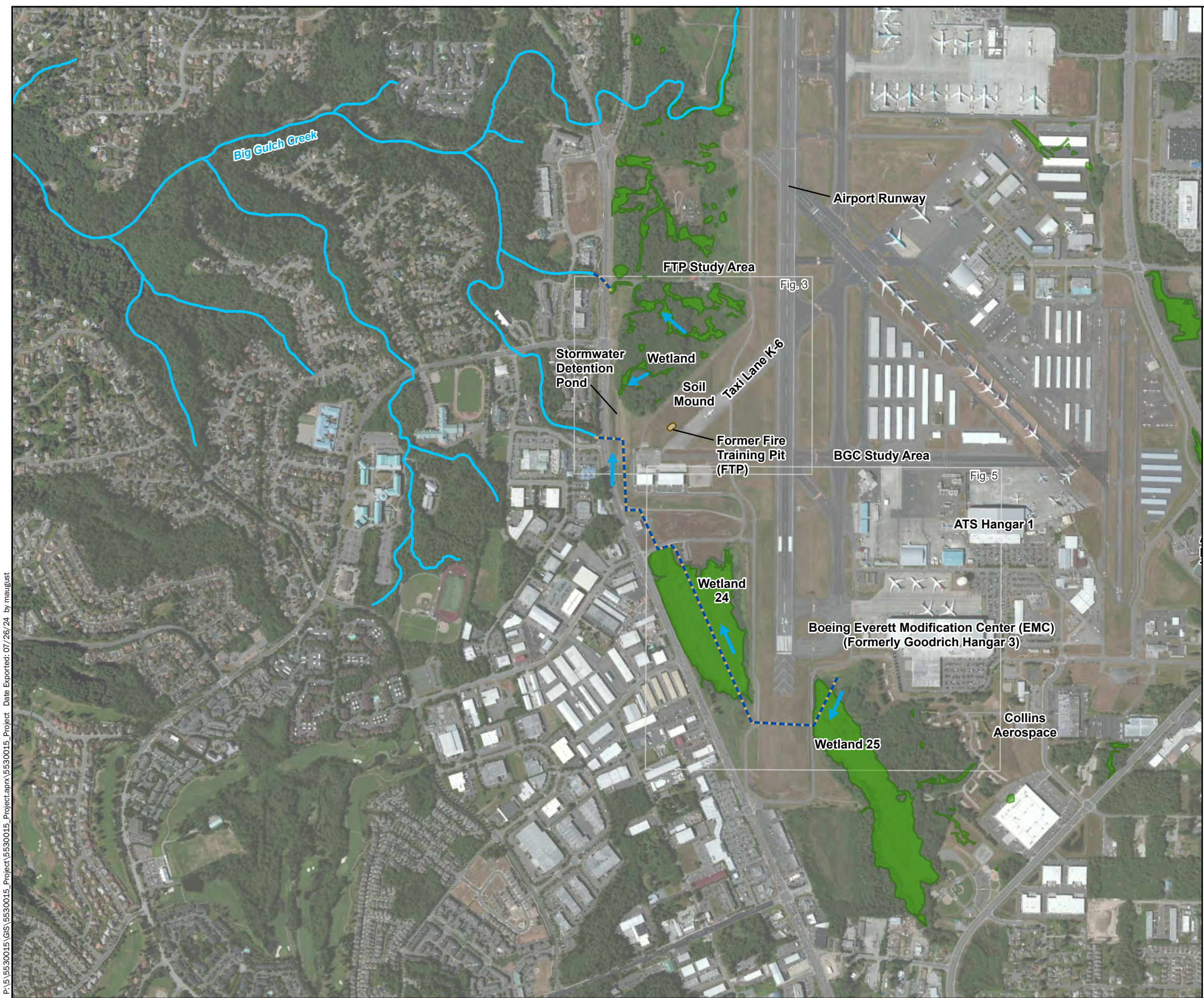
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0 2,000
Feet

Vicinity Map	
Initial Data Gaps Investigation Report Paine Field/Snohomish County Airport Everett, Washington	
	Figure 1

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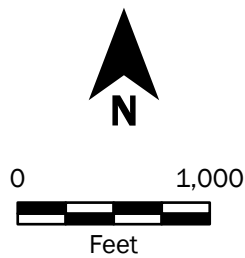


- Legend**
- Creek Trace
 - Inferred Storm/Surface Water Flow Direction
 - Inferred Storm/Surface Water Flow Path
 - Wetland

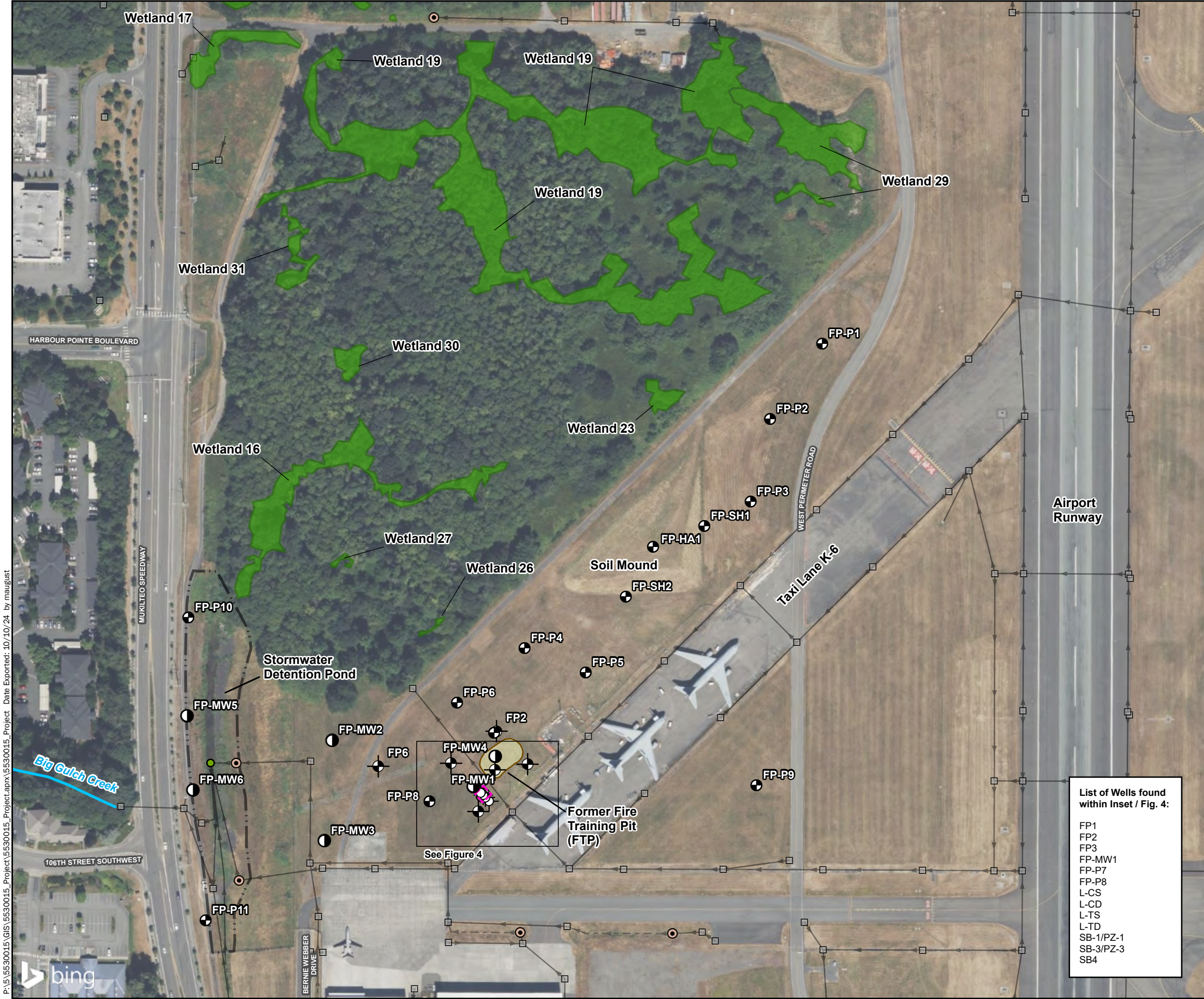
Source(s): Bing Aerial Imagery 2022, ESRI, Snohomish County.

Coordinate System: NAD 1983 HARN StatePlane Washington South FIPS 4602 Feet

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Paine Field Airport - Southwestern Area Surface Water Drainage Map	
Initial Data Gaps Investigation Report Paine Field/Snohomish County Airport Everett, Washington	
GEOENGINEERS	Figure 2



Legend

- Existing Monitoring Well (SWI 2023)
- Direct Push Boring (CDM 2018)
- Direct Push Boring and Shovel or Hand Auger Explorations (SWI 2023)
- Lysimeter, (Regenesis 2023)
- Regenesis Soil Boring/Piezometer (Regenesis 2023)
- Catch Basin
- Bioinfiltration Cell
- Pipe Out/Outfall
- Ditch/Swale
- Stormwater Pipe
- Detention Pond; Infiltration Pond; Wet Pond
- Approximate Former Fire Training Pit (FTP) Boundary
- 2023 Regenesis Treatment Area
- Wetland

Source(s): Bing Aerial Imagery 2022, ESRI, Snohomish County.

Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet

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List of Wells found within Inset / Fig. 4:

- FP1
- FP2
- FP3
- FP-MW1
- FP-P7
- FP-P8
- L-CS
- L-CD
- L-TS
- L-TD
- SB-1/PZ-1
- SB-3/PZ-3
- SB4

Former Fire Training Pit - Historical Exploration Locations

Initial Data Gaps Investigation Report

Paine Field/Snohomish County Airport

Everett, Washington

Figure 3

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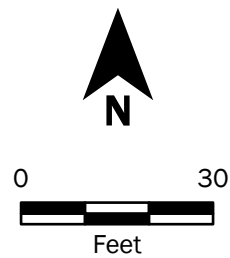


- Legend**
- Existing Monitoring Well (SWI 2023)
 - Direct Push Boring (CDM 2018)
 - Direct Push Boring and Shovel or Hand Auger Explorations (SWI 2023)
 - Lysimeter, (Regenesis 2023)
 - Regenesis Soil Boring/Piezometer (Regenesis 2023)
 - Catch Basin
 - Stormwater Pipe
 - Approximate Former Fire Training Pit (FTP) Boundary
 - 2023 Regenesis Treatment Area

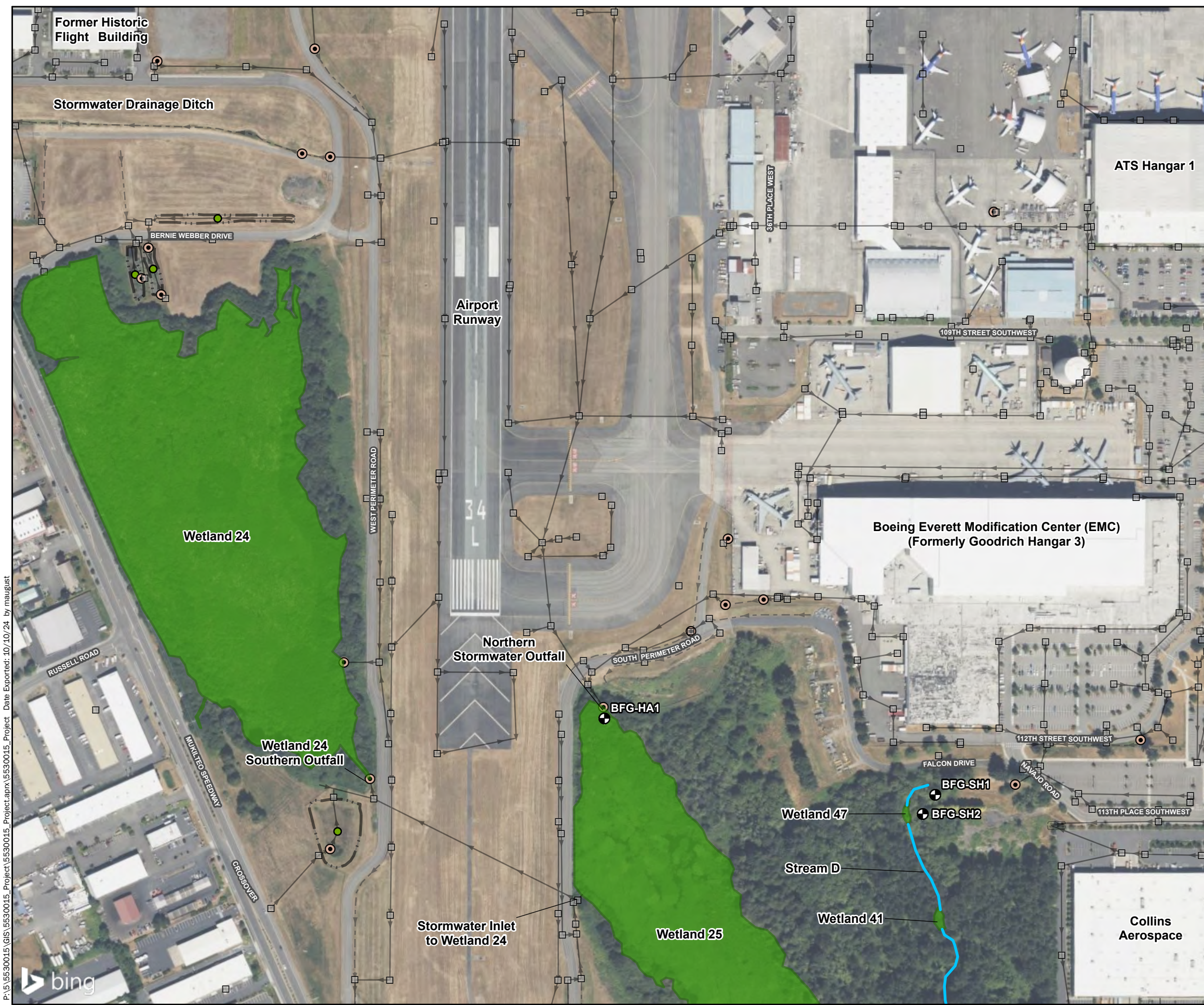
Source(s): Bing Aerial Imagery, ESRI, Snohomish County.

Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet

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Former Fire Training Pit Detail - Historical Exploration Locations and Treatment Area	
Initial Data Gaps Investigation Report Paine Field/Snohomish County Airport Everett, Washington	
	Figure 4



Legend

- Direct Push Boring and Shovel or Hand Auger Explorations (SWI 2023)
- Catch Basin
- Bioinfiltration Cell
- Pipe Out/Outfall
- Ditch/Swale
- Stormwater Pipe
- Wetland
- Creek Trace

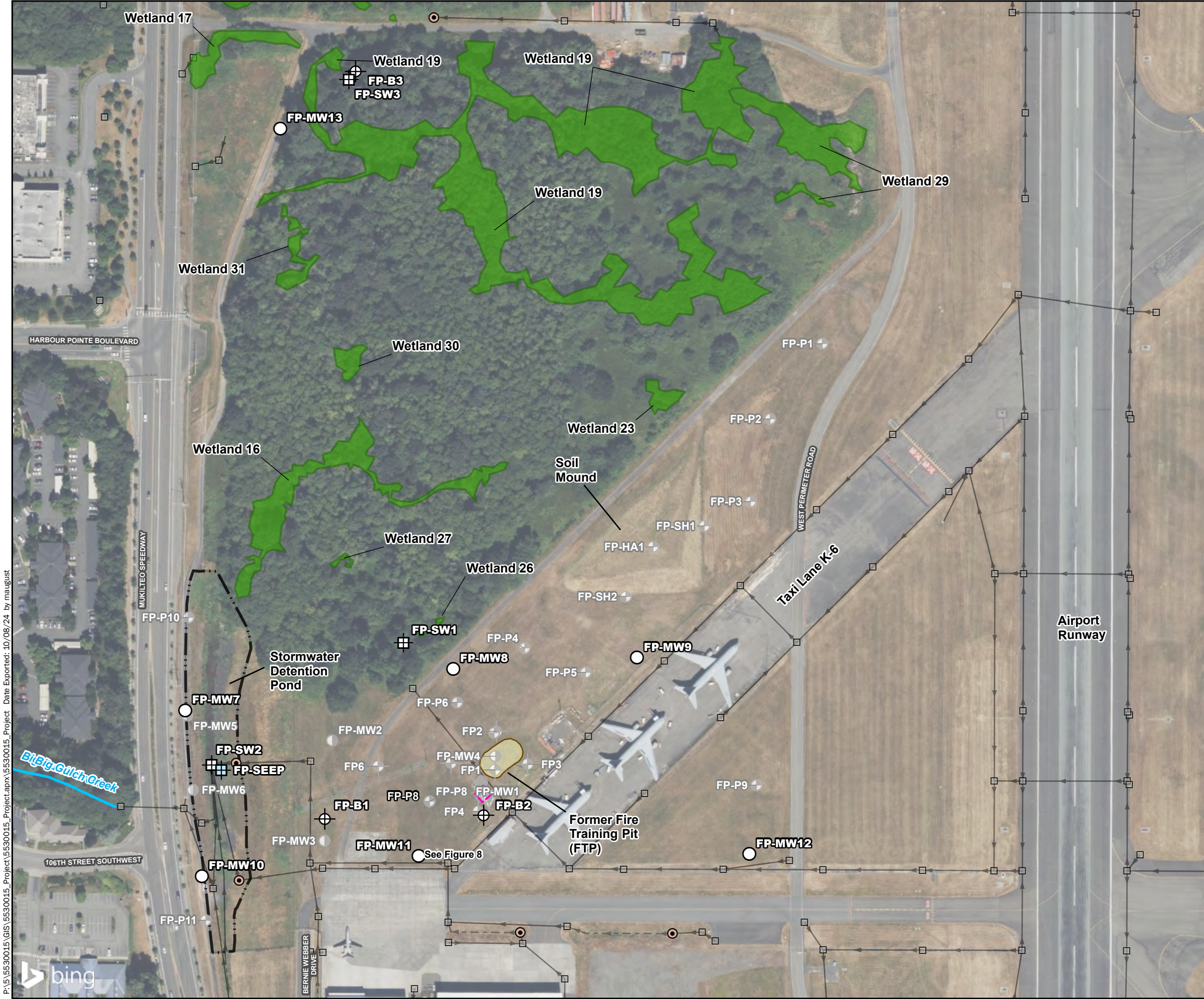
Source(s): Bing Aerial Imagery 2022, ESRI, Snohomish County.

Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet

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Big Gulch Creek Sub-Basin 9 - Historical Exploration Locations	
Initial Data Gaps Investigation Report Paine Field/Snohomish County Airport Everett, Washington	
	Figure 5

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Legend

Exploration Type

- Soil Boring (GEI 2024)
- Surface Water Sample Location (GEI 2024)
- Monitoring Well (GEI 2024)
- Catch Basin Sample (GEI 2024)
- Seep Water Sample (GEI 2024)
- Existing Monitoring Well (SWI 2023)
- Direct Push Boring (CDM 2018)
- Direct Push Boring and Shovel or Hand Auger Explorations (SWI 2023)
- Lysimeter (Regenesis, 2023)
- Monitoring Well (Regenesis, 2023)
- Soil Boring/Piezometer (Regenesis, 2023)
- Stormwater Pipe and Flow Direction
- Approximate Former Fire Training Pit (FTP) Boundary
- 2023 Regenesis Treatment Area
- Stormwater Detention Pond
- Wetland
- Creek Trace

Source(s): Bing Aerial Imagery 2022, ESRI, Snohomish County.

Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet

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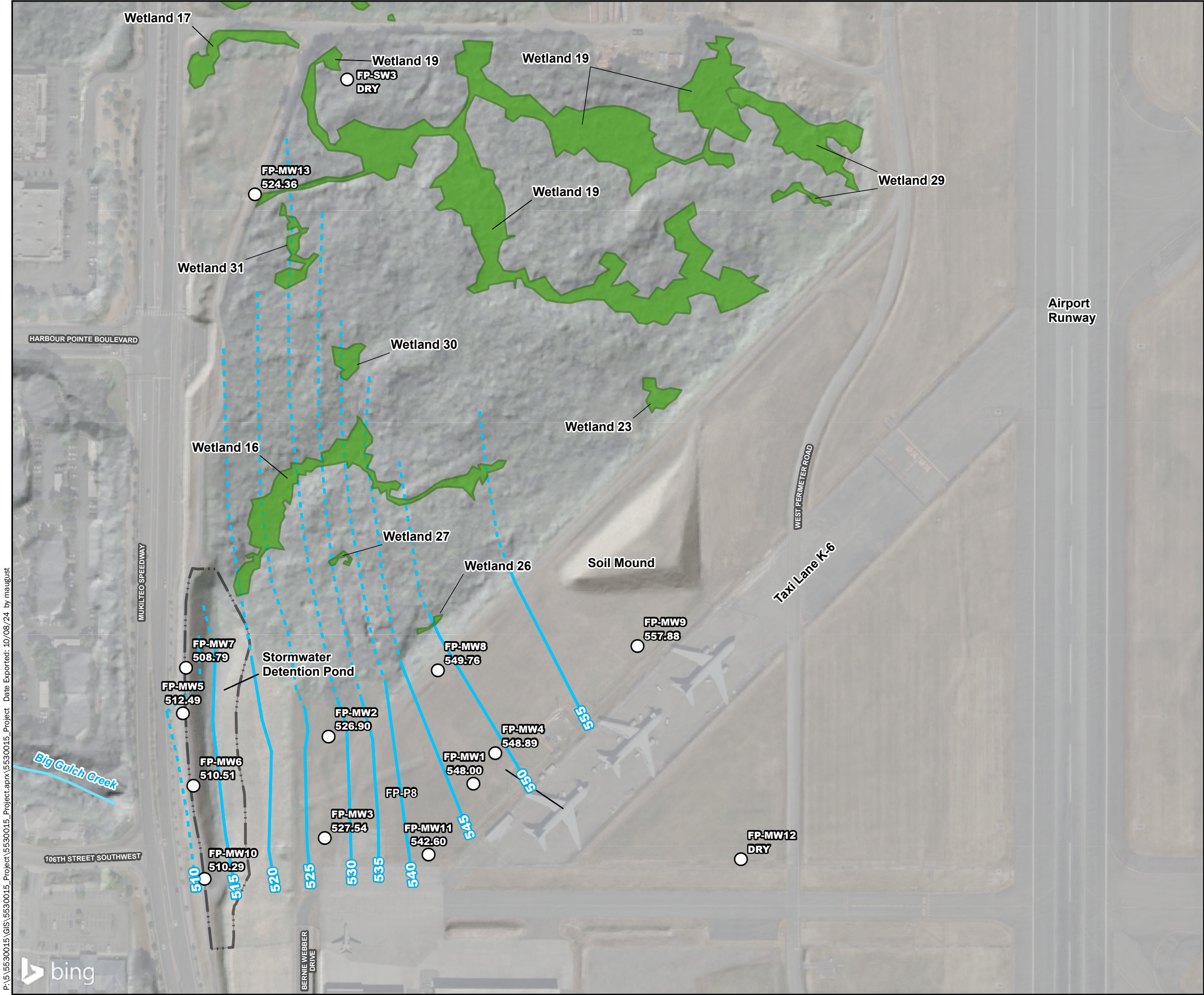
0 200
Feet

Former Fire Training Pit - Data Gaps Investigation Exploration Locations

Initial Data Gaps Investigation Report
Paine Field/Snohomish County Airport
Everett, Washington

Figure 6

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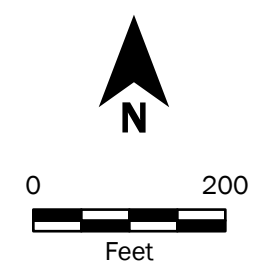
Legend

- Groundwater Monitoring Well
- FP-MW9 557.88
- 550 Groundwater Elevation Contour (May 2024 Measurement)
- Creek Trace
- Wetland
- Stormwater Detention Pond

Source(s): Bing Aerial Imagery 2022, ESRI, Snohomish County.

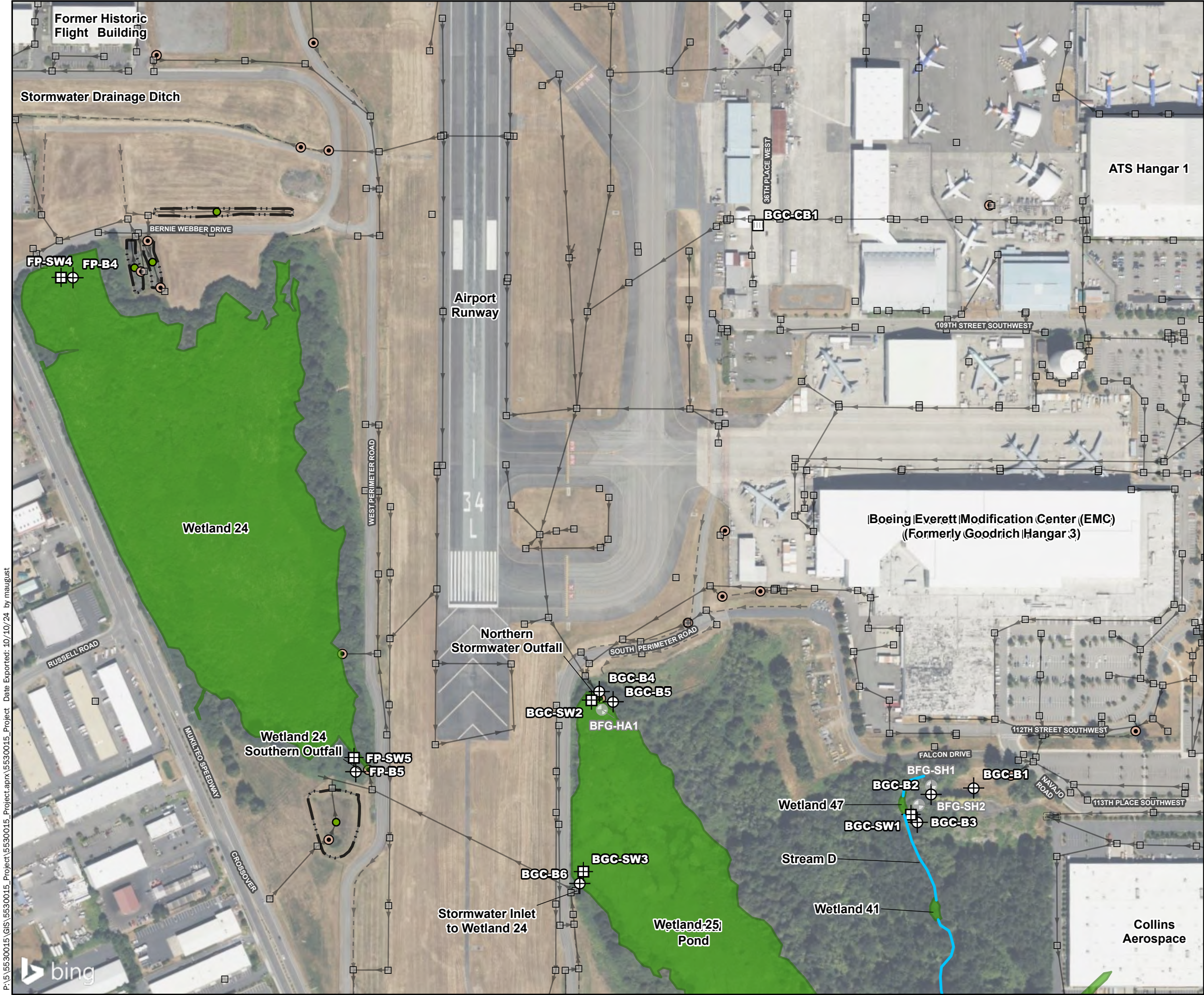
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Former Fire Training Pit - Groundwater Elevations May 2024	
Initial Data Gaps Investigation Report Paine Field/Snohomish County Airport Everett, Washington	
	Figure 7

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Legend

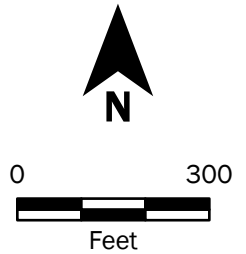
Exploration Type

- Soil Boring (GEI 2024)
- Surface Water Sample Location (GEI 2024)
- Catch Basin Sample (GEI 2024)
- Existing Monitoring Well (SWI 2023)
- Direct Push Boring (CDM 2018)
- Direct Push Boring and Shovel or Hand Auger Explorations (SWI 2023)
- Lysimeter (Regenesis, 2023)
- Monitoring Well (Regenesis, 2023)
- Soil Boring/Piezometer (Regenesis, 2023)
- Stormwater Pipe and Flow Direction
- Stormwater Detention Pond
- Wetland
- Creek Trace

Source(s): Bing Aerial Imagery 2022, ESRI, Snohomish County.

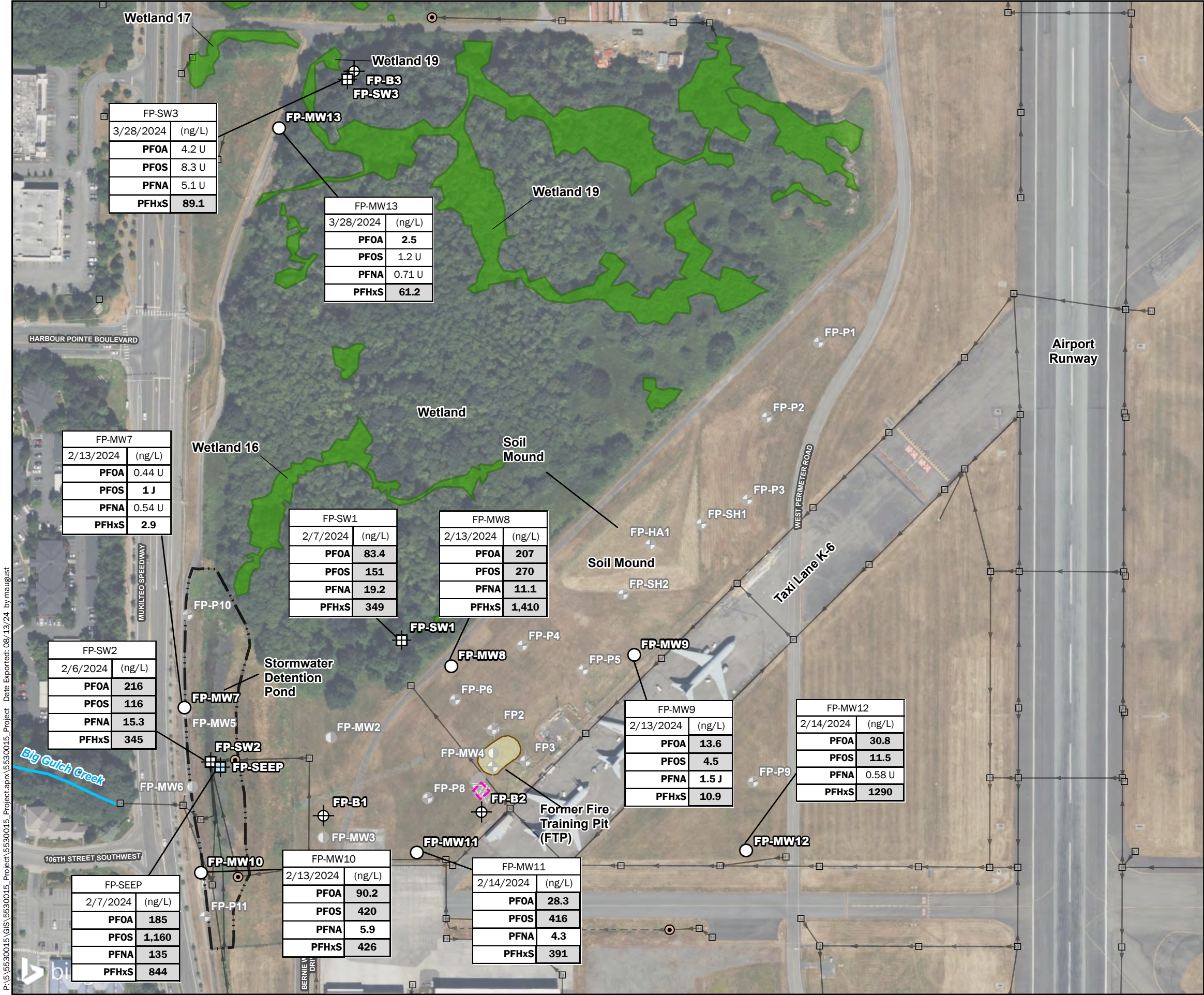
Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet

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Big Gulch Creek Sub-Basin 9 - Data Gap Investigation Exploration Locations	
Initial Data Gaps Investigation Report Paine Field/Snohomish County Airport Everett, Washington	
	Figure 8

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Legend

Exploration Type

- Soil Boring (GEI 2024)
- Surface Water Sample Location (GEI 2024)
- Monitoring Well (GEI 2024)
- Catch Basin Sample (GEI 2024)
- Seep Water Sample (GEI 2024)
- Existing Monitoring Well (SWI 2023)
- Direct Push Boring (CDM 2018)
- Direct Push Boring and Shovel or Hand Auger Explorations (SWI 2023)
- Lysimeter (Regenesis, 2023)
- Monitoring Well (Regenesis, 2023)
- Soil Boring/Piezometer (Regenesis, 2023)
- Stormwater Pipe and Flow Direction
- Approximate Former Fire Training Pit (FTP) Boundary
- 2023 Regenesis Treatment Area
- Detention Pond; Infiltration Pond; Wet Pond
- Wetland

XX-XXXX		Location ID
X/X/2024	(ng/L)	Sample Date (Units)
PFOA	XX	Analyte Detected, Concentration Exceeds Ecology PCUL
PFOS	XX	Analyte Detected, Concentration Below PCUL
PFNA	XX	Analyte Not Detected
PFHxS	XX	

Source(s): Bing Aerial Imagery 2022, ESRI, Snohomish County.
Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet

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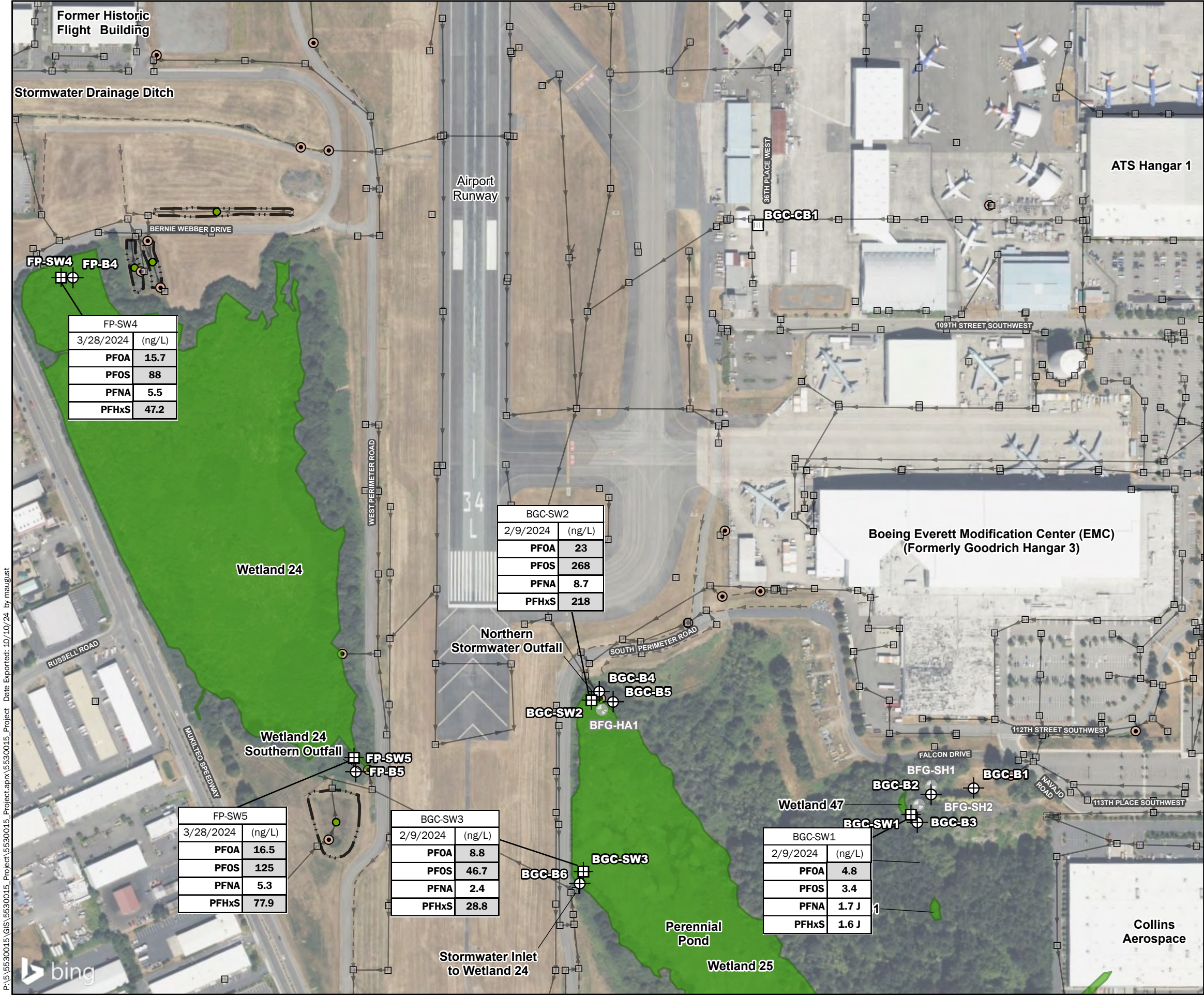
Former Fire Training Pit - 2024 Groundwater and Surface Water PFAS Concentrations

Initial Data Gaps Investigation Report
Paine Field/Snohomish County Airport
Everett, Washington

GEOENGINEERS

Figure 9

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Legend

Exploration Type

- Soil Boring (GEI 2024)
- Surface Water Sample Location (GEI 2024)
- Catch Basin Sample (GEI 2024)
- Existing Monitoring Well (SWI 2023)
- Direct Push Boring (CDM 2018)
- Direct Push Boring and Shovel or Hand Auger Explorations (SWI 2023)
- Lysimeter (Regenesis, 2023)
- Monitoring Well (Regenesis, 2023)
- Soil Boring/Piezometer (Regenesis, 2023)
- Stormwater Pipe and Flow Direction
- Detention Pond; Infiltration Pond; Wet Pond
- Wetland

XX-XXXX		Location ID
X/X/2024	(ng/L)	Sample Date (Units)
PFOA	XX	Analyte Detected, Concentration Exceeds Ecology PCUL
PFOS	XX	Analyte Detected, Concentration Below PCUL
PFNA	XX	Analyte Not Detected
PFHxS	XX	

Source(s): Bing Aerial Imagery 2022, ESRI, Snohomish County.

Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet

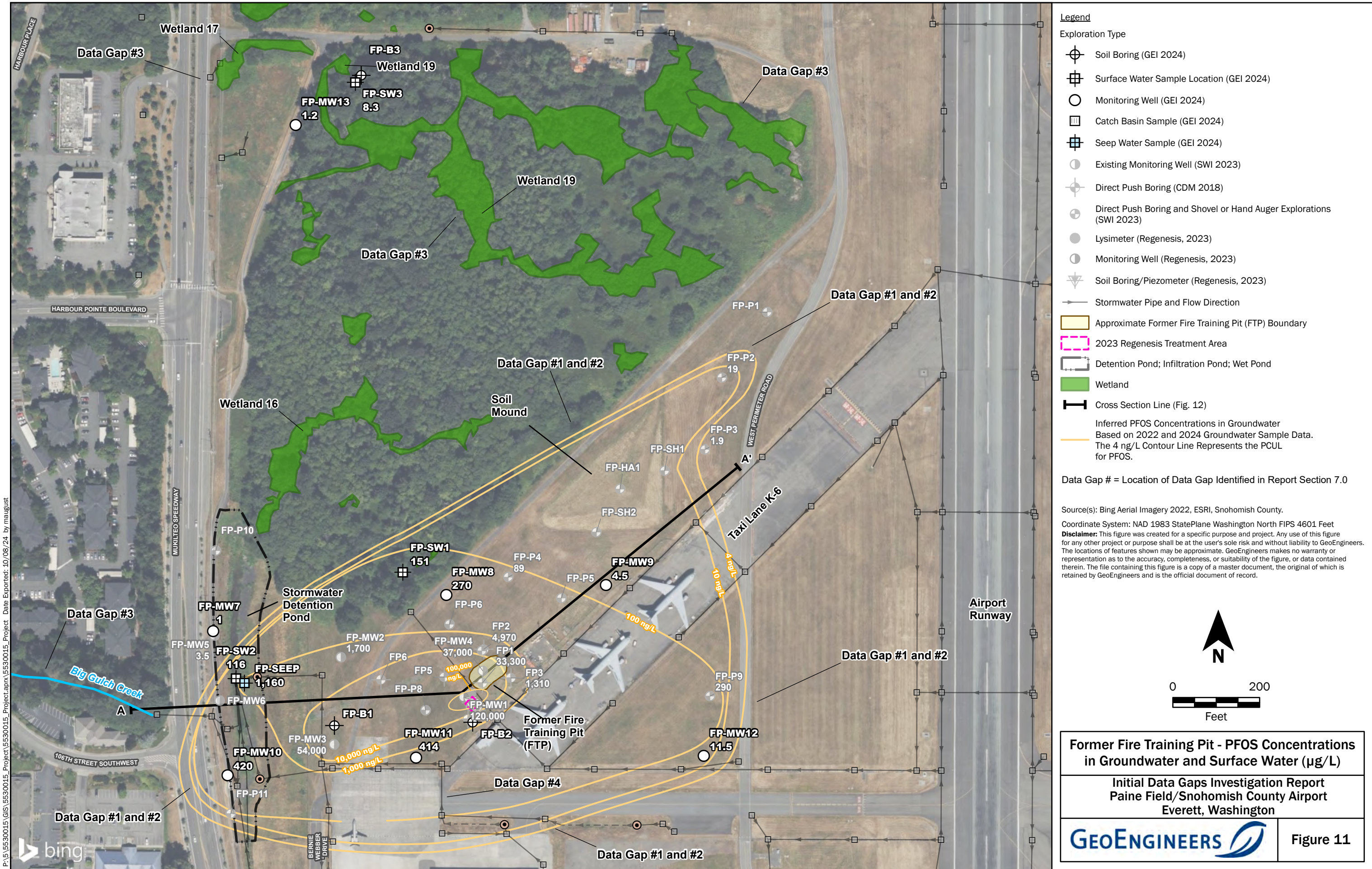
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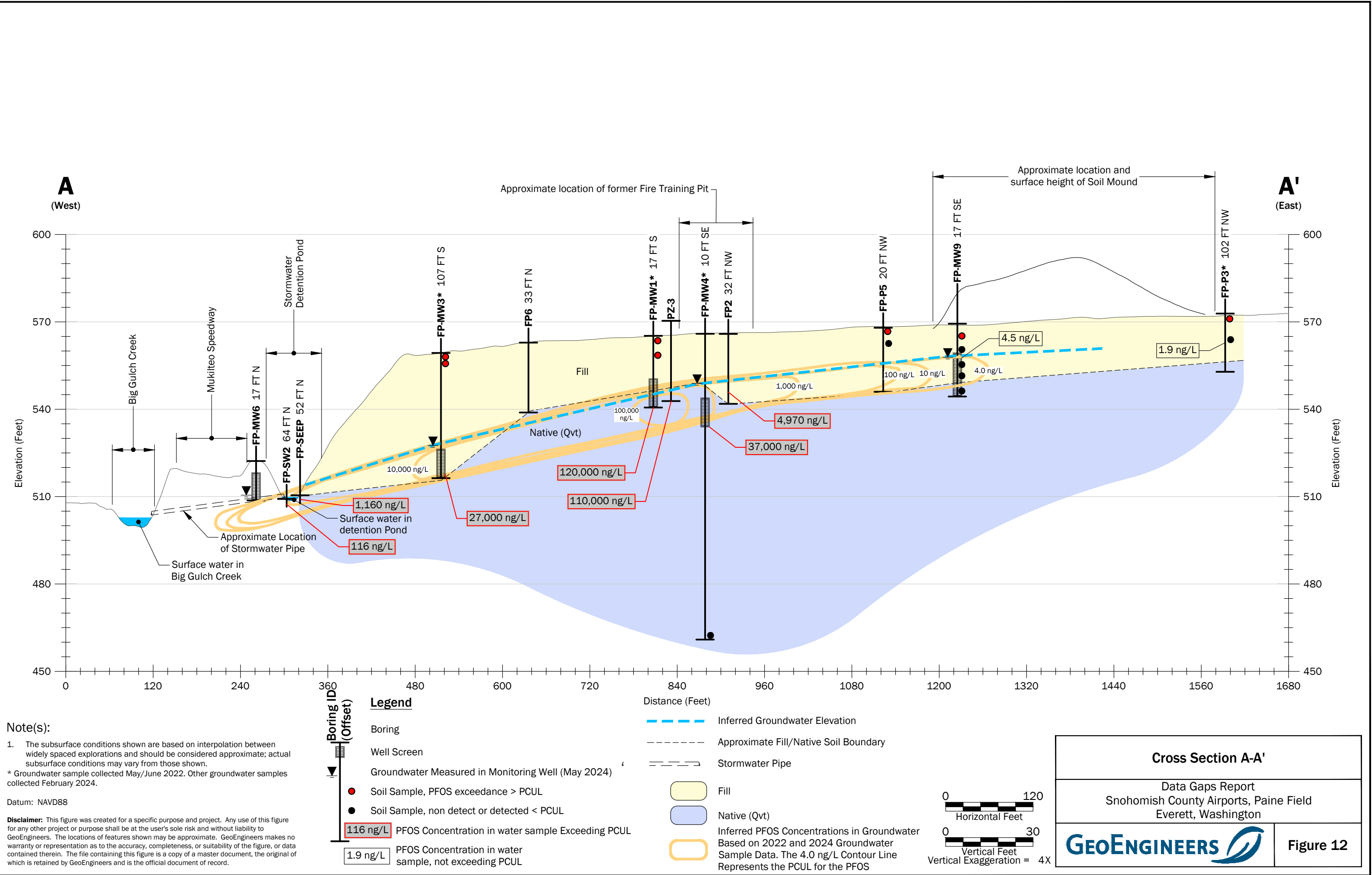
Big Gulch Creek Sub-Basin 9 - 2024
Surface Water PFAS Concentrations
Greater Than PCULs

Initial Data Gaps Investigation Report
Paine Field/Snohomish County Airport
Everett, Washington

Figure 10



\\geoengineers.com\WAN\Projects\5530015\CAD\00>Data Gaps Report\553001500_F12_Cross Section.dwg 12 Date Exported:8/20/2024 11:30 AM - by Michael R. Woods



Appendices

Appendix A

Soil Exploration Logs

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES
				GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
			GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES	
	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SP	POORLY-GRADED SANDS, GRAVELLY SAND
FINE GRAINED SOILS	SILTS AND CLAYS		LIQUID LIMIT LESS THAN 50		SM
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
				ML	INORGANIC SILTS, ROCK FLOUR, CLAYEY SILTS WITH SLIGHT PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
				MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS SILTY SOILS
HIGHLY ORGANIC SOILS				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS AND SILTS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: Multiple symbols are used to indicate borderline or dual soil classifications

Sampler Symbol Descriptions

	Modified California Sampler (6-inch sleeve) or Dames & Moore
	Standard Penetration Test (SPT)
	Shelby tube
	Piston
	Direct-Push
	Bulk or grab
	Continuous Coring

Blowcount is recorded for driven samplers as the number of blows required to advance sampler 12 inches (or distance noted). See exploration log for hammer weight and drop.

"P" indicates sampler pushed using the weight of the drill rig.

"WOH" indicates sampler pushed using the weight of the hammer.

NOTE: The reader must refer to the discussion in the report text and the logs of explorations for a proper understanding of subsurface conditions. Descriptions on the logs apply only at the specific exploration locations and at the time the explorations were made; they are not warranted to be representative of subsurface conditions at other locations or times.

ADDITIONAL MATERIAL SYMBOLS

SYMBOLS		TYPICAL DESCRIPTIONS
GRAPH	LETTER	
	AC	Asphalt Concrete
	CC	Cement Concrete
	CR	Crushed Rock/Quarry Spalls
	SOD	Sod/Forest Duff
	TS	Topsoil

Groundwater Contact



Measured groundwater level in exploration, well, or piezometer



Measured free product in well or piezometer

Graphic Log Contact



Distinct contact between soil strata



Approximate contact between soil strata

Material Description Contact



Contact between geologic units



Contact between soil of the same geologic unit

Laboratory / Field Tests

%F	Percent fines
%G	Percent gravel
AL	Atterberg limits
CA	Chemical analysis
CP	Laboratory compaction test
CS	Consolidation test
DD	Dry density
DS	Direct shear
HA	Hydrometer analysis
MC	Moisture content
MD	Moisture content and dry density
Mohs	Mohs hardness scale
OC	Organic content
PM	Permeability or hydraulic conductivity
PI	Plasticity index
PL	Point load test
PP	Pocket penetrometer
SA	Sieve analysis
TX	Triaxial compression
UC	Unconfined compression
UU	Unconsolidated undrained triaxial compression
VS	Vane shear

Sheen Classification

NS	No Visible Sheen
SS	Slight Sheen
MS	Moderate Sheen
HS	Heavy Sheen

Key to Exploration Logs



Figure A-1

Drilled	Start 2/8/2024	End 2/8/2024	Total Depth (ft)	31.5	Logged By Checked By	MAB JML	Driller	Holocene	Drilling Method	Hollow-stem Auger	
Surface Elevation (ft) Vertical Datum			Undetermined NAVD88		Hammer Data			N/A		Drilling Equipment	Diedrich D-50
Latitude Longitude					System Datum			N/A		Groundwater not observed at time of exploration	
Notes:											

Elevation (feet)	FIELD DATA					Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Graphic Log					
0						SP-SM	Brown fine sand with silt and occasional gravel (moist) (fill)			
5	0.5	2		FP-B1-5.0				NS	<1	
10	0.5	3		FP-B1-10.0			Becomes gray-brown	NS	1.2	
15	0.5	3		FP-B1-15.0		SP	Gray fine sand with trace silt and occasional gravel, mottling (moist) (fill)	NS		
20	0.5	9		FP-B1-20.0		SM	Gray silty fine sand with occasional gravel mixed till (moist)	NS	1.1	
25	0.5	5		FP-B1-25.0			Wood layer at approximately 26 feet bgs			
30	0.5	13		FP-B1-30.0			Becomes with increased gravel	NS	<1	

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on . Vertical approximated based on .

Log of Boring FP-B1



Project: Snohomish Co Airports - Paine Field Former Fire Pit Investigation
Project Location: Everett, Washington
Project Number: 5530-015-00

Figure A-2
Sheet 1 of 1

Drilled	Start 2/8/2024	End 2/8/2024	Total Depth (ft)	26.5	Logged By Checked By	MAB JML	Driller	Holocene	Drilling Method	Hollow-stem Auger	
Surface Elevation (ft) Vertical Datum			Undetermined NAVD88		Hammer Data			N/A		Drilling Equipment	Diedrich D-50
Latitude Longitude					System Datum			N/A		Groundwater not observed at time of exploration	
Notes:											

Elevation (feet)	FIELD DATA					Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing						
0							GP	Fine to medium gravel (moist)			
							SM	Brown silty fine sand (moist)			
5	X	0.5	4		FP-B2-5.0		SPSM	Brown gray fine sand with silt and occasional gravel, mottled (moist) (fill)	NS	<1	
10	X	0.5	7		FP-B2-10.0		SP	Gray fine sand with trace silt and occasional gravel (moist) (fill)	NS	<1	
15	X	1.5	13		FP-B2-15.0		SM	Gray silty fine sand with fine to medium gravel, mottled orange (moist)	NS	<1	
20	X		9		FP-B2-20.0			Gray silty sand, mottled (moist) Becomes wet	NS	<1	
25	X		48		FP-B2-25.0		SP	Fine sand with fine gravel (wet) (native)	NS	<1	

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on . Vertical approximated based on .

Log of Boring FP-B2



Project: Snohomish Co Airports - Paine Field Former Fire Pit Investigation
Project Location: Everett, Washington
Project Number: 5530-015-00

Figure A-3
Sheet 1 of 1

Drilled	Start 3/28/2023	End 3/28/2024	Total Depth (ft)	1	Logged By Checked By	MAB JML	Driller	N/A	Drilling Method	Hand Auger
Surface Elevation (ft) Vertical Datum	Undetermined NAVD88			Hammer Data	N/A			Drilling Equipment	Hand Auger	
Latitude Longitude				System Datum	N/A			Groundwater not observed at time of exploration		
Notes:										

Elevation (feet)	Depth (feet)	FIELD DATA				Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
		Interval	Recovered (in)	Blows/foot	Collected Sample Sample Name Testing						
	12				FP-B3-1.0		SM	Dark brown silty fine sand with wood fragments (wet)			

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on . Vertical approximated based on .

Figure A-4
Sheet 1 of 1

Start Drilled	3/28/2023	End 3/28/2024	Total Depth (ft)	1	Logged By Checked By	MAB JML	Driller	N/A	Drilling Method	Hand Auger
Surface Elevation (ft) Vertical Datum			Undetermined NAVD88		Hammer Data		N/A		Drilling Equipment Hand Auger	
Latitude Longitude					System Datum		N/A		Groundwater not observed at time of exploration	
Notes:										

Elevation (feet)	Depth (feet)	FIELD DATA					Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
		Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing						
0								SM	Dark brown silty fine sand with gravel (wet)			
	12					FP-B4-0.5						
Note: See Figure A-1 for explanation of symbols. Coordinates Data Source: Horizontal approximated based on . Vertical approximated based on .												

Log of Hand Auger FP-B4		
	Project: Snohomish Co Airports - Paine Field Former Fire Pit Investigation	
	Project Location: Everett, Washington	
	Project Number: 5530-015-00	
		Figure A-5 Sheet 1 of 1

Date: 6/7/24 Path: P:\5530015\GINT_553001500.GPJ DBLibrary/Library\GEOENGINEERS_DF_STD_US_JUNE_2017\GLB\GEI8_ENVIRONMENTAL_STANDARD_NO_GW

Drilled	Start 3/28/2023	End 3/28/2024	Total Depth (ft)	1	Logged By Checked By	MAB JML	Driller	N/A	Drilling Method	Hand Auger
Surface Elevation (ft) Vertical Datum			Undetermined NAVD88		Hammer Data			N/A	Drilling Equipment	Hand Auger
Latitude Longitude					System Datum		N/A		Groundwater not observed at time of exploration	
Notes:										

Elevation (feet)	Depth (feet)	FIELD DATA				Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
		Interval	Recovered (in)	Blows/foot	Collected Sample Sample Name Testing						
	0						SM	Dark brown silty fine sand with gravel and roots (wet)			
			12		FP-B5-0.5						

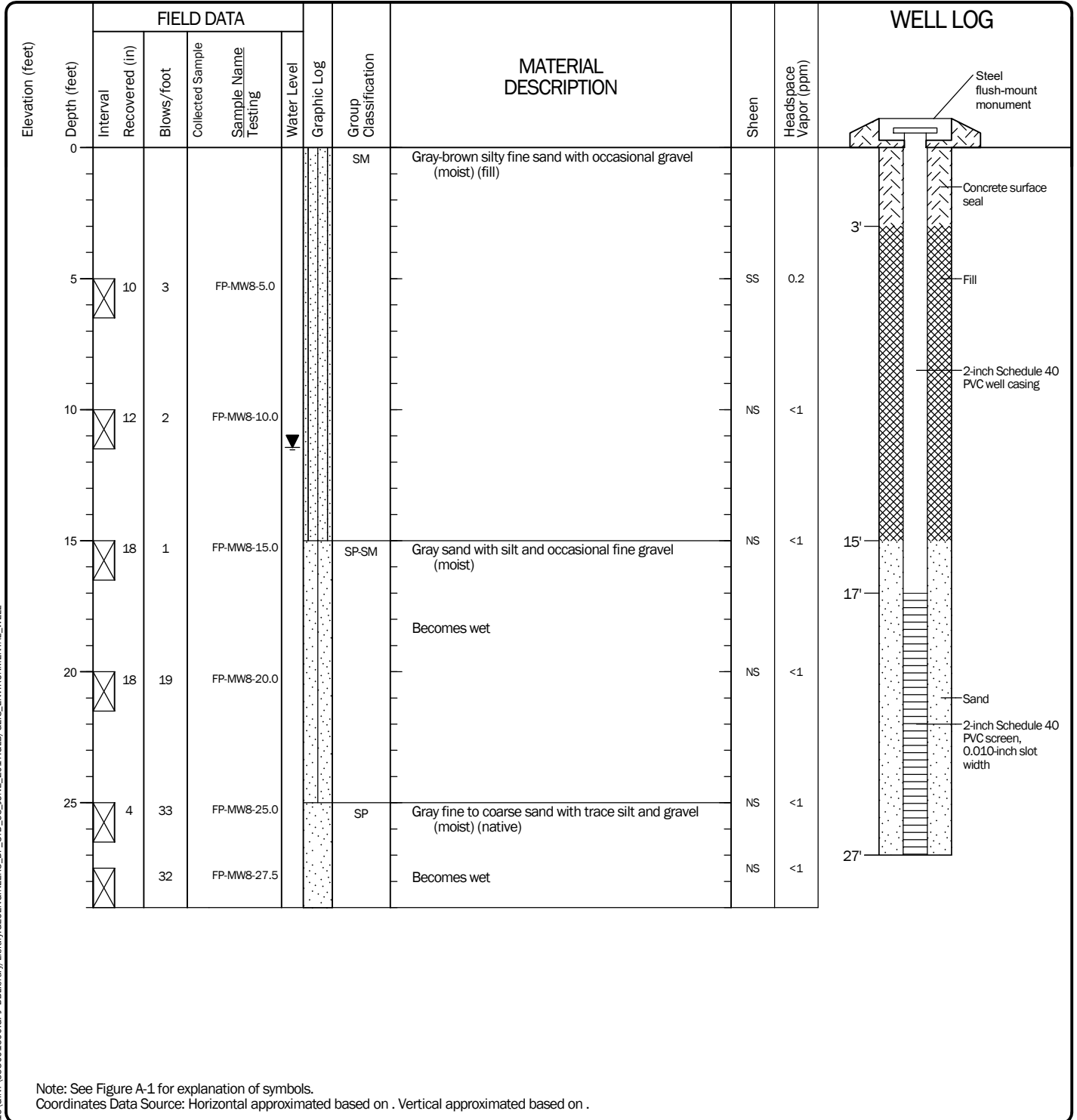
Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on . Vertical approximated based on .

Figure A-6
Sheet 1 of 1

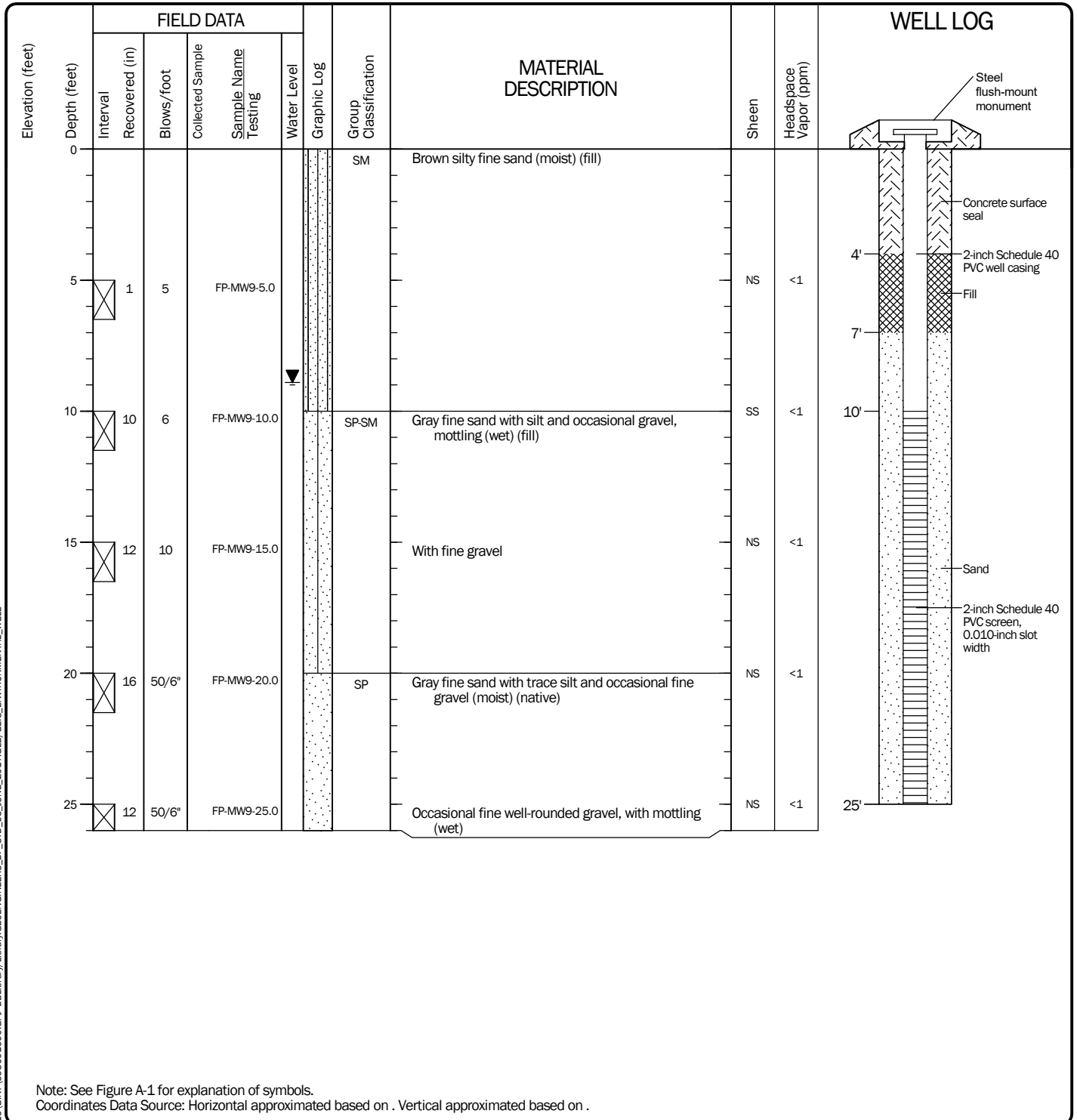
Date:6/7/24 Path:P:\5\5530015\GINT\553001500.GPJ DBLibrary/Library:GEOENGINEERS_DF_STD_US_JUNE_2017.GLB\GEI8_ENVIRONMENTAL_WELL



Drilled	<u>Start</u> 2/6/2024	<u>End</u> 2/6/2024	Total Depth (ft)	29	Logged By Checked By	MAB JML	Driller	Holocene	Drilling Method	Hollow-stem Auger
Hammer Data	Autohammer 140 (lbs) / 30 (in) Drop				Drilling Equipment	Diedrich D-50		A 2-in well was installed on 2/6/2024 to a depth of 27 ft.		
Surface Elevation (ft)		Undetermined NAVD88		Top of Casing Elevation (ft)		564.00		Groundwater		
Vertical Datum				Horizontal Datum		N/A		Date Measured		2/8/2024
Latitude				Depth to Water (ft)		11.44		Elevation (ft)		
Longitude										
Notes:										



Drilled	<u>Start</u> 2/6/2024	<u>End</u> 2/6/2024	Total Depth (ft)	26	Logged By Checked By	MAB JML	Driller	Holocene	Drilling Method	Hollow-stem Auger
Hammer Data	Autohammer 140 (lbs) / 30 (in) Drop				Drilling Equipment	Diedrich D-50			A 2-in well was installed on 2/6/2024 to a depth of 25 ft.	
Surface Elevation (ft) Vertical Datum	Undetermined NAVD88			Top of Casing Elevation (ft)	569.08					
Latitude Longitude				Horizontal Datum	N/A					
				<u>Groundwater</u> <u>Date Measured</u> 2/8/2024	<u>Depth to Water (ft)</u> 8.90	<u>Elevation (ft)</u>				
Notes:										



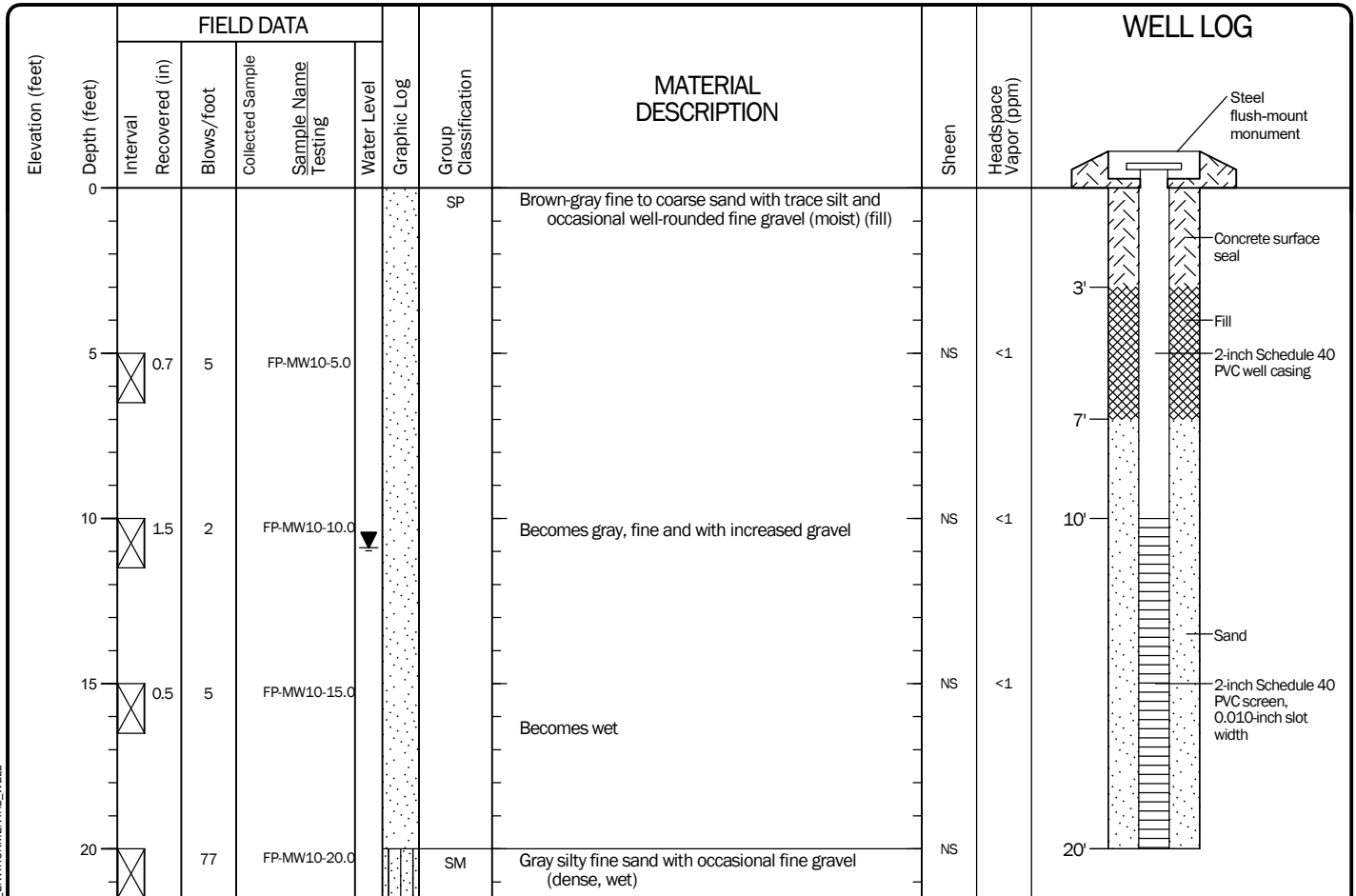
Log of Monitoring Well FP-MW9



Project: Snohomish Co Airports - Paine Field Former Fire Pit Investigation
Project Location: Everett, Washington
Project Number: 5530-015-00

Figure A-9
Sheet 1 of 1

Drilled	<u>Start</u> 2/7/2024	<u>End</u> 2/7/2024	Total Depth (ft)	21.5	Logged By Checked By	MAB JML	Driller	Holocene	Drilling Method	Hollow-stem Auger
Hammer Data	Autohammer 140 (lbs) / 30 (in) Drop				Drilling Equipment		Diedrich D-50		A 2-in well was installed on 2/7/2024 to a depth of 20 ft.	
Surface Elevation (ft)		Undetermined NAVD88		Top of Casing Elevation (ft)		522.17		Groundwater Date Measured		2/8/2024
Latitude				Horizontal Datum		N/A		Depth to Water (ft)		10.89
Longitude								Elevation (ft)		
Notes:										



Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on . Vertical approximated based on .

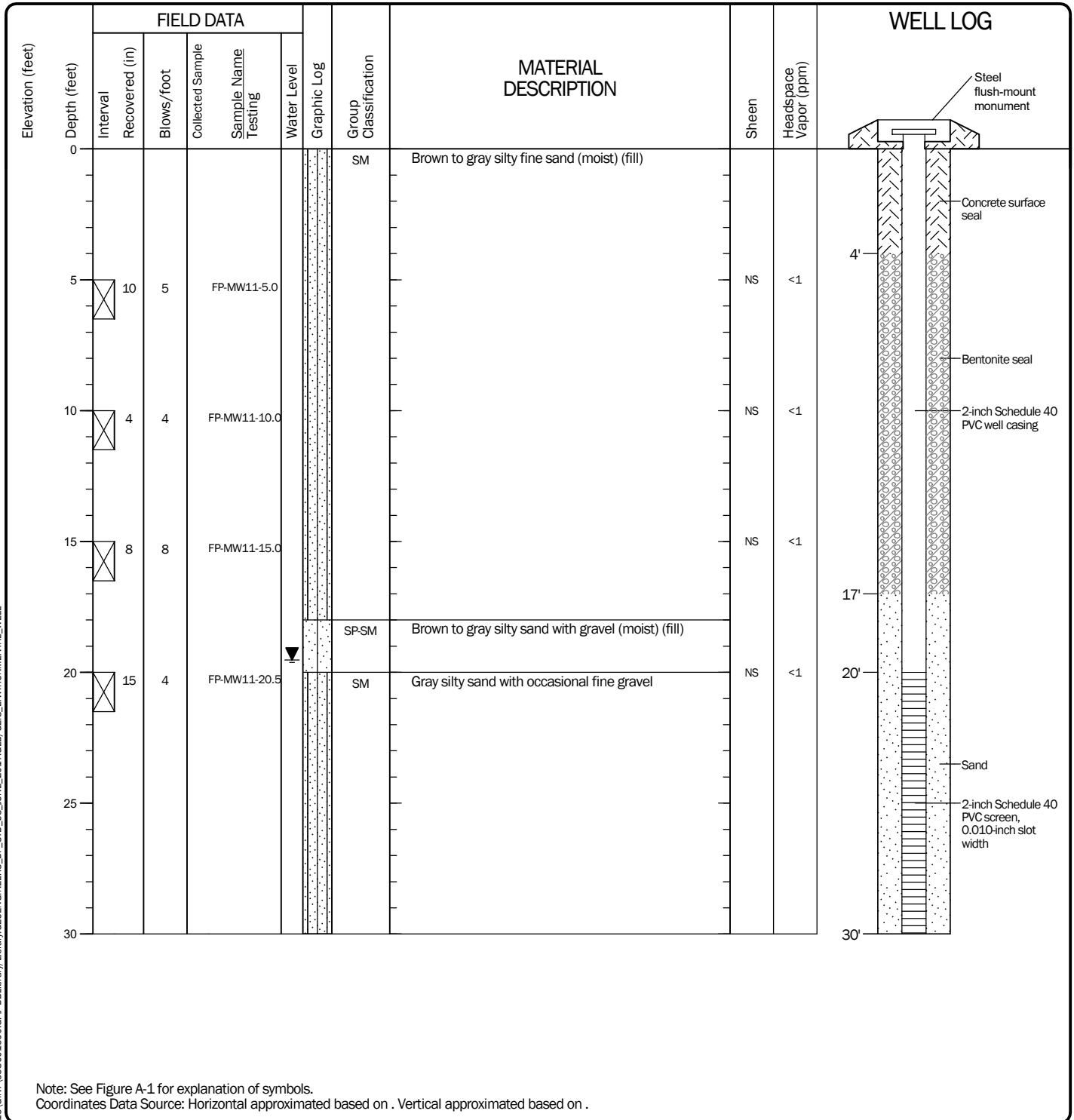
Log of Monitoring Well FP-MW10



Project: Snohomish Co Airports - Paine Field Former Fire Pit Investigation
Project Location: Everett, Washington
Project Number: 5530-015-00

Figure A-10
Sheet 1 of 1

Drilled	<u>Start</u> 2/5/2024	<u>End</u> 2/5/2024	Total Depth (ft)	30	Logged By Checked By	MAB JML	Driller	Holocene	Drilling Method	Hollow-stem Auger
Hammer Data	Autohammer 140 (lbs) / 30 (in) Drop				Drilling Equipment	Diedrich D-50		A 2-in well was installed on 2/5/2024 to a depth of 30 ft.		
Surface Elevation (ft) Vertical Datum	Undetermined NAVD88				Top of Casing Elevation (ft)	562.66		<u>Groundwater</u> Date Measured	<u>Depth to</u> Water (ft)	<u>Elevation (ft)</u>
Latitude Longitude					Horizontal Datum	N/A		2/8/2024	19.53	
Notes:										



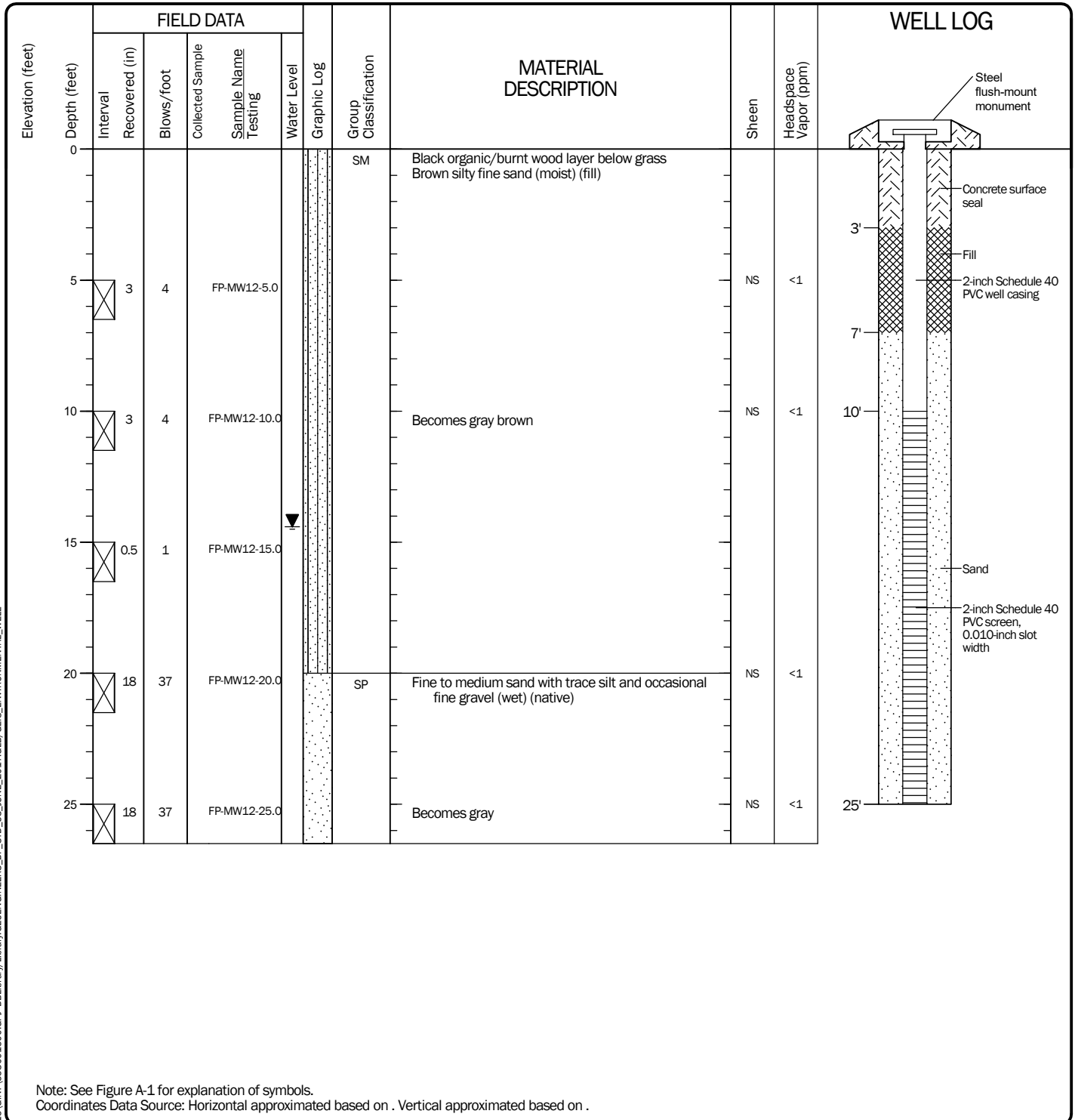
Log of Monitoring Well FP-MW11



Project: Snohomish Co Airports - Paine Field Former Fire Pit Investigation
Project Location: Everett, Washington
Project Number: 5530-015-00

Figure A-11
Sheet 1 of 1

Drilled	<u>Start</u> 2/5/2024	<u>End</u> 2/5/2024	Total Depth (ft)	26.5	Logged By Checked By	MAB JML	Driller	Holocene	Drilling Method	Hollow-stem Auger
Hammer Data	Autohammer 140 (lbs) / 30 (in) Drop				Drilling Equipment		Diedrich D-50		A 2-in well was installed on 2/5/2024 to a depth of 25 ft.	
Surface Elevation (ft)		Undetermined NAVD88		Top of Casing Elevation (ft)		572.24		Groundwater Date Measured		2/8/2024
Latitude				Horizontal Datum		N/A		Depth to Water (ft)		14.41
Longitude								Elevation (ft)		
Notes:										



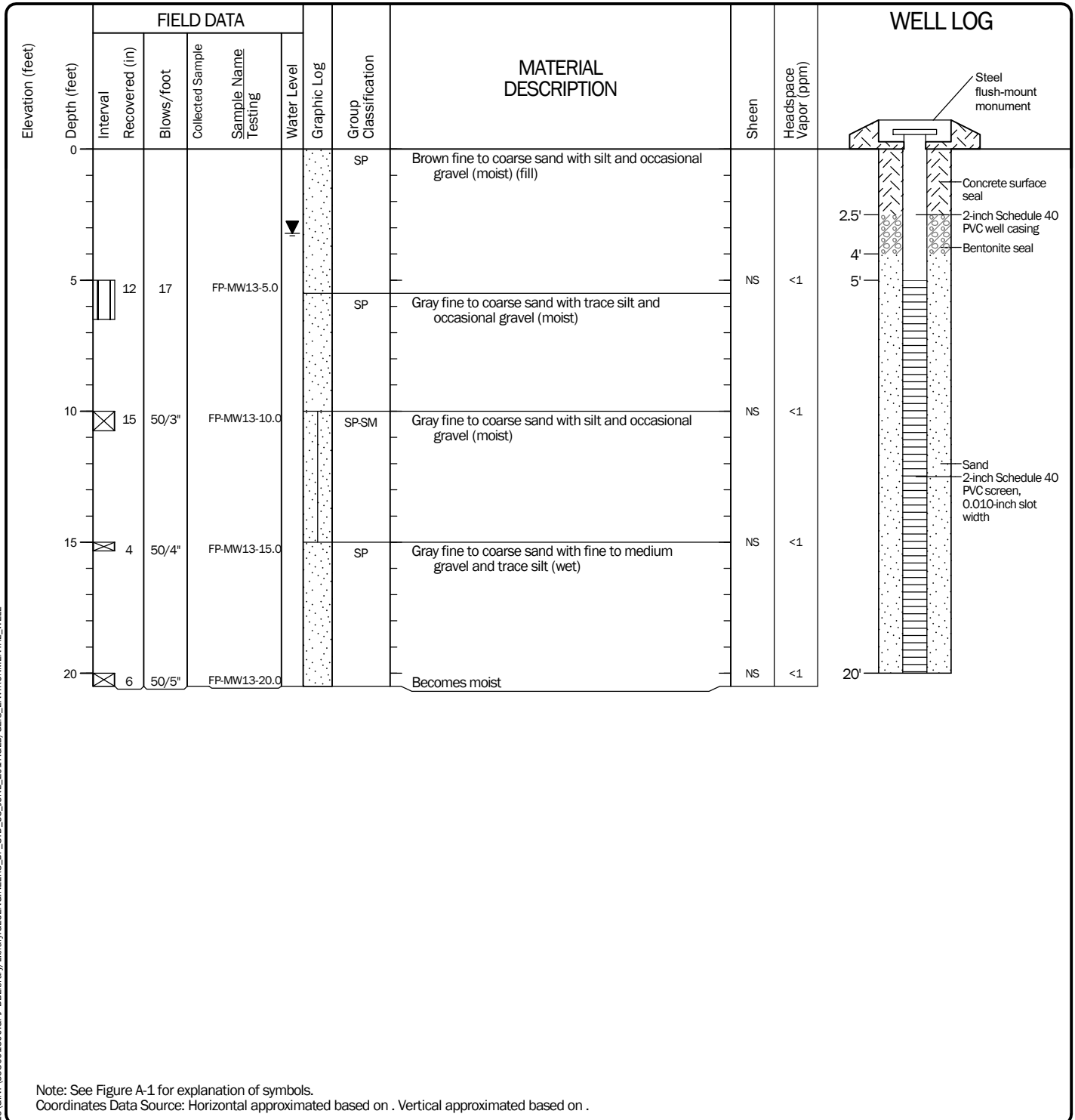
Log of Monitoring Well FP-MW12



Project: Snohomish Co Airports - Paine Field Former Fire Pit Investigation
Project Location: Everett, Washington
Project Number: 5530-015-00

Figure A-12
Sheet 1 of 1

Start Drilled 3/26/2024	End 3/26/2023	Total Depth (ft) 20.5	Logged By Checked By MAB JML	Driller Holocene	Drilling Method Hollow-stem Auger
Hammer Data Autohammer 140 (lbs) / 30 (in) Drop		Drilling Equipment Diedrich D-50		A 2-in well was installed on 3/26/2024 to a depth of 20 ft.	
Surface Elevation (ft) Vertical Datum Undetermined NAVD88		Top of Casing Elevation (ft) 528.54		Groundwater Date Measured 3/28/2024	
Latitude Longitude		Horizontal Datum N/A		Depth to Water (ft) 3.21 Elevation (ft)	
Notes:					



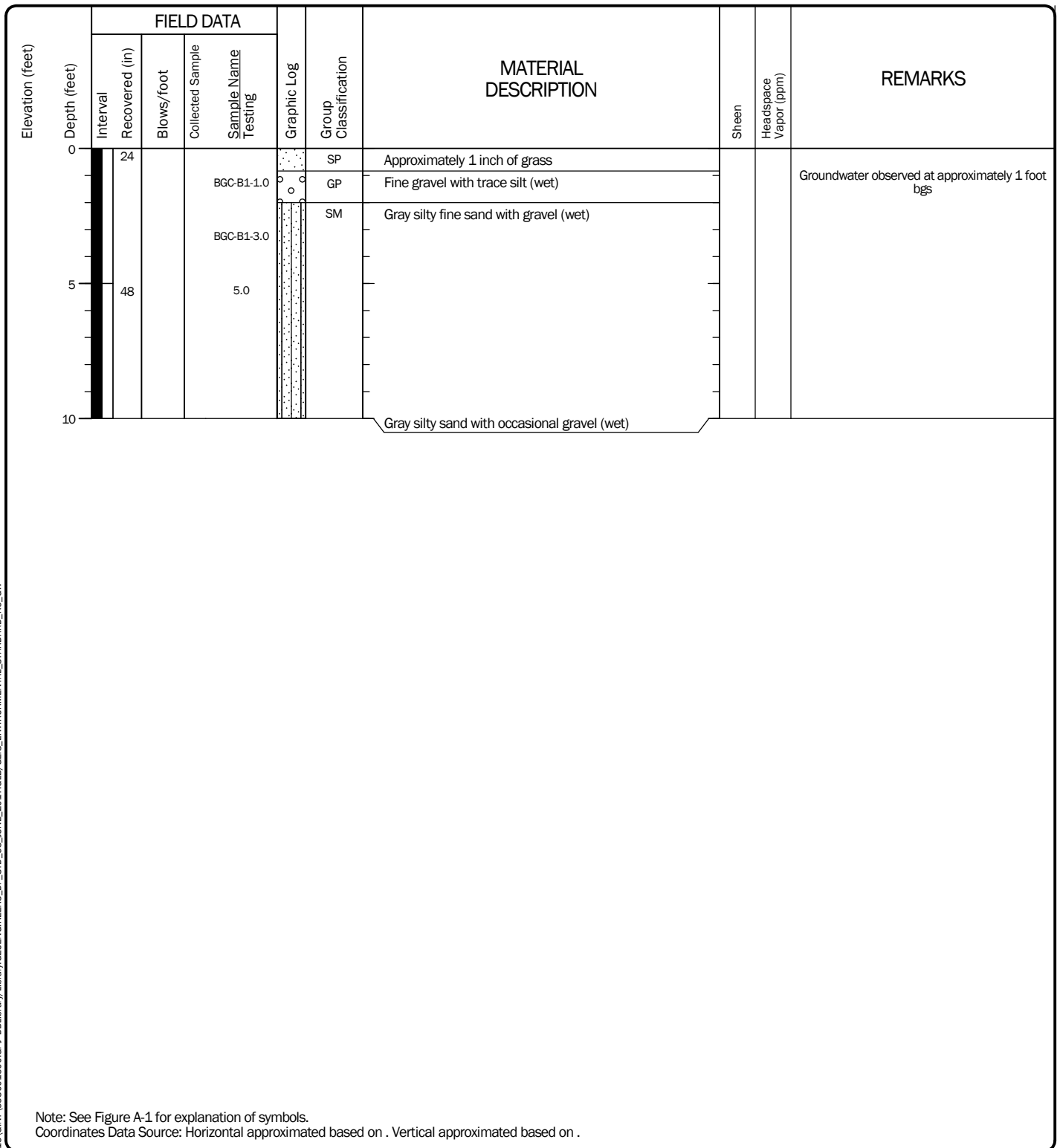
Log of Monitoring Well FP-MW13



Project: Snohomish Co Airports - Paine Field Former Fire Pit Investigation
Project Location: Everett, Washington
Project Number: 5530-015-00

Figure A-13
Sheet 1 of 1

Drilled	Start 2/9/2024	End 2/9/2024	Total Depth (ft)	10	Logged By Checked By	MAB JML	Driller	Holocene	Drilling Method	Direct Push	
Surface Elevation (ft) Vertical Datum			Undetermined NAVD88		Hammer Data		Autohammer 140 (lbs) / 30 (in) Drop		Drilling Equipment		6011 DT Geoprobe
Latitude Longitude			System Datum		N/A		See "Remarks" section for groundwater observed				
Notes:											



Log of Boring BGC-B1	
	Project: Snohomish Co Airports - Paine Field Former Fire Pit Investigation
	Project Location: Everett, Washington
	Project Number: 5530-015-00
Figure A-14 Sheet 1 of 1	

Date: 6/7/24 Path: P:\5530015\GINT_553001500.GPJ DBLibrary\Library\GEOENGINEERS_DF_STD_US_JUNE_2017\GLB\GEB8_ENVIRONMENTAL_STANDARD_NO_GW

Drilled	Start 2/9/2024	End 2/9/2024	Total Depth (ft)	7	Logged By Checked By	MAB JML	Driller	Holocene	Drilling Method	Direct Push	
Surface Elevation (ft) Vertical Datum			Undetermined NAVD88		Hammer Data		Autohammer 140 (lbs) / 30 (in) Drop		Drilling Equipment		6011 DT Geoprobe
Latitude Longitude			System Datum		N/A		See "Remarks" section for groundwater observed				
Notes:											

Elevation (feet)	FIELD DATA					Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing						
0		24					SM	Organic matter layer			Groundwater observed at approximately 1 foot bgs
					BGC-B2-1.5		SP-SM	Gray fine sand with silt and occasional gravel (wet) Becomes brown			
5		36			BGC-B2-5.0		SM	Gray silty fine sand with occasional gravel (moist)			

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on . Vertical approximated based on .

Log of Boring BGC-B2	
	Project: Snohomish Co Airports - Paine Field Former Fire Pit Investigation
	Project Location: Everett, Washington
	Project Number: 5530-015-00
Figure A-15 Sheet 1 of 1	

Date: 6/7/24 Path: P:\5530015\GINT_553001500.GPJ DBLibrary/Library\GEOENGINEERS_DF_STD_US_JUNE_2017\GLB\GEB8_ENVIRONMENTAL_STANDARD_NO_GW

Drilled	Start 2/9/2024	End 2/9/2024	Total Depth (ft)	3	Logged By Checked By	MAB JML	Driller	N/A	Drilling Method	Hand Auger
Surface Elevation (ft) Vertical Datum			Undetermined NAVD88		Hammer Data			N/A	Drilling Equipment	Hand Auger
Latitude Longitude					System Datum			N/A	Groundwater not observed at time of exploration	
Notes:										

Elevation (feet)	Depth (feet)	FIELD DATA				Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
		Interval	Recovered (in)	Blows/foot	Collected Sample Sample Name Testing						
	0						SM	Dark brown silty fine to medium sand with roots, high organic content (wet)			
					BGC-B3-1.0						
			36								
					BGC-B3-3.0						

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on . Vertical approximated based on .

Coordinates Data Source: Horizontal approximated based on . Vertical approximated based on .

Log of Hand Auger BGC-3



Project: Snohomish Co Airports - Paine Field Former Fire Pit Investigation
Project Location: Everett, Washington
Project Number: 5530-015-00

Project Location: Everett, Washington

Project Number: 5530-015-00

Figure A-16
Sheet 1 of 1

Sheet 1 of 1

Drilled	Start 2/9/2024	End 2/9/2024	Total Depth (ft)	3	Logged By Checked By	MAB JML	Driller	N/A	Drilling Method	Hand Auger	
Surface Elevation (ft) Vertical Datum			Undetermined NAVD88		Hammer Data			N/A	Drilling Equipment		Hand Auger
Latitude Longitude					System Datum			N/A	Groundwater not observed at time of exploration		
Notes:											

[illegible]

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on . Vertical approximated based on .

Coordinates Data Source: Horizontal approximated based on . Vertical approximated based on .

Log of Hand Auger BGC-4



Project: Snohomish Co Airports - Paine Field Former Fire Pit Investigation
Project Location: Everett, Washington
Project Number: 5530-015-00

Project Location: Everett, Washington

Project Number: 5530-015-00

Figure A-17
Sheet 1 of 1

Sheet 1 of 1

Drilled	Start 2/9/2024	End 2/9/2024	Total Depth (ft)	3	Logged By Checked By	MAB JML	Driller	N/A	Drilling Method	Hand Auger
Surface Elevation (ft) Vertical Datum	Undetermined NAVD88			Hammer Data	N/A			Drilling Equipment	Hand Auger	
Latitude Longitude				System Datum	N/A			Groundwater not observed at time of exploration		
Notes:										

	Elevation (feet)	FIELD DATA					Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	Depth (feet)	Interval	Recovered (in)	Blows/foot	Collected Sample							
						Sample Name Testing						
		0						SM	Dark brown to black silty fine to medium sand with roots, high organic content (wet)			

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on . Vertical approximated based on .

Coordinates Data Source: Horizontal approximated based on . Vertical approximated based on .

Log of Hand Auger BGC-5



Project: Snohomish Co Airports - Paine Field Former Fire Pit Investigation
Project Location: Everett, Washington
Project Number: 5530-015-00

Project Location: Everett, Washington

Project Number: 5530-015-00

Figure A-18
Sheet 1 of 1

Sheet 1 of 1

Drilled	Start 2/9/2024	End 2/9/2024	Total Depth (ft)	3	Logged By Checked By	MAB JML	Driller	N/A	Drilling Method	Hand Auger
Surface Elevation (ft) Vertical Datum			Undetermined NAVD88		Hammer Data			N/A	Drilling Equipment	Hand Auger
Latitude Longitude					System Datum			N/A	Groundwater not observed at time of exploration	
Notes:										

[illegible]

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on . Vertical approximated based on .

Coordinates Data Source: Horizontal approximated based on . Vertical approximated based on .

Log of Hand Auger BGC-6



Project: Snohomish Co Airports - Paine Field Former Fire Pit Investigation
Project Location: Everett, Washington
Project Number: 5530-015-00

Project Location: Everett, Washington

Project Number: 5530-015-00

Figure A-19
Sheet 1 of 1

Sheet 1 of 1

Appendix B

Groundwater Sampling Field Data

Project	Paine Field FTP	Job No.	05530-015-00	Collector	MAB	SAMPLE ID:	FP-MW7-20240213				
PURGE DATA											
Well Condition: Secure		☒ Yes ☐ No		Describe Damage _____							
(Padlock brand and number) _____											
Depth to Water (from top of well casing)		13.53									
Depth to Base of Well		19.55		Height of Water Column		6.02					
Well Casing Type/Diameter		2" PVC									
One Casing Volume (gal.)		1.02									
Purge Method		Pump (type)		per		Bailer (type)		NA			
Gallons Purged		2.2									
(Remove minimum of 3 well volumes or until field parameters stabilize)											
Purge Water Storage/Disposal		Drum storage on concrete pad									
(Drum identification, sample analysis, sample results, storage location, etc.) _____											
SAMPLING DATA											
Date Collected (mo/dy/yr)		2/13/2024									
Sample Location and Depth		MW # 16' Lys									
Tidal Cycle		NA [X]		High Tide at _____		Low Tide at _____					
Sample type (Groundwater, Product, Other)		Groundwater									
Sample Collected with		☐ Bailer		☒ Pump		☐ Other _____					
Made of		☐ Stainless Steel		☐ PVC		☐ Teflon		☒ Disposable HDPE		☐ Other _____	
Sampler Decon Procedure		Alconox and PFAS-Free water rinse									
Sample Description (color, free product thickness, odor, turbidity, etc.)		clear, odorless									
FIELD PARAMETERS											
Time	Depth to Water (ft bTOC) +/-0.3ft	Flow Rate (L/min)	Purge Volume (Gallons)	Temperature (°C) +/-3%	Turbidity (NTU) +/-10%	ORP (mV) +/- 10 eV	pH +/- 0.1	Dissolved O ₂ (ppm) +/-10%	Specific Conductance (µS/cm) +/-3%	TDS (mg/l)	Salinity (ppt)
1145	13.68	.25	.3	11.02	10.1	45.6	6.53	14.29	201	--	--
1145	13.85	.25	.6	11.02	8.75	51.4	6.55	6.75	205	--	--
1150	13.98	.25	.9	11.20	8.38	52.1	6.62	7.39	209	--	--
1155	14.10	.25	1.2	11.03	10.4	50.5	6.67	18.58	208	--	--
1200	14.23	.25	1.5	11.48	6.70	53.3	6.69	17.20	208	--	--
1205	14.54	.25	1.9	11.77	4.41	51.6	6.69	15.27	206	--	--
1210	14.73	.25	2.1	11.85	3.26	50.4	6.69	16.00	207	--	--
1214	14.84	.25									
Meters Used for Measurement YSI 500A Hand Turbidimeter											
pH/Con./DO Instrument Calibration		☒ Yes ☐ No		Spectrophotometer NA		E-Tape Hylon					
ADDITIONAL INFORMATION											
Samples Composited Overtime, Distance		NA									
Analyses, Number and Volume of Sample Containers		3 bottles - PFAS by 1533									
Duplicate Sample Number(s)											
Comments: (Filtered, Not Filtered, Calculations, etc.)											
Signature		[Signature]						Date	2/13/2024		Page 1 of 1
Check if additional information on back /											

[illegible]

GROUNDWATER SAMPLE COLLECTION FORM

Project Paine Field FTP Job No. 05530-015-00 Collector MAB SAMPLE ID: FP-MW9-20240208

PURGE DATA

Well Condition: Secure ☒ Yes ☐ No Describe Damage _____
 (Padlock brand and number) _____
 Depth to Water (from top of well casing) 8.51
 Depth to Base of Well 23.59 Height of Water Column 15.08
 Well Casing Type/Diameter 2" PVC
 One Casing Volume (gal.) 2.56
 Purge Method Pump (type) pen. Bailer (type) NA
 Gallons Purged 2.8
 (Remove minimum of 3 well volumes or until field parameters stabilize)
 Purge Water Storage/Disposal Drum storage on concrete pad
 (Drum identification, sample analysis, sample results, storage location, etc.) _____

Diameter (in.)	OD	ID	Volume Gal./ Linear Ft
2	2.375"	2.067"	0.17
3	3.500"	3.068"	0.38
4	4.500"	4.026"	0.66
6	6.625"	6.065"	1.50
0.75	1.050"	0.810"	0.023

$$V = \pi \cdot r^2 \cdot h \cdot 7.48 \text{ gal/ft}^3 = \text{gal/ft}^3$$

SAMPLING DATA

Date Collected (mo/dy/yr) 2/13/2024
 Sample Location and Depth MW9C 20' bgs Time Collected 1100
 Tidal Cycle NA [X] High Tide at _____ Low Tide at _____ Weather 40c, clear
 Sample type (Groundwater, Product, Other) Groundwater
 Sample Collected with ☐ Bailer ☒ Pump ☐ Other _____
 Made of ☐ Stainless Steel ☐ PVC ☐ Teflon ☒ Disposable HDPE ☐ Other _____
 Sampler Decon Procedure Alconox and PFAS-Free water rinse
 Sample Description (color, free product thickness, odor, turbidity, etc.) clear, odorless

FIELD PARAMETERS

Time	Depth to Water (ft bTOC) +/-0.3ft	Flow Rate (L/min)	Purge Volume (Gallons)	Temperature (°C) +/-3%	Turbidity (NTU) +/-10%	ORP (mV) +/- 10 eV	pH +/- 0.1	Dissolved O2 (ppm) +/-10%	Specific Conductance (µS/cm) +/-3%	TDS (mg/l)	Salinity (ppt)
1015	8.51										
1020	8.52	.3	.3	10.06	108	-44.1	6.41	16.99	.123	--	--
1025	8.51	.3	.5	9.85	144	-10.7	6.30	2.78	.194	--	--
1030	8.52	.3	.8	9.87	165	0.9	6.29	2.30	.194	--	--
1035	8.52	.3	1.1	9.81	160.7	8.0	6.28	2.10	.193	--	--
1040	8.51	.3	1.5	9.83	31.8	14.8	6.28	1.77	.193	--	--
1045	8.50	.3	1.7	9.85	17.1	18.7	6.28	1.70	.193	--	--
1050	8.51	.3	2.0	9.84	10.5	22.8	6.27	1.64	.193	--	--
1054	8.52	.3	2.2	9.82	6.59	24.1	6.27	1.61	.193	--	--
1058	8.52	.3	2.6	9.84	5.46	25.9	6.24	1.59	.193	--	--

Meters Used for Measurement YSI 560 and Hach Turbidity
 pH/Con./DO Instrument Calibration ☒ Yes ☐ No Spectrophotometer NA E-Tape Hen

ADDITIONAL INFORMATION

Samples Composited Overtime, Distance NA
 Analyses, Number and Volume of Sample Containers 3 bottles
 Duplicate Sample Number(s) _____
 Comments: (Filtered, Not Filtered, Calculations, etc.) _____

Signature [Signature] Date 2/13/2024 Page 1 of 1

Check if additional information on back ☐

GROUNDWATER SAMPLE COLLECTION FORM

Project Paine Field FTP Job No. 05530-015-00 Collector MAB SAMPLE ID: FP-MW10-20240213

PURGE DATA

Well Condition: Secure ☒ Yes ☐ No Describe Damage _____
 (Padlock brand and number) _____
 Depth to Water (from top of well casing) 10.98
 Depth to Base of Well 19.98 Height of Water Column 9.00
 Well Casing Type/Diameter 2" PVC
 One Casing Volume (gal.) 1.53
 Purge Method Pump (type) per Bailer (type) NA
 Gallons Purged _____
 (Remove minimum of 3 well volumes or until field parameters stabilize)
 Purge Water Storage/Disposal Drum storage on concrete pad
 (Drum identification, sample analysis, sample results, storage location, etc.) _____

Diameter (in.)	OD	ID	Volume Gal./ Linear Ft
2	2.375"	2.067"	0.17
3	3.500"	3.068"	0.38
4	4.500"	4.026"	0.66
6	6.625"	6.065"	1.50
0.75	1.050"	0.810"	0.023

$$V = \pi r^2 \text{ in ft}^2 \times 7.48 \text{ gal/ft}^3 = \text{gal/ft}^3$$

SAMPLING DATA

Date Collected (mo/dy/yr) 2/13/2024
 Sample Location and Depth MW10C 10' bgs
 Tidal Cycle NA [X] High Tide at _____ Low Tide at _____
 Sample type (Groundwater, Product, Other) Groundwater
 Sample Collected with ☐ Bailer ☒ Pump ☐ Other _____
 Made of ☐ Stainless Steel ☐ PVC ☐ Teflon ☒ Disposable HDPE ☐ Other _____
 Sampler Decon Procedure Alconox and PFAS-Free water rinse
 Sample Description (color, free product thickness, odor, turbidity, etc.) clear, odorless

FIELD PARAMETERS

Time	Depth to Water (ft bTOC) +/-0.3ft	Flow Rate (L/min)	Purge Volume (Gallons)	Temperature (°C) +/-3%	Turbidity (NTU) +/-10%	ORP (mV) +/- 10 eV	pH +/- 0.1	Dissolved O2 (ppm) +/-10%	Specific Conductance (µS/cm) +/-3%	TDS (mg/l)	Salinity (ppt)
1250	11.09										
1255	11.20	0.25	0.2	11.21	12.3	-30.2	6.47	30.01	0.399		
1300	11.24	0.3	0.5	11.33	10.5	-70.0	6.44	5.23	0.443		
1305	11.22	0.3	0.8	11.02	7.19	-80.5	6.46	3.29	0.446		
1310	11.22	0.3	1.1	10.93	5.92	-78.3	6.47	2.69	0.447		
1315	11.23	0.3	1.3	10.69	5.19	-87.9	6.47	2.13	0.447		
1320	11.23	0.3	1.6	10.54	6.22	-89.8	6.47	1.95	0.446		
1325	11.22	0.3	1.9	10.54	4.91	-90.6	6.47	1.77	0.447		
1329	11.22			10.55	3.67	-93.0	6.48	1.65	0.446		

Meters Used for Measurement YSI 556 MPS, Hach 2100 Q
 pH/Con./DO Instrument Calibration ☒ Yes ☐ No Spectrophotometer NA E-Tape ITERON

ADDITIONAL INFORMATION

Samples Composited Overtime, Distance NA
 Analyses, Number and Volume of Sample Containers 3 bottles
 Duplicate Sample Number(s) _____
 Comments: (Filtered, Not Filtered, Calculations, etc.) _____

Signature [Signature] Date 2/13/2024 Page 1 of 1
 Check if additional information on back ☐

GROUNDWATER SAMPLE COLLECTION FORM

Project <u>Paine Field FTP</u>	Job No. <u>05530-015-00</u>	Collector <u>MAB</u>	SAMPLE ID: FP- <u>MW11-20240214</u>

PURGE DATA

Well Condition: Secure ☒ Yes ☐ No Describe Damage _____

(Padlock brand and number) _____

Depth to Water (from top of well casing) 19.62

Depth to Base of Well 27.51 Height of Water Column 7.89

Well Casing Type/Diameter 2" PVC

One Casing Volume (gal.) 1.34

Purge Method Pump (type) peri. Bailer (type) NA

Gallons Purged _____

(Remove minimum of 3 well volumes or until field parameters stabilize)

Purge Water Storage/Disposal _____ Drum storage on concrete pad

(Drum identification, sample analysis, sample results, storage location, etc.) _____

Diameter (in.)	OD	ID	Volume Gal./ Linear Ft
2	2.375"	2.067"	0.17
3	3.500"	3.068"	0.38
4	4.500"	4.026"	0.66
6	6.625"	6.065"	1.50
0.75	1.050"	0.810"	0.023

$V = \pi \cdot r^2 \cdot h \cdot 7.48 \text{ gal/ft}^3 = \text{gal/ft}^3$

SAMPLING DATA

Date Collected (mo/dy/yr) 2/14/2024

Sample Location and Depth MW11 @ 24' bgs

Tidal Cycle NA [X] High Tide at _____ Low Tide at _____

Time Collected 1105

Sample type (Groundwater, Product, Other) Groundwater Weather 40s cloudy

Sample Collected with ☐ Bailer ☒ Pump ☐ Other _____

Made of ☐ Stainless Steel ☐ PVC ☐ Teflon ☒ Disposable HDPE ☐ Other _____

Sampler Decon Procedure Alconox and PFAS-Free water rinse

Sample Description (color, free product thickness, odor, turbidity, etc.) clean, odorless

FIELD PARAMETERS

Time	Depth to Water (ft bTOC) +/-0.3ft	Flow Rate (L/min)	Purge Volume (Gallons)	Temperature (°F) +/-3%	Turbidity (NTU) +/-10%	ORP (mV) +/- 10 eV	pH +/- 0.1	Dissolved O2 (ppm) +/-10%	Specific Conductance (us/cm) +/-3%	TDS (mg/l)	Salinity (ppt)
1005	19.72	0.3	0.2	9.38	340	-2.0	6.23	2.00	0.192	--	--
1010	19.87	0.3	0.6	9.93	411	-3.8	6.30	1.76	0.175	--	--
1015	19.94	0.3	1.0	9.94	483	-1.1	6.31	1.69	0.175	--	--
1020	19.96	0.3	1.4	9.99	295	3.0	6.31	1.51	0.174	--	--
1025	19.96	0.3	1.8	9.90	170	5.1	6.29	1.42	0.171	--	--
1030	19.96	0.3	2.0	9.94	97.7	8.6	6.29	1.33	0.173	--	--
1035	19.94	0.3	2.3	9.95	63.5	9.4	6.28	1.30	0.174	--	--
1040	19.92	0.3	2.5	9.60	59.6	12.1	6.28	1.50	0.173	--	--
1045	19.79	0.3	2.7	9.51	44.6	14.1	6.28	1.53	0.173	--	--
1050	19.75	0.3	3.0	9.39	41.1	17.7	6.28	1.54	0.173	--	--
1055	19.78	0.3	3.2	9.45	42.3	18.0	6.28	1.62	0.173	--	--
1100	19.80	0.3									

Meters Used for Measurement YSI 560, Hach 2100Q

pH/Con./DO Instrument Calibration ☒ Yes ☐ No Spectrophotometer NA E-Tape Hach

ADDITIONAL INFORMATION

Samples Composited Overtime, Distance NA

Analyses, Number and Volume of Sample Containers 3 bottles

Duplicate Sample Number(s) FP-MW11-DUP-20240214

Comments: (Filtered, Not Filtered, Calculations, etc.) NO

Signature [Signature] Date 2/24/2024 Page 1 of 1

Check if additional information on back ☐

ProjectPaine Field FTPJob No.05530-015-00CollectorMABSAMPLE ID: FP-MW12-

PURGE DATA

20240219

Well Condition: SecureYes [] NoDescribe Damage

(Padlock brand and number)

Depth to Water (from top of well casing)14.48

Depth to Base of Well24.66Height of Water Column10.2

Well Casing Type/Diameter2" PVC

One Casing Volume (gal.)1.73

Purge MethodPump (type)pen.Bailer (type)NA

Gallons Purged37

(Remove minimum of 3 well volumes or until field parameters stabilize)

Purge Water Storage/DisposalDrum storage on concrete pad

(Drum identification, sample analysis, sample results, storage location, etc.)

Diameter (in.)	OD	ID	Volume Gal./ Linear Ft
2	2.375"	2.067"	0.17
3	3.500"	3.068"	0.38
4	4.500"	4.026"	0.66
6	6.625"	6.065"	1.50
0.75	1.050"	0.810"	0.023

V = pi*r in ft ^2*7.48 gal/ft^3 = gal/ft^3

SAMPLING DATA

Date Collected (mo/dy/yr)2/14/2024

Sample Location and DepthMW12 @

Tidal CycleNA [X] High Tide atLow Tide at

Sample type (Groundwater, Product, Other)Groundwater

Sample Collected with[] Bailer[X] Pump[] Other

Made of[] Stainless Steel[] PVC[] Teflon[X] Disposable HDPE[] Other

Sampler Decon ProcedureAlconox and PFAS-Free water rinse

Sample Description (color, free product thickness, odor, turbidity, etc.)clear, odorless

FIELD PARAMETERS

Time	Depth to Water (ft bTOC) +/-0.3ft	Flow Rate (L/min)	Purge Volume (Gallons)	Temperature (°C) +/-3%	Turbidity (NTU) +/-10%	ORP (mV) +/- 10 eV	pH +/- 0.1	Dissolved O2 (ppm) +/-10%	Specific Conductance (µS/cm) +/-3%	TDS (mg/l)	Salinity (ppt)
0815	14.62										
0820	14.75	.3	.4	10.36	63.1	21.8	6.27	36.25	0.244	--	--
0825	14.75	.3	.7	10.26	40.9	30.0	6.24	15.90	0.244	--	--
0830	14.77	.3	1.2	10.44	25.4	26.2	6.24	10.93	0.242	--	--
0835	14.75	.3	1.8	10.35	21.9	21.9	6.22	7.86	0.243	--	--
0840	14.74	.3	2.3	10.37	13.4	15.1	6.21	5.97	0.243	--	--
0845	14.73	.3	2.6	10.49	9.62	9.1	6.20	4.72	0.244	--	--
0850	14.72	.3	3.1	10.49	9.25	5.6	6.19	4.41	0.243	--	--
0855	14.73	.3	3.4	10.59	6.53	4.4	6.19	3.89	0.243	--	--
0859	14.73	.3	3.7	10.63	8.22	4.5	6.19	3.61	0.245	--	--

Meters Used for MeasurementYSI 556, Hach 2100 Q

pH/Con./DO Instrument Calibration[X] Yes [] NoSpectrophotometerNAE-TapeHera

ADDITIONAL INFORMATION

Samples Composited Overtime, DistanceNA

Analyses, Number and Volume of Sample Containers3 bottles

Duplicate Sample Number(s)

Comments: (Filtered, Not Filtered, Calculations, etc.)no

SignatureDate2/14/2024Pageof

Check if additional information on back []

GROUNDWATER SAMPLE COLLECTION FORM

Project <u>Paine Field FTP</u>	Job No. <u>05530-015-00</u>	Collector <u>MAB</u>	SAMPLE ID: <u>FP-MWB-240228</u>

PURGE DATA

Well Condition: Secure ☒ Yes ☐ No Describe Damage _____

(Padlock brand and number) _____

Depth to Water (from top of well casing) 3.21

Depth to Base of Well 19.92 Height of Water Column 16.71

Well Casing Type/Diameter 2" PVC

One Casing Volume (gal.) 2.8

Purge Method Pump (type) per Bailer (type) NA

Gallons Purged 3.0

(Remove minimum of 3 well volumes or until field parameters stabilize)

Purge Water Storage/Disposal _____ Drum storage on concrete pad

(Drum identification, sample analysis, sample results, storage location, etc.) _____

Diameter (in.)	OD	ID	Volume Gal./ Linear Ft
2	2.375"	2.067"	0.17
3	3.500"	3.068"	0.38
4	4.500"	4.026"	0.66
6	6.625"	6.065"	1.50
0.75	1.050"	0.810"	0.023

$V = \pi \cdot r^2 \cdot h \text{ in ft}^3 \cdot 7.48 \text{ gal/ft}^3 = \text{gal/ft}^3$

SAMPLING DATA

Date Collected (mo/dy/yr) 03/28/2024

Sample Location and Depth MWB 15' by S

Tidal Cycle NA [X] High Tide at _____ Low Tide at _____

Time Collected 0930

Weather 50s, cloudy

Sample type (Groundwater, Product, Other) Groundwater

Sample Collected with ☐ Bailer ☒ Pump ☐ Other _____

Made of ☐ Stainless Steel ☐ PVC ☐ Teflon ☒ Disposable HDPE ☐ Other _____

Sampler Decon Procedure Alconox and PFAS-Free water rinse

Sample Description (color, free product thickness, odor, turbidity, etc.) clear, odorless

FIELD PARAMETERS

Time	Depth to Water (ft bTOC) +/-0.3ft	Flow Rate (L/min)	Purge Volume (Gallons)	Temperature (°F) +/-3%	Turbidity (NTU) +/-10%	ORP (mV) +/- 10 eV	pH +/- 0.1	Dissolved O2 (ppm) +/-10%	Specific Conductance (us/cm) +/-3%	TDS (mg/l)	Salinity (ppt)
0838	3.29	.3									
0842	4.02	.3	.25	9.0	30.6	41.8	6.65	11.09	232.4	--	--
0847	4.22	.3	.50	9.0	35.7	16.6	6.65	10.56	232.3	--	--
0853	4.39	.3	.75	9.0	36.7	1.6	6.64	8.77	229.3	--	--
0858	4.53	.3	1.0	9.0	35.2	-7.1	6.62	8.14	227.4	--	--
0903	4.56	.3	1.25	8.9	33.9	-14.8	6.61	7.94	224.2	--	--
0908	4.66	.3	1.50	9.0	28.7	-21.6	6.61	7.83	224.9	--	--
0913	4.68	.3	1.75	8.9	28.4	-31.1	6.61	7.64	225.7	--	--
0918	4.79	.3	2.10	8.9	37.0	-43.2	6.60	7.46	227.2	--	--
0923	4.84	.3	2.50	8.9	33.1	-49.9	6.59	7.25	228.4	--	--
0928	4.90	.3	2.75	8.9	32.9	-51.8	6.61	7.31	229.7	--	--

Meters Used for Measurement YSI Pro Plus, Hach 2100Q

pH/Con./DO Instrument Calibration ☒ Yes ☐ No Spectrophotometer NA E-Tape Heron Dipper-T

ADDITIONAL INFORMATION

Samples Composited Overtime, Distance NA

Analyses, Number and Volume of Sample Containers 2x 500mL HDPE, 1x 60mL HDPE
PFAS by EPA 1633

Duplicate Sample Number(s) _____

Comments: (Filtered, Not Filtered, Calculations, etc.) well tag: B08-615

Signature _____ Date 3/28/2024 Page 1 of 1

Check if additional information on back ☐

Appendix C

Laboratory Analytical Reports

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

GeoEngineers, Inc.

Paine Field; Everett, WA

05530-015-00

SGS Job Number: FC13428

Sampling Dates: 02/09/24 - 02/12/24



Report to:

GeoEngineers, Inc
1101 Fawcett Ave Suite 200
Tacoma, WA 98402
jletts@geoengineers.com; katakturk@geoengineers.com

ATTN: Jacob Letts

Total number of pages in report: **99**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable unless noted in the narrative, comments or footnotes.



Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001)

DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177),

AL, AK, AR, CT, IA, KY, MA, MI, MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

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Test results relate only to samples analyzed.

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Sample Summary

GeoEngineers, Inc.

Job No: FC13428

Paine Field; Everett, WA
Project No: 05530-015-00

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID

This report contains results reported as ND = Not detected. The following applies:
Organics ND = Not detected above the MDL

FC13428-1	02/09/24	09:20	NB	02/16/24	SO	Soil	BGC-B1-1.0
FC13428-2	02/09/24	09:25	NB	02/16/24	SO	Soil	BGC-B1-3.0
FC13428-5	02/09/24	10:10	NB	02/16/24	SO	Soil	BGC-B2-1.5
FC13428-6	02/09/24	10:20	NB	02/16/24	SO	Soil	BGC-B2-5.0
FC13428-8	02/09/24	11:20	NB	02/16/24	SO	Soil	BGC-B3-1.0
FC13428-9	02/09/24	11:30	NB	02/16/24	SO	Soil	BGC-B3-3.0
FC13428-10	02/09/24	11:55	NB	02/16/24	SO	Soil	BGC-B4-1.0
FC13428-11	02/09/24	12:00	NB	02/16/24	SO	Soil	BGC-B4-3.0
FC13428-12	02/09/24	12:10	NB	02/16/24	SO	Soil	BGC-B5-1.0
FC13428-13	02/09/24	12:15	NB	02/16/24	SO	Soil	BGC-B5-3.0
FC13428-14	02/09/24	12:50	NB	02/16/24	SO	Soil	BGC-B6-1.0
FC13428-15	02/09/24	12:55	NB	02/16/24	SO	Soil	BGC-B6-3.0

Soil samples reported on a dry weight basis unless otherwise indicated on result page.



Sample Summary
(continued)

GeoEngineers, Inc.

Job No: FC13428

Paine Field; Everett, WA
Project No: 05530-015-00

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
FC13428-16	02/09/24	11:15 NB	02/16/24	AQ	Surface Water	BGC-SW1-20240209
FC13428-17	02/09/24	11:55 NB	02/16/24	AQ	Surface Water	BGC-SW2-20240209
FC13428-18	02/09/24	12:40 NB	02/16/24	AQ	Surface Water	BGC-SW3-20240209
FC13428-19	02/09/24	13:15 NB	02/16/24	AQ	Equipment Blank	EB-20240209
FC13428-20	02/12/24	10:45 NB	02/16/24	SO	Soil	BGC-CB1

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

SAMPLE DELIVERY GROUP CASE NARRATIVE

2

Client: GeoEngineers, Inc.

Job No: FC13428

Site: Paine Field; Everett, WA

Report Date: 2/29/2024 4:21:57 PM

On 02/16/2024, 16 Sample(s), 0 Trip Blank(s), 1 Equip. Blank(s) and 0 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 1.4 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC13428 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA DRAFT 1633

Matrix: AQ

Batch ID: OP1744

Sample(s) FC13428-16MS, FC13428-17DUP were used as the QC samples indicated.

Blank Spike Recovery(s) for 3:3 Fluorotelomer carboxylate are outside control limits.

RPD(s) for Duplicate for Perfluorononanesulfonic acid are outside control limits for sample OP1744-DUP. Probable cause is due to sample non-homogeneity.

FC13428-16 for 3:3 Fluorotelomer carboxylate: Associated BS outside control limits high, sample was ND.

FC13428-18 for 3:3 Fluorotelomer carboxylate: Associated BS outside control limits high, sample was ND.

FC13428-19 for 3:3 Fluorotelomer carboxylate: Associated BS outside control limits high, sample was ND.

Matrix: SO

Batch ID: OP1818

Sample(s) FC13428-5MS, FC13428-5MSD were used as the QC samples indicated.

Blank Spike Recovery(s) for Perfluorododecanesulfonic acid are outside control limits.

FC13428-1 for Perfluorododecanesulfonic acid: Associated Low Level CCV outside of control limits high, sample was ND.

FC13428-2 for Perfluorododecanesulfonic acid: Associated Low Level CCV outside of control limits high, sample was ND.

FC13428-5 for Perfluorododecanesulfonic acid: Associated Low Level CCV outside of control limits high, sample was ND.

FC13428-6 for Perfluorododecanesulfonic acid: Associated Low Level CCV outside of control limits high, sample was ND.

FC13428-8 for Perfluorododecanesulfonic acid: Associated Low Level CCV outside of control limits high, sample was ND.

FC13428-9 for Perfluorododecanesulfonic acid: Associated Low Level CCV outside of control limits high, sample was ND.

FC13428-11 for Perfluorododecanesulfonic acid: Associated Low Level CCV outside of control limits high, sample was ND.

FC13428-12 for Perfluorododecanesulfonic acid: Associated Low Level CCV outside of control limits high, sample was ND.

FC13428-13 for Perfluorododecanesulfonic acid: Associated Low Level CCV outside of control limits high, sample was ND.

FC13428-14 for Perfluorododecanesulfonic acid: Associated Low Level CCV outside of control limits high, sample was ND.

FC13428-15 for Perfluorododecanesulfonic acid: Associated Low Level CCV outside of control limits high, sample was ND.

FC13428-20 for Perfluorododecanesulfonic acid: Associated Low Level CCV outside of control limits high, sample was ND.

General Chemistry By Method SM19 2540G

Matrix: SO

Batch ID: GN96755

Sample(s) FC13428-1DUP were used as the QC samples for Solids, Percent.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

Kim Benham, Report Generation (signature on file)

Summary of Hits

Page 1 of 4

Job Number: FC13428
Account: GeoEngineers, Inc.
Project: Paine Field; Everett, WA
Collected: 02/09/24 thru 02/12/24



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method

FC13428-1 BGC-B1-1.0

Perfluoroundecanoic acid	0.29	0.24	0.16	ug/kg	EPA DRAFT 1633
Perfluorododecanoic acid	0.36	0.24	0.12	ug/kg	EPA DRAFT 1633
Perfluorotridecanoic acid	0.20 J	0.24	0.12	ug/kg	EPA DRAFT 1633
Perfluorotetradecanoic acid	0.17 J	0.24	0.12	ug/kg	EPA DRAFT 1633
Perfluorooctanesulfonic acid	0.28	0.24	0.12	ug/kg	EPA DRAFT 1633

FC13428-2 BGC-B1-3.0

No hits reported in this sample.

FC13428-5 BGC-B2-1.5

No hits reported in this sample.

FC13428-6 BGC-B2-5.0

No hits reported in this sample.

FC13428-8 BGC-B3-1.0

Perfluoropentanoic acid	0.45 J	0.50	0.12	ug/kg	EPA DRAFT 1633
Perfluorohexanoic acid	0.17 J	0.25	0.12	ug/kg	EPA DRAFT 1633
Perfluorodecanoic acid	0.20 J	0.25	0.12	ug/kg	EPA DRAFT 1633
Perfluorododecanoic acid	0.19 J	0.25	0.12	ug/kg	EPA DRAFT 1633
Perfluorooctanesulfonic acid	1.5	0.25	0.12	ug/kg	EPA DRAFT 1633
Perfluorodecanesulfonic acid	0.78	0.25	0.18	ug/kg	EPA DRAFT 1633

FC13428-9 BGC-B3-3.0

Perfluorooctanesulfonic acid	0.63	0.24	0.12	ug/kg	EPA DRAFT 1633

FC13428-10 BGC-B4-1.0

Perfluorobutanoic acid	1.8	1.0	0.64	ug/kg	EPA DRAFT 1633
Perfluoropentanoic acid	4.7	0.52	0.13	ug/kg	EPA DRAFT 1633
Perfluorohexanoic acid	4.7	0.26	0.13	ug/kg	EPA DRAFT 1633
Perfluoroheptanoic acid	1.4	0.26	0.13	ug/kg	EPA DRAFT 1633
Perfluorooctanoic acid	3.4	0.26	0.13	ug/kg	EPA DRAFT 1633
Perfluorononanoic acid	0.39	0.26	0.15	ug/kg	EPA DRAFT 1633
Perfluorodecanoic acid	0.34	0.26	0.13	ug/kg	EPA DRAFT 1633
Perfluorododecanoic acid	0.16 J	0.26	0.13	ug/kg	EPA DRAFT 1633
Perfluorotridecanoic acid	0.25 J	0.26	0.13	ug/kg	EPA DRAFT 1633
Perfluorohexanesulfonic acid	0.32	0.26	0.20	ug/kg	EPA DRAFT 1633

Summary of Hits

Job Number: FC13428
Account: GeoEngineers, Inc.
Project: Paine Field; Everett, WA
Collected: 02/09/24 thru 02/12/24



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Perfluorooctanesulfonic acid		6.3	0.26	0.13	ug/kg	EPA DRAFT 1633
Perfluorodecanesulfonic acid		1.3	0.26	0.18	ug/kg	EPA DRAFT 1633
6:2 Fluorotelomer sulfonate		47.0	1.0	0.52	ug/kg	EPA DRAFT 1633
8:2 Fluorotelomer sulfonate		52.5	1.0	0.77	ug/kg	EPA DRAFT 1633
PFOSA		1.0	0.26	0.13	ug/kg	EPA DRAFT 1633
7:3 Fluorotelomer carboxylate		2.4 J	6.4	1.6	ug/kg	EPA DRAFT 1633

FC13428-11 BGC-B4-3.0

Perfluorobutanoic acid	0.69 J	0.99	0.62	ug/kg	EPA DRAFT 1633
Perfluoropentanoic acid	2.6	0.49	0.12	ug/kg	EPA DRAFT 1633
Perfluorohexanoic acid	2.6	0.25	0.12	ug/kg	EPA DRAFT 1633
Perfluoroheptanoic acid	1.1	0.25	0.12	ug/kg	EPA DRAFT 1633
Perfluorooctanoic acid	3.8	0.25	0.12	ug/kg	EPA DRAFT 1633
Perfluorononanoic acid	0.63	0.25	0.14	ug/kg	EPA DRAFT 1633
Perfluorodecanoic acid	0.37	0.25	0.12	ug/kg	EPA DRAFT 1633
Perfluorohexanesulfonic acid	0.55	0.25	0.20	ug/kg	EPA DRAFT 1633
Perfluorooctanesulfonic acid	18.5	0.25	0.12	ug/kg	EPA DRAFT 1633
Perfluorodecanesulfonic acid	0.48	0.25	0.18	ug/kg	EPA DRAFT 1633
6:2 Fluorotelomer sulfonate	37.5	0.99	0.49	ug/kg	EPA DRAFT 1633
8:2 Fluorotelomer sulfonate	34.8	0.99	0.74	ug/kg	EPA DRAFT 1633
PFOSA	0.65	0.25	0.12	ug/kg	EPA DRAFT 1633

FC13428-12 BGC-B5-1.0

Perfluoropentanoic acid	1.7	0.50	0.12	ug/kg	EPA DRAFT 1633
Perfluorohexanoic acid	1.2	0.25	0.12	ug/kg	EPA DRAFT 1633
Perfluoroheptanoic acid	0.77	0.25	0.12	ug/kg	EPA DRAFT 1633
Perfluorooctanoic acid	1.6	0.25	0.12	ug/kg	EPA DRAFT 1633
Perfluorononanoic acid	0.95	0.25	0.14	ug/kg	EPA DRAFT 1633
Perfluorohexanesulfonic acid	0.53	0.25	0.20	ug/kg	EPA DRAFT 1633
Perfluorooctanesulfonic acid	11.8	0.25	0.12	ug/kg	EPA DRAFT 1633
6:2 Fluorotelomer sulfonate	1.4	1.0	0.50	ug/kg	EPA DRAFT 1633

FC13428-13 BGC-B5-3.0

Perfluoropentanoic acid	1.6	0.50	0.13	ug/kg	EPA DRAFT 1633
Perfluorohexanoic acid	1.2	0.25	0.13	ug/kg	EPA DRAFT 1633
Perfluoroheptanoic acid	0.62	0.25	0.13	ug/kg	EPA DRAFT 1633
Perfluorooctanoic acid	1.2	0.25	0.13	ug/kg	EPA DRAFT 1633
Perfluorononanoic acid	0.30	0.25	0.14	ug/kg	EPA DRAFT 1633
Perfluorohexanesulfonic acid	0.54	0.25	0.20	ug/kg	EPA DRAFT 1633
Perfluorooctanesulfonic acid	10.3	0.25	0.13	ug/kg	EPA DRAFT 1633
6:2 Fluorotelomer sulfonate	1.8	1.0	0.50	ug/kg	EPA DRAFT 1633
8:2 Fluorotelomer sulfonate	0.92 J	1.0	0.75	ug/kg	EPA DRAFT 1633

Summary of Hits

Job Number: FC13428
Account: GeoEngineers, Inc.
Project: Paine Field; Everett, WA
Collected: 02/09/24 thru 02/12/24



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method

FC13428-14 BGC-B6-1.0

Perfluorobutanoic acid	2.0	2.0	1.2	ug/kg	EPA DRAFT 1633
Perfluoropentanoic acid	8.9	0.98	0.24	ug/kg	EPA DRAFT 1633
Perfluorohexanoic acid	6.2	0.49	0.24	ug/kg	EPA DRAFT 1633
Perfluoroheptanoic acid	3.1	0.49	0.24	ug/kg	EPA DRAFT 1633
Perfluorooctanoic acid	12.6	0.49	0.24	ug/kg	EPA DRAFT 1633
Perfluorononanoic acid	5.8	0.49	0.28	ug/kg	EPA DRAFT 1633
Perfluorodecanoic acid	1.3	0.49	0.24	ug/kg	EPA DRAFT 1633
Perfluoroundecanoic acid	0.63	0.49	0.33	ug/kg	EPA DRAFT 1633
Perfluorododecanoic acid	0.31 J	0.49	0.24	ug/kg	EPA DRAFT 1633
Perfluoropentanesulfonic acid	0.54	0.49	0.38	ug/kg	EPA DRAFT 1633
Perfluorohexanesulfonic acid	7.9	0.49	0.39	ug/kg	EPA DRAFT 1633
Perfluoroheptanesulfonic acid	0.53	0.49	0.35	ug/kg	EPA DRAFT 1633
Perfluorooctanesulfonic acid	46.2	0.49	0.24	ug/kg	EPA DRAFT 1633
6:2 Fluorotelomer sulfonate	3.7	2.0	0.98	ug/kg	EPA DRAFT 1633

FC13428-15 BGC-B6-3.0

Perfluoropentanoic acid	0.62 J	0.66	0.16	ug/kg	EPA DRAFT 1633
Perfluorohexanoic acid	0.77	0.33	0.16	ug/kg	EPA DRAFT 1633
Perfluoroheptanoic acid	0.42	0.33	0.16	ug/kg	EPA DRAFT 1633
Perfluorooctanoic acid	2.1	0.33	0.16	ug/kg	EPA DRAFT 1633
Perfluorononanoic acid	0.57	0.33	0.19	ug/kg	EPA DRAFT 1633
Perfluorodecanoic acid	0.17 J	0.33	0.16	ug/kg	EPA DRAFT 1633
Perfluorohexanesulfonic acid	1.5	0.33	0.26	ug/kg	EPA DRAFT 1633
Perfluorooctanesulfonic acid	11.9	0.33	0.16	ug/kg	EPA DRAFT 1633
6:2 Fluorotelomer sulfonate	2.9	1.3	0.66	ug/kg	EPA DRAFT 1633
8:2 Fluorotelomer sulfonate	1.3	1.3	0.98	ug/kg	EPA DRAFT 1633

FC13428-16 BGC-SW1-20240209

Perfluorobutanoic acid	0.0072 J	0.0074	0.0037	ug/l	EPA DRAFT 1633
Perfluoropentanoic acid	0.0163	0.0037	0.00093	ug/l	EPA DRAFT 1633
Perfluorohexanoic acid	0.0101	0.0019	0.00046	ug/l	EPA DRAFT 1633
Perfluoroheptanoic acid	0.0061	0.0019	0.00046	ug/l	EPA DRAFT 1633
Perfluorooctanoic acid	0.0048	0.0019	0.00046	ug/l	EPA DRAFT 1633
Perfluorononanoic acid	0.0017 J	0.0019	0.00056	ug/l	EPA DRAFT 1633
Perfluorodecanoic acid	0.00093 J	0.0019	0.00046	ug/l	EPA DRAFT 1633
Perfluorobutanesulfonic acid	0.0013 J	0.0019	0.00093	ug/l	EPA DRAFT 1633
Perfluorohexanesulfonic acid	0.0016 J	0.0019	0.00093	ug/l	EPA DRAFT 1633
Perfluorooctanesulfonic acid	0.0034	0.0019	0.00093	ug/l	EPA DRAFT 1633

Summary of Hits

Job Number: FC13428
Account: GeoEngineers, Inc.
Project: Paine Field; Everett, WA
Collected: 02/09/24 thru 02/12/24



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method

FC13428-17 BGC-SW2-20240209

Perfluorobutanoic acid	0.0306	0.0075	0.0038	ug/l	EPA DRAFT 1633
Perfluoropentanoic acid	0.118	0.0038	0.00094	ug/l	EPA DRAFT 1633
Perfluorohexanoic acid	0.0776	0.0019	0.00047	ug/l	EPA DRAFT 1633
Perfluoroheptanoic acid	0.0287	0.0019	0.00047	ug/l	EPA DRAFT 1633
Perfluorooctanoic acid	0.0230	0.0019	0.00047	ug/l	EPA DRAFT 1633
Perfluorononanoic acid	0.0087	0.0019	0.00058	ug/l	EPA DRAFT 1633
Perfluorodecanoic acid	0.0013 J	0.0019	0.00047	ug/l	EPA DRAFT 1633
Perfluoroundecanoic acid	0.00063 J	0.0019	0.00057	ug/l	EPA DRAFT 1633
Perfluorobutanesulfonic acid	0.0132	0.0019	0.00094	ug/l	EPA DRAFT 1633
Perfluoropentanesulfonic acid	0.0236	0.0019	0.0011	ug/l	EPA DRAFT 1633
Perfluorohexanesulfonic acid	0.218	0.0019	0.00094	ug/l	EPA DRAFT 1633
Perfluoroheptanesulfonic acid	0.0053	0.0019	0.00094	ug/l	EPA DRAFT 1633
Perfluorooctanesulfonic acid	0.268	0.0019	0.00094	ug/l	EPA DRAFT 1633
Perfluorononanesulfonic acid	0.0013 J	0.0019	0.00094	ug/l	EPA DRAFT 1633
6:2 Fluorotelomer sulfonate	0.208	0.0075	0.0038	ug/l	EPA DRAFT 1633
8:2 Fluorotelomer sulfonate	0.0176	0.0075	0.0039	ug/l	EPA DRAFT 1633
PFOA	0.0014 J	0.0019	0.00094	ug/l	EPA DRAFT 1633

FC13428-18 BGC-SW3-20240209

Perfluorobutanoic acid	0.0106	0.0087	0.0043	ug/l	EPA DRAFT 1633
Perfluoropentanoic acid	0.0253	0.0043	0.0011	ug/l	EPA DRAFT 1633
Perfluorohexanoic acid	0.0203	0.0022	0.00054	ug/l	EPA DRAFT 1633
Perfluoroheptanoic acid	0.0086	0.0022	0.00054	ug/l	EPA DRAFT 1633
Perfluorooctanoic acid	0.0088	0.0022	0.00054	ug/l	EPA DRAFT 1633
Perfluorononanoic acid	0.0024	0.0022	0.00066	ug/l	EPA DRAFT 1633
Perfluorodecanoic acid	0.00077 J	0.0022	0.00054	ug/l	EPA DRAFT 1633
Perfluorobutanesulfonic acid	0.0034	0.0022	0.0011	ug/l	EPA DRAFT 1633
Perfluoropentanesulfonic acid	0.0030	0.0022	0.0012	ug/l	EPA DRAFT 1633
Perfluorohexanesulfonic acid	0.0288	0.0022	0.0011	ug/l	EPA DRAFT 1633
Perfluorooctanesulfonic acid	0.0467	0.0022	0.0011	ug/l	EPA DRAFT 1633
6:2 Fluorotelomer sulfonate	0.0388	0.0087	0.0043	ug/l	EPA DRAFT 1633
8:2 Fluorotelomer sulfonate	0.0065 J	0.0087	0.0045	ug/l	EPA DRAFT 1633

FC13428-19 EB-20240209

No hits reported in this sample.

FC13428-20 BGC-CB1

No hits reported in this sample.



Orlando, FL

Section 4

4

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	BGC-B1-1.0	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-1	Date Received:	02/16/24
Matrix:	SO - Soil	Percent Solids:	83.2
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q31548.D	1	02/26/24 19:47	MV	02/26/24 10:10	OP1818	S6Q444
Run #2							

Run #	Initial Weight	Final Volume
Run #1	5.04 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.95	0.60	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.48	0.12	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.24	0.12	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.24	0.12	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.24	0.12	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.24	0.14	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.24	0.12	ug/kg	
2058-94-8	Perfluoroundecanoic acid	0.29	0.24	0.16	ug/kg	
307-55-1	Perfluorododecanoic acid	0.36	0.24	0.12	ug/kg	
72629-94-8	Perfluorotridecanoic acid	0.20	0.24	0.12	ug/kg	J
376-06-7	Perfluorotetradecanoic acid	0.17	0.24	0.12	ug/kg	J

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.24	0.12	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.24	0.19	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.24	0.19	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.24	0.17	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.28	0.24	0.12	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.24	0.22	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.24	0.17	ug/kg	
79780-39-5	Perfluorododecanesulfonic ac ^a	ND	0.24	0.18	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.95	0.48	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.95	0.48	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.95	0.72	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.24	0.12	ug/kg	
31506-32-8	MeFOSA	ND	0.24	0.16	ug/kg	
4151-50-2	EtFOSA	ND	0.24	0.12	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: BGC-B1-1.0

Lab Sample ID: FC13428-1

Date Sampled: 02/09/24

Matrix: SO - Soil

Date Received: 02/16/24

Method: EPA DRAFT 1633 EPA 1633 DRAFT

Percent Solids: 83.2

Project: Paine Field; Everett, WA

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.24	0.19	ug/kg	
2991-50-6	EtFOSAA	ND	0.24	0.23	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.4	1.2	ug/kg	
1691-99-2	EtFOSE	ND	2.4	1.2	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.95	0.34	ug/kg	
919005-14-4	ADONA	ND	0.95	0.40	ug/kg	
377-73-1	PFMPA	ND	0.48	0.24	ug/kg	
863090-89-5	PFMBA	ND	0.48	0.24	ug/kg	
151772-58-6	NFDHA	ND	0.48	0.29	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.95	0.52	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.95	0.48	ug/kg	
113507-82-7	PFEESA	ND	0.48	0.24	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.2	0.61	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	6.0	1.4	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	6.0	1.5	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	66%		20-150%
	13C5-PFPeA	66%		20-150%
	13C5-PFHxA	66%		20-150%
	13C4-PFHpA	68%		20-150%
	13C8-PFOA	66%		20-150%
	13C9-PFNA	68%		20-150%
	13C6-PFDA	64%		20-150%
	13C7-PFUnDA	55%		20-150%
	13C2-PFDoDA	57%		20-150%
	13C2-PFTeDA	61%		20-150%
	13C3-PFBS	62%		20-150%
	13C3-PFHxS	65%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BGC-B1-1.0	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-1	Date Received:	02/16/24
Matrix:	SO - Soil	Percent Solids:	83.2
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	66%		20-150%
	13C8-FOSA	64%		20-150%
	d3-MeFOSA	54%		20-150%
	d5-EtFOSA	57%		20-150%
	d3-MeFOSAA	72%		20-150%
	d5-EtFOSAA	78%		20-150%
	d7-MeFOSE	67%		20-150%
	d9-EtFOSE	66%		20-150%
	13C2-4:2FTS	70%		20-180%
	13C2-6:2FTS	69%		20-180%
	13C2-8:2FTS	73%		20-180%
	13C3-HFPO-DA	64%		20-150%

(a) Associated Low Level CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BGC-B1-3.0	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-2	Date Received:	02/16/24
Matrix:	SO - Soil	Percent Solids:	87.2
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q31549.D	1	02/26/24 20:02	MV	02/26/24 10:10	OP1818	S6Q444
Run #2							

Run #	Initial Weight	Final Volume
Run #1	4.98 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.92	0.58	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.46	0.12	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.23	0.12	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.23	0.12	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.23	0.12	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.23	0.13	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.23	0.12	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.23	0.15	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.23	0.12	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.23	0.12	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.23	0.12	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.23	0.12	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.23	0.18	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.23	0.18	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.23	0.17	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.23	0.12	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.23	0.21	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.23	0.16	ug/kg	
79780-39-5	Perfluorododecanesulfonic ac ^a	ND	0.23	0.17	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.92	0.46	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.92	0.46	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.92	0.69	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.23	0.12	ug/kg	
31506-32-8	MeFOSA	ND	0.23	0.16	ug/kg	
4151-50-2	EtFOSA	ND	0.23	0.12	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BGC-B1-3.0		
Lab Sample ID:	FC13428-2	Date Sampled:	02/09/24
Matrix:	SO - Soil	Date Received:	02/16/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	87.2
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.23	0.18	ug/kg	
2991-50-6	EtFOSAA	ND	0.23	0.23	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.3	1.2	ug/kg	
1691-99-2	EtFOSE	ND	2.3	1.2	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.92	0.33	ug/kg	
919005-14-4	ADONA	ND	0.92	0.39	ug/kg	
377-73-1	PFMPA	ND	0.46	0.23	ug/kg	
863090-89-5	PFMBA	ND	0.46	0.23	ug/kg	
151772-58-6	NFDHA	ND	0.46	0.28	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.92	0.51	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.92	0.46	ug/kg	
113507-82-7	PFEESA	ND	0.46	0.23	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.2	0.59	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.8	1.3	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.8	1.5	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	57%		20-150%
	13C5-PFPeA	55%		20-150%
	13C5-PFHxA	55%		20-150%
	13C4-PFHpA	56%		20-150%
	13C8-PFOA	57%		20-150%
	13C9-PFNA	56%		20-150%
	13C6-PFDA	53%		20-150%
	13C7-PFUnDA	51%		20-150%
	13C2-PFDoDA	50%		20-150%
	13C2-PFTeDA	52%		20-150%
	13C3-PFBS	53%		20-150%
	13C3-PFHxS	53%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BGC-B1-3.0	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-2	Date Received:	02/16/24
Matrix:	SO - Soil	Percent Solids:	87.2
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	61%		20-150%
	13C8-FOSA	64%		20-150%
	d3-MeFOSA	48%		20-150%
	d5-EtFOSA	57%		20-150%
	d3-MeFOSAA	68%		20-150%
	d5-EtFOSAA	67%		20-150%
	d7-MeFOSE	67%		20-150%
	d9-EtFOSE	62%		20-150%
	13C2-4:2FTS	55%		20-180%
	13C2-6:2FTS	64%		20-180%
	13C2-8:2FTS	66%		20-180%
	13C3-HFPO-DA	55%		20-150%

(a) Associated Low Level CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.2
4

Report of Analysis

Client Sample ID:	BGC-B2-1.5	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-5	Date Received:	02/16/24
Matrix:	SO - Soil	Percent Solids:	84.0
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q31550.D	1	02/26/24 20:16	MV	02/26/24 10:10	OP1818	S6Q444
Run #2							

Run #	Initial Weight	Final Volume
Run #1	5.02 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.95	0.59	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.47	0.12	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.24	0.12	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.24	0.12	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.24	0.12	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.24	0.14	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.24	0.12	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.24	0.16	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.24	0.12	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.24	0.12	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.24	0.12	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.24	0.12	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.24	0.19	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.24	0.19	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.24	0.17	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.24	0.12	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.24	0.21	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.24	0.17	ug/kg	
79780-39-5	Perfluorododecanesulfonic ac ^a	ND	0.24	0.18	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.95	0.47	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.95	0.47	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.95	0.71	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.24	0.12	ug/kg	
31506-32-8	MeFOSA	ND	0.24	0.16	ug/kg	
4151-50-2	EtFOSA	ND	0.24	0.12	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BGC-B2-1.5	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-5	Date Received:	02/16/24
Matrix:	SO - Soil	Percent Solids:	84.0
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.24	0.19	ug/kg	
2991-50-6	EtFOSAA	ND	0.24	0.23	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.4	1.2	ug/kg	
1691-99-2	EtFOSE	ND	2.4	1.2	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.95	0.34	ug/kg	
919005-14-4	ADONA	ND	0.95	0.40	ug/kg	
377-73-1	PFMPA	ND	0.47	0.24	ug/kg	
863090-89-5	PFMBA	ND	0.47	0.24	ug/kg	
151772-58-6	NFDHA	ND	0.47	0.29	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.95	0.52	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.95	0.47	ug/kg	
113507-82-7	PFEESA	ND	0.47	0.24	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.2	0.60	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.9	1.4	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.9	1.5	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	79%		20-150%
	13C5-PFPeA	79%		20-150%
	13C5-PFHxA	79%		20-150%
	13C4-PFHpA	80%		20-150%
	13C8-PFOA	80%		20-150%
	13C9-PFNA	72%		20-150%
	13C6-PFDA	79%		20-150%
	13C7-PFUnDA	76%		20-150%
	13C2-PFDoDA	80%		20-150%
	13C2-PFTeDA	77%		20-150%
	13C3-PFBS	73%		20-150%
	13C3-PFHxS	77%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BGC-B2-1.5	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-5	Date Received:	02/16/24
Matrix:	SO - Soil	Percent Solids:	84.0
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	73%		20-150%
	13C8-FOSA	76%		20-150%
	d3-MeFOSA	66%		20-150%
	d5-EtFOSA	68%		20-150%
	d3-MeFOSAA	79%		20-150%
	d5-EtFOSAA	91%		20-150%
	d7-MeFOSE	85%		20-150%
	d9-EtFOSE	81%		20-150%
	13C2-4:2FTS	81%		20-180%
	13C2-6:2FTS	81%		20-180%
	13C2-8:2FTS	96%		20-180%
	13C3-HFPO-DA	81%		20-150%

(a) Associated Low Level CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.3
4

Report of Analysis

Client Sample ID:	BGC-B2-5.0	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-6	Date Received:	02/16/24
Matrix:	SO - Soil	Percent Solids:	89.9
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q31553.D	1	02/26/24 20:59	MV	02/26/24 10:10	OP1818	S6Q444
Run #2							

	Initial Weight	Final Volume
Run #1	4.98 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.89	0.56	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.45	0.11	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.22	0.11	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.22	0.11	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.22	0.11	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.22	0.13	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.22	0.11	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.22	0.15	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.22	0.11	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.22	0.11	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.22	0.11	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.22	0.11	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.22	0.18	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.22	0.18	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.22	0.16	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.22	0.11	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.22	0.20	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.22	0.16	ug/kg	
79780-39-5	Perfluorododecanesulfonic ac ^a	ND	0.22	0.17	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.89	0.45	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.89	0.45	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.89	0.67	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.22	0.11	ug/kg	
31506-32-8	MeFOSA	ND	0.22	0.15	ug/kg	
4151-50-2	EtFOSA	ND	0.22	0.11	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BGC-B2-5.0		
Lab Sample ID:	FC13428-6	Date Sampled:	02/09/24
Matrix:	SO - Soil	Date Received:	02/16/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	89.9
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.22	0.18	ug/kg	
2991-50-6	EtFOSAA	ND	0.22	0.22	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.2	1.1	ug/kg	
1691-99-2	EtFOSE	ND	2.2	1.1	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.89	0.32	ug/kg	
919005-14-4	ADONA	ND	0.89	0.38	ug/kg	
377-73-1	PFMPA	ND	0.45	0.22	ug/kg	
863090-89-5	PFMBA	ND	0.45	0.22	ug/kg	
151772-58-6	NFDHA	ND	0.45	0.27	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.89	0.49	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.89	0.45	ug/kg	
113507-82-7	PFEESA	ND	0.45	0.22	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.1	0.57	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.6	1.3	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.6	1.4	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	65%		20-150%
	13C5-PFPeA	65%		20-150%
	13C5-PFHxA	61%		20-150%
	13C4-PFHpA	61%		20-150%
	13C8-PFOA	63%		20-150%
	13C9-PFNA	61%		20-150%
	13C6-PFDA	71%		20-150%
	13C7-PFUnDA	64%		20-150%
	13C2-PFDoDA	72%		20-150%
	13C2-PFTeDA	65%		20-150%
	13C3-PFBS	62%		20-150%
	13C3-PFHxS	62%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BGC-B2-5.0	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-6	Date Received:	02/16/24
Matrix:	SO - Soil	Percent Solids:	89.9
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	63%		20-150%
	13C8-FOSA	67%		20-150%
	d3-MeFOSA	57%		20-150%
	d5-EtFOSA	67%		20-150%
	d3-MeFOSAA	70%		20-150%
	d5-EtFOSAA	66%		20-150%
	d7-MeFOSE	69%		20-150%
	d9-EtFOSE	68%		20-150%
	13C2-4:2FTS	70%		20-180%
	13C2-6:2FTS	74%		20-180%
	13C2-8:2FTS	82%		20-180%
	13C3-HFPO-DA	65%		20-150%

(a) Associated Low Level CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BGC-B3-1.0	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-8	Date Received:	02/16/24
Matrix:	SO - Soil	Percent Solids:	80.1
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q31554.D	1	02/26/24 21:13	MV	02/26/24 10:10	OP1818	S6Q444
Run #2							

Run #	Initial Weight	Final Volume
Run #1	5.02 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.99	0.62	ug/kg	
2706-90-3	Perfluoropentanoic acid	0.45	0.50	0.12	ug/kg	J
307-24-4	Perfluorohexanoic acid	0.17	0.25	0.12	ug/kg	J
375-85-9	Perfluoroheptanoic acid	ND	0.25	0.12	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.25	0.12	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.25	0.14	ug/kg	
335-76-2	Perfluorodecanoic acid	0.20	0.25	0.12	ug/kg	J
2058-94-8	Perfluoroundecanoic acid	ND	0.25	0.17	ug/kg	
307-55-1	Perfluorododecanoic acid	0.19	0.25	0.12	ug/kg	J
72629-94-8	Perfluorotridecanoic acid	ND	0.25	0.13	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.25	0.12	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.25	0.12	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.25	0.20	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.25	0.20	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.25	0.18	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	1.5	0.25	0.12	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.25	0.23	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	0.78	0.25	0.18	ug/kg	
79780-39-5	Perfluorododecanesulfonic ac ^a	ND	0.25	0.19	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.99	0.50	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.99	0.50	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.99	0.75	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.25	0.12	ug/kg	
31506-32-8	MeFOSA	ND	0.25	0.17	ug/kg	
4151-50-2	EtFOSA	ND	0.25	0.13	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BGC-B3-1.0		
Lab Sample ID:	FC13428-8	Date Sampled:	02/09/24
Matrix:	SO - Soil	Date Received:	02/16/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	80.1
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.25	0.20	ug/kg	
2991-50-6	EtFOSAA	ND	0.25	0.24	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.5	1.2	ug/kg	
1691-99-2	EtFOSE	ND	2.5	1.2	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.99	0.36	ug/kg	
919005-14-4	ADONA	ND	0.99	0.42	ug/kg	
377-73-1	PFMPA	ND	0.50	0.25	ug/kg	
863090-89-5	PFMBA	ND	0.50	0.25	ug/kg	
151772-58-6	NFDHA	ND	0.50	0.30	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.99	0.55	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.99	0.50	ug/kg	
113507-82-7	PFEESA	ND	0.50	0.25	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.2	0.63	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	6.2	1.4	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	6.2	1.6	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	77%		20-150%
	13C5-PFPeA	76%		20-150%
	13C5-PFHxA	76%		20-150%
	13C4-PFHpA	78%		20-150%
	13C8-PFOA	76%		20-150%
	13C9-PFNA	76%		20-150%
	13C6-PFDA	70%		20-150%
	13C7-PFUnDA	65%		20-150%
	13C2-PFDoDA	76%		20-150%
	13C2-PFTeDA	73%		20-150%
	13C3-PFBS	70%		20-150%
	13C3-PFHxS	76%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BGC-B3-1.0	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-8	Date Received:	02/16/24
Matrix:	SO - Soil	Percent Solids:	80.1
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	70%		20-150%
	13C8-FOSA	77%		20-150%
	d3-MeFOSA	58%		20-150%
	d5-EtFOSA	66%		20-150%
	d3-MeFOSAA	81%		20-150%
	d5-EtFOSAA	88%		20-150%
	d7-MeFOSE	83%		20-150%
	d9-EtFOSE	76%		20-150%
	13C2-4:2FTS	75%		20-180%
	13C2-6:2FTS	87%		20-180%
	13C2-8:2FTS	87%		20-180%
	13C3-HFPO-DA	72%		20-150%

(a) Associated Low Level CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	BGC-B3-3.0	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-9	Date Received:	02/16/24
Matrix:	SO - Soil	Percent Solids:	84.9
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q31557.D	1	02/26/24 21:56	MV	02/26/24 10:10	OP1818	S6Q444
Run #2							

Run #	Initial Weight	Final Volume
Run #1	4.98 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.95	0.59	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.47	0.12	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.24	0.12	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.24	0.12	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.24	0.12	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.24	0.14	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.24	0.12	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.24	0.16	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.24	0.12	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.24	0.12	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.24	0.12	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.24	0.12	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.24	0.19	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.24	0.19	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.24	0.17	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.63	0.24	0.12	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.24	0.21	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.24	0.17	ug/kg	
79780-39-5	Perfluorododecanesulfonic ac ^a	ND	0.24	0.18	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.95	0.47	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.95	0.47	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.95	0.71	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.24	0.12	ug/kg	
31506-32-8	MeFOSA	ND	0.24	0.16	ug/kg	
4151-50-2	EtFOSA	ND	0.24	0.12	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BGC-B3-3.0		
Lab Sample ID:	FC13428-9	Date Sampled:	02/09/24
Matrix:	SO - Soil	Date Received:	02/16/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	84.9
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.24	0.19	ug/kg	
2991-50-6	EtFOSAA	ND	0.24	0.23	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.4	1.2	ug/kg	
1691-99-2	EtFOSE	ND	2.4	1.2	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.95	0.34	ug/kg	
919005-14-4	ADONA	ND	0.95	0.40	ug/kg	
377-73-1	PFMPA	ND	0.47	0.24	ug/kg	
863090-89-5	PFMBA	ND	0.47	0.24	ug/kg	
151772-58-6	NFDHA	ND	0.47	0.29	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.95	0.52	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.95	0.47	ug/kg	
113507-82-7	PFEESA	ND	0.47	0.24	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.2	0.60	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.9	1.4	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.9	1.5	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	67%		20-150%
	13C5-PFPeA	64%		20-150%
	13C5-PFHxA	67%		20-150%
	13C4-PFHpA	61%		20-150%
	13C8-PFOA	66%		20-150%
	13C9-PFNA	62%		20-150%
	13C6-PFDA	61%		20-150%
	13C7-PFUnDA	66%		20-150%
	13C2-PFDoDA	68%		20-150%
	13C2-PFTeDA	55%		20-150%
	13C3-PFBS	60%		20-150%
	13C3-PFHxS	66%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BGC-B3-3.0	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-9	Date Received:	02/16/24
Matrix:	SO - Soil	Percent Solids:	84.9
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	69%		20-150%
	13C8-FOSA	71%		20-150%
	d3-MeFOSA	63%		20-150%
	d5-EtFOSA	63%		20-150%
	d3-MeFOSAA	72%		20-150%
	d5-EtFOSAA	78%		20-150%
	d7-MeFOSE	78%		20-150%
	d9-EtFOSE	71%		20-150%
	13C2-4:2FTS	62%		20-180%
	13C2-6:2FTS	77%		20-180%
	13C2-8:2FTS	71%		20-180%
	13C3-HFPO-DA	64%		20-150%

(a) Associated Low Level CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BGC-B4-1.0	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-10	Date Received:	02/16/24
Matrix:	SO - Soil	Percent Solids:	77.1
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q0357.D	1	02/28/24 06:15	AL	02/26/24 10:10	OP1818	S7Q47
Run #2							

Run #	Initial Weight	Final Volume
Run #1	5.03 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	1.8	1.0	0.64	ug/kg	
2706-90-3	Perfluoropentanoic acid	4.7	0.52	0.13	ug/kg	
307-24-4	Perfluorohexanoic acid	4.7	0.26	0.13	ug/kg	
375-85-9	Perfluoroheptanoic acid	1.4	0.26	0.13	ug/kg	
335-67-1	Perfluorooctanoic acid	3.4	0.26	0.13	ug/kg	
375-95-1	Perfluorononanoic acid	0.39	0.26	0.15	ug/kg	
335-76-2	Perfluorodecanoic acid	0.34	0.26	0.13	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.26	0.17	ug/kg	
307-55-1	Perfluorododecanoic acid	0.16	0.26	0.13	ug/kg	J
72629-94-8	Perfluorotridecanoic acid	0.25	0.26	0.13	ug/kg	J
376-06-7	Perfluorotetradecanoic acid	ND	0.26	0.13	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.26	0.13	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.26	0.20	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	0.32	0.26	0.20	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.26	0.19	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	6.3	0.26	0.13	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.26	0.23	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	1.3	0.26	0.18	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.26	0.19	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	1.0	0.52	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	47.0	1.0	0.52	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	52.5	1.0	0.77	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	1.0	0.26	0.13	ug/kg	
31506-32-8	MeFOSA	ND	0.26	0.18	ug/kg	
4151-50-2	EtFOSA	ND	0.26	0.13	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BGC-B4-1.0	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-10	Date Received:	02/16/24
Matrix:	SO - Soil	Percent Solids:	77.1
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.26	0.20	ug/kg	
2991-50-6	EtFOSAA	ND	0.26	0.25	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.6	1.3	ug/kg	
1691-99-2	EtFOSE	ND	2.6	1.3	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	1.0	0.37	ug/kg	
919005-14-4	ADONA	ND	1.0	0.43	ug/kg	
377-73-1	PFMPA	ND	0.52	0.26	ug/kg	
863090-89-5	PFMBA	ND	0.52	0.26	ug/kg	
151772-58-6	NFDHA	ND	0.52	0.31	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	1.0	0.57	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	1.0	0.52	ug/kg	
113507-82-7	PFEESA	ND	0.52	0.26	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.3	0.66	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	6.4	1.5	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	2.4	6.4	1.6	ug/kg	J

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	73%		20-150%
	13C5-PFPeA	72%		20-150%
	13C5-PFHxA	74%		20-150%
	13C4-PFHpA	73%		20-150%
	13C8-PFOA	73%		20-150%
	13C9-PFNA	72%		20-150%
	13C6-PFDA	70%		20-150%
	13C7-PFUnDA	73%		20-150%
	13C2-PFDoDA	70%		20-150%
	13C2-PFTeDA	69%		20-150%
	13C3-PFBS	73%		20-150%
	13C3-PFHxS	74%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BGC-B4-1.0	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-10	Date Received:	02/16/24
Matrix:	SO - Soil	Percent Solids:	77.1
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	72%		20-150%
	13C8-FOSA	69%		20-150%
	d3-MeFOSA	66%		20-150%
	d5-EtFOSA	72%		20-150%
	d3-MeFOSAA	69%		20-150%
	d5-EtFOSAA	69%		20-150%
	d7-MeFOSE	69%		20-150%
	d9-EtFOSE	69%		20-150%
	13C2-4:2FTS	67%		20-180%
	13C2-6:2FTS	66%		20-180%
	13C2-8:2FTS	70%		20-180%
	13C3-HFPO-DA	75%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BGC-B4-3.0	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-11	Date Received:	02/16/24
Matrix:	SO - Soil	Percent Solids:	81.7
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q31559.D	1	02/26/24 22:25	MV	02/26/24 10:10	OP1818	S6Q444
Run #2							

Run #	Initial Weight	Final Volume
Run #1	4.97 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	0.69	0.99	0.62	ug/kg	J
2706-90-3	Perfluoropentanoic acid	2.6	0.49	0.12	ug/kg	
307-24-4	Perfluorohexanoic acid	2.6	0.25	0.12	ug/kg	
375-85-9	Perfluoroheptanoic acid	1.1	0.25	0.12	ug/kg	
335-67-1	Perfluorooctanoic acid	3.8	0.25	0.12	ug/kg	
375-95-1	Perfluorononanoic acid	0.63	0.25	0.14	ug/kg	
335-76-2	Perfluorodecanoic acid	0.37	0.25	0.12	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.25	0.16	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.25	0.12	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.25	0.13	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.25	0.12	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.25	0.12	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.25	0.19	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	0.55	0.25	0.20	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.25	0.18	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	18.5	0.25	0.12	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.25	0.22	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	0.48	0.25	0.18	ug/kg	
79780-39-5	Perfluorododecanesulfonic ac ^a	ND	0.25	0.18	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.99	0.49	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	37.5	0.99	0.49	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	34.8	0.99	0.74	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	0.65	0.25	0.12	ug/kg	
31506-32-8	MeFOSA	ND	0.25	0.17	ug/kg	
4151-50-2	EtFOSA	ND	0.25	0.12	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BGC-B4-3.0		
Lab Sample ID:	FC13428-11	Date Sampled:	02/09/24
Matrix:	SO - Soil	Date Received:	02/16/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	81.7
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.25	0.19	ug/kg	
2991-50-6	EtFOSAA	ND	0.25	0.24	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.5	1.2	ug/kg	
1691-99-2	EtFOSE	ND	2.5	1.2	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.99	0.36	ug/kg	
919005-14-4	ADONA	ND	0.99	0.41	ug/kg	
377-73-1	PFMPA	ND	0.49	0.25	ug/kg	
863090-89-5	PFMBA	ND	0.49	0.25	ug/kg	
151772-58-6	NFDHA	ND	0.49	0.30	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.99	0.54	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.99	0.49	ug/kg	
113507-82-7	PFEESA	ND	0.49	0.25	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.2	0.63	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	6.2	1.4	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	6.2	1.6	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	81%		20-150%
	13C5-PFPeA	80%		20-150%
	13C5-PFHxA	80%		20-150%
	13C4-PFHpA	82%		20-150%
	13C8-PFOA	76%		20-150%
	13C9-PFNA	70%		20-150%
	13C6-PFDA	83%		20-150%
	13C7-PFUnDA	84%		20-150%
	13C2-PFDoDA	90%		20-150%
	13C2-PFTeDA	80%		20-150%
	13C3-PFBS	76%		20-150%
	13C3-PFHxS	78%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BGC-B4-3.0	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-11	Date Received:	02/16/24
Matrix:	SO - Soil	Percent Solids:	81.7
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	73%		20-150%
	13C8-FOSA	86%		20-150%
	d3-MeFOSA	70%		20-150%
	d5-EtFOSA	90%		20-150%
	d3-MeFOSAA	90%		20-150%
	d5-EtFOSAA	98%		20-150%
	d7-MeFOSE	94%		20-150%
	d9-EtFOSE	90%		20-150%
	13C2-4:2FTS	93%		20-180%
	13C2-6:2FTS	93%		20-180%
	13C2-8:2FTS	110%		20-180%
	13C3-HFPO-DA	82%		20-150%

(a) Associated Low Level CCV outside of control limits high, sample was ND.

ND = Not detected	MDL = Method Detection Limit	J = Indicates an estimated value
RL = Reporting Limit		B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range		N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BGC-B5-1.0	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-12	Date Received:	02/16/24
Matrix:	SO - Soil	Percent Solids:	80.5
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q31560.D	1	02/26/24 22:39	MV	02/26/24 10:10	OP1818	S6Q444
Run #2							

Run #	Initial Weight	Final Volume
Run #1	4.98 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	1.0	0.62	ug/kg	
2706-90-3	Perfluoropentanoic acid	1.7	0.50	0.12	ug/kg	
307-24-4	Perfluorohexanoic acid	1.2	0.25	0.12	ug/kg	
375-85-9	Perfluoroheptanoic acid	0.77	0.25	0.12	ug/kg	
335-67-1	Perfluorooctanoic acid	1.6	0.25	0.12	ug/kg	
375-95-1	Perfluorononanoic acid	0.95	0.25	0.14	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.25	0.12	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.25	0.17	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.25	0.12	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.25	0.13	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.25	0.12	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.25	0.12	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.25	0.20	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	0.53	0.25	0.20	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.25	0.18	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	11.8	0.25	0.12	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.25	0.23	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.25	0.18	ug/kg	
79780-39-5	Perfluorododecanesulfonic ac ^a	ND	0.25	0.19	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	1.0	0.50	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	1.4	1.0	0.50	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	1.0	0.75	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.25	0.12	ug/kg	
31506-32-8	MeFOSA	ND	0.25	0.17	ug/kg	
4151-50-2	EtFOSA	ND	0.25	0.13	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BGC-B5-1.0		
Lab Sample ID:	FC13428-12	Date Sampled:	02/09/24
Matrix:	SO - Soil	Date Received:	02/16/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	80.5
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.25	0.20	ug/kg	
2991-50-6	EtFOSAA	ND	0.25	0.25	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.5	1.2	ug/kg	
1691-99-2	EtFOSE	ND	2.5	1.2	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	1.0	0.36	ug/kg	
919005-14-4	ADONA	ND	1.0	0.42	ug/kg	
377-73-1	PFMPA	ND	0.50	0.25	ug/kg	
863090-89-5	PFMBA	ND	0.50	0.25	ug/kg	
151772-58-6	NFDHA	ND	0.50	0.30	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	1.0	0.55	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	1.0	0.50	ug/kg	
113507-82-7	PFEESA	ND	0.50	0.25	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.2	0.63	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	6.2	1.4	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	6.2	1.6	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	82%		20-150%
	13C5-PFPeA	81%		20-150%
	13C5-PFHxA	81%		20-150%
	13C4-PFHpA	80%		20-150%
	13C8-PFOA	77%		20-150%
	13C9-PFNA	73%		20-150%
	13C6-PFDA	82%		20-150%
	13C7-PFUnDA	82%		20-150%
	13C2-PFDoDA	90%		20-150%
	13C2-PFTeDA	83%		20-150%
	13C3-PFBS	79%		20-150%
	13C3-PFHxS	78%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BGC-B5-1.0	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-12	Date Received:	02/16/24
Matrix:	SO - Soil	Percent Solids:	80.5
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	84%		20-150%
	13C8-FOSA	86%		20-150%
	d3-MeFOSA	86%		20-150%
	d5-EtFOSA	92%		20-150%
	d3-MeFOSAA	82%		20-150%
	d5-EtFOSAA	107%		20-150%
	d7-MeFOSE	95%		20-150%
	d9-EtFOSE	92%		20-150%
	13C2-4:2FTS	91%		20-180%
	13C2-6:2FTS	83%		20-180%
	13C2-8:2FTS	100%		20-180%
	13C3-HFPO-DA	78%		20-150%

(a) Associated Low Level CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	BGC-B5-3.0	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-13	Date Received:	02/16/24
Matrix:	SO - Soil	Percent Solids:	79.6
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q31561.D	1	02/26/24 22:53	MV	02/26/24 10:10	OP1818	S6Q444
Run #2							

Run #	Initial Weight	Final Volume
Run #1	5.01 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	1.0	0.63	ug/kg	
2706-90-3	Perfluoropentanoic acid	1.6	0.50	0.13	ug/kg	
307-24-4	Perfluorohexanoic acid	1.2	0.25	0.13	ug/kg	
375-85-9	Perfluoroheptanoic acid	0.62	0.25	0.13	ug/kg	
335-67-1	Perfluorooctanoic acid	1.2	0.25	0.13	ug/kg	
375-95-1	Perfluorononanoic acid	0.30	0.25	0.14	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.25	0.13	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.25	0.17	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.25	0.13	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.25	0.13	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.25	0.13	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.25	0.13	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.25	0.20	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	0.54	0.25	0.20	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.25	0.18	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	10.3	0.25	0.13	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.25	0.23	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.25	0.18	ug/kg	
79780-39-5	Perfluorododecanesulfonic ac ^a	ND	0.25	0.19	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	1.0	0.50	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	1.8	1.0	0.50	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	0.92	1.0	0.75	ug/kg	J

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.25	0.13	ug/kg	
31506-32-8	MeFOSA	ND	0.25	0.17	ug/kg	
4151-50-2	EtFOSA	ND	0.25	0.13	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BGC-B5-3.0		
Lab Sample ID:	FC13428-13	Date Sampled:	02/09/24
Matrix:	SO - Soil	Date Received:	02/16/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	79.6
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.25	0.20	ug/kg	
2991-50-6	EtFOSAA	ND	0.25	0.25	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.5	1.3	ug/kg	
1691-99-2	EtFOSE	ND	2.5	1.3	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	1.0	0.36	ug/kg	
919005-14-4	ADONA	ND	1.0	0.42	ug/kg	
377-73-1	PFMPA	ND	0.50	0.25	ug/kg	
863090-89-5	PFMBA	ND	0.50	0.25	ug/kg	
151772-58-6	NFDHA	ND	0.50	0.31	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	1.0	0.55	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	1.0	0.50	ug/kg	
113507-82-7	PFEESA	ND	0.50	0.25	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.3	0.64	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	6.3	1.4	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	6.3	1.6	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	78%		20-150%
	13C5-PFPeA	77%		20-150%
	13C5-PFHxA	80%		20-150%
	13C4-PFHpA	81%		20-150%
	13C8-PFOA	71%		20-150%
	13C9-PFNA	78%		20-150%
	13C6-PFDA	83%		20-150%
	13C7-PFUnDA	79%		20-150%
	13C2-PFDoDA	88%		20-150%
	13C2-PFTeDA	79%		20-150%
	13C3-PFBS	70%		20-150%
	13C3-PFHxS	71%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BGC-B5-3.0	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-13	Date Received:	02/16/24
Matrix:	SO - Soil	Percent Solids:	79.6
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	67%		20-150%
	13C8-FOSA	83%		20-150%
	d3-MeFOSA	71%		20-150%
	d5-EtFOSA	80%		20-150%
	d3-MeFOSAA	87%		20-150%
	d5-EtFOSAA	91%		20-150%
	d7-MeFOSE	85%		20-150%
	d9-EtFOSE	85%		20-150%
	13C2-4:2FTS	87%		20-180%
	13C2-6:2FTS	83%		20-180%
	13C2-8:2FTS	99%		20-180%
	13C3-HFPO-DA	77%		20-150%

(a) Associated Low Level CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BGC-B6-1.0	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-14	Date Received:	02/16/24
Matrix:	SO - Soil	Percent Solids:	40.7
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q31562.D	1	02/26/24 23:08	MV	02/26/24 10:10	OP1818	S6Q444
Run #2							

Run #	Initial Weight	Final Volume
Run #1	5.02 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	2.0	2.0	1.2	ug/kg	
2706-90-3	Perfluoropentanoic acid	8.9	0.98	0.24	ug/kg	
307-24-4	Perfluorohexanoic acid	6.2	0.49	0.24	ug/kg	
375-85-9	Perfluoroheptanoic acid	3.1	0.49	0.24	ug/kg	
335-67-1	Perfluorooctanoic acid	12.6	0.49	0.24	ug/kg	
375-95-1	Perfluorononanoic acid	5.8	0.49	0.28	ug/kg	
335-76-2	Perfluorodecanoic acid	1.3	0.49	0.24	ug/kg	
2058-94-8	Perfluoroundecanoic acid	0.63	0.49	0.33	ug/kg	
307-55-1	Perfluorododecanoic acid	0.31	0.49	0.24	ug/kg	J
72629-94-8	Perfluorotridecanoic acid	ND	0.49	0.25	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.49	0.24	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.49	0.24	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	0.54	0.49	0.38	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	7.9	0.49	0.39	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	0.53	0.49	0.35	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	46.2	0.49	0.24	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.49	0.44	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.49	0.35	ug/kg	
79780-39-5	Perfluorododecanesulfonic ac ^a	ND	0.49	0.37	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	2.0	0.98	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	3.7	2.0	0.98	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	2.0	1.5	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.49	0.24	ug/kg	
31506-32-8	MeFOSA	ND	0.49	0.33	ug/kg	
4151-50-2	EtFOSA	ND	0.49	0.25	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BGC-B6-1.0		
Lab Sample ID:	FC13428-14	Date Sampled:	02/09/24
Matrix:	SO - Soil	Date Received:	02/16/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	40.7
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.49	0.39	ug/kg	
2991-50-6	EtFOSAA	ND	0.49	0.48	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	4.9	2.4	ug/kg	
1691-99-2	EtFOSE	ND	4.9	2.4	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	2.0	0.71	ug/kg	
919005-14-4	ADONA	ND	2.0	0.82	ug/kg	
377-73-1	PFMPA	ND	0.98	0.49	ug/kg	
863090-89-5	PFMBA	ND	0.98	0.49	ug/kg	
151772-58-6	NFDHA	ND	0.98	0.60	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	2.0	1.1	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	2.0	0.98	ug/kg	
113507-82-7	PFEESA	ND	0.98	0.49	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	2.4	1.2	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	12	2.8	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	12	3.1	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	67%		20-150%
	13C5-PFPeA	66%		20-150%
	13C5-PFHxA	69%		20-150%
	13C4-PFHpA	69%		20-150%
	13C8-PFOA	63%		20-150%
	13C9-PFNA	67%		20-150%
	13C6-PFDA	63%		20-150%
	13C7-PFUnDA	72%		20-150%
	13C2-PFDoDA	75%		20-150%
	13C2-PFTeDA	70%		20-150%
	13C3-PFBS	61%		20-150%
	13C3-PFHxS	62%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BGC-B6-1.0	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-14	Date Received:	02/16/24
Matrix:	SO - Soil	Percent Solids:	40.7
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	59%		20-150%
	13C8-FOSA	62%		20-150%
	d3-MeFOSA	33%		20-150%
	d5-EtFOSA	44%		20-150%
	d3-MeFOSAA	65%		20-150%
	d5-EtFOSAA	73%		20-150%
	d7-MeFOSE	61%		20-150%
	d9-EtFOSE	59%		20-150%
	13C2-4:2FTS	86%		20-180%
	13C2-6:2FTS	93%		20-180%
	13C2-8:2FTS	94%		20-180%
	13C3-HFPO-DA	65%		20-150%

(a) Associated Low Level CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	BGC-B6-3.0	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-15	Date Received:	02/16/24
Matrix:	SO - Soil	Percent Solids:	60.7
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q31563.D	1	02/26/24 23:22	MV	02/26/24 10:10	OP1818	S6Q444
Run #2							

Run #	Initial Weight	Final Volume
Run #1	5.02 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	1.3	0.82	ug/kg	
2706-90-3	Perfluoropentanoic acid	0.62	0.66	0.16	ug/kg	J
307-24-4	Perfluorohexanoic acid	0.77	0.33	0.16	ug/kg	
375-85-9	Perfluoroheptanoic acid	0.42	0.33	0.16	ug/kg	
335-67-1	Perfluorooctanoic acid	2.1	0.33	0.16	ug/kg	
375-95-1	Perfluorononanoic acid	0.57	0.33	0.19	ug/kg	
335-76-2	Perfluorodecanoic acid	0.17	0.33	0.16	ug/kg	J
2058-94-8	Perfluoroundecanoic acid	ND	0.33	0.22	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.33	0.16	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.33	0.17	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.33	0.16	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.33	0.16	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.33	0.26	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	1.5	0.33	0.26	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.33	0.24	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	11.9	0.33	0.16	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.33	0.30	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.33	0.23	ug/kg	
79780-39-5	Perfluorododecanesulfonic ac ^a	ND	0.33	0.25	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	1.3	0.66	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	2.9	1.3	0.66	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	1.3	1.3	0.98	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.33	0.16	ug/kg	
31506-32-8	MeFOSA	ND	0.33	0.22	ug/kg	
4151-50-2	EtFOSA	ND	0.33	0.17	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BGC-B6-3.0	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-15	Date Received:	02/16/24
Matrix:	SO - Soil	Percent Solids:	60.7
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.33	0.26	ug/kg	
2991-50-6	EtFOSAA	ND	0.33	0.32	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	3.3	1.6	ug/kg	
1691-99-2	EtFOSE	ND	3.3	1.6	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	1.3	0.47	ug/kg	
919005-14-4	ADONA	ND	1.3	0.55	ug/kg	
377-73-1	PFMPA	ND	0.66	0.33	ug/kg	
863090-89-5	PFMBA	ND	0.66	0.33	ug/kg	
151772-58-6	NFDHA	ND	0.66	0.40	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	1.3	0.72	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	1.3	0.66	ug/kg	
113507-82-7	PFEESA	ND	0.66	0.33	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.6	0.84	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	8.2	1.9	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	8.2	2.1	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	64%		20-150%
	13C5-PFPeA	62%		20-150%
	13C5-PFHxA	63%		20-150%
	13C4-PFHpA	64%		20-150%
	13C8-PFOA	62%		20-150%
	13C9-PFNA	63%		20-150%
	13C6-PFDA	68%		20-150%
	13C7-PFUnDA	60%		20-150%
	13C2-PFDoDA	63%		20-150%
	13C2-PFTeDA	62%		20-150%
	13C3-PFBS	61%		20-150%
	13C3-PFHxS	62%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BGC-B6-3.0	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-15	Date Received:	02/16/24
Matrix:	SO - Soil	Percent Solids:	60.7
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	58%		20-150%
	13C8-FOSA	71%		20-150%
	d3-MeFOSA	50%		20-150%
	d5-EtFOSA	64%		20-150%
	d3-MeFOSAA	70%		20-150%
	d5-EtFOSAA	72%		20-150%
	d7-MeFOSE	69%		20-150%
	d9-EtFOSE	70%		20-150%
	13C2-4:2FTS	88%		20-180%
	13C2-6:2FTS	75%		20-180%
	13C2-8:2FTS	80%		20-180%
	13C3-HFPO-DA	64%		20-150%

(a) Associated Low Level CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

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4

Report of Analysis

Client Sample ID:	BGC-SW1-20240209	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-16	Date Received:	02/16/24
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q0111.D	1	02/23/24 18:10	MV	02/21/24 08:30	OP1744	S7Q45
Run #2							

Run #	Initial Volume	Final Volume
Run #1	540 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	0.0072	0.0074	0.0037	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0163	0.0037	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0101	0.0019	0.00046	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0061	0.0019	0.00046	ug/l	
335-67-1	Perfluorooctanoic acid	0.0048	0.0019	0.00046	ug/l	
375-95-1	Perfluorononanoic acid	0.0017	0.0019	0.00056	ug/l	J
335-76-2	Perfluorodecanoic acid	0.00093	0.0019	0.00046	ug/l	J
2058-94-8	Perfluoroundecanoic acid	ND	0.0019	0.00056	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0019	0.00056	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0019	0.00078	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0019	0.00046	ug/l	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	0.0013	0.0019	0.00093	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0019	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0016	0.0019	0.00093	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0034	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0019	0.00093	ug/l	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.0019	0.0011	ug/l	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0074	0.0037	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0074	0.0037	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0074	0.0038	ug/l	

PERFLUOROOCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA	ND	0.0019	0.00093	ug/l	
4151-50-2	EtFOSA	ND	0.0019	0.00093	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
 RL = Reporting Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BGC-SW1-20240209	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-16	Date Received:	02/16/24
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.0019	0.00093	ug/l	
2991-50-6	EtFOSAA	ND	0.0019	0.0012	ug/l	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	0.019	0.0093	ug/l	
1691-99-2	EtFOSE	ND	0.019	0.0093	ug/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.0074	0.0019	ug/l	
919005-14-4	ADONA	ND	0.0074	0.0019	ug/l	
377-73-1	PFMPA	ND	0.0037	0.00093	ug/l	
863090-89-5	PFMBA	ND	0.0037	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0037	0.0011	ug/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0074	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0074	0.0019	ug/l	
113507-82-7	PFEESA	ND	0.0037	0.00093	ug/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylat ^a	ND	0.0093	0.0046	ug/l	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	0.046	0.0093	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.046	0.0093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	107%		20-150%
	13C5-PFPeA	101%		20-150%
	13C5-PFHxA	109%		20-150%
	13C4-PFHpA	103%		20-150%
	13C8-PFOA	109%		20-150%
	13C9-PFNA	110%		20-150%
	13C6-PFDA	108%		20-150%
	13C7-PFUnDA	107%		20-150%
	13C2-PFDoDA	104%		20-150%
	13C2-PFTeDA	100%		20-150%
	13C3-PFBS	114%		20-150%
	13C3-PFHxS	107%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BGC-SW1-20240209	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-16	Date Received:	02/16/24
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	105%		20-150%
	13C8-FOSA	98%		20-150%
	d3-MeFOSA	86%		20-150%
	d5-EtFOSA	88%		20-150%
	d3-MeFOSAA	94%		20-150%
	d5-EtFOSAA	96%		20-150%
	d7-MeFOSE	93%		20-150%
	d9-EtFOSE	90%		20-150%
	13C2-4:2FTS	86%		20-180%
	13C2-6:2FTS	102%		20-180%
	13C2-8:2FTS	102%		20-180%
	13C3-HFPO-DA	108%		20-150%

(a) Associated BS outside control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

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4

Report of Analysis

Client Sample ID:	BGC-SW2-20240209	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-17	Date Received:	02/16/24
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q0113.D	1	02/23/24 18:37	MV	02/21/24 08:30	OP1744	S7Q45
Run #2							

Run #	Initial Volume	Final Volume
Run #1	530 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	0.0306	0.0075	0.0038	ug/l	
2706-90-3	Perfluoropentanoic acid	0.118	0.0038	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	0.0776	0.0019	0.00047	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0287	0.0019	0.00047	ug/l	
335-67-1	Perfluorooctanoic acid	0.0230	0.0019	0.00047	ug/l	
375-95-1	Perfluorononanoic acid	0.0087	0.0019	0.00058	ug/l	
335-76-2	Perfluorodecanoic acid	0.0013	0.0019	0.00047	ug/l	J
2058-94-8	Perfluoroundecanoic acid	0.00063	0.0019	0.00057	ug/l	J
307-55-1	Perfluorododecanoic acid	ND	0.0019	0.00057	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0019	0.00079	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0019	0.00047	ug/l	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	0.0132	0.0019	0.00094	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0236	0.0019	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.218	0.0019	0.00094	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0053	0.0019	0.00094	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.268	0.0019	0.00094	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0013	0.0019	0.00094	ug/l	J
335-77-3	Perfluorodecanesulfonic acid	ND	0.0019	0.00094	ug/l	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.0019	0.0011	ug/l	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0075	0.0038	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.208	0.0075	0.0038	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0176	0.0075	0.0039	ug/l	

PERFLUOROOCTANE SULFONAMIDES

754-91-6	PFOSA	0.0014	0.0019	0.00094	ug/l	J
31506-32-8	MeFOSA	ND	0.0019	0.00094	ug/l	
4151-50-2	EtFOSA	ND	0.0019	0.00094	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
 RL = Reporting Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BGC-SW2-20240209	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-17	Date Received:	02/16/24
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.0019	0.00094	ug/l	
2991-50-6	EtFOSAA	ND	0.0019	0.0013	ug/l	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	0.019	0.0094	ug/l	
1691-99-2	EtFOSE	ND	0.019	0.0094	ug/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.0075	0.0019	ug/l	
919005-14-4	ADONA	ND	0.0075	0.0019	ug/l	
377-73-1	PFMPA	ND	0.0038	0.00094	ug/l	
863090-89-5	PFMBA	ND	0.0038	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0038	0.0011	ug/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0075	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0075	0.0019	ug/l	
113507-82-7	PFEESA	ND	0.0038	0.00094	ug/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	0.0094	0.0047	ug/l	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	0.047	0.0094	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.047	0.0094	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	99%		20-150%
	13C5-PFPeA	96%		20-150%
	13C5-PFHxA	104%		20-150%
	13C4-PFHpA	101%		20-150%
	13C8-PFOA	100%		20-150%
	13C9-PFNA	98%		20-150%
	13C6-PFDA	100%		20-150%
	13C7-PFUnDA	103%		20-150%
	13C2-PFDoDA	91%		20-150%
	13C2-PFTeDA	82%		20-150%
	13C3-PFBS	111%		20-150%
	13C3-PFHxS	103%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BGC-SW2-20240209	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-17	Date Received:	02/16/24
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	98%		20-150%
	13C8-FOSA	93%		20-150%
	d3-MeFOSA	81%		20-150%
	d5-EtFOSA	81%		20-150%
	d3-MeFOSAA	87%		20-150%
	d5-EtFOSAA	93%		20-150%
	d7-MeFOSE	85%		20-150%
	d9-EtFOSE	83%		20-150%
	13C2-4:2FTS	85%		20-180%
	13C2-6:2FTS	100%		20-180%
	13C2-8:2FTS	105%		20-180%
	13C3-HFPO-DA	99%		20-150%

ND = Not detectedMDL = Method Detection LimitJ = Indicates an estimated value

RL = Reporting LimitB = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration rangeN = Indicates presumptive evidence of a compound

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4

Report of Analysis

Client Sample ID:	BGC-SW3-20240209	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-18	Date Received:	02/16/24
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q0115.D	1	02/23/24 19:05	MV	02/21/24 08:30	OP1744	S7Q45
Run #2							

Run #	Initial Volume	Final Volume
Run #1	460 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	0.0106	0.0087	0.0043	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0253	0.0043	0.0011	ug/l	
307-24-4	Perfluorohexanoic acid	0.0203	0.0022	0.00054	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0086	0.0022	0.00054	ug/l	
335-67-1	Perfluorooctanoic acid	0.0088	0.0022	0.00054	ug/l	
375-95-1	Perfluorononanoic acid	0.0024	0.0022	0.00066	ug/l	
335-76-2	Perfluorodecanoic acid	0.00077	0.0022	0.00054	ug/l	J
2058-94-8	Perfluoroundecanoic acid	ND	0.0022	0.00065	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0022	0.00065	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0022	0.00091	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0022	0.00054	ug/l	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	0.0034	0.0022	0.0011	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0030	0.0022	0.0012	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0288	0.0022	0.0011	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0022	0.0011	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0467	0.0022	0.0011	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0022	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0022	0.0011	ug/l	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.0022	0.0012	ug/l	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0087	0.0043	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0388	0.0087	0.0043	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0065	0.0087	0.0045	ug/l	J

PERFLUOROOCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.0022	0.0011	ug/l	
31506-32-8	MeFOSA	ND	0.0022	0.0011	ug/l	
4151-50-2	EtFOSA	ND	0.0022	0.0011	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
 RL = Reporting Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BGC-SW3-20240209	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-18	Date Received:	02/16/24
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.0022	0.0011	ug/l	
2991-50-6	EtFOSAA	ND	0.0022	0.0014	ug/l	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	0.022	0.011	ug/l	
1691-99-2	EtFOSE	ND	0.022	0.011	ug/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.0087	0.0022	ug/l	
919005-14-4	ADONA	ND	0.0087	0.0022	ug/l	
377-73-1	PFMPA	ND	0.0043	0.0011	ug/l	
863090-89-5	PFMBA	ND	0.0043	0.0012	ug/l	
151772-58-6	NFDHA	ND	0.0043	0.0013	ug/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0087	0.0022	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0087	0.0022	ug/l	
113507-82-7	PFEESA	ND	0.0043	0.0011	ug/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylat ^a	ND	0.011	0.0054	ug/l	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	0.054	0.011	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.054	0.011	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	109%		20-150%
	13C5-PFPeA	103%		20-150%
	13C5-PFHxA	112%		20-150%
	13C4-PFHpA	107%		20-150%
	13C8-PFOA	110%		20-150%
	13C9-PFNA	112%		20-150%
	13C6-PFDA	114%		20-150%
	13C7-PFUnDA	112%		20-150%
	13C2-PFDoDA	105%		20-150%
	13C2-PFTeDA	80%		20-150%
	13C3-PFBS	118%		20-150%
	13C3-PFHxS	111%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BGC-SW3-20240209	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-18	Date Received:	02/16/24
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	107%		20-150%
	13C8-FOSA	107%		20-150%
	d3-MeFOSA	97%		20-150%
	d5-EtFOSA	89%		20-150%
	d3-MeFOSAA	102%		20-150%
	d5-EtFOSAA	103%		20-150%
	d7-MeFOSE	93%		20-150%
	d9-EtFOSE	91%		20-150%
	13C2-4:2FTS	88%		20-180%
	13C2-6:2FTS	105%		20-180%
	13C2-8:2FTS	111%		20-180%
	13C3-HFPO-DA	109%		20-150%

(a) Associated BS outside control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	EB-20240209	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-19	Date Received:	02/16/24
Matrix:	AQ - Equipment Blank	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q0116.D	1	02/23/24 19:19	MV	02/21/24 08:30	OP1744	S7Q45
Run #2							

Run #	Initial Volume	Final Volume
Run #1	540 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.0074	0.0037	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0037	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0019	0.00046	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0019	0.00046	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0019	0.00046	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0019	0.00056	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0019	0.00046	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0019	0.00056	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0019	0.00056	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0019	0.00078	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0019	0.00046	ug/l	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0019	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0019	0.00093	ug/l	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.0019	0.0011	ug/l	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0074	0.0037	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0074	0.0037	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0074	0.0038	ug/l	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA	ND	0.0019	0.00093	ug/l	
4151-50-2	EtFOSA	ND	0.0019	0.00093	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
 RL = Reporting Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	EB-20240209	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-19	Date Received:	02/16/24
Matrix:	AQ - Equipment Blank	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.0019	0.00093	ug/l	
2991-50-6	EtFOSAA	ND	0.0019	0.0012	ug/l	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	0.019	0.0093	ug/l	
1691-99-2	EtFOSE	ND	0.019	0.0093	ug/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.0074	0.0019	ug/l	
919005-14-4	ADONA	ND	0.0074	0.0019	ug/l	
377-73-1	PFMPA	ND	0.0037	0.00093	ug/l	
863090-89-5	PFMBA	ND	0.0037	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0037	0.0011	ug/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0074	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0074	0.0019	ug/l	
113507-82-7	PFEESA	ND	0.0037	0.00093	ug/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylat ^a	ND	0.0093	0.0046	ug/l	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	0.046	0.0093	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.046	0.0093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	106%		20-150%
	13C5-PFPeA	105%		20-150%
	13C5-PFHxA	106%		20-150%
	13C4-PFHpA	105%		20-150%
	13C8-PFOA	107%		20-150%
	13C9-PFNA	104%		20-150%
	13C6-PFDA	113%		20-150%
	13C7-PFUnDA	110%		20-150%
	13C2-PFDoDA	91%		20-150%
	13C2-PFTeDA	88%		20-150%
	13C3-PFBS	108%		20-150%
	13C3-PFHxS	105%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	EB-20240209	Date Sampled:	02/09/24
Lab Sample ID:	FC13428-19	Date Received:	02/16/24
Matrix:	AQ - Equipment Blank	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	106%		20-150%
	13C8-FOSA	91%		20-150%
	d3-MeFOSA	82%		20-150%
	d5-EtFOSA	83%		20-150%
	d3-MeFOSAA	83%		20-150%
	d5-EtFOSAA	77%		20-150%
	d7-MeFOSE	88%		20-150%
	d9-EtFOSE	83%		20-150%
	13C2-4:2FTS	106%		20-180%
	13C2-6:2FTS	114%		20-180%
	13C2-8:2FTS	116%		20-180%
	13C3-HFPO-DA	107%		20-150%

(a) Associated BS outside control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

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4

Report of Analysis

Client Sample ID:	BGC-CB1	Date Sampled:	02/12/24
Lab Sample ID:	FC13428-20	Date Received:	02/16/24
Matrix:	SO - Soil	Percent Solids:	81.5
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q31564.D	1	02/26/24 23:36	MV	02/26/24 10:10	OP1818	S6Q444
Run #2							

	Initial Weight	Final Volume
Run #1	4.99 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.98	0.61	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.49	0.12	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.25	0.12	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.25	0.12	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.25	0.12	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.25	0.14	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.25	0.12	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.25	0.16	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.25	0.12	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.25	0.13	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.25	0.12	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.25	0.12	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.25	0.19	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.25	0.20	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.25	0.18	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.25	0.12	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.25	0.22	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.25	0.18	ug/kg	
79780-39-5	Perfluorododecanesulfonic acid ^a	ND	0.25	0.18	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.98	0.49	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.98	0.49	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.98	0.74	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.25	0.12	ug/kg	
31506-32-8	MeFOSA	ND	0.25	0.17	ug/kg	
4151-50-2	EtFOSA	ND	0.25	0.12	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BGC-CB1		
Lab Sample ID:	FC13428-20	Date Sampled:	02/12/24
Matrix:	SO - Soil	Date Received:	02/16/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	81.5
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.25	0.19	ug/kg	
2991-50-6	EtFOSAA	ND	0.25	0.24	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.5	1.2	ug/kg	
1691-99-2	EtFOSE	ND	2.5	1.2	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.98	0.36	ug/kg	
919005-14-4	ADONA	ND	0.98	0.41	ug/kg	
377-73-1	PFMPA	ND	0.49	0.25	ug/kg	
863090-89-5	PFMBA	ND	0.49	0.25	ug/kg	
151772-58-6	NFDHA	ND	0.49	0.30	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.98	0.54	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.98	0.49	ug/kg	
113507-82-7	PFEESA	ND	0.49	0.25	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.2	0.63	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	6.1	1.4	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	6.1	1.6	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	70%		20-150%
	13C5-PFPeA	72%		20-150%
	13C5-PFHxA	74%		20-150%
	13C4-PFHpA	73%		20-150%
	13C8-PFOA	73%		20-150%
	13C9-PFNA	78%		20-150%
	13C6-PFDA	74%		20-150%
	13C7-PFUnDA	72%		20-150%
	13C2-PFDoDA	76%		20-150%
	13C2-PFTeDA	76%		20-150%
	13C3-PFBS	66%		20-150%
	13C3-PFHxS	73%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BGC-CB1	Date Sampled:	02/12/24
Lab Sample ID:	FC13428-20	Date Received:	02/16/24
Matrix:	SO - Soil	Percent Solids:	81.5
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	68%		20-150%
	13C8-FOSA	75%		20-150%
	d3-MeFOSA	61%		20-150%
	d5-EtFOSA	73%		20-150%
	d3-MeFOSAA	78%		20-150%
	d5-EtFOSAA	76%		20-150%
	d7-MeFOSE	77%		20-150%
	d9-EtFOSE	79%		20-150%
	13C2-4:2FTS	69%		20-180%
	13C2-6:2FTS	77%		20-180%
	13C2-8:2FTS	83%		20-180%
	13C3-HFPO-DA	72%		20-150%

(a) Associated Low Level CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound



Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

Client / Reporting Information										Project Information						SGS - ORLANDO Quote #								SKIFF #		Analytical Information										Matrix Codes			
Company Name: Geo Engineers Inc					Project Name: Prime Field former file Pit																									DW - Drinking Water									
Address: 2101 4th Ave, Suite 950					Street:																									GW - Ground Water									
City: Seattle					State: WA					Zip: 98121					City: Everett					State: WA																	VW - Water SW - Surface Water		
Project Contact: Jacob Letts jletts@geoengineers.com					Email:					Project # 05530-015.00																						SO - Soil							
Phone #:										Fax #																						SL - Sludge							
Sampler(s) Name(s) (Printed)										Client Purchase Order #																						OL - Oil							
Sampler 1: Meredith Bush					Sampler 2:																											LIQ - Other Liquid							
COLLECTION										CONTAINER INFORMATION																						AIR - Air							
SGS Orlando Sample #	Field ID / Point of Collection				DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	ASCH-Zn/Cd	CWATER	MEQH											SOL - Other Solid										
1	BGC-B1-1.0				2/14	0920	NAB	SO											X	PFA's by EPA 1633											LAB USE ONLY								
2	BGC-B1-3.0					0925													X																				
3	BGC-B1-5.0					0930																																	
4	BGC-B1-10.0					0935																																	
5	BGC-B2-1.0					1010													X																				
6	BGC-B2-5.0					1020													X																				
7	BGC-B2-10.0					1017														X																			
8	BGC-B3-1.0					1120													X																				
9	BGC-B3-3.0					1130													X																				
10	BGC-B4-1.0					1155													X																				
11	BGC-B4-3.0					1200													X																				
12	BGC-B5-1.0					1210													X																				
13	BGC-B5-3.0					1215													X																				
Turnaround Time (Business days)										Data Deliverable Information										Comments / Remarks																			
10 Day (Business) 7 Day 5 Day 3 Day RUSH 2 Day RUSH 1 Day RUSH Other										Approved By / Date: 										☐ COMMERCIAL "A" (RESULTS ONLY) ☐ COMMERCIAL "B" (RESULTS PLUS QC) ☐ REDT1 (EPA LEVEL 3) ☐ FULLT1 (EPA LEVEL 4) ☐ EDD'S										INITIAL ASSESSMENT _____ LABEL VERIFICATION _____									
Rush T/A Data Available VIA Email or Lablink										Sample Custody must be documented below each time samples change possession, including courier delivery.																													
Relinquished by Sampler/Affiliation 1 Meredith Bush/GFI					Date Time: 2/14/24					Received By/Affiliation 2 [Signature] 2/16/24					930					Relinquished By/Affiliation 3					Date Time:					Received By/Affiliation 4									
Relinquished by/Affiliation 5					Date Time:					Received By/Affiliation 6										Relinquished By/Affiliation 7					Date Time:					Received By/Affiliation 8									
Lab Use Only : Cooler Temperature (s) Celsius (corrected): 0.4 IR1																																							

4405 Vineland Road, Suite C-15 Orlando, FL 32811
TEL: 407-425-6700 FAX: 407-425-0707
www.sgs.com

[illegible]

5.1

FC13428: Chain of Custody

Page 2 of 4

SGS - Orlando Sample Receipt Summary

Job Number: fc13428 Client: GEOENGINEERS INC Project: PAINE FIELD FORMER FIRE PIT
 Date / Time Received: 2/16/2024 9:30:00 AM Delivery Method: FEDEX Airbill #'s: 270996036894

Cooler Temps (Raw Measured) °C: Cooler 1: (0.4);

Cooler Temps (Corrected) °C: Cooler 1: (1.4);

Cooler Information	Y	or	N
1. Custody Seals Present:	☒		☐
2. Custody Seals Intact:	☒		☐
3. Temp criteria achieved:	☒		☐
4. Cooler temp verification:			IR Gun
5. Cooler media:			Ice (Bag)

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☐	☒
2. Trip Blank listed on COC:	☐		☐	☒
	W	or	S	N/A
3. Type of TB Received	☐		☐	☒

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles:	☒		☐	
2. Samples presented properly	☒		☐	
3. Sufficient volume/containers rec'd for analysis	☒		☐	
4. Condition of sample:			Intact	
5. Sample rec'd within HT	☒		☐	
6. Dates/Times/IDs on COC match sample label	☐		☒	
7. VOCs have headspace	☐		☐	☒
8. Bottles received for unspecified tests	☐		☒	
9. Compositing instructions clear	☐		☐	☒
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☒
11. % Solids Jar Received?	☒		☐	☐
12. Residual Chlorine Present?	☐		☐	☒

Misc Information

Number of Encores: 25 Gram 5 Gram Number of Lab Filtered Metals:
 Test Strip Lot #: pH 0-3: 226422 pH 10-12: _____ Other: (Specify) pH 1.0 - 12.0 222221
 Residual Chlorine Test Strip Lot # _____

Comments SAMPLE #5, ID ON COC IS: "BGC-B2-1.0", ID ON BOTTLE LABEL IS: ""BGC-B2-1.5". TIME ON COC AND TIME ON BOTTLE LABEL MATCH.

Sample Receipt Summary 112723 EK Technician: ZANEB Date: 2/16/2024 1:46:44 PM Reviewer: _____ Date: _____

FC13428: Chain of Custody

Page 3 of 4

Job Change Order: FC13428

Requested Date:	2/16/2024	Received Date:	2/16/2024
Account Name:	GeoEngineers, Inc.	Due Date:	2/16/2024
Project Description:	Paine Field; Everett, WA	Deliverable:	FULT1
C/O Initiated By:	ANDREA_C	PM:	AC
		TAT (Days):	21

=====

Sample #:	FC13428-5	Dept:	LOGIN
Client ID:	BGC-B2-1.5	TAT:	21
Change:	Please use the sample ID on the label		

FC13428: Chain of Custody
Page 4 of 4

Above Changes Per: Meredith Bush **Date/Time:** 2/16/2024

To Client: This Change Order is confirmation of the revisions, previously discussed with the Client Service Representative.

Page 1 of 1

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 2

Job Number: FC13428

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1744-MB	7Q0105.D	1	02/23/24	MV	02/21/24	OP1744	S7Q45

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13428-16, FC13428-17, FC13428-18, FC13428-19

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0020	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0020	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0020	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0020	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0020	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0020	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0020	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0020	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0020	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0020	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0020	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0020	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0020	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0020	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0020	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0020	0.0010	ug/l	
79780-39-5	Perfluorododecanesulfonic acid	ND	0.0020	0.0011	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0041	ug/l	
754-91-6	PFOSA	ND	0.0020	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0020	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0020	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0020	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0020	0.0013	ug/l	
24448-09-7	MeFOSE	ND	0.020	0.010	ug/l	
1691-99-2	EtFOSE	ND	0.020	0.010	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
377-73-1	PFMPA	ND	0.0040	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.0040	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0040	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

Method Blank Summary

Job Number: FC13428
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1744-MB	7Q0105.D	1	02/23/24	MV	02/21/24	OP1744	S7Q45

The QC reported here applies to the following samples: Method: EPA DRAFT 1633

FC13428-16, FC13428-17, FC13428-18, FC13428-19

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.0040	0.0010	ug/l	
356-02-5	3:3 Fluorotelomer carboxylate	ND	0.010	0.0050	ug/l	
914637-49-35:3	Fluorotelomer carboxylate	ND	0.050	0.010	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.050	0.010	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	113% 20-150%
	13C5-PFPeA	113% 20-150%
	13C5-PFHxA	111% 20-150%
	13C4-PFHpA	112% 20-150%
	13C8-PFOA	111% 20-150%
	13C9-PFNA	112% 20-150%
	13C6-PFDA	115% 20-150%
	13C7-PFUnDA	112% 20-150%
	13C2-PFDoDA	107% 20-150%
	13C2-PFTeDA	104% 20-150%
	13C3-PFBS	116% 20-150%
	13C3-PFHxS	115% 20-150%
	13C8-PFOS	107% 20-150%
	13C8-FOSA	84% 20-150%
	d3-MeFOSA	72% 20-150%
	d5-EtFOSA	76% 20-150%
	d3-MeFOSAA	111% 20-150%
	d5-EtFOSAA	101% 20-150%
	d7-MeFOSE	80% 20-150%
	d9-EtFOSE	85% 20-150%
	13C2-4:2FTS	112% 20-180%
	13C2-6:2FTS	118% 20-180%
	13C2-8:2FTS	108% 20-180%
	13C3-HFPO-DA	115% 20-150%

Method Blank Summary

Page 1 of 2

Job Number: FC13428
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1818-MB	6Q31547.D	1	02/26/24	MV	02/26/24	OP1818	S6Q444

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13428-1, FC13428-2, FC13428-5, FC13428-6, FC13428-8, FC13428-9, FC13428-10, FC13428-11, FC13428-12, FC13428-13, FC13428-14, FC13428-15, FC13428-20

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.80	0.50	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.40	0.10	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.20	0.10	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.20	0.10	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.20	0.10	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.20	0.12	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.20	0.10	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.20	0.13	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.20	0.10	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.20	0.10	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.20	0.10	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	0.20	0.10	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.20	0.16	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.20	0.16	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.20	0.15	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.20	0.10	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.20	0.18	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.20	0.14	ug/kg	
79780-39-5	Perfluorododecanesulfonic acid	ND	0.20	0.15	ug/kg	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.80	0.40	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.80	0.40	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.80	0.60	ug/kg	
754-91-6	PFOSA	ND	0.20	0.10	ug/kg	
31506-32-8	MeFOSA	ND	0.20	0.14	ug/kg	
4151-50-2	EtFOSA	ND	0.20	0.10	ug/kg	
2355-31-9	MeFOSAA	ND	0.20	0.16	ug/kg	
2991-50-6	EtFOSAA	ND	0.20	0.20	ug/kg	
24448-09-7	MeFOSE	ND	2.0	1.0	ug/kg	
1691-99-2	EtFOSE	ND	2.0	1.0	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	0.80	0.29	ug/kg	
919005-14-4	ADONA	ND	0.80	0.34	ug/kg	
377-73-1	PFMPA	ND	0.40	0.20	ug/kg	
863090-89-5	PFMBA	ND	0.40	0.20	ug/kg	
151772-58-6	NFDHA	ND	0.40	0.24	ug/kg	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.80	0.44	ug/kg	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.80	0.40	ug/kg	

Method Blank Summary

Page 2 of 2

Job Number: FC13428
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1818-MB	6Q31547.D	1	02/26/24	MV	02/26/24	OP1818	S6Q444

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13428-1, FC13428-2, FC13428-5, FC13428-6, FC13428-8, FC13428-9, FC13428-10, FC13428-11, FC13428-12, FC13428-13, FC13428-14, FC13428-15, FC13428-20

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.40	0.20	ug/kg	
356-02-5	3:3 Fluorotelomer carboxylate	ND	1.0	0.51	ug/kg	
914637-49-35:3	Fluorotelomer carboxylate	ND	5.0	1.2	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.0	1.3	ug/kg	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	66% 20-150%
	13C5-PFPeA	66% 20-150%
	13C5-PFHxA	70% 20-150%
	13C4-PFHpA	69% 20-150%
	13C8-PFOA	72% 20-150%
	13C9-PFNA	66% 20-150%
	13C6-PFDA	68% 20-150%
	13C7-PFUnDA	67% 20-150%
	13C2-PFDoDA	73% 20-150%
	13C2-PFTeDA	59% 20-150%
	13C3-PFBS	65% 20-150%
	13C3-PFHxS	61% 20-150%
	13C8-PFOS	68% 20-150%
	13C8-FOSA	71% 20-150%
	d3-MeFOSA	63% 20-150%
	d5-EtFOSA	66% 20-150%
	d3-MeFOSAA	62% 20-150%
	d5-EtFOSAA	75% 20-150%
	d7-MeFOSE	76% 20-150%
	d9-EtFOSE	71% 20-150%
	13C2-4:2FTS	68% 20-180%
	13C2-6:2FTS	75% 20-180%
	13C2-8:2FTS	63% 20-180%
	13C3-HFPO-DA	65% 20-150%

Instrument Blank

Page 1 of 2

Job Number: FC13428

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q45-IBLK	7Q0094.D	1	02/23/24	MV	n/a	n/a	S7Q45

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13428-10

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	2.0	0.31	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	1.0	0.10	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	1.0	0.10	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	1.0	0.10	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	1.0	0.10	ug/kg	
375-95-1	Perfluorononanoic acid	ND	1.0	0.12	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	1.0	0.10	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	1.0	0.13	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	1.0	0.10	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	1.0	0.10	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	1.0	0.10	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	1.0	0.10	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.0	0.16	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	1.0	0.16	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.0	0.15	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.0	0.10	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	1.0	0.18	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	1.0	0.14	ug/kg	
79780-39-5	Perfluorododecanesulfonic acid	ND	1.0	0.15	ug/kg	
757124-72-44:2	Fluorotelomer sulfonate	ND	2.0	0.30	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	2.0	0.35	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	2.0	0.61	ug/kg	
754-91-6	PFOSA	ND	1.0	0.10	ug/kg	
31506-32-8	MeFOSA	ND	1.0	0.14	ug/kg	
4151-50-2	EtFOSA	ND	1.0	0.10	ug/kg	
2355-31-9	MeFOSAA	ND	1.0	0.16	ug/kg	
2991-50-6	EtFOSAA	ND	1.0	0.20	ug/kg	
24448-09-7	MeFOSE	ND	5.0	0.64	ug/kg	
1691-99-2	EtFOSE	ND	5.0	0.83	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	2.0	0.29	ug/kg	
919005-14-4	ADONA	ND	2.0	0.34	ug/kg	
377-73-1	PFMPA	ND	1.0	0.11	ug/kg	
863090-89-5	PFMBA	ND	1.0	0.10	ug/kg	
151772-58-6	NFDHA	ND	2.0	0.24	ug/kg	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	2.0	0.44	ug/kg	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	2.0	0.36	ug/kg	

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Job Number: FC13428**Account:** GEOEWAT GeoEngineers, Inc.**Project:** Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q45-IBLK	7Q0094.D	1	02/23/24	MV	n/a	n/a	S7Q45

The QC reported here applies to the following samples:**Method:** EPA DRAFT 1633

FC13428-10

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	1.0	0.10	ug/kg	
356-02-5	3:3 Fluorotelomer carboxylate	ND	2.5	0.51	ug/kg	
914637-49-35:3	Fluorotelomer carboxylate	ND	13	1.2	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	13	1.3	ug/kg	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	100% 20-150%
	13C5-PFPeA	99% 20-150%
	13C5-PFHxA	101% 20-150%
	13C4-PFHpA	99% 20-150%
	13C8-PFOA	104% 20-150%
	13C9-PFNA	100% 20-150%
	13C6-PFDA	106% 20-150%
	13C7-PFUnDA	108% 20-150%
	13C2-PFDoDA	102% 20-150%
	13C2-PFTeDA	98% 20-150%
	13C3-PFBS	100% 20-150%
	13C3-PFHxS	102% 20-150%
	13C8-PFOS	100% 20-150%
	13C8-FOSA	99% 20-150%
	d3-MeFOSA	102% 20-150%
	d5-EtFOSA	102% 20-150%
	d3-MeFOSAA	99% 20-150%
	d5-EtFOSAA	105% 20-150%
	d7-MeFOSE	100% 20-150%
	d9-EtFOSE	98% 20-150%
	13C2-4:2FTS	109% 20-180%
	13C2-6:2FTS	107% 20-180%
	13C2-8:2FTS	103% 20-180%
	13C3-HFPO-DA	95% 20-150%

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Job Number: FC13428

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q45-IBLK	7Q0094.D	1	02/23/24	MV	n/a	n/a	S7Q45

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13428-16, FC13428-17, FC13428-18, FC13428-19

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.00064	ug/l	
79780-39-5	Perfluorododecanesulfonic acid	ND	0.0050	0.0011	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.020	0.0032	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.020	0.0035	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.020	0.0041	ug/l	
754-91-6	PFOSA	ND	0.0040	0.00067	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0080	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0050	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0050	0.0013	ug/l	
24448-09-7	MeFOSE	ND	0.040	0.0044	ug/l	
1691-99-2	EtFOSE	ND	0.040	0.0074	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0040	0.0010	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0019	ug/l	
377-73-1	PFMPA	ND	0.0080	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.0080	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0080	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0014	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0018	ug/l	

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Job Number: FC13428

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q45-IBLK	7Q0094.D	1	02/23/24	MV	n/a	n/a	S7Q45

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13428-16, FC13428-17, FC13428-18, FC13428-19

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.0080	0.00078	ug/l	
356-02-5	3:3 Fluorotelomer carboxylate	ND	0.020	0.0045	ug/l	
914637-49-35:3	Fluorotelomer carboxylate	ND	0.10	0.0087	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.10	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	100% 20-150%
	13C5-PFPeA	99% 20-150%
	13C5-PFHxA	101% 20-150%
	13C4-PFHpA	99% 20-150%
	13C8-PFOA	104% 20-150%
	13C9-PFNA	100% 20-150%
	13C6-PFDA	106% 20-150%
	13C7-PFUnDA	108% 20-150%
	13C2-PFDoDA	102% 20-150%
	13C2-PFTeDA	98% 20-150%
	13C3-PFBS	100% 20-150%
	13C3-PFHxS	102% 20-150%
	13C8-PFOS	100% 20-150%
	13C8-FOSA	99% 20-150%
	d3-MeFOSA	102% 20-150%
	d5-EtFOSA	102% 20-150%
	d3-MeFOSAA	99% 20-150%
	d5-EtFOSAA	105% 20-150%
	d7-MeFOSE	100% 20-150%
	d9-EtFOSE	98% 20-150%
	13C2-4:2FTS	109% 20-180%
	13C2-6:2FTS	107% 20-180%
	13C2-8:2FTS	103% 20-180%
	13C3-HFPO-DA	95% 20-150%

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Job Number: FC13428

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q444-IBLK	6Q31540.D	1	02/26/24	MV	n/a	n/a	S6Q444

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13428-1, FC13428-2, FC13428-5, FC13428-6, FC13428-8, FC13428-9, FC13428-11, FC13428-12, FC13428-13, FC13428-14, FC13428-15, FC13428-20

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	2.0	0.31	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	1.0	0.10	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	1.0	0.10	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	1.0	0.10	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	1.0	0.10	ug/kg	
375-95-1	Perfluorononanoic acid	ND	1.0	0.12	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	1.0	0.10	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	1.0	0.13	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	1.0	0.10	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	1.0	0.10	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	1.0	0.10	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	1.0	0.10	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.0	0.16	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	1.0	0.16	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.0	0.15	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.0	0.10	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	1.0	0.18	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	1.0	0.14	ug/kg	
79780-39-5	Perfluorododecanesulfonic acid	ND	1.0	0.15	ug/kg	
757124-72-44:2	Fluorotelomer sulfonate	ND	2.0	0.30	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	2.0	0.35	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	2.0	0.61	ug/kg	
754-91-6	PFOSA	ND	1.0	0.10	ug/kg	
31506-32-8	MeFOSA	ND	1.0	0.14	ug/kg	
4151-50-2	EtFOSA	ND	1.0	0.10	ug/kg	
2355-31-9	MeFOSAA	ND	1.0	0.16	ug/kg	
2991-50-6	EtFOSAA	ND	1.0	0.20	ug/kg	
24448-09-7	MeFOSE	ND	5.0	0.64	ug/kg	
1691-99-2	EtFOSE	ND	5.0	0.83	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	2.0	0.29	ug/kg	
919005-14-4	ADONA	ND	2.0	0.34	ug/kg	
377-73-1	PFMPA	ND	1.0	0.11	ug/kg	
863090-89-5	PFMBA	ND	1.0	0.10	ug/kg	
151772-58-6	NFDHA	ND	2.0	0.24	ug/kg	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	2.0	0.44	ug/kg	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	2.0	0.36	ug/kg	

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Job Number: FC13428

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q444-IBLK	6Q31540.D	1	02/26/24	MV	n/a	n/a	S6Q444

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13428-1, FC13428-2, FC13428-5, FC13428-6, FC13428-8, FC13428-9, FC13428-11, FC13428-12, FC13428-13, FC13428-14, FC13428-15, FC13428-20

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	1.0	0.10	ug/kg	
356-02-5	3:3 Fluorotelomer carboxylate	ND	2.5	0.51	ug/kg	
914637-49-35	3:3 Fluorotelomer carboxylate	ND	13	1.2	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	13	1.3	ug/kg	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	101% 20-150%
	13C5-PFPeA	101% 20-150%
	13C5-PFHxA	99% 20-150%
	13C4-PFHpA	101% 20-150%
	13C8-PFOA	104% 20-150%
	13C9-PFNA	97% 20-150%
	13C6-PFDA	103% 20-150%
	13C7-PFUnDA	110% 20-150%
	13C2-PFDoDA	113% 20-150%
	13C2-PFTeDA	89% 20-150%
	13C3-PFBS	92% 20-150%
	13C3-PFHxS	94% 20-150%
	13C8-PFOS	101% 20-150%
	13C8-FOSA	97% 20-150%
	d3-MeFOSA	91% 20-150%
	d5-EtFOSA	105% 20-150%
	d3-MeFOSAA	96% 20-150%
	d5-EtFOSAA	100% 20-150%
	d7-MeFOSE	103% 20-150%
	d9-EtFOSE	100% 20-150%
	13C2-4:2FTS	93% 20-180%
	13C2-6:2FTS	92% 20-180%
	13C2-8:2FTS	101% 20-180%
	13C3-HFPO-DA	102% 20-150%

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Job Number: FC13428

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q47-IBLK	7Q0308.D	1	02/27/24	AL	n/a	n/a	S7Q47

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13428-10

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	2.0	0.31	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	1.0	0.10	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	1.0	0.10	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	1.0	0.10	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	1.0	0.10	ug/kg	
375-95-1	Perfluorononanoic acid	ND	1.0	0.12	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	1.0	0.10	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	1.0	0.13	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	1.0	0.10	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	1.0	0.10	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	1.0	0.10	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	1.0	0.10	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.0	0.16	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	1.0	0.16	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.0	0.15	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.0	0.10	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	1.0	0.18	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	1.0	0.14	ug/kg	
79780-39-5	Perfluorododecanesulfonic acid	ND	1.0	0.15	ug/kg	
757124-72-44:2	Fluorotelomer sulfonate	ND	2.0	0.30	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	2.0	0.35	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	2.0	0.61	ug/kg	
754-91-6	PFOSA	ND	1.0	0.10	ug/kg	
31506-32-8	MeFOSA	ND	1.0	0.14	ug/kg	
4151-50-2	EtFOSA	ND	1.0	0.10	ug/kg	
2355-31-9	MeFOSAA	ND	1.0	0.16	ug/kg	
2991-50-6	EtFOSAA	ND	1.0	0.20	ug/kg	
24448-09-7	MeFOSE	ND	5.0	0.64	ug/kg	
1691-99-2	EtFOSE	ND	5.0	0.83	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	2.0	0.29	ug/kg	
919005-14-4	ADONA	ND	2.0	0.34	ug/kg	
377-73-1	PFMPA	ND	1.0	0.11	ug/kg	
863090-89-5	PFMBA	ND	1.0	0.10	ug/kg	
151772-58-6	NFDHA	ND	2.0	0.24	ug/kg	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	2.0	0.44	ug/kg	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	2.0	0.36	ug/kg	

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Job Number: FC13428
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q47-IBLK	7Q0308.D	1	02/27/24	AL	n/a	n/a	S7Q47

The QC reported here applies to the following samples: Method: EPA DRAFT 1633

FC13428-10

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	1.0	0.10	ug/kg	
356-02-5	3:3 Fluorotelomer carboxylate	ND	2.5	0.51	ug/kg	
914637-49-35:3	Fluorotelomer carboxylate	ND	13	1.2	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	13	1.3	ug/kg	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	101% 20-150%
	13C5-PFPeA	98% 20-150%
	13C5-PFHxA	101% 20-150%
	13C4-PFHpA	100% 20-150%
	13C8-PFOA	101% 20-150%
	13C9-PFNA	99% 20-150%
	13C6-PFDA	108% 20-150%
	13C7-PFUnDA	109% 20-150%
	13C2-PFDoDA	102% 20-150%
	13C2-PFTeDA	97% 20-150%
	13C3-PFBS	95% 20-150%
	13C3-PFHxS	98% 20-150%
	13C8-PFOS	106% 20-150%
	13C8-FOSA	99% 20-150%
	d3-MeFOSA	98% 20-150%
	d5-EtFOSA	102% 20-150%
	d3-MeFOSAA	99% 20-150%
	d5-EtFOSAA	101% 20-150%
	d7-MeFOSE	97% 20-150%
	d9-EtFOSE	95% 20-150%
	13C2-4:2FTS	117% 20-180%
	13C2-6:2FTS	107% 20-180%
	13C2-8:2FTS	99% 20-180%
	13C3-HFPO-DA	92% 20-150%

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Job Number: FC13428

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q45-ICCB	7Q0110.D	1	02/23/24	MV	n/a	n/a	S7Q45

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13428-16, FC13428-17, FC13428-18, FC13428-19

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.00064	ug/l	
79780-39-5	Perfluorododecanesulfonic acid	ND	0.0050	0.0011	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.020	0.0032	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.020	0.0035	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.020	0.0041	ug/l	
754-91-6	PFOSA	ND	0.0040	0.00067	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0080	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0050	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0050	0.0013	ug/l	
24448-09-7	MeFOSE	ND	0.040	0.0044	ug/l	
1691-99-2	EtFOSE	ND	0.040	0.0074	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0040	0.0010	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0019	ug/l	
377-73-1	PFMPA	ND	0.0080	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.0080	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0080	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0014	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0018	ug/l	

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Job Number: FC13428
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q45-ICCB	7Q0110.D	1	02/23/24	MV	n/a	n/a	S7Q45

The QC reported here applies to the following samples: Method: EPA DRAFT 1633

FC13428-16, FC13428-17, FC13428-18, FC13428-19

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.0080	0.00078	ug/l	
356-02-5	3:3 Fluorotelomer carboxylate	ND	0.020	0.0045	ug/l	
914637-49-35:3	Fluorotelomer carboxylate	ND	0.10	0.0087	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.10	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	100% 20-150%
	13C5-PFPeA	100% 20-150%
	13C5-PFHxA	99% 20-150%
	13C4-PFHpA	99% 20-150%
	13C8-PFOA	100% 20-150%
	13C9-PFNA	102% 20-150%
	13C6-PFDA	106% 20-150%
	13C7-PFUnDA	107% 20-150%
	13C2-PFDoDA	101% 20-150%
	13C2-PFTeDA	95% 20-150%
	13C3-PFBS	96% 20-150%
	13C3-PFHxS	97% 20-150%
	13C8-PFOS	95% 20-150%
	13C8-FOSA	95% 20-150%
	d3-MeFOSA	97% 20-150%
	d5-EtFOSA	98% 20-150%
	d3-MeFOSAA	98% 20-150%
	d5-EtFOSAA	95% 20-150%
	d7-MeFOSE	100% 20-150%
	d9-EtFOSE	96% 20-150%
	13C2-4:2FTS	117% 20-180%
	13C2-6:2FTS	105% 20-180%
	13C2-8:2FTS	100% 20-180%
	13C3-HFPO-DA	92% 20-150%

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Job Number: FC13428

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q444-ICCB	6Q31556.D	1	02/26/24	MV	n/a	n/a	S6Q444

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13428-9, FC13428-11, FC13428-12, FC13428-13, FC13428-14, FC13428-15, FC13428-20

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	2.0	0.31	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	1.0	0.10	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	1.0	0.10	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	1.0	0.10	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	1.0	0.10	ug/kg	
375-95-1	Perfluorononanoic acid	ND	1.0	0.12	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	1.0	0.10	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	1.0	0.13	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	1.0	0.10	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	1.0	0.10	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	1.0	0.10	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	1.0	0.10	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.0	0.16	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	1.0	0.16	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.0	0.15	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.0	0.10	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	1.0	0.18	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	1.0	0.14	ug/kg	
79780-39-5	Perfluorododecanesulfonic acid	ND	1.0	0.15	ug/kg	
757124-72-44:2	Fluorotelomer sulfonate	ND	2.0	0.30	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	2.0	0.35	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	2.0	0.61	ug/kg	
754-91-6	PFOSA	ND	1.0	0.10	ug/kg	
31506-32-8	MeFOSA	ND	1.0	0.14	ug/kg	
4151-50-2	EtFOSA	ND	1.0	0.10	ug/kg	
2355-31-9	MeFOSAA	ND	1.0	0.16	ug/kg	
2991-50-6	EtFOSAA	ND	1.0	0.20	ug/kg	
24448-09-7	MeFOSE	ND	5.0	0.64	ug/kg	
1691-99-2	EtFOSE	ND	5.0	0.83	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	2.0	0.29	ug/kg	
919005-14-4	ADONA	ND	2.0	0.34	ug/kg	
377-73-1	PFMPA	ND	1.0	0.11	ug/kg	
863090-89-5	PFMBA	ND	1.0	0.10	ug/kg	
151772-58-6	NFDHA	ND	2.0	0.24	ug/kg	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	2.0	0.44	ug/kg	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	2.0	0.36	ug/kg	

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Job Number: FC13428

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q444-ICCB	6Q31556.D	1	02/26/24	MV	n/a	n/a	S6Q444

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13428-9, FC13428-11, FC13428-12, FC13428-13, FC13428-14, FC13428-15, FC13428-20

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	1.0	0.10	ug/kg	
356-02-5	3:3 Fluorotelomer carboxylate	ND	2.5	0.51	ug/kg	
914637-49-35:3	Fluorotelomer carboxylate	ND	13	1.2	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	13	1.3	ug/kg	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	100% 20-150%
	13C5-PFPeA	98% 20-150%
	13C5-PFHxA	101% 20-150%
	13C4-PFHpA	100% 20-150%
	13C8-PFOA	105% 20-150%
	13C9-PFNA	98% 20-150%
	13C6-PFDA	97% 20-150%
	13C7-PFUnDA	97% 20-150%
	13C2-PFDoDA	101% 20-150%
	13C2-PFTeDA	85% 20-150%
	13C3-PFBS	93% 20-150%
	13C3-PFHxS	94% 20-150%
	13C8-PFOS	100% 20-150%
	13C8-FOSA	109% 20-150%
	d3-MeFOSA	102% 20-150%
	d5-EtFOSA	100% 20-150%
	d3-MeFOSAA	115% 20-150%
	d5-EtFOSAA	113% 20-150%
	d7-MeFOSE	116% 20-150%
	d9-EtFOSE	117% 20-150%
	13C2-4:2FTS	93% 20-180%
	13C2-6:2FTS	105% 20-180%
	13C2-8:2FTS	112% 20-180%
	13C3-HFPO-DA	97% 20-150%

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Job Number: FC13428

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q47-ICCB	7Q0349.D	1	02/28/24	AL	n/a	n/a	S7Q47

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13428-10

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	2.0	0.31	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	1.0	0.10	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	1.0	0.10	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	1.0	0.10	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	1.0	0.10	ug/kg	
375-95-1	Perfluorononanoic acid	ND	1.0	0.12	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	1.0	0.10	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	1.0	0.13	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	1.0	0.10	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	1.0	0.10	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	1.0	0.10	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	1.0	0.10	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.0	0.16	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	1.0	0.16	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.0	0.15	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.0	0.10	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	1.0	0.18	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	1.0	0.14	ug/kg	
79780-39-5	Perfluorododecanesulfonic acid	ND	1.0	0.15	ug/kg	
757124-72-44:2	Fluorotelomer sulfonate	ND	2.0	0.30	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	2.0	0.35	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	2.0	0.61	ug/kg	
754-91-6	PFOSA	ND	1.0	0.10	ug/kg	
31506-32-8	MeFOSA	ND	1.0	0.14	ug/kg	
4151-50-2	EtFOSA	ND	1.0	0.10	ug/kg	
2355-31-9	MeFOSAA	ND	1.0	0.16	ug/kg	
2991-50-6	EtFOSAA	ND	1.0	0.20	ug/kg	
24448-09-7	MeFOSE	ND	5.0	0.64	ug/kg	
1691-99-2	EtFOSE	ND	5.0	0.83	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	2.0	0.29	ug/kg	
919005-14-4	ADONA	ND	2.0	0.34	ug/kg	
377-73-1	PFMPA	ND	1.0	0.11	ug/kg	
863090-89-5	PFMBA	ND	1.0	0.10	ug/kg	
151772-58-6	NFDHA	ND	2.0	0.24	ug/kg	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	2.0	0.44	ug/kg	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	2.0	0.36	ug/kg	

Continuing Calibration Blank

Job Number: FC13428
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q47-ICCB	7Q0349.D	1	02/28/24	AL	n/a	n/a	S7Q47

The QC reported here applies to the following samples: Method: EPA DRAFT 1633

FC13428-10

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	1.0	0.10	ug/kg	
356-02-5	3:3 Fluorotelomer carboxylate	ND	2.5	0.51	ug/kg	
914637-49-35:3	Fluorotelomer carboxylate	ND	13	1.2	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	13	1.3	ug/kg	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	100% 20-150%
	13C5-PFPeA	98% 20-150%
	13C5-PFHxA	100% 20-150%
	13C4-PFHpA	103% 20-150%
	13C8-PFOA	100% 20-150%
	13C9-PFNA	100% 20-150%
	13C6-PFDA	103% 20-150%
	13C7-PFUnDA	104% 20-150%
	13C2-PFDoDA	101% 20-150%
	13C2-PFTeDA	98% 20-150%
	13C3-PFBS	99% 20-150%
	13C3-PFHxS	102% 20-150%
	13C8-PFOS	92% 20-150%
	13C8-FOSA	95% 20-150%
	d3-MeFOSA	95% 20-150%
	d5-EtFOSA	96% 20-150%
	d3-MeFOSAA	94% 20-150%
	d5-EtFOSAA	93% 20-150%
	d7-MeFOSE	93% 20-150%
	d9-EtFOSE	92% 20-150%
	13C2-4:2FTS	117% 20-180%
	13C2-6:2FTS	112% 20-180%
	13C2-8:2FTS	100% 20-180%
	13C3-HFPO-DA	97% 20-150%

Blank Spike Summary

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Job Number: FC13428
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1744-LLBS	7Q0104.D	1	02/23/24	MV	02/21/24	OP1744	S7Q45

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13428-16, FC13428-17, FC13428-18, FC13428-19

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.016	0.0141	88	40-150
2706-90-3	Perfluoropentanoic acid	0.008	0.0072	90	40-150
307-24-4	Perfluorohexanoic acid	0.004	0.0035	88	40-150
375-85-9	Perfluoroheptanoic acid	0.004	0.0036	90	40-150
335-67-1	Perfluorooctanoic acid	0.004	0.0037	93	40-150
375-95-1	Perfluorononanoic acid	0.004	0.0033	83	40-150
335-76-2	Perfluorodecanoic acid	0.004	0.0035	88	40-150
2058-94-8	Perfluoroundecanoic acid	0.004	0.0035	88	40-150
307-55-1	Perfluorododecanoic acid	0.004	0.0038	95	40-150
72629-94-8	Perfluorotridecanoic acid	0.004	0.0034	85	40-150
376-06-7	Perfluorotetradecanoic acid	0.004	0.0036	90	40-150
375-73-5	Perfluorobutanesulfonic acid	0.00355	0.0033	93	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.00376	0.0034	90	40-150
355-46-4	Perfluorohexanesulfonic acid	0.00366	0.0033	90	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.00381	0.0031	81	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.00371	0.0035	94	40-150
68259-12-1	Perfluorononanesulfonic acid	0.00385	0.0035	91	40-150
335-77-3	Perfluorodecanesulfonic acid	0.00386	0.0034	88	40-150
79780-39-5	Perfluorododecanesulfonic acid	0.00388	0.0039	101	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.015	0.0135	90	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.0152	0.0143	94	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.0154	0.0144	94	40-150
754-91-6	PFOSA	0.004	0.0036	90	40-150
31506-32-8	MeFOSA	0.008	0.0083	104	40-150
4151-50-2	EtFOSA	0.008	0.0072	90	40-150
2355-31-9	MeFOSAA	0.004	0.0037	93	40-150
2991-50-6	EtFOSAA	0.004	0.0042	105	40-150
24448-09-7	MeFOSE	0.02	0.0187	94	40-150
1691-99-2	EtFOSE	0.02	0.0187	94	40-150
13252-13-6	HFPO-DA (GenX)	0.008	0.0064	80	40-150
919005-14-4	ADONA	0.00756	0.0067	89	40-150
377-73-1	PFMPA	0.008	0.0069	86	40-150
863090-89-5	PFMBA	0.008	0.0070	88	40-150
151772-58-6	NFDHA	0.008	0.0072	90	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.00748	0.0068	91	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.00756	0.0063	83	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC13428
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1744-LLBS	7Q0104.D	1	02/23/24	MV	02/21/24	OP1744	S7Q45

The QC reported here applies to the following samples: Method: EPA DRAFT 1633

FC13428-16, FC13428-17, FC13428-18, FC13428-19

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.00712	0.0064	90	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.02	0.0164	82	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.1	0.0858	86	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.1	0.0906	91	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	111%	20-150%
	13C5-PFPeA	113%	20-150%
	13C5-PFHxA	111%	20-150%
	13C4-PFHpA	112%	20-150%
	13C8-PFOA	109%	20-150%
	13C9-PFNA	109%	20-150%
	13C6-PFDA	112%	20-150%
	13C7-PFUnDA	116%	20-150%
	13C2-PFDoDA	105%	20-150%
	13C2-PFTeDA	103%	20-150%
	13C3-PFBS	108%	20-150%
	13C3-PFHxS	106%	20-150%
	13C8-PFOS	106%	20-150%
	13C8-FOSA	87%	20-150%
	d3-MeFOSA	81%	20-150%
	d5-EtFOSA	93%	20-150%
	d3-MeFOSAA	106%	20-150%
	d5-EtFOSAA	104%	20-150%
	d7-MeFOSE	79%	20-150%
	d9-EtFOSE	84%	20-150%
	13C2-4:2FTS	99%	20-180%
	13C2-6:2FTS	109%	20-180%
	13C2-8:2FTS	103%	20-180%
	13C3-HFPO-DA	111%	20-150%

* = Outside of Control Limits.

Blank Spike Summary

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Job Number: FC13428
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1818-LLBS	6Q31546.D	1	02/26/24	MV	02/26/24	OP1818	S6Q444

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13428-1, FC13428-2, FC13428-5, FC13428-6, FC13428-8, FC13428-9, FC13428-10, FC13428-11, FC13428-12, FC13428-13, FC13428-14, FC13428-15, FC13428-20

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
375-22-4	Perfluorobutanoic acid	1.6	1.6	100	40-150
2706-90-3	Perfluoropentanoic acid	0.8	0.78	98	40-150
307-24-4	Perfluorohexanoic acid	0.4	0.45	113	40-150
375-85-9	Perfluoroheptanoic acid	0.4	0.43	108	40-150
335-67-1	Perfluorooctanoic acid	0.4	0.41	103	40-150
375-95-1	Perfluorononanoic acid	0.4	0.40	100	40-150
335-76-2	Perfluorodecanoic acid	0.4	0.39	98	40-150
2058-94-8	Perfluoroundecanoic acid	0.4	0.38	95	40-150
307-55-1	Perfluorododecanoic acid	0.4	0.36	90	40-150
72629-94-8	Perfluorotridecanoic acid	0.4	0.40	100	40-150
376-06-7	Perfluorotetradecanoic acid	0.4	0.42	105	40-150
375-73-5	Perfluorobutanesulfonic acid	0.355	0.38	107	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.376	0.49	130	40-150
355-46-4	Perfluorohexanesulfonic acid	0.366	0.43	118	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.381	0.43	113	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.371	0.39	105	40-150
68259-12-1	Perfluorononanesulfonic acid	0.385	0.52	135	40-150
335-77-3	Perfluorodecanesulfonic acid	0.386	0.38	98	40-150
79780-39-5	Perfluorododecanesulfonic acid	0.388	0.59	152*	40-150
757124-72-44:2	Fluorotelomer sulfonate	1.5	1.6	107	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	1.52	1.3	86	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	1.54	1.6	104	40-150
754-91-6	PFOSA	0.4	0.44	110	40-150
31506-32-8	MeFOSA	0.8	0.79	99	40-150
4151-50-2	EtFOSA	0.8	0.72	90	40-150
2355-31-9	MeFOSAA	0.4	0.43	108	40-150
2991-50-6	EtFOSAA	0.4	0.30	75	40-150
24448-09-7	MeFOSE	2	2.4	120	40-150
1691-99-2	EtFOSE	2	2.0	100	40-150
13252-13-6	HFPO-DA (GenX)	0.8	0.77	96	40-150
919005-14-4	ADONA	0.756	0.77	102	40-150
377-73-1	PFMPA	0.8	0.78	98	40-150
863090-89-5	PFMBA	0.8	0.81	101	40-150
151772-58-6	NFDHA	0.8	0.86	108	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.748	0.68	91	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.756	0.73	97	40-150

* = Outside of Control Limits.

Blank Spike Summary

Page 2 of 2

Job Number: FC13428
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1818-LLBS	6Q31546.D	1	02/26/24	MV	02/26/24	OP1818	S6Q444

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13428-1, FC13428-2, FC13428-5, FC13428-6, FC13428-8, FC13428-9, FC13428-10, FC13428-11, FC13428-12, FC13428-13, FC13428-14, FC13428-15, FC13428-20

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
113507-82-7	PFEESA	0.712	0.63	88	40-150
356-02-5	3:3 Fluorotelomer carboxylate	2	2.0	100	40-150
914637-49-35:3	Fluorotelomer carboxylate	10	9.6	96	40-150
812-70-4	7:3 Fluorotelomer carboxylate	10	10.2	102	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	72%	20-150%
	13C5-PFPeA	74%	20-150%
	13C5-PFHxA	72%	20-150%
	13C4-PFHpA	70%	20-150%
	13C8-PFOA	76%	20-150%
	13C9-PFNA	72%	20-150%
	13C6-PFDA	73%	20-150%
	13C7-PFUnDA	77%	20-150%
	13C2-PFDoDA	84%	20-150%
	13C2-PFTeDA	75%	20-150%
	13C3-PFBS	60%	20-150%
	13C3-PFHxS	60%	20-150%
	13C8-PFOS	68%	20-150%
	13C8-FOSA	74%	20-150%
	d3-MeFOSA	56%	20-150%
	d5-EtFOSA	70%	20-150%
	d3-MeFOSAA	78%	20-150%
	d5-EtFOSAA	75%	20-150%
	d7-MeFOSE	77%	20-150%
	d9-EtFOSE	73%	20-150%
	13C2-4:2FTS	65%	20-180%
	13C2-6:2FTS	73%	20-180%
	13C2-8:2FTS	77%	20-180%
	13C3-HFPO-DA	74%	20-150%

* = Outside of Control Limits.

Blank Spike Summary

Page 1 of 2

Job Number: FC13428

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1744-BS	7Q0103.D	1	02/23/24	MV	02/21/24	OP1744	S7Q45

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13428-16, FC13428-17, FC13428-18, FC13428-19

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.1	0.0885	89	40-150
2706-90-3	Perfluoropentanoic acid	0.05	0.0440	88	40-150
307-24-4	Perfluorohexanoic acid	0.025	0.0218	87	40-150
375-85-9	Perfluoroheptanoic acid	0.025	0.0222	89	40-150
335-67-1	Perfluorooctanoic acid	0.025	0.0227	91	40-150
375-95-1	Perfluorononanoic acid	0.025	0.0211	84	40-150
335-76-2	Perfluorodecanoic acid	0.025	0.0218	87	40-150
2058-94-8	Perfluoroundecanoic acid	0.025	0.0226	90	40-150
307-55-1	Perfluorododecanoic acid	0.025	0.0234	94	40-150
72629-94-8	Perfluorotridecanoic acid	0.025	0.0219	88	40-150
376-06-7	Perfluorotetradecanoic acid	0.025	0.0231	92	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0222	0.0196	88	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0235	0.0208	88	40-150
355-46-4	Perfluorohexanesulfonic acid	0.0229	0.0210	92	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.0238	0.0209	88	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.0232	0.0221	95	40-150
68259-12-1	Perfluorononanesulfonic acid	0.0241	0.0217	90	40-150
335-77-3	Perfluorodecanesulfonic acid	0.0241	0.0205	85	40-150
79780-39-5	Perfluorododecanesulfonic acid	0.0243	0.0207	85	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0938	0.0859	92	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.095	0.0888	93	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.096	0.0827	86	40-150
754-91-6	PFOSA	0.025	0.0233	93	40-150
31506-32-8	MeFOSA	0.05	0.0455	91	40-150
4151-50-2	EtFOSA	0.05	0.0459	92	40-150
2355-31-9	MeFOSAA	0.025	0.0220	88	40-150
2991-50-6	EtFOSAA	0.025	0.0217	87	40-150
24448-09-7	MeFOSE	0.125	0.110	88	40-150
1691-99-2	EtFOSE	0.125	0.111	89	40-150
13252-13-6	HFPO-DA (GenX)	0.05	0.0456	91	40-150
919005-14-4	ADONA	0.0473	0.0429	91	40-150
377-73-1	PFMPA	0.05	0.0210	42	40-150
863090-89-5	PFMBA	0.05	0.0459	92	40-150
151772-58-6	NFDHA	0.05	0.0444	89	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0468	0.0411	88	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0473	0.0406	86	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC13428
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1744-BS	7Q0103.D	1	02/23/24	MV	02/21/24	OP1744	S7Q45

The QC reported here applies to the following samples: Method: EPA DRAFT 1633

FC13428-16, FC13428-17, FC13428-18, FC13428-19

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0445	0.0404	91	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.125	0.205	164*	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.625	0.550	88	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.625	0.566	91	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	28%	20-150%
	13C5-PFPeA	108%	20-150%
	13C5-PFHxA	112%	20-150%
	13C4-PFHpA	113%	20-150%
	13C8-PFOA	111%	20-150%
	13C9-PFNA	114%	20-150%
	13C6-PFDA	115%	20-150%
	13C7-PFUnDA	110%	20-150%
	13C2-PFDoDA	105%	20-150%
	13C2-PFTeDA	98%	20-150%
	13C3-PFBS	113%	20-150%
	13C3-PFHxS	110%	20-150%
	13C8-PFOS	107%	20-150%
	13C8-FOSA	94%	20-150%
	d3-MeFOSA	93%	20-150%
	d5-EtFOSA	90%	20-150%
	d3-MeFOSAA	111%	20-150%
	d5-EtFOSAA	112%	20-150%
	d7-MeFOSE	83%	20-150%
	d9-EtFOSE	88%	20-150%
	13C2-4:2FTS	101%	20-180%
	13C2-6:2FTS	109%	20-180%
	13C2-8:2FTS	114%	20-180%
	13C3-HFPO-DA	114%	20-150%

* = Outside of Control Limits.

Blank Spike Summary

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Job Number: FC13428
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1818-BS	6Q31545.D	1	02/26/24	MV	02/26/24	OP1818	S6Q444

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13428-1, FC13428-2, FC13428-5, FC13428-6, FC13428-8, FC13428-9, FC13428-10, FC13428-11, FC13428-12, FC13428-13, FC13428-14, FC13428-15, FC13428-20

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
375-22-4	Perfluorobutanoic acid	10	10.2	102	40-150
2706-90-3	Perfluoropentanoic acid	5	5.1	102	40-150
307-24-4	Perfluorohexanoic acid	2.5	2.5	100	40-150
375-85-9	Perfluoroheptanoic acid	2.5	2.7	108	40-150
335-67-1	Perfluorooctanoic acid	2.5	2.5	100	40-150
375-95-1	Perfluorononanoic acid	2.5	2.7	108	40-150
335-76-2	Perfluorodecanoic acid	2.5	2.4	96	40-150
2058-94-8	Perfluoroundecanoic acid	2.5	2.4	96	40-150
307-55-1	Perfluorododecanoic acid	2.5	2.6	104	40-150
72629-94-8	Perfluorotridecanoic acid	2.5	2.6	104	40-150
376-06-7	Perfluorotetradecanoic acid	2.5	2.9	116	40-150
375-73-5	Perfluorobutanesulfonic acid	2.22	2.4	108	40-150
2706-91-4	Perfluoropentanesulfonic acid	2.35	2.4	102	40-150
355-46-4	Perfluorohexanesulfonic acid	2.29	2.3	101	40-150
375-92-8	Perfluoroheptanesulfonic acid	2.38	2.2	92	40-150
1763-23-1	Perfluorooctanesulfonic acid	2.32	2.4	103	40-150
68259-12-1	Perfluorononanesulfonic acid	2.41	2.4	100	40-150
335-77-3	Perfluorodecanesulfonic acid	2.41	2.4	99	40-150
79780-39-5	Perfluorododecanesulfonic acid	2.43	2.9	120	40-150
757124-72-44:2	Fluorotelomer sulfonate	9.38	9.0	96	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	9.5	11.7	123	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	9.6	9.4	98	40-150
754-91-6	PFOSA	2.5	2.6	104	40-150
31506-32-8	MeFOSA	5	5.5	110	40-150
4151-50-2	EtFOSA	5	5.1	102	40-150
2355-31-9	MeFOSAA	2.5	2.5	100	40-150
2991-50-6	EtFOSAA	2.5	3.1	124	40-150
24448-09-7	MeFOSE	12.5	13.8	110	40-150
1691-99-2	EtFOSE	12.5	13.5	108	40-150
13252-13-6	HFPO-DA (GenX)	5	5.3	106	40-150
919005-14-4	ADONA	4.73	4.8	102	40-150
377-73-1	PFMPA	5	4.9	98	40-150
863090-89-5	PFMBA	5	5.0	100	40-150
151772-58-6	NFDHA	5	5.2	104	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	4.68	4.3	92	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	4.73	4.6	97	40-150

* = Outside of Control Limits.

Blank Spike Summary

Page 2 of 2

Job Number: FC13428
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1818-BS	6Q31545.D	1	02/26/24	MV	02/26/24	OP1818	S6Q444

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13428-1, FC13428-2, FC13428-5, FC13428-6, FC13428-8, FC13428-9, FC13428-10, FC13428-11, FC13428-12, FC13428-13, FC13428-14, FC13428-15, FC13428-20

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
113507-82-7	PFEESA	4.45	4.0	90	40-150
356-02-5	3:3 Fluorotelomer carboxylate	12.5	11.8	94	40-150
914637-49-35:3	Fluorotelomer carboxylate	62.5	57.9	93	40-150
812-70-4	7:3 Fluorotelomer carboxylate	62.5	58.9	94	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	68%	20-150%
	13C5-PFPeA	65%	20-150%
	13C5-PFHxA	67%	20-150%
	13C4-PFHpA	62%	20-150%
	13C8-PFOA	73%	20-150%
	13C9-PFNA	61%	20-150%
	13C6-PFDA	72%	20-150%
	13C7-PFUnDA	69%	20-150%
	13C2-PFDoDA	70%	20-150%
	13C2-PFTeDA	65%	20-150%
	13C3-PFBS	63%	20-150%
	13C3-PFHxS	65%	20-150%
	13C8-PFOS	75%	20-150%
	13C8-FOSA	74%	20-150%
	d3-MeFOSA	57%	20-150%
	d5-EtFOSA	66%	20-150%
	d3-MeFOSAA	79%	20-150%
	d5-EtFOSAA	69%	20-150%
	d7-MeFOSE	78%	20-150%
	d9-EtFOSE	73%	20-150%
	13C2-4:2FTS	75%	20-180%
	13C2-6:2FTS	67%	20-180%
	13C2-8:2FTS	79%	20-180%
	13C3-HFPO-DA	67%	20-150%

* = Outside of Control Limits.

Matrix Spike Summary

Page 1 of 2

Job Number: FC13428
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1744-MS	7Q0112.D	1	02/23/24	MV	02/21/24	OP1744	S7Q45
FC13428-16	7Q0111.D	1	02/23/24	MV	02/21/24	OP1744	S7Q45

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13428-16, FC13428-17, FC13428-18, FC13428-19

CAS No.	Compound	FC13428-16 ug/l	Spike Q	ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.0072	J	0.0909	0.0926	94	40-150
2706-90-3	Perfluoropentanoic acid	0.0163		0.0455	0.0581	92	40-150
307-24-4	Perfluorohexanoic acid	0.0101		0.0227	0.0313	93	40-150
375-85-9	Perfluoroheptanoic acid	0.0061		0.0227	0.0270	92	40-150
335-67-1	Perfluorooctanoic acid	0.0048		0.0227	0.0261	94	40-150
375-95-1	Perfluorononanoic acid	0.0017	J	0.0227	0.0217	88	40-150
335-76-2	Perfluorodecanoic acid	0.00093	J	0.0227	0.0212	89	40-150
2058-94-8	Perfluoroundecanoic acid	ND		0.0227	0.0213	94	40-150
307-55-1	Perfluorododecanoic acid	ND		0.0227	0.0216	95	40-150
72629-94-8	Perfluorotridecanoic acid	ND		0.0227	0.0218	96	40-150
376-06-7	Perfluorotetradecanoic acid	ND		0.0227	0.0212	93	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0013	J	0.0202	0.0206	96	40-150
2706-91-4	Perfluoropentanesulfonic acid	ND		0.0214	0.0211	99	40-150
355-46-4	Perfluorohexanesulfonic acid	0.0016	J	0.0208	0.0218	97	40-150
375-92-8	Perfluoroheptanesulfonic acid	ND		0.0217	0.0203	94	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.0034		0.0211	0.0240	98	40-150
68259-12-1	Perfluorononanesulfonic acid	ND		0.0219	0.0222	102	40-150
335-77-3	Perfluorodecanesulfonic acid	ND		0.0219	0.0203	93	40-150
79780-39-5	Perfluorododecanesulfonic aci	ND		0.022	0.0194	88	40-150
757124-72-44:2	Fluorotelomer sulfonate	ND		0.0852	0.0758	89	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	ND		0.0864	0.0837	97	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	ND		0.0873	0.0853	98	40-150
754-91-6	PFOSA	ND		0.0227	0.0212	93	40-150
31506-32-8	MeFOSA	ND		0.0455	0.0429	94	40-150
4151-50-2	EtFOSA	ND		0.0455	0.0445	98	40-150
2355-31-9	MeFOSAA	ND		0.0227	0.0229	101	40-150
2991-50-6	EtFOSAA	ND		0.0227	0.0217	95	40-150
24448-09-7	MeFOSE	ND		0.114	0.107	94	40-150
1691-99-2	EtFOSE	ND		0.114	0.112	99	40-150
13252-13-6	HFPO-DA (GenX)	ND		0.0455	0.0407	90	40-150
919005-14-4	ADONA	ND		0.043	0.0400	93	40-150
377-73-1	PFMPA	ND		0.0455	0.0428	94	40-150
863090-89-5	PFMBA	ND		0.0455	0.0419	92	40-150
151772-58-6	NFDHA	ND		0.0455	0.0417	92	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	ND		0.0425	0.0393	92	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND		0.043	0.0383	89	40-150

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC13428
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1744-MS	7Q0112.D	1	02/23/24	MV	02/21/24	OP1744	S7Q45
FC13428-16	7Q0111.D	1	02/23/24	MV	02/21/24	OP1744	S7Q45

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13428-16, FC13428-17, FC13428-18, FC13428-19

CAS No.	Compound	FC13428-16 ug/l	Spike Q	MS ug/l	MS %	Limits
113507-82-7	PFEESA	ND	0.0405	0.0396	98	40-150
356-02-5	3:3 Fluorotelomer carboxylate	ND	0.114	0.105	92	40-150
914637-49-35	3:3 Fluorotelomer carboxylate	ND	0.568	0.559	98	40-150
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.568	0.537	95	40-150

CAS No.	ID Standard Recoveries	MS	FC13428-16	Limits
	13C4-PFBA	110%	107%	20-150%
	13C5-PFPeA	104%	101%	20-150%
	13C5-PFHxA	112%	109%	20-150%
	13C4-PFHpA	108%	103%	20-150%
	13C8-PFOA	109%	109%	20-150%
	13C9-PFNA	109%	110%	20-150%
	13C6-PFDA	112%	108%	20-150%
	13C7-PFUnDA	111%	107%	20-150%
	13C2-PFDoDA	103%	104%	20-150%
	13C2-PFTeDA	104%	100%	20-150%
	13C3-PFBS	119%	114%	20-150%
	13C3-PFHxS	110%	107%	20-150%
	13C8-PFOS	103%	105%	20-150%
	13C8-FOSA	104%	98%	20-150%
	d3-MeFOSA	96%	86%	20-150%
	d5-EtFOSA	89%	88%	20-150%
	d3-MeFOSAA	100%	94%	20-150%
	d5-EtFOSAA	98%	96%	20-150%
	d7-MeFOSE	99%	93%	20-150%
	d9-EtFOSE	93%	90%	20-150%
	13C2-4:2FTS	86%	86%	20-180%
	13C2-6:2FTS	103%	102%	20-180%
	13C2-8:2FTS	106%	102%	20-180%
	13C3-HFPO-DA	112%	108%	20-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

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Job Number: FC13428
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1818-MS	6Q31551.D	1	02/26/24	MV	02/26/24	OP1818	S6Q444
OP1818-MSD	6Q31552.D	1	02/26/24	MV	02/26/24	OP1818	S6Q444
FC13428-5	6Q31550.D	1	02/26/24	MV	02/26/24	OP1818	S6Q444

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13428-1, FC13428-2, FC13428-5, FC13428-6, FC13428-8, FC13428-9, FC13428-10, FC13428-11, FC13428-12, FC13428-13, FC13428-14, FC13428-15, FC13428-20

CAS No.	Compound	FC13428-5 ug/kg	Spike Q ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	ND	11.9	12.1	102	12	12.5	104	3	40-150/30
2706-90-3	Perfluoropentanoic acid	ND	5.95	6.2	104	6	6.2	103	0	40-150/30
307-24-4	Perfluorohexanoic acid	ND	2.98	2.8	94	3	3.0	100	7	40-150/30
375-85-9	Perfluoroheptanoic acid	ND	2.98	3.2	108	3	3.2	107	0	40-150/30
335-67-1	Perfluorooctanoic acid	ND	2.98	3.3	111	3	3.1	103	6	40-150/30
375-95-1	Perfluorononanoic acid	ND	2.98	3.4	114	3	3.3	110	3	40-150/30
335-76-2	Perfluorodecanoic acid	ND	2.98	3.1	104	3	3.0	100	3	40-150/30
2058-94-8	Perfluoroundecanoic acid	ND	2.98	3.0	101	3	2.8	93	7	40-150/30
307-55-1	Perfluorododecanoic acid	ND	2.98	3.1	104	3	3.3	110	6	40-150/30
72629-94-8	Perfluorotridecanoic acid	ND	2.98	2.9	97	3	3.0	100	3	40-150/30
376-06-7	Perfluorotetradecanoic acid	ND	2.98	3.0	101	3	3.3	110	10	40-150/30
375-73-5	Perfluorobutanesulfonic acid	ND	2.64	2.6	98	2.66	2.7	101	4	40-150/30
2706-91-4	Perfluoropentanesulfonic acid	ND	2.8	2.8	100	2.82	3.0	106	7	40-150/30
355-46-4	Perfluorohexanesulfonic acid	ND	2.72	2.7	99	2.74	2.8	102	4	40-150/30
375-92-8	Perfluoroheptanesulfonic acid	ND	2.84	3.2	113	2.86	2.7	94	17	40-150/30
1763-23-1	Perfluorooctanesulfonic acid	ND	2.76	3.2	116	2.78	2.8	101	13	40-150/30
68259-12-1	Perfluorononanesulfonic acid	ND	2.86	3.2	112	2.89	2.8	97	13	40-150/30
335-77-3	Perfluorodecanesulfonic acid	ND	2.87	3.3	115	2.9	2.6	90	24	40-150/30
79780-39-5	Perfluorododecanesulfonic acid	ND	2.89	3.7	128	2.91	3.3	113	11	40-150/30
757124-72-44:2	Fluorotelomer sulfonate	ND	11.2	9.5	85	11.3	10.7	95	12	40-150/30
27619-97-2	6:2 Fluorotelomer sulfonate	ND	11.3	12.5	111	11.4	10.9	96	14	40-150/30
39108-34-4	8:2 Fluorotelomer sulfonate	ND	11.4	11.1	97	11.5	10.1	88	9	40-150/30
754-91-6	PFOSA	ND	2.98	2.7	91	3	3.0	100	11	40-150/30
31506-32-8	MeFOSA	ND	5.95	6.3	106	6	6.6	110	5	40-150/30
4151-50-2	EtFOSA	ND	5.95	5.1	86	6	6.0	100	16	40-150/30
2355-31-9	MeFOSAA	ND	2.98	3.0	101	3	3.2	107	6	40-150/30
2991-50-6	EtFOSAA	ND	2.98	2.9	97	3	3.1	103	7	40-150/30
24448-09-7	MeFOSE	ND	14.9	17.2	116	15	16.8	112	2	40-150/30
1691-99-2	EtFOSE	ND	14.9	15.3	103	15	17.5	117	13	40-150/30
13252-13-6	HFPO-DA (GenX)	ND	5.95	5.7	96	6	5.8	97	2	40-150/30
919005-14-4	ADONA	ND	5.63	5.9	105	5.67	6.0	106	2	40-150/30
377-73-1	PFMPA	ND	5.95	6.0	101	6	5.9	98	2	40-150/30
863090-89-5	PFMBA	ND	5.95	6.0	101	6	6.0	100	0	40-150/30
151772-58-6	NFDHA	ND	5.95	6.0	101	6	5.9	98	2	40-150/30
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	5.57	5.4	97	5.61	5.7	102	5	40-150/30
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	5.63	5.4	96	5.67	5.6	99	4	40-150/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 2 of 2

Job Number: FC13428
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1818-MS	6Q31551.D	1	02/26/24	MV	02/26/24	OP1818	S6Q444
OP1818-MSD	6Q31552.D	1	02/26/24	MV	02/26/24	OP1818	S6Q444
FC13428-5	6Q31550.D	1	02/26/24	MV	02/26/24	OP1818	S6Q444

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13428-1, FC13428-2, FC13428-5, FC13428-6, FC13428-8, FC13428-9, FC13428-10, FC13428-11, FC13428-12, FC13428-13, FC13428-14, FC13428-15, FC13428-20

CAS No.	Compound	FC13428-5 ug/kg	Spike Q ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
113507-82-7	PFEEESA	ND	5.3	4.7	89	5.34	4.9	92	4	40-150/30
356-02-5	3:3 Fluorotelomer carboxylate	ND	14.9	13.4	90	15	13.9	93	4	40-150/30
914637-49-35	3:3 Fluorotelomer carboxylate	ND	74.4	65.6	88	75	67.2	90	2	40-150/30
812-70-4	7:3 Fluorotelomer carboxylate	ND	74.4	66.1	89	75	73.0	97	10	40-150/30

CAS No.	ID Standard Recoveries	MS	MSD	FC13428-5	Limits
	13C4-PFBA	82%	79%	79%	20-150%
	13C5-PFPeA	85%	82%	79%	20-150%
	13C5-PFHxA	90%	83%	79%	20-150%
	13C4-PFHpA	83%	79%	80%	20-150%
	13C8-PFOA	81%	81%	80%	20-150%
	13C9-PFNA	72%	79%	72%	20-150%
	13C6-PFDA	77%	77%	79%	20-150%
	13C7-PFUnDA	88%	81%	76%	20-150%
	13C2-PFDoDA	84%	80%	80%	20-150%
	13C2-PFTeDA	86%	71%	77%	20-150%
	13C3-PFBS	85%	81%	73%	20-150%
	13C3-PFHxS	83%	81%	77%	20-150%
	13C8-PFOS	68%	81%	73%	20-150%
	13C8-FOSA	86%	81%	76%	20-150%
	d3-MeFOSA	70%	62%	66%	20-150%
	d5-EtFOSA	84%	75%	68%	20-150%
	d3-MeFOSAA	82%	77%	79%	20-150%
	d5-EtFOSAA	87%	95%	91%	20-150%
	d7-MeFOSE	81%	82%	85%	20-150%
	d9-EtFOSE	81%	79%	81%	20-150%
	13C2-4:2FTS	100%	91%	81%	20-180%
	13C2-6:2FTS	88%	95%	81%	20-180%
	13C2-8:2FTS	102%	108%	96%	20-180%
	13C3-HFPO-DA	86%	83%	81%	20-150%

* = Outside of Control Limits.

Duplicate Summary

Page 1 of 2

Job Number: FC13428
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1744-DUP	7Q0114.D	1	02/23/24	MV	02/21/24	OP1744	S7Q45
FC13428-17	7Q0113.D	1	02/23/24	MV	02/21/24	OP1744	S7Q45

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13428-16, FC13428-17, FC13428-18, FC13428-19

CAS No.	Compound	FC13428-17 DUP		Q	RPD	Limits
		ug/l	Q ug/l			
375-22-4	Perfluorobutanoic acid	0.0306	0.0308		1	30
2706-90-3	Perfluoropentanoic acid	0.118	0.120		2	30
307-24-4	Perfluorohexanoic acid	0.0776	0.0796		3	30
375-85-9	Perfluoroheptanoic acid	0.0287	0.0297		3	30
335-67-1	Perfluorooctanoic acid	0.0230	0.0224		3	30
375-95-1	Perfluorononanoic acid	0.0087	0.0086		1	30
335-76-2	Perfluorodecanoic acid	0.0013	J 0.0012	J	8	30
2058-94-8	Perfluoroundecanoic acid	0.00063	J 0.00056	J	12	30
307-55-1	Perfluorododecanoic acid	ND	ND		nc	30
72629-94-8	Perfluorotridecanoic acid	ND	ND		nc	30
376-06-7	Perfluorotetradecanoic acid	ND	ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.0132	0.0141		7	30
2706-91-4	Perfluoropentanesulfonic acid	0.0236	0.0241		2	30
355-46-4	Perfluorohexanesulfonic acid	0.218	0.224		3	30
375-92-8	Perfluoroheptanesulfonic acid	0.0053	0.0052		2	30
1763-23-1	Perfluorooctanesulfonic acid	0.268	0.286		6	30
68259-12-1	Perfluorononanesulfonic acid	0.0013	J 0.0012	J	200*	30
335-77-3	Perfluorodecanesulfonic acid	ND	ND		nc	30
79780-39-5	Perfluorododecanesulfonic acid	ND	ND		nc	30
757124-72-44:2	Fluorotelomer sulfonate	ND	ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.208	0.210		1	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.0176	0.0167		5	30
754-91-6	PFOSA	0.0014	J 0.0013	J	7	30
31506-32-8	MeFOSA	ND	ND		nc	30
4151-50-2	EtFOSA	ND	ND		nc	30
2355-31-9	MeFOSAA	ND	ND		nc	30
2991-50-6	EtFOSAA	ND	ND		nc	30
24448-09-7	MeFOSE	ND	ND		nc	30
1691-99-2	EtFOSE	ND	ND		nc	30
13252-13-6	HFPO-DA (GenX)	ND	ND		nc	30
919005-14-4	ADONA	ND	ND		nc	30
377-73-1	PFMPA	ND	ND		nc	30
863090-89-5	PFMBA	ND	ND		nc	30
151772-58-6	NFDHA	ND	ND		nc	30
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	ND		nc	30
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	ND		nc	30

* = Outside of Control Limits.

Duplicate Summary

Page 2 of 2

Job Number: FC13428
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1744-DUP	7Q0114.D	1	02/23/24	MV	02/21/24	OP1744	S7Q45
FC13428-17	7Q0113.D	1	02/23/24	MV	02/21/24	OP1744	S7Q45

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13428-16, FC13428-17, FC13428-18, FC13428-19

CAS No.	Compound	FC13428-17 ug/l	DUP Q ug/l	Q RPD	Limits
113507-82-7PFEESA		ND	ND	nc	30
356-02-5	3:3 Fluorotelomer carboxylate	ND	ND	nc	30
914637-49-35:3 Fluorotelomer carboxylate		ND	ND	nc	30
812-70-4	7:3 Fluorotelomer carboxylate	ND	ND	nc	30

CAS No.	ID Standard Recoveries	DUP	FC13428-17	Limits
	13C4-PFBA	97%	99%	20-150%
	13C5-PFPeA	91%	96%	20-150%
	13C5-PFHxA	98%	104%	20-150%
	13C4-PFHpA	97%	101%	20-150%
	13C8-PFOA	96%	100%	20-150%
	13C9-PFNA	95%	98%	20-150%
	13C6-PFDA	99%	100%	20-150%
	13C7-PFUnDA	99%	103%	20-150%
	13C2-PFDoDA	91%	91%	20-150%
	13C2-PFTeDA	77%	82%	20-150%
	13C3-PFBS	110%	111%	20-150%
	13C3-PFHxS	102%	103%	20-150%
	13C8-PFOS	92%	98%	20-150%
	13C8-FOSA	97%	93%	20-150%
	d3-MeFOSA	80%	81%	20-150%
	d5-EtFOSA	75%	81%	20-150%
	d3-MeFOSAA	94%	87%	20-150%
	d5-EtFOSAA	86%	93%	20-150%
	d7-MeFOSE	85%	85%	20-150%
	d9-EtFOSE	82%	83%	20-150%
	13C2-4:2FTS	80%	85%	20-180%
	13C2-6:2FTS	99%	100%	20-180%
	13C2-8:2FTS	103%	105%	20-180%
	13C3-HFPO-DA	101%	99%	20-150%

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

GeoEngineers, Inc.

Paine Field; Everett, WA

05530-015-00

SGS Job Number: FC13254

Sampling Dates: 02/05/24 - 02/08/24

Report to:

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Total number of pages in report: **234**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable unless noted in the narrative, comments or footnotes.



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Technical Director

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Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001)

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Test results relate only to samples analyzed.

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Sample Summary

GeoEngineers, Inc.

Job No: FC13254

Paine Field; Everett, WA
Project No: 05530-015-00

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID

This report contains results reported as ND = Not detected. The following applies:
Organics ND = Not detected above the MDL

FC13254-1	02/07/24	09:17	MBLK	02/09/24	SO Soil	FP-MW-7-5.0
FC13254-2	02/07/24	09:22	MBLK	02/09/24	SO Soil	FP-MW-7-10.0
FC13254-3	02/07/24	09:30	MBLK	02/09/24	SO Soil	FP-MW-7-15.0
FC13254-4	02/07/24	09:40	MBLK	02/09/24	SO Soil	FP-MW-7-20.0
FC13254-5	02/06/24	12:10	MBLK	02/09/24	SO Soil	FP-MW-8-5.0
FC13254-6	02/06/24	12:20	MBLK	02/09/24	SO Soil	FP-MW-8-10.0
FC13254-7	02/06/24	12:25	MBLK	02/09/24	SO Soil	FP-MW-8-15.0
FC13254-8	02/06/24	12:30	MBLK	02/09/24	SO Soil	FP-MW-8-20.0
FC13254-9	02/06/24	12:40	MBLK	02/09/24	SO Soil	FP-MW-8-25.0
FC13254-10	02/06/24	13:00	MBLK	02/09/24	SO Soil	FP-MW-8-27.5
FC13254-11	02/06/24	08:38	MBLK	02/09/24	SO Soil	FP-MW-9-5.0
FC13254-12	02/06/24	08:45	MBLK	02/09/24	SO Soil	FP-MW-9-10.0

Soil samples reported on a dry weight basis unless otherwise indicated on result page.



Sample Summary
(continued)

GeoEngineers, Inc.

Job No: FC13254

Paine Field; Everett, WA
Project No: 05530-015-00

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
FC13254-13	02/06/24	08:50	MBLK 02/09/24	SO	Soil	FP-MW-9-15.0
FC13254-14	02/06/24	08:55	MBLK 02/09/24	SO	Soil	FP-MW-9-20.0
FC13254-15	02/06/24	09:25	MBLK 02/09/24	SO	Soil	FP-MW-9-25.0
FC13254-16	02/07/24	10:50	MBLK 02/09/24	SO	Soil	FP-MW-10-5.0
FC13254-17	02/07/24	11:05	MBLK 02/09/24	SO	Soil	FP-MW-10-10.0
FC13254-18	02/07/24	11:10	MBLK 02/09/24	SO	Soil	FP-MW-10-15.0
FC13254-19	02/07/24	11:15	MBLK 02/09/24	SO	Soil	FP-MW-10-20.0
FC13254-20	02/05/24	09:12	MBLK 02/09/24	SO	Soil	FP-MW-11-5.0
FC13254-21	02/05/24	09:17	MBLK 02/09/24	SO	Soil	FP-MW-11-10.0
FC13254-22	02/05/24	09:20	MBLK 02/09/24	SO	Soil	FP-MW-11-15.0
FC13254-23	02/05/24	09:30	MBLK 02/09/24	SO	Soil	FP-MW-11-20.0
FC13254-24	02/05/24	12:45	MBLK 02/09/24	SO	Soil	FP-MW-12-5.0
FC13254-25	02/05/24	12:50	MBLK 02/09/24	SO	Soil	FP-MW-12-10.0

Soil samples reported on a dry weight basis unless otherwise indicated on result page.



Sample Summary
(continued)

GeoEngineers, Inc.

Job No: FC13254

Paine Field; Everett, WA
Project No: 05530-015-00

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
FC13254-26	02/05/24	12:55	MBLK 02/09/24	SO	Soil	FP-MW-12-15.0
FC13254-27	02/05/24	13:00	MBLK 02/09/24	SO	Soil	FP-MW-12-20.0
FC13254-28	02/05/24	13:10	MBLK 02/09/24	SO	Soil	FP-MW-12-25.0
FC13254-29	02/08/24	10:45	MBLK 02/09/24	SO	Soil	FP-B1-5.0
FC13254-30	02/08/24	10:50	MBLK 02/09/24	SO	Soil	FP-B1-10.0
FC13254-31	02/08/24	10:55	MBLK 02/09/24	SO	Soil	FP-B1-15.0
FC13254-32	02/08/24	11:00	MBLK 02/09/24	SO	Soil	FP-B1-20.0
FC13254-33	02/08/24	11:10	MBLK 02/09/24	SO	Soil	FP-B1-25.0
FC13254-34	02/08/24	11:30	MBLK 02/09/24	SO	Soil	FP-B1-30.0
FC13254-35	02/08/24	09:10	MBLK 02/09/24	SO	Soil	FP-B2-5.0
FC13254-36	02/08/24	09:18	MBLK 02/09/24	SO	Soil	FP-B2-10.0
FC13254-37	02/08/24	09:22	MBLK 02/09/24	SO	Soil	FP-B2-15.0
FC13254-38	02/08/24	09:30	MBLK 02/09/24	SO	Soil	FP-B2-20.0

Soil samples reported on a dry weight basis unless otherwise indicated on result page.



Sample Summary
(continued)

GeoEngineers, Inc.

Job No: FC13254

Paine Field; Everett, WA
Project No: 05530-015-00

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
FC13254-39	02/08/24	09:58	MBLK 02/09/24	SO	Soil	FP-B2-25.0
FC13254-40	02/08/24	12:10	MBLK 02/09/24	SO	Soil	S DUP-1-20240206
FC13254-41	02/08/24	09:22	MBLK 02/09/24	SO	Soil	S DUP-2-20240206
FC13254-42	02/07/24	12:30	MBLK 02/09/24	AQ	Surface Water	FP-SW1-20240207
FC13254-43	02/06/24	11:30	MBLK 02/09/24	AQ	Surface Water	FP-SW2-20240206
FC13254-44	02/07/24	12:50	MBLK 02/09/24	AQ	Surface Water	FP-SEEP-20240207

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

SAMPLE DELIVERY GROUP CASE NARRATIVE

2

Client: GeoEngineers, Inc.

Job No: FC13254

Site: Paine Field; Everett, WA

Report Date: 2/28/2024 3:49:25 PM

On 02/09/2024, 44 Sample(s), 0 Trip Blank(s), 0 Equip. Blank(s) and 0 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 4 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC13254 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA DRAFT 1633

Matrix: AQ

Batch ID: OP1599

Sample(s) FC13224-1MS, FC13225-1DUP were used as the QC samples indicated.

Blank Spike Recovery(s) for 3:3 Fluorotelomer carboxylate, PFMPA are outside control limits.

Matrix Spike Recovery(s) for 3:3 Fluorotelomer carboxylate are outside control limits. Probable cause is due to matrix interference.

FC13254-43 for PFMPA: Associated BS recovery outside control limits.

FC13254-43 for 3:3 Fluorotelomer carboxylate: Associated BS recovery outside control limits.

Matrix: SO

Batch ID: OP1626

Sample(s) FC13254-16MS, FC13254-16MSD were used as the QC samples indicated.

Matrix: SO

Batch ID: OP1652

Sample(s) FC13254-38MS, FC13254-38MSD were used as the QC samples indicated.

Matrix: SO

Batch ID: OP1753

Sample(s) FC13254-40MS, FC13254-40MSD were used as the QC samples indicated.

FC13254-39 for 8:2 Fluorotelomer sulfonate: Associated CCV outside control limits high. Sample was ND.

FC13254-40 for 8:2 Fluorotelomer sulfonate: Associated CCV outside control limits high. Sample was ND.

FC13254-41 for 8:2 Fluorotelomer sulfonate: Associated CCV outside control limits high. Sample was ND.

General Chemistry By Method SM19 2540G

Matrix: SO

Batch ID: GN96685

Sample(s) FC13254-1DUP were used as the QC samples for Solids, Percent.

Matrix: SO

Batch ID: GN96701

Sample(s) FC13228-4DUP were used as the QC samples for Solids, Percent.

Matrix: SO

Batch ID: GN96735

Sample(s) FC13592-1DUP were used as the QC samples for Solids, Percent.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

Kim Benham, Report Generation (signature on file)

Summary of Hits

Job Number: FC13254
Account: GeoEngineers, Inc.
Project: Paine Field; Everett, WA
Collected: 02/05/24 thru 02/08/24



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method

FC13254-1 FP-MW-7-5.0

No hits reported in this sample.

FC13254-2 FP-MW-7-10.0

No hits reported in this sample.

FC13254-3 FP-MW-7-15.0

No hits reported in this sample.

FC13254-4 FP-MW-7-20.0

No hits reported in this sample.

FC13254-5 FP-MW-8-5.0

Perfluoropentanoic acid	0.18 J	0.46	0.12	ug/kg	EPA DRAFT 1633
Perfluorohexanoic acid	0.13 J	0.23	0.12	ug/kg	EPA DRAFT 1633
Perfluorooctanesulfonic acid	1.6	0.23	0.12	ug/kg	EPA DRAFT 1633

FC13254-6 FP-MW-8-10.0

Perfluoropentanoic acid	0.19 J	0.45	0.11	ug/kg	EPA DRAFT 1633
Perfluorohexanoic acid	0.12 J	0.23	0.11	ug/kg	EPA DRAFT 1633
Perfluorooctanesulfonic acid	0.18 J	0.23	0.11	ug/kg	EPA DRAFT 1633

FC13254-7 FP-MW-8-15.0

Perfluoropentanoic acid	0.13 J	0.46	0.12	ug/kg	EPA DRAFT 1633

FC13254-8 FP-MW-8-20.0

Perfluoropentanoic acid	0.19 J	0.46	0.12	ug/kg	EPA DRAFT 1633
Perfluorohexanoic acid	0.13 J	0.23	0.12	ug/kg	EPA DRAFT 1633
Perfluorohexanesulfonic acid	0.23	0.23	0.18	ug/kg	EPA DRAFT 1633

FC13254-9 FP-MW-8-25.0

Perfluoropentanoic acid	0.20 J	0.47	0.12	ug/kg	EPA DRAFT 1633
Perfluorohexanoic acid	0.13 J	0.24	0.12	ug/kg	EPA DRAFT 1633
Perfluorohexanesulfonic acid	0.25	0.24	0.19	ug/kg	EPA DRAFT 1633

Summary of Hits

Job Number: FC13254
Account: GeoEngineers, Inc.
Project: Paine Field; Everett, WA
Collected: 02/05/24 thru 02/08/24

Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method

FC13254-10 FP-MW-8-27.5

Perfluoropentanoic acid	0.28 J	0.46	0.11	ug/kg	EPA DRAFT 1633
Perfluorohexanoic acid	0.17 J	0.23	0.11	ug/kg	EPA DRAFT 1633
6:2 Fluorotelomer sulfonate	0.54 J	0.91	0.46	ug/kg	EPA DRAFT 1633

FC13254-11 FP-MW-9-5.0

Perfluoropentanoic acid	0.26 J	0.51	0.13	ug/kg	EPA DRAFT 1633
Perfluoroundecanoic acid	0.31	0.25	0.17	ug/kg	EPA DRAFT 1633
Perfluorotridecanoic acid	0.28	0.25	0.13	ug/kg	EPA DRAFT 1633
Perfluorohexanesulfonic acid	0.29	0.25	0.20	ug/kg	EPA DRAFT 1633
Perfluorooctanesulfonic acid	2.9	0.25	0.13	ug/kg	EPA DRAFT 1633

FC13254-12 FP-MW-9-10.0

Perfluoropentanoic acid	0.31 J	0.47	0.12	ug/kg	EPA DRAFT 1633
Perfluorohexanoic acid	0.16 J	0.24	0.12	ug/kg	EPA DRAFT 1633
6:2 Fluorotelomer sulfonate	1.7	0.94	0.47	ug/kg	EPA DRAFT 1633

FC13254-13 FP-MW-9-15.0

Perfluoropentanoic acid	0.47	0.46	0.12	ug/kg	EPA DRAFT 1633
Perfluorohexanoic acid	0.23	0.23	0.12	ug/kg	EPA DRAFT 1633
6:2 Fluorotelomer sulfonate	0.99	0.92	0.46	ug/kg	EPA DRAFT 1633

FC13254-14 FP-MW-9-20.0

Perfluoropentanoic acid	0.24 J	0.44	0.11	ug/kg	EPA DRAFT 1633
Perfluorohexanoic acid	0.12 J	0.22	0.11	ug/kg	EPA DRAFT 1633
6:2 Fluorotelomer sulfonate	0.77 J	0.89	0.44	ug/kg	EPA DRAFT 1633

FC13254-15 FP-MW-9-25.0

Perfluoropentanoic acid	0.26 J	0.46	0.11	ug/kg	EPA DRAFT 1633
Perfluorohexanoic acid	0.15 J	0.23	0.11	ug/kg	EPA DRAFT 1633
6:2 Fluorotelomer sulfonate	0.75 J	0.92	0.46	ug/kg	EPA DRAFT 1633

FC13254-16 FP-MW-10-5.0

No hits reported in this sample.

FC13254-17 FP-MW-10-10.0

No hits reported in this sample.

Summary of Hits

Job Number: FC13254
Account: GeoEngineers, Inc.
Project: Paine Field; Everett, WA
Collected: 02/05/24 thru 02/08/24

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
FC13254-18 FP-MW-10-15.0						
Perfluorooctanesulfonic acid		0.18 J	0.23	0.12	ug/kg	EPA DRAFT 1633
FC13254-19 FP-MW-10-20.0						
Perfluorooctanesulfonic acid		0.30	0.23	0.11	ug/kg	EPA DRAFT 1633
FC13254-20 FP-MW-11-5.0						
Perfluorooctanesulfonic acid		1.5	0.23	0.11	ug/kg	EPA DRAFT 1633
FC13254-21 FP-MW-11-10.0						
Perfluoropentanoic acid		0.18 J	0.46	0.12	ug/kg	EPA DRAFT 1633
Perfluorooctanesulfonic acid		3.5	0.23	0.12	ug/kg	EPA DRAFT 1633
FC13254-22 FP-MW-11-15.0						
Perfluorooctanesulfonic acid		1.8	0.22	0.11	ug/kg	EPA DRAFT 1633
FC13254-23 FP-MW-11-20.0						
Perfluorooctanesulfonic acid		0.15 J	0.22	0.11	ug/kg	EPA DRAFT 1633
FC13254-24 FP-MW-12-5.0						
Perfluoropentanoic acid		0.17 J	0.48	0.12	ug/kg	EPA DRAFT 1633
Perfluorohexanoic acid		0.17 J	0.24	0.12	ug/kg	EPA DRAFT 1633
Perfluorooctanoic acid		0.14 J	0.24	0.12	ug/kg	EPA DRAFT 1633
Perfluorobutanesulfonic acid		0.16 J	0.24	0.12	ug/kg	EPA DRAFT 1633
Perfluoropentanesulfonic acid		0.34	0.24	0.19	ug/kg	EPA DRAFT 1633
Perfluorohexanesulfonic acid		5.7	0.24	0.19	ug/kg	EPA DRAFT 1633
Perfluoroheptanesulfonic acid		0.93	0.24	0.17	ug/kg	EPA DRAFT 1633
Perfluorooctanesulfonic acid		75.4	0.48	0.24	ug/kg	EPA DRAFT 1633
FC13254-25 FP-MW-12-10.0						
Perfluorohexanesulfonic acid		1.4	0.23	0.18	ug/kg	EPA DRAFT 1633
Perfluoroheptanesulfonic acid		0.19 J	0.23	0.16	ug/kg	EPA DRAFT 1633
Perfluorooctanesulfonic acid		15.8	0.23	0.11	ug/kg	EPA DRAFT 1633

Summary of Hits

Job Number: FC13254
Account: GeoEngineers, Inc.
Project: Paine Field; Everett, WA
Collected: 02/05/24 thru 02/08/24



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method

FC13254-26 FP-MW-12-15.0

Perfluoropentanoic acid	0.19 J	0.48	0.12	ug/kg	EPA DRAFT 1633
Perfluorohexanesulfonic acid	2.6	0.24	0.19	ug/kg	EPA DRAFT 1633
Perfluoroheptanesulfonic acid	0.31	0.24	0.17	ug/kg	EPA DRAFT 1633
Perfluorooctanesulfonic acid	35.3	0.24	0.12	ug/kg	EPA DRAFT 1633
Perfluorodecanesulfonic acid	0.18 J	0.24	0.17	ug/kg	EPA DRAFT 1633

FC13254-27 FP-MW-12-20.0

No hits reported in this sample.

FC13254-28 FP-MW-12-25.0

No hits reported in this sample.

FC13254-29 FP-B1-5.0

Perfluoropentanoic acid	0.44 J	0.48	0.12	ug/kg	EPA DRAFT 1633
Perfluorohexanoic acid	0.45	0.24	0.12	ug/kg	EPA DRAFT 1633
Perfluorooctanoic acid	0.26	0.24	0.12	ug/kg	EPA DRAFT 1633
Perfluorononanoic acid	0.25	0.24	0.14	ug/kg	EPA DRAFT 1633
Perfluoroundecanoic acid	0.55	0.24	0.16	ug/kg	EPA DRAFT 1633
Perfluorohexanesulfonic acid	4.8	0.24	0.19	ug/kg	EPA DRAFT 1633
Perfluoroheptanesulfonic acid	0.37	0.24	0.17	ug/kg	EPA DRAFT 1633
Perfluorooctanesulfonic acid	34.6	0.24	0.12	ug/kg	EPA DRAFT 1633
Perfluorononanesulfonic acid	0.93	0.24	0.22	ug/kg	EPA DRAFT 1633
Perfluorodecanesulfonic acid	0.20 J	0.24	0.17	ug/kg	EPA DRAFT 1633
PFOSA	0.45	0.24	0.12	ug/kg	EPA DRAFT 1633

FC13254-30 FP-B1-10.0

Perfluorohexanesulfonic acid	1.4	0.23	0.18	ug/kg	EPA DRAFT 1633
Perfluorooctanesulfonic acid	7.4	0.23	0.11	ug/kg	EPA DRAFT 1633

FC13254-31 FP-B1-15.0

Perfluorohexanesulfonic acid	2.3	0.24	0.19	ug/kg	EPA DRAFT 1633
Perfluorooctanesulfonic acid	0.27	0.24	0.12	ug/kg	EPA DRAFT 1633

FC13254-32 FP-B1-20.0

Perfluorohexanesulfonic acid	0.46	0.22	0.17	ug/kg	EPA DRAFT 1633

Summary of Hits

Job Number: FC13254
Account: GeoEngineers, Inc.
Project: Paine Field; Everett, WA
Collected: 02/05/24 thru 02/08/24



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method

FC13254-33 FP-B1-25.0

Perfluorohexanesulfonic acid	1.5	0.22	0.18	ug/kg	EPA DRAFT 1633

FC13254-34 FP-B1-30.0

Perfluoropentanesulfonic acid	0.22	0.22	0.18	ug/kg	EPA DRAFT 1633
Perfluorohexanesulfonic acid	1.5	0.22	0.18	ug/kg	EPA DRAFT 1633
Perfluorooctanesulfonic acid	5.2	0.22	0.11	ug/kg	EPA DRAFT 1633

FC13254-35 FP-B2-5.0

Perfluoropentanoic acid	0.35 J	0.45	0.11	ug/kg	EPA DRAFT 1633
Perfluorohexanoic acid	0.27	0.22	0.11	ug/kg	EPA DRAFT 1633
Perfluoroheptanoic acid	0.37	0.22	0.11	ug/kg	EPA DRAFT 1633
Perfluorooctanoic acid	1.5	0.22	0.11	ug/kg	EPA DRAFT 1633
Perfluorononanoic acid	1.9	0.22	0.13	ug/kg	EPA DRAFT 1633
Perfluorodecanoic acid	1.5	0.22	0.11	ug/kg	EPA DRAFT 1633
Perfluoroundecanoic acid	1.3	0.22	0.15	ug/kg	EPA DRAFT 1633
Perfluorododecanoic acid	0.11 J	0.22	0.11	ug/kg	EPA DRAFT 1633
Perfluorotridecanoic acid	0.95	0.22	0.11	ug/kg	EPA DRAFT 1633
Perfluorohexanesulfonic acid	1.9	0.22	0.18	ug/kg	EPA DRAFT 1633
Perfluorooctanesulfonic acid	92.5	0.45	0.22	ug/kg	EPA DRAFT 1633
Perfluorononanesulfonic acid	2.1	0.22	0.20	ug/kg	EPA DRAFT 1633
Perfluorodecanesulfonic acid	0.86	0.22	0.16	ug/kg	EPA DRAFT 1633
Perfluorododecanesulfonic acid	0.17 J	0.22	0.17	ug/kg	EPA DRAFT 1633
6:2 Fluorotelomer sulfonate	1.7	0.89	0.45	ug/kg	EPA DRAFT 1633
8:2 Fluorotelomer sulfonate	62.5	0.89	0.67	ug/kg	EPA DRAFT 1633
PFOSA	1.6	0.22	0.11	ug/kg	EPA DRAFT 1633

FC13254-36 FP-B2-10.0

Perfluoropentanoic acid	0.32 J	0.44	0.11	ug/kg	EPA DRAFT 1633
Perfluorohexanoic acid	0.33	0.22	0.11	ug/kg	EPA DRAFT 1633
Perfluoroheptanoic acid	0.44	0.22	0.11	ug/kg	EPA DRAFT 1633
Perfluorooctanoic acid	0.88	0.22	0.11	ug/kg	EPA DRAFT 1633
Perfluorononanoic acid	0.63	0.22	0.13	ug/kg	EPA DRAFT 1633
Perfluorodecanoic acid	0.15 J	0.22	0.11	ug/kg	EPA DRAFT 1633
Perfluoroundecanoic acid	0.17 J	0.22	0.14	ug/kg	EPA DRAFT 1633
Perfluorotridecanoic acid	0.13 J	0.22	0.11	ug/kg	EPA DRAFT 1633
Perfluorohexanesulfonic acid	1.3	0.22	0.17	ug/kg	EPA DRAFT 1633
Perfluorooctanesulfonic acid	37.1	0.22	0.11	ug/kg	EPA DRAFT 1633
Perfluorononanesulfonic acid	0.33	0.22	0.20	ug/kg	EPA DRAFT 1633
6:2 Fluorotelomer sulfonate	0.97	0.87	0.44	ug/kg	EPA DRAFT 1633
8:2 Fluorotelomer sulfonate	31.1	0.87	0.65	ug/kg	EPA DRAFT 1633

Summary of Hits

Job Number: FC13254
Account: GeoEngineers, Inc.
Project: Paine Field; Everett, WA
Collected: 02/05/24 thru 02/08/24

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method

PFOSA		0.36	0.22	0.11	ug/kg	EPA DRAFT 1633

FC13254-37 FP-B2-15.0

Perfluoropentanoic acid	0.18 J	0.46	0.12	ug/kg	EPA DRAFT 1633
Perfluorohexanoic acid	0.18 J	0.23	0.12	ug/kg	EPA DRAFT 1633
Perfluoroheptanoic acid	0.16 J	0.23	0.12	ug/kg	EPA DRAFT 1633
Perfluorooctanoic acid	0.67	0.23	0.12	ug/kg	EPA DRAFT 1633
Perfluorononanoic acid	1.7	0.23	0.13	ug/kg	EPA DRAFT 1633
Perfluorohexanesulfonic acid	1.3	0.23	0.18	ug/kg	EPA DRAFT 1633
Perfluorooctanesulfonic acid	51.2	0.23	0.12	ug/kg	EPA DRAFT 1633
8:2 Fluorotelomer sulfonate	0.76 J	0.93	0.70	ug/kg	EPA DRAFT 1633

FC13254-38 FP-B2-20.0

Perfluorooctanoic acid	0.42	0.25	0.12	ug/kg	EPA DRAFT 1633
Perfluorohexanesulfonic acid	0.78	0.25	0.20	ug/kg	EPA DRAFT 1633
Perfluorooctanesulfonic acid	6.4	0.25	0.12	ug/kg	EPA DRAFT 1633

FC13254-39 FP-B2-25.0

Perfluorooctanoic acid	0.31	0.22	0.11	ug/kg	EPA DRAFT 1633
Perfluorohexanesulfonic acid	0.45	0.22	0.18	ug/kg	EPA DRAFT 1633
Perfluorooctanesulfonic acid	1.5	0.22	0.11	ug/kg	EPA DRAFT 1633

FC13254-40 S DUP-1-20240206

Perfluorohexanoic acid	0.15 J	0.23	0.12	ug/kg	EPA DRAFT 1633
Perfluorooctanesulfonic acid	1.6	0.23	0.12	ug/kg	EPA DRAFT 1633

FC13254-41 S DUP-2-20240206

Perfluoropentanoic acid	0.20 J	0.46	0.12	ug/kg	EPA DRAFT 1633
Perfluorohexanoic acid	0.24	0.23	0.12	ug/kg	EPA DRAFT 1633
Perfluoroheptanoic acid	0.19 J	0.23	0.12	ug/kg	EPA DRAFT 1633
Perfluorooctanoic acid	0.77	0.23	0.12	ug/kg	EPA DRAFT 1633
Perfluorononanoic acid	1.6	0.23	0.13	ug/kg	EPA DRAFT 1633
Perfluorohexanesulfonic acid	1.3	0.23	0.18	ug/kg	EPA DRAFT 1633
Perfluorooctanesulfonic acid	37.8	0.23	0.12	ug/kg	EPA DRAFT 1633

FC13254-42 FP-SW1-20240207

Perfluorobutanoic acid	0.604	0.0075	0.0038	ug/l	EPA DRAFT 1633
Perfluoropentanoic acid	4.56	0.038	0.0094	ug/l	EPA DRAFT 1633
Perfluorohexanoic acid	2.06	0.019	0.0047	ug/l	EPA DRAFT 1633

Summary of Hits

Job Number: FC13254
Account: GeoEngineers, Inc.
Project: Paine Field; Everett, WA
Collected: 02/05/24 thru 02/08/24



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Perfluoroheptanoic acid		0.518	0.0019	0.00047	ug/l	EPA DRAFT 1633
Perfluorooctanoic acid		0.0834	0.0019	0.00047	ug/l	EPA DRAFT 1633
Perfluorononanoic acid		0.0192	0.0019	0.00058	ug/l	EPA DRAFT 1633
Perfluorobutanesulfonic acid		0.0529	0.0019	0.00094	ug/l	EPA DRAFT 1633
Perfluoropentanesulfonic acid		0.0605	0.0019	0.0011	ug/l	EPA DRAFT 1633
Perfluorohexanesulfonic acid		0.349	0.0019	0.00094	ug/l	EPA DRAFT 1633
Perfluoroheptanesulfonic acid		0.0154	0.0019	0.00094	ug/l	EPA DRAFT 1633
Perfluorooctanesulfonic acid		0.151	0.0019	0.00094	ug/l	EPA DRAFT 1633
6:2 Fluorotelomer sulfonate		1.96	0.0075	0.0038	ug/l	EPA DRAFT 1633
3:3 Fluorotelomer carboxylate		0.0084 J	0.0094	0.0047	ug/l	EPA DRAFT 1633
5:3 Fluorotelomer carboxylate		0.0167 J	0.047	0.0094	ug/l	EPA DRAFT 1633

FC13254-43 FP-SW2-20240206

Perfluorobutanoic acid	0.827	0.0080	0.0040	ug/l	EPA DRAFT 1633
Perfluoropentanoic acid	4.50	0.040	0.010	ug/l	EPA DRAFT 1633
Perfluorohexanoic acid	2.02	0.020	0.0050	ug/l	EPA DRAFT 1633
Perfluoroheptanoic acid	0.655	0.020	0.0050	ug/l	EPA DRAFT 1633
Perfluorooctanoic acid	0.216	0.0020	0.00050	ug/l	EPA DRAFT 1633
Perfluorononanoic acid	0.0153	0.0020	0.00061	ug/l	EPA DRAFT 1633
Perfluorobutanesulfonic acid	0.0543	0.0020	0.0010	ug/l	EPA DRAFT 1633
Perfluoropentanesulfonic acid	0.0758	0.0020	0.0011	ug/l	EPA DRAFT 1633
Perfluorohexanesulfonic acid	0.345	0.0020	0.0010	ug/l	EPA DRAFT 1633
Perfluoroheptanesulfonic acid	0.0134	0.0020	0.0010	ug/l	EPA DRAFT 1633
Perfluorooctanesulfonic acid	0.116	0.0020	0.0010	ug/l	EPA DRAFT 1633
6:2 Fluorotelomer sulfonate	4.30	0.080	0.040	ug/l	EPA DRAFT 1633
5:3 Fluorotelomer carboxylate	0.0176 J	0.050	0.010	ug/l	EPA DRAFT 1633

FC13254-44 FP-SEEP-20240207

Perfluorobutanoic acid	0.451	0.0091	0.0045	ug/l	EPA DRAFT 1633
Perfluoropentanoic acid	2.89	0.045	0.011	ug/l	EPA DRAFT 1633
Perfluorohexanoic acid	1.35	0.023	0.0057	ug/l	EPA DRAFT 1633
Perfluoroheptanoic acid	0.398	0.0023	0.00057	ug/l	EPA DRAFT 1633
Perfluorooctanoic acid	0.185	0.0023	0.00057	ug/l	EPA DRAFT 1633
Perfluorononanoic acid	0.135	0.0023	0.00069	ug/l	EPA DRAFT 1633
Perfluorobutanesulfonic acid	0.102	0.0023	0.0011	ug/l	EPA DRAFT 1633
Perfluoropentanesulfonic acid	0.130	0.0023	0.0013	ug/l	EPA DRAFT 1633
Perfluorohexanesulfonic acid	0.844	0.023	0.011	ug/l	EPA DRAFT 1633
Perfluoroheptanesulfonic acid	0.0427	0.0023	0.0011	ug/l	EPA DRAFT 1633
Perfluorooctanesulfonic acid	1.16	0.023	0.011	ug/l	EPA DRAFT 1633
6:2 Fluorotelomer sulfonate	0.992	0.0091	0.0045	ug/l	EPA DRAFT 1633
3:3 Fluorotelomer carboxylate	0.0068 J	0.011	0.0057	ug/l	EPA DRAFT 1633
5:3 Fluorotelomer carboxylate	0.0242 J	0.057	0.011	ug/l	EPA DRAFT 1633



Orlando, FL

Section 4

4

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	FP-MW-7-5.0	Date Sampled:	02/07/24
Lab Sample ID:	FC13254-1	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	90.1
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2586.D	1	02/19/24 23:43	MV	02/14/24 08:40	OP1626	S7Q42
Run #2							

Run #	Initial Weight	Final Volume
Run #1	5.05 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.88	0.55	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.44	0.11	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.22	0.11	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.22	0.11	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.22	0.11	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.22	0.13	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.22	0.11	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.22	0.15	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.22	0.11	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.22	0.11	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.22	0.11	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.22	0.11	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.22	0.17	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.22	0.17	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.22	0.16	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.22	0.11	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.22	0.20	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.22	0.16	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.22	0.16	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.88	0.44	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.88	0.44	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.88	0.66	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.22	0.11	ug/kg	
31506-32-8	MeFOSA	ND	0.22	0.15	ug/kg	
4151-50-2	EtFOSA	ND	0.22	0.11	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-7-5.0	Date Sampled:	02/07/24
Lab Sample ID:	FC13254-1	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	90.1
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.22	0.17	ug/kg	
2991-50-6	EtFOSAA	ND	0.22	0.22	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.2	1.1	ug/kg	
1691-99-2	EtFOSE	ND	2.2	1.1	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.88	0.32	ug/kg	
919005-14-4	ADONA	ND	0.88	0.37	ug/kg	
377-73-1	PFMPA	ND	0.44	0.22	ug/kg	
863090-89-5	PFMBA	ND	0.44	0.22	ug/kg	
151772-58-6	NFDHA	ND	0.44	0.27	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.88	0.48	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.88	0.44	ug/kg	
113507-82-7	PFEESA	ND	0.44	0.22	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.1	0.56	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.5	1.3	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.5	1.4	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	88%		20-150%
	13C5-PFPeA	83%		20-150%
	13C5-PFHxA	87%		20-150%
	13C4-PFHpA	89%		20-150%
	13C8-PFOA	87%		20-150%
	13C9-PFNA	84%		20-150%
	13C6-PFDA	92%		20-150%
	13C7-PFUnDA	93%		20-150%
	13C2-PFDoDA	87%		20-150%
	13C2-PFTeDA	78%		20-150%
	13C3-PFBS	81%		20-150%
	13C3-PFHxS	83%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-7-5.0	Date Sampled:	02/07/24
Lab Sample ID:	FC13254-1	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	90.1
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	83%		20-150%
	13C8-FOSA	80%		20-150%
	d3-MeFOSA	81%		20-150%
	d5-EtFOSA	86%		20-150%
	d3-MeFOSAA	90%		20-150%
	d5-EtFOSAA	97%		20-150%
	d7-MeFOSE	86%		20-150%
	d9-EtFOSE	87%		20-150%
	13C2-4:2FTS	72%		20-180%
	13C2-6:2FTS	92%		20-180%
	13C2-8:2FTS	99%		20-180%
	13C3-HFPO-DA	90%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-7-10.0	Date Sampled:	02/07/24
Lab Sample ID:	FC13254-2	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	90.6
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2587.D	1	02/19/24 23:57	MV	02/14/24 08:40	OP1626	S7Q42
Run #2							

Run #	Initial Weight	Final Volume
Run #1	4.95 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.89	0.56	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.45	0.11	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.22	0.11	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.22	0.11	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.22	0.11	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.22	0.13	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.22	0.11	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.22	0.15	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.22	0.11	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.22	0.11	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.22	0.11	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.22	0.11	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.22	0.18	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.22	0.18	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.22	0.16	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.22	0.11	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.22	0.20	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.22	0.16	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.22	0.17	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.89	0.45	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.89	0.45	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.89	0.67	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.22	0.11	ug/kg	
31506-32-8	MeFOSA	ND	0.22	0.15	ug/kg	
4151-50-2	EtFOSA	ND	0.22	0.11	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-7-10.0	Date Sampled:	02/07/24
Lab Sample ID:	FC13254-2	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	90.6
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.22	0.18	ug/kg	
2991-50-6	EtFOSAA	ND	0.22	0.22	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.2	1.1	ug/kg	
1691-99-2	EtFOSE	ND	2.2	1.1	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.89	0.32	ug/kg	
919005-14-4	ADONA	ND	0.89	0.37	ug/kg	
377-73-1	PFMPA	ND	0.45	0.22	ug/kg	
863090-89-5	PFMBA	ND	0.45	0.22	ug/kg	
151772-58-6	NFDHA	ND	0.45	0.27	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.89	0.49	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.89	0.45	ug/kg	
113507-82-7	PFEESA	ND	0.45	0.22	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.1	0.57	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.6	1.3	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.6	1.4	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	94%		20-150%
	13C5-PFPeA	89%		20-150%
	13C5-PFHxA	95%		20-150%
	13C4-PFHpA	94%		20-150%
	13C8-PFOA	92%		20-150%
	13C9-PFNA	85%		20-150%
	13C6-PFDA	93%		20-150%
	13C7-PFUnDA	97%		20-150%
	13C2-PFDoDA	91%		20-150%
	13C2-PFTeDA	87%		20-150%
	13C3-PFBS	83%		20-150%
	13C3-PFHxS	87%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-7-10.0	Date Sampled:	02/07/24
Lab Sample ID:	FC13254-2	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	90.6
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	91%		20-150%
	13C8-FOSA	91%		20-150%
	d3-MeFOSA	98%		20-150%
	d5-EtFOSA	103%		20-150%
	d3-MeFOSAA	96%		20-150%
	d5-EtFOSAA	97%		20-150%
	d7-MeFOSE	99%		20-150%
	d9-EtFOSE	98%		20-150%
	13C2-4:2FTS	70%		20-180%
	13C2-6:2FTS	88%		20-180%
	13C2-8:2FTS	97%		20-180%
	13C3-HFPO-DA	102%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-7-15.0	Date Sampled:	02/07/24
Lab Sample ID:	FC13254-3	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	88.3
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2588.D	1	02/20/24 00:11	MV	02/14/24 08:40	OP1626	S7Q42
Run #2							

	Initial Weight	Final Volume
Run #1	4.99 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.91	0.57	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.45	0.11	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.23	0.11	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.23	0.11	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.23	0.11	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.23	0.13	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.23	0.11	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.23	0.15	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.23	0.11	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.23	0.12	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.23	0.11	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.23	0.11	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.23	0.18	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.23	0.18	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.23	0.16	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.23	0.11	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.23	0.21	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.23	0.16	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.23	0.17	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.91	0.45	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.91	0.45	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.91	0.68	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.23	0.11	ug/kg	
31506-32-8	MeFOSA	ND	0.23	0.15	ug/kg	
4151-50-2	EtFOSA	ND	0.23	0.11	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-7-15.0		
Lab Sample ID:	FC13254-3	Date Sampled:	02/07/24
Matrix:	SO - Soil	Date Received:	02/09/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	88.3
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.23	0.18	ug/kg	
2991-50-6	EtFOSAA	ND	0.23	0.22	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.3	1.1	ug/kg	
1691-99-2	EtFOSE	ND	2.3	1.1	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.91	0.33	ug/kg	
919005-14-4	ADONA	ND	0.91	0.38	ug/kg	
377-73-1	PFMPA	ND	0.45	0.23	ug/kg	
863090-89-5	PFMBA	ND	0.45	0.23	ug/kg	
151772-58-6	NFDHA	ND	0.45	0.28	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.91	0.50	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.91	0.45	ug/kg	
113507-82-7	PFEESA	ND	0.45	0.23	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.1	0.58	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.7	1.3	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.7	1.4	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	92%		20-150%
	13C5-PFPeA	88%		20-150%
	13C5-PFHxA	93%		20-150%
	13C4-PFHpA	94%		20-150%
	13C8-PFOA	91%		20-150%
	13C9-PFNA	88%		20-150%
	13C6-PFDA	94%		20-150%
	13C7-PFUnDA	97%		20-150%
	13C2-PFDoDA	90%		20-150%
	13C2-PFTeDA	86%		20-150%
	13C3-PFBS	83%		20-150%
	13C3-PFHxS	89%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-7-15.0	Date Sampled:	02/07/24
Lab Sample ID:	FC13254-3	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	88.3
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	90%		20-150%
	13C8-FOSA	91%		20-150%
	d3-MeFOSA	93%		20-150%
	d5-EtFOSA	96%		20-150%
	d3-MeFOSAA	99%		20-150%
	d5-EtFOSAA	98%		20-150%
	d7-MeFOSE	95%		20-150%
	d9-EtFOSE	97%		20-150%
	13C2-4:2FTS	72%		20-180%
	13C2-6:2FTS	92%		20-180%
	13C2-8:2FTS	100%		20-180%
	13C3-HFPO-DA	104%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-7-20.0	Date Sampled:	02/07/24
Lab Sample ID:	FC13254-4	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	90.6
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2591.D	1	02/20/24 00:52	MV	02/14/24 08:40	OP1626	S7Q42
Run #2							

Run #	Initial Weight	Final Volume
Run #1	5.01 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.88	0.55	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.44	0.11	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.22	0.11	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.22	0.11	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.22	0.11	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.22	0.13	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.22	0.11	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.22	0.15	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.22	0.11	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.22	0.11	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.22	0.11	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.22	0.11	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.22	0.17	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.22	0.18	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.22	0.16	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.22	0.11	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.22	0.20	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.22	0.16	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.22	0.17	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.88	0.44	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.88	0.44	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.88	0.66	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.22	0.11	ug/kg	
31506-32-8	MeFOSA	ND	0.22	0.15	ug/kg	
4151-50-2	EtFOSA	ND	0.22	0.11	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-7-20.0		
Lab Sample ID:	FC13254-4	Date Sampled:	02/07/24
Matrix:	SO - Soil	Date Received:	02/09/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	90.6
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.22	0.17	ug/kg	
2991-50-6	EtFOSAA	ND	0.22	0.22	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.2	1.1	ug/kg	
1691-99-2	EtFOSE	ND	2.2	1.1	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.88	0.32	ug/kg	
919005-14-4	ADONA	ND	0.88	0.37	ug/kg	
377-73-1	PFMPA	ND	0.44	0.22	ug/kg	
863090-89-5	PFMBA	ND	0.44	0.22	ug/kg	
151772-58-6	NFDHA	ND	0.44	0.27	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.88	0.48	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.88	0.44	ug/kg	
113507-82-7	PFEESA	ND	0.44	0.22	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.1	0.56	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.5	1.3	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.5	1.4	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	91%		20-150%
	13C5-PFPeA	87%		20-150%
	13C5-PFHxA	92%		20-150%
	13C4-PFHpA	93%		20-150%
	13C8-PFOA	90%		20-150%
	13C9-PFNA	87%		20-150%
	13C6-PFDA	90%		20-150%
	13C7-PFUnDA	91%		20-150%
	13C2-PFDoDA	89%		20-150%
	13C2-PFTeDA	84%		20-150%
	13C3-PFBS	84%		20-150%
	13C3-PFHxS	86%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-7-20.0	Date Sampled:	02/07/24
Lab Sample ID:	FC13254-4	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	90.6
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	85%		20-150%
	13C8-FOSA	84%		20-150%
	d3-MeFOSA	84%		20-150%
	d5-EtFOSA	88%		20-150%
	d3-MeFOSAA	94%		20-150%
	d5-EtFOSAA	93%		20-150%
	d7-MeFOSE	83%		20-150%
	d9-EtFOSE	88%		20-150%
	13C2-4:2FTS	75%		20-180%
	13C2-6:2FTS	87%		20-180%
	13C2-8:2FTS	97%		20-180%
	13C3-HFPO-DA	105%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-8-5.0	Date Sampled:	02/06/24
Lab Sample ID:	FC13254-5	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	86.5
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2592.D	1	02/20/24 01:06	MV	02/14/24 08:40	OP1626	S7Q42
Run #2							

Run #	Initial Weight	Final Volume
Run #1	5.01 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.92	0.58	ug/kg	
2706-90-3	Perfluoropentanoic acid	0.18	0.46	0.12	ug/kg	J
307-24-4	Perfluorohexanoic acid	0.13	0.23	0.12	ug/kg	J
375-85-9	Perfluoroheptanoic acid	ND	0.23	0.12	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.23	0.12	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.23	0.13	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.23	0.12	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.23	0.15	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.23	0.12	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.23	0.12	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.23	0.12	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.23	0.12	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.23	0.18	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.23	0.18	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.23	0.17	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	1.6	0.23	0.12	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.23	0.21	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.23	0.16	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.23	0.17	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.92	0.46	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.92	0.46	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.92	0.69	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.23	0.12	ug/kg	
31506-32-8	MeFOSA	ND	0.23	0.16	ug/kg	
4151-50-2	EtFOSA	ND	0.23	0.12	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-8-5.0	Date Sampled:	02/06/24
Lab Sample ID:	FC13254-5	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	86.5
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.23	0.18	ug/kg	
2991-50-6	EtFOSAA	ND	0.23	0.23	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.3	1.2	ug/kg	
1691-99-2	EtFOSE	ND	2.3	1.2	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.92	0.33	ug/kg	
919005-14-4	ADONA	ND	0.92	0.39	ug/kg	
377-73-1	PFMPA	ND	0.46	0.23	ug/kg	
863090-89-5	PFMBA	ND	0.46	0.23	ug/kg	
151772-58-6	NFDHA	ND	0.46	0.28	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.92	0.51	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.92	0.46	ug/kg	
113507-82-7	PFEESA	ND	0.46	0.23	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.2	0.59	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.8	1.3	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.8	1.5	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	85%		20-150%
	13C5-PFPeA	82%		20-150%
	13C5-PFHxA	87%		20-150%
	13C4-PFHpA	86%		20-150%
	13C8-PFOA	86%		20-150%
	13C9-PFNA	81%		20-150%
	13C6-PFDA	87%		20-150%
	13C7-PFUnDA	87%		20-150%
	13C2-PFDoDA	81%		20-150%
	13C2-PFTeDA	81%		20-150%
	13C3-PFBS	79%		20-150%
	13C3-PFHxS	78%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-8-5.0	Date Sampled:	02/06/24
Lab Sample ID:	FC13254-5	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	86.5
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	77%		20-150%
	13C8-FOSA	82%		20-150%
	d3-MeFOSA	80%		20-150%
	d5-EtFOSA	83%		20-150%
	d3-MeFOSAA	91%		20-150%
	d5-EtFOSAA	90%		20-150%
	d7-MeFOSE	83%		20-150%
	d9-EtFOSE	86%		20-150%
	13C2-4:2FTS	65%		20-180%
	13C2-6:2FTS	85%		20-180%
	13C2-8:2FTS	86%		20-180%
	13C3-HFPO-DA	92%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-8-10.0	Date Sampled:	02/06/24
Lab Sample ID:	FC13254-6	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	88.7
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2593.D	1	02/20/24 01:20	MV	02/14/24 08:40	OP1626	S7Q42
Run #2							

	Initial Weight	Final Volume
Run #1	4.97 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.91	0.57	ug/kg	
2706-90-3	Perfluoropentanoic acid	0.19	0.45	0.11	ug/kg	J
307-24-4	Perfluorohexanoic acid	0.12	0.23	0.11	ug/kg	J
375-85-9	Perfluoroheptanoic acid	ND	0.23	0.11	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.23	0.11	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.23	0.13	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.23	0.11	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.23	0.15	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.23	0.11	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.23	0.12	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.23	0.11	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.23	0.11	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.23	0.18	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.23	0.18	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.23	0.16	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.18	0.23	0.11	ug/kg	J
68259-12-1	Perfluorononanesulfonic acid	ND	0.23	0.21	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.23	0.16	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.23	0.17	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.91	0.45	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.91	0.45	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.91	0.68	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.23	0.11	ug/kg	
31506-32-8	MeFOSA	ND	0.23	0.15	ug/kg	
4151-50-2	EtFOSA	ND	0.23	0.11	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-8-10.0	Date Sampled:	02/06/24
Lab Sample ID:	FC13254-6	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	88.7
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.23	0.18	ug/kg	
2991-50-6	EtFOSAA	ND	0.23	0.22	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.3	1.1	ug/kg	
1691-99-2	EtFOSE	ND	2.3	1.1	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.91	0.33	ug/kg	
919005-14-4	ADONA	ND	0.91	0.38	ug/kg	
377-73-1	PFMPA	ND	0.45	0.23	ug/kg	
863090-89-5	PFMBA	ND	0.45	0.23	ug/kg	
151772-58-6	NFDHA	ND	0.45	0.28	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.91	0.50	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.91	0.45	ug/kg	
113507-82-7	PFEESA	ND	0.45	0.23	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.1	0.58	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.7	1.3	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.7	1.4	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	86%		20-150%
	13C5-PFPeA	80%		20-150%
	13C5-PFHxA	85%		20-150%
	13C4-PFHpA	86%		20-150%
	13C8-PFOA	86%		20-150%
	13C9-PFNA	80%		20-150%
	13C6-PFDA	89%		20-150%
	13C7-PFUnDA	94%		20-150%
	13C2-PFDoDA	87%		20-150%
	13C2-PFTeDA	85%		20-150%
	13C3-PFBS	80%		20-150%
	13C3-PFHxS	81%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-8-10.0	Date Sampled:	02/06/24
Lab Sample ID:	FC13254-6	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	88.7
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	77%		20-150%
	13C8-FOSA	80%		20-150%
	d3-MeFOSA	82%		20-150%
	d5-EtFOSA	85%		20-150%
	d3-MeFOSAA	91%		20-150%
	d5-EtFOSAA	88%		20-150%
	d7-MeFOSE	86%		20-150%
	d9-EtFOSE	88%		20-150%
	13C2-4:2FTS	66%		20-180%
	13C2-6:2FTS	85%		20-180%
	13C2-8:2FTS	88%		20-180%
	13C3-HFPO-DA	99%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-8-15.0	Date Sampled:	02/06/24
Lab Sample ID:	FC13254-7	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	85.9
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2594.D	1	02/20/24 01:34	MV	02/14/24 08:40	OP1626	S7Q42
Run #2							

Run #	Initial Weight	Final Volume
Run #1	5.04 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.92	0.58	ug/kg	J
2706-90-3	Perfluoropentanoic acid	0.13	0.46	0.12	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.23	0.12	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.23	0.12	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.23	0.12	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.23	0.13	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.23	0.12	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.23	0.15	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.23	0.12	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.23	0.12	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.23	0.12	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.23	0.12	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.23	0.18	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.23	0.18	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.23	0.17	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.23	0.12	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.23	0.21	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.23	0.17	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.23	0.17	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.92	0.46	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.92	0.46	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.92	0.69	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.23	0.12	ug/kg	
31506-32-8	MeFOSA	ND	0.23	0.16	ug/kg	
4151-50-2	EtFOSA	ND	0.23	0.12	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-8-15.0		
Lab Sample ID:	FC13254-7	Date Sampled:	02/06/24
Matrix:	SO - Soil	Date Received:	02/09/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	85.9
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.23	0.18	ug/kg	
2991-50-6	EtFOSAA	ND	0.23	0.23	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.3	1.2	ug/kg	
1691-99-2	EtFOSE	ND	2.3	1.2	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.92	0.33	ug/kg	
919005-14-4	ADONA	ND	0.92	0.39	ug/kg	
377-73-1	PFMPA	ND	0.46	0.23	ug/kg	
863090-89-5	PFMBA	ND	0.46	0.23	ug/kg	
151772-58-6	NFDHA	ND	0.46	0.28	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.92	0.51	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.92	0.46	ug/kg	
113507-82-7	PFEESA	ND	0.46	0.23	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.2	0.59	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.8	1.3	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.8	1.5	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	85%		20-150%
	13C5-PFPeA	81%		20-150%
	13C5-PFHxA	85%		20-150%
	13C4-PFHpA	88%		20-150%
	13C8-PFOA	84%		20-150%
	13C9-PFNA	79%		20-150%
	13C6-PFDA	87%		20-150%
	13C7-PFUnDA	87%		20-150%
	13C2-PFDoDA	85%		20-150%
	13C2-PFTeDA	81%		20-150%
	13C3-PFBS	77%		20-150%
	13C3-PFHxS	80%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-8-15.0	Date Sampled:	02/06/24
Lab Sample ID:	FC13254-7	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	85.9
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	82%		20-150%
	13C8-FOSA	84%		20-150%
	d3-MeFOSA	77%		20-150%
	d5-EtFOSA	83%		20-150%
	d3-MeFOSAA	93%		20-150%
	d5-EtFOSAA	87%		20-150%
	d7-MeFOSE	84%		20-150%
	d9-EtFOSE	86%		20-150%
	13C2-4:2FTS	65%		20-180%
	13C2-6:2FTS	83%		20-180%
	13C2-8:2FTS	90%		20-180%
	13C3-HFPO-DA	90%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-8-20.0	Date Sampled:	02/06/24
Lab Sample ID:	FC13254-8	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	86.6
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2595.D	1	02/20/24 01:48	MV	02/14/24 08:40	OP1626	S7Q42
Run #2							

Run #	Initial Weight	Final Volume
Run #1	5.01 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.92	0.58	ug/kg	
2706-90-3	Perfluoropentanoic acid	0.19	0.46	0.12	ug/kg	J
307-24-4	Perfluorohexanoic acid	0.13	0.23	0.12	ug/kg	J
375-85-9	Perfluoroheptanoic acid	ND	0.23	0.12	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.23	0.12	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.23	0.13	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.23	0.12	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.23	0.15	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.23	0.12	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.23	0.12	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.23	0.12	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.23	0.12	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.23	0.18	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	0.23	0.23	0.18	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.23	0.17	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.23	0.12	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.23	0.21	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.23	0.16	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.23	0.17	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.92	0.46	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.92	0.46	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.92	0.69	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.23	0.12	ug/kg	
31506-32-8	MeFOSA	ND	0.23	0.16	ug/kg	
4151-50-2	EtFOSA	ND	0.23	0.12	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-8-20.0		
Lab Sample ID:	FC13254-8	Date Sampled:	02/06/24
Matrix:	SO - Soil	Date Received:	02/09/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	86.6
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.23	0.18	ug/kg	
2991-50-6	EtFOSAA	ND	0.23	0.23	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.3	1.2	ug/kg	
1691-99-2	EtFOSE	ND	2.3	1.2	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.92	0.33	ug/kg	
919005-14-4	ADONA	ND	0.92	0.39	ug/kg	
377-73-1	PFMPA	ND	0.46	0.23	ug/kg	
863090-89-5	PFMBA	ND	0.46	0.23	ug/kg	
151772-58-6	NFDHA	ND	0.46	0.28	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.92	0.51	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.92	0.46	ug/kg	
113507-82-7	PFEESA	ND	0.46	0.23	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.2	0.59	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.8	1.3	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.8	1.5	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	95%		20-150%
	13C5-PFPeA	89%		20-150%
	13C5-PFHxA	94%		20-150%
	13C4-PFHpA	93%		20-150%
	13C8-PFOA	95%		20-150%
	13C9-PFNA	86%		20-150%
	13C6-PFDA	97%		20-150%
	13C7-PFUnDA	98%		20-150%
	13C2-PFDoDA	94%		20-150%
	13C2-PFTeDA	90%		20-150%
	13C3-PFBS	91%		20-150%
	13C3-PFHxS	93%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-8-20.0	Date Sampled:	02/06/24
Lab Sample ID:	FC13254-8	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	86.6
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	86%		20-150%
	13C8-FOSA	88%		20-150%
	d3-MeFOSA	88%		20-150%
	d5-EtFOSA	89%		20-150%
	d3-MeFOSAA	93%		20-150%
	d5-EtFOSAA	97%		20-150%
	d7-MeFOSE	93%		20-150%
	d9-EtFOSE	93%		20-150%
	13C2-4:2FTS	77%		20-180%
	13C2-6:2FTS	97%		20-180%
	13C2-8:2FTS	111%		20-180%
	13C3-HFPO-DA	102%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-8-25.0	Date Sampled:	02/06/24
Lab Sample ID:	FC13254-9	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	85.1
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2596.D	1	02/20/24 02:01	MV	02/14/24 08:40	OP1626	S7Q42
Run #2							

Run #	Initial Weight	Final Volume
Run #1	4.96 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.95	0.59	ug/kg	
2706-90-3	Perfluoropentanoic acid	0.20	0.47	0.12	ug/kg	J
307-24-4	Perfluorohexanoic acid	0.13	0.24	0.12	ug/kg	J
375-85-9	Perfluoroheptanoic acid	ND	0.24	0.12	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.24	0.12	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.24	0.14	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.24	0.12	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.24	0.16	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.24	0.12	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.24	0.12	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.24	0.12	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.24	0.12	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.24	0.19	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	0.25	0.24	0.19	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.24	0.17	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.24	0.12	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.24	0.21	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.24	0.17	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.24	0.18	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.95	0.47	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.95	0.47	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.95	0.71	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.24	0.12	ug/kg	
31506-32-8	MeFOSA	ND	0.24	0.16	ug/kg	
4151-50-2	EtFOSA	ND	0.24	0.12	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-8-25.0		
Lab Sample ID:	FC13254-9	Date Sampled:	02/06/24
Matrix:	SO - Soil	Date Received:	02/09/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	85.1
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.24	0.19	ug/kg	
2991-50-6	EtFOSAA	ND	0.24	0.23	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.4	1.2	ug/kg	
1691-99-2	EtFOSE	ND	2.4	1.2	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.95	0.34	ug/kg	
919005-14-4	ADONA	ND	0.95	0.40	ug/kg	
377-73-1	PFMPA	ND	0.47	0.24	ug/kg	
863090-89-5	PFMBA	ND	0.47	0.24	ug/kg	
151772-58-6	NFDHA	ND	0.47	0.29	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.95	0.52	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.95	0.47	ug/kg	
113507-82-7	PFEESA	ND	0.47	0.24	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.2	0.60	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.9	1.4	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.9	1.5	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	90%		20-150%
	13C5-PFPeA	87%		20-150%
	13C5-PFHxA	90%		20-150%
	13C4-PFHpA	93%		20-150%
	13C8-PFOA	89%		20-150%
	13C9-PFNA	83%		20-150%
	13C6-PFDA	91%		20-150%
	13C7-PFUnDA	94%		20-150%
	13C2-PFDoDA	88%		20-150%
	13C2-PFTeDA	84%		20-150%
	13C3-PFBS	83%		20-150%
	13C3-PFHxS	88%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-8-25.0	Date Sampled:	02/06/24
Lab Sample ID:	FC13254-9	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	85.1
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	87%		20-150%
	13C8-FOSA	85%		20-150%
	d3-MeFOSA	92%		20-150%
	d5-EtFOSA	91%		20-150%
	d3-MeFOSAA	90%		20-150%
	d5-EtFOSAA	94%		20-150%
	d7-MeFOSE	89%		20-150%
	d9-EtFOSE	94%		20-150%
	13C2-4:2FTS	71%		20-180%
	13C2-6:2FTS	88%		20-180%
	13C2-8:2FTS	101%		20-180%
	13C3-HFPO-DA	102%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-8-27.5	Date Sampled:	02/06/24
Lab Sample ID:	FC13254-10	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	87.1
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2597.D	1	02/20/24 02:15	MV	02/14/24 08:40	OP1626	S7Q42
Run #2							

Run #	Initial Weight	Final Volume
Run #1	5.04 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.91	0.57	ug/kg	
2706-90-3	Perfluoropentanoic acid	0.28	0.46	0.11	ug/kg	J
307-24-4	Perfluorohexanoic acid	0.17	0.23	0.11	ug/kg	J
375-85-9	Perfluoroheptanoic acid	ND	0.23	0.11	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.23	0.11	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.23	0.13	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.23	0.11	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.23	0.15	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.23	0.11	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.23	0.12	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.23	0.11	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.23	0.11	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.23	0.18	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.23	0.18	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.23	0.17	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.23	0.11	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.23	0.21	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.23	0.16	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.23	0.17	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.91	0.46	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	0.54	0.91	0.46	ug/kg	J
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.91	0.68	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.23	0.11	ug/kg	
31506-32-8	MeFOSA	ND	0.23	0.15	ug/kg	
4151-50-2	EtFOSA	ND	0.23	0.12	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-8-27.5	Date Sampled:	02/06/24
Lab Sample ID:	FC13254-10	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	87.1
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.23	0.18	ug/kg	
2991-50-6	EtFOSAA	ND	0.23	0.22	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.3	1.1	ug/kg	
1691-99-2	EtFOSE	ND	2.3	1.1	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.91	0.33	ug/kg	
919005-14-4	ADONA	ND	0.91	0.38	ug/kg	
377-73-1	PFMPA	ND	0.46	0.23	ug/kg	
863090-89-5	PFMBA	ND	0.46	0.23	ug/kg	
151772-58-6	NFDHA	ND	0.46	0.28	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.91	0.50	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.91	0.46	ug/kg	
113507-82-7	PFEESA	ND	0.46	0.23	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.1	0.58	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.7	1.3	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.7	1.4	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	92%		20-150%
	13C5-PFPeA	88%		20-150%
	13C5-PFHxA	93%		20-150%
	13C4-PFHpA	91%		20-150%
	13C8-PFOA	91%		20-150%
	13C9-PFNA	91%		20-150%
	13C6-PFDA	92%		20-150%
	13C7-PFUnDA	95%		20-150%
	13C2-PFDoDA	89%		20-150%
	13C2-PFTeDA	85%		20-150%
	13C3-PFBS	88%		20-150%
	13C3-PFHxS	89%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-8-27.5	Date Sampled:	02/06/24
Lab Sample ID:	FC13254-10	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	87.1
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	86%		20-150%
	13C8-FOSA	91%		20-150%
	d3-MeFOSA	90%		20-150%
	d5-EtFOSA	95%		20-150%
	d3-MeFOSAA	102%		20-150%
	d5-EtFOSAA	103%		20-150%
	d7-MeFOSE	94%		20-150%
	d9-EtFOSE	96%		20-150%
	13C2-4:2FTS	79%		20-180%
	13C2-6:2FTS	93%		20-180%
	13C2-8:2FTS	102%		20-180%
	13C3-HFPO-DA	104%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

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4

Report of Analysis

Client Sample ID:	FP-MW-9-5.0	Date Sampled:	02/06/24
Lab Sample ID:	FC13254-11	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	78.0
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2598.D	1	02/20/24 02:29	MV	02/14/24 08:40	OP1626	S7Q42
Run #2							

Run #	Initial Weight	Final Volume
Run #1	5.04 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	1.0	0.64	ug/kg	J
2706-90-3	Perfluoropentanoic acid	0.26	0.51	0.13	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.25	0.13	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.25	0.13	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.25	0.13	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.25	0.15	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.25	0.13	ug/kg	
2058-94-8	Perfluoroundecanoic acid	0.31	0.25	0.17	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.25	0.13	ug/kg	
72629-94-8	Perfluorotridecanoic acid	0.28	0.25	0.13	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.25	0.13	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.25	0.13	ug/kg
2706-91-4	Perfluoropentanesulfonic acid	ND	0.25	0.20	ug/kg
355-46-4	Perfluorohexanesulfonic acid	0.29	0.25	0.20	ug/kg
375-92-8	Perfluoroheptanesulfonic acid	ND	0.25	0.18	ug/kg
1763-23-1	Perfluorooctanesulfonic acid	2.9	0.25	0.13	ug/kg
68259-12-1	Perfluorononanesulfonic acid	ND	0.25	0.23	ug/kg
335-77-3	Perfluorodecanesulfonic acid	ND	0.25	0.18	ug/kg
79780-39-5	Perfluorododecanesulfonic aci	ND	0.25	0.19	ug/kg

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	1.0	0.51	ug/kg
27619-97-2	6:2 Fluorotelomer sulfonate	ND	1.0	0.51	ug/kg
39108-34-4	8:2 Fluorotelomer sulfonate	ND	1.0	0.76	ug/kg

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.25	0.13	ug/kg
31506-32-8	MeFOSA	ND	0.25	0.17	ug/kg
4151-50-2	EtFOSA	ND	0.25	0.13	ug/kg

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-9-5.0	Date Sampled:	02/06/24
Lab Sample ID:	FC13254-11	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	78.0
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.25	0.20	ug/kg	
2991-50-6	EtFOSAA	ND	0.25	0.25	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.5	1.3	ug/kg	
1691-99-2	EtFOSE	ND	2.5	1.3	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	1.0	0.37	ug/kg	
919005-14-4	ADONA	ND	1.0	0.43	ug/kg	
377-73-1	PFMPA	ND	0.51	0.25	ug/kg	
863090-89-5	PFMBA	ND	0.51	0.25	ug/kg	
151772-58-6	NFDHA	ND	0.51	0.31	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	1.0	0.56	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	1.0	0.51	ug/kg	
113507-82-7	PFEESA	ND	0.51	0.25	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.3	0.65	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	6.4	1.5	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	6.4	1.6	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	86%		20-150%
	13C5-PFPeA	84%		20-150%
	13C5-PFHxA	88%		20-150%
	13C4-PFHpA	88%		20-150%
	13C8-PFOA	84%		20-150%
	13C9-PFNA	79%		20-150%
	13C6-PFDA	92%		20-150%
	13C7-PFUnDA	87%		20-150%
	13C2-PFDoDA	86%		20-150%
	13C2-PFTeDA	93%		20-150%
	13C3-PFBS	84%		20-150%
	13C3-PFHxS	85%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-9-5.0	Date Sampled:	02/06/24
Lab Sample ID:	FC13254-11	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	78.0
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	84%		20-150%
	13C8-FOSA	87%		20-150%
	d3-MeFOSA	85%		20-150%
	d5-EtFOSA	82%		20-150%
	d3-MeFOSAA	93%		20-150%
	d5-EtFOSAA	85%		20-150%
	d7-MeFOSE	91%		20-150%
	d9-EtFOSE	89%		20-150%
	13C2-4:2FTS	67%		20-180%
	13C2-6:2FTS	71%		20-180%
	13C2-8:2FTS	76%		20-180%
	13C3-HFPO-DA	94%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.11
4

Report of Analysis

Client Sample ID:	FP-MW-9-10.0	Date Sampled:	02/06/24
Lab Sample ID:	FC13254-12	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	83.9
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2599.D	1	02/20/24 02:43	MV	02/14/24 08:40	OP1626	S7Q42
Run #2							

Run #	Initial Weight	Final Volume
Run #1	5.05 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.94	0.59	ug/kg	
2706-90-3	Perfluoropentanoic acid	0.31	0.47	0.12	ug/kg	J
307-24-4	Perfluorohexanoic acid	0.16	0.24	0.12	ug/kg	J
375-85-9	Perfluoroheptanoic acid	ND	0.24	0.12	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.24	0.12	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.24	0.14	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.24	0.12	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.24	0.16	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.24	0.12	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.24	0.12	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.24	0.12	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.24	0.12	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.24	0.19	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.24	0.19	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.24	0.17	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.24	0.12	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.24	0.21	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.24	0.17	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.24	0.18	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.94	0.47	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	1.7	0.94	0.47	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.94	0.71	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.24	0.12	ug/kg	
31506-32-8	MeFOSA	ND	0.24	0.16	ug/kg	
4151-50-2	EtFOSA	ND	0.24	0.12	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-9-10.0		
Lab Sample ID:	FC13254-12	Date Sampled:	02/06/24
Matrix:	SO - Soil	Date Received:	02/09/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	83.9
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.24	0.19	ug/kg	
2991-50-6	EtFOSAA	ND	0.24	0.23	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.4	1.2	ug/kg	
1691-99-2	EtFOSE	ND	2.4	1.2	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.94	0.34	ug/kg	
919005-14-4	ADONA	ND	0.94	0.40	ug/kg	
377-73-1	PFMPA	ND	0.47	0.24	ug/kg	
863090-89-5	PFMBA	ND	0.47	0.24	ug/kg	
151772-58-6	NFDHA	ND	0.47	0.29	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.94	0.52	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.94	0.47	ug/kg	
113507-82-7	PFEESA	ND	0.47	0.24	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.2	0.60	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.9	1.4	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.9	1.5	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	94%		20-150%
	13C5-PFPeA	92%		20-150%
	13C5-PFHxA	97%		20-150%
	13C4-PFHpA	96%		20-150%
	13C8-PFOA	93%		20-150%
	13C9-PFNA	87%		20-150%
	13C6-PFDA	97%		20-150%
	13C7-PFUnDA	100%		20-150%
	13C2-PFDoDA	89%		20-150%
	13C2-PFTeDA	88%		20-150%
	13C3-PFBS	83%		20-150%
	13C3-PFHxS	87%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-9-10.0	Date Sampled:	02/06/24
Lab Sample ID:	FC13254-12	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	83.9
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	86%		20-150%
	13C8-FOSA	90%		20-150%
	d3-MeFOSA	83%		20-150%
	d5-EtFOSA	86%		20-150%
	d3-MeFOSAA	99%		20-150%
	d5-EtFOSAA	100%		20-150%
	d7-MeFOSE	93%		20-150%
	d9-EtFOSE	97%		20-150%
	13C2-4:2FTS	69%		20-180%
	13C2-6:2FTS	92%		20-180%
	13C2-8:2FTS	94%		20-180%
	13C3-HFPO-DA	102%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.12
4

Report of Analysis

Client Sample ID:	FP-MW-9-15.0	Date Sampled:	02/06/24
Lab Sample ID:	FC13254-13	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	86.0
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2600.D	1	02/20/24 02:57	MV	02/14/24 08:40	OP1626	S7Q42
Run #2							

	Initial Weight	Final Volume
Run #1	5.04 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.92	0.58	ug/kg	
2706-90-3	Perfluoropentanoic acid	0.47	0.46	0.12	ug/kg	
307-24-4	Perfluorohexanoic acid	0.23	0.23	0.12	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.23	0.12	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.23	0.12	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.23	0.13	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.23	0.12	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.23	0.15	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.23	0.12	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.23	0.12	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.23	0.12	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.23	0.12	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.23	0.18	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.23	0.18	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.23	0.17	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.23	0.12	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.23	0.21	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.23	0.16	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.23	0.17	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.92	0.46	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	0.99	0.92	0.46	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.92	0.69	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.23	0.12	ug/kg	
31506-32-8	MeFOSA	ND	0.23	0.16	ug/kg	
4151-50-2	EtFOSA	ND	0.23	0.12	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-9-15.0		
Lab Sample ID:	FC13254-13	Date Sampled:	02/06/24
Matrix:	SO - Soil	Date Received:	02/09/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	86.0
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.23	0.18	ug/kg	
2991-50-6	EtFOSAA	ND	0.23	0.23	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.3	1.2	ug/kg	
1691-99-2	EtFOSE	ND	2.3	1.2	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.92	0.33	ug/kg	
919005-14-4	ADONA	ND	0.92	0.39	ug/kg	
377-73-1	PFMPA	ND	0.46	0.23	ug/kg	
863090-89-5	PFMBA	ND	0.46	0.23	ug/kg	
151772-58-6	NFDHA	ND	0.46	0.28	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.92	0.51	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.92	0.46	ug/kg	
113507-82-7	PFEESA	ND	0.46	0.23	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.2	0.59	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.8	1.3	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.8	1.5	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	80%		20-150%
	13C5-PFPeA	75%		20-150%
	13C5-PFHxA	79%		20-150%
	13C4-PFHpA	81%		20-150%
	13C8-PFOA	79%		20-150%
	13C9-PFNA	77%		20-150%
	13C6-PFDA	85%		20-150%
	13C7-PFUnDA	82%		20-150%
	13C2-PFDoDA	75%		20-150%
	13C2-PFTeDA	74%		20-150%
	13C3-PFBS	71%		20-150%
	13C3-PFHxS	73%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-9-15.0	Date Sampled:	02/06/24
Lab Sample ID:	FC13254-13	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	86.0
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	73%		20-150%
	13C8-FOSA	76%		20-150%
	d3-MeFOSA	80%		20-150%
	d5-EtFOSA	81%		20-150%
	d3-MeFOSAA	87%		20-150%
	d5-EtFOSAA	86%		20-150%
	d7-MeFOSE	80%		20-150%
	d9-EtFOSE	83%		20-150%
	13C2-4:2FTS	63%		20-180%
	13C2-6:2FTS	79%		20-180%
	13C2-8:2FTS	85%		20-180%
	13C3-HFPO-DA	86%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.13
4

Report of Analysis

Client Sample ID:	FP-MW-9-20.0	Date Sampled:	02/06/24
Lab Sample ID:	FC13254-14	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	89.6
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2603.D	1	02/20/24 03:38	MV	02/14/24 08:40	OP1626	S7Q42
Run #2							

Run #	Initial Weight	Final Volume
Run #1	5.04 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.89	0.55	ug/kg	
2706-90-3	Perfluoropentanoic acid	0.24	0.44	0.11	ug/kg	J
307-24-4	Perfluorohexanoic acid	0.12	0.22	0.11	ug/kg	J
375-85-9	Perfluoroheptanoic acid	ND	0.22	0.11	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.22	0.11	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.22	0.13	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.22	0.11	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.22	0.15	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.22	0.11	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.22	0.11	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.22	0.11	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.22	0.11	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.22	0.17	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.22	0.18	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.22	0.16	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.22	0.11	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.22	0.20	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.22	0.16	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.22	0.17	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.89	0.44	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	0.77	0.89	0.44	ug/kg	J
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.89	0.66	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.22	0.11	ug/kg	
31506-32-8	MeFOSA	ND	0.22	0.15	ug/kg	
4151-50-2	EtFOSA	ND	0.22	0.11	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-9-20.0		
Lab Sample ID:	FC13254-14	Date Sampled:	02/06/24
Matrix:	SO - Soil	Date Received:	02/09/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	89.6
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.22	0.17	ug/kg	
2991-50-6	EtFOSAA	ND	0.22	0.22	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.2	1.1	ug/kg	
1691-99-2	EtFOSE	ND	2.2	1.1	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.89	0.32	ug/kg	
919005-14-4	ADONA	ND	0.89	0.37	ug/kg	
377-73-1	PFMPA	ND	0.44	0.22	ug/kg	
863090-89-5	PFMBA	ND	0.44	0.22	ug/kg	
151772-58-6	NFDHA	ND	0.44	0.27	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.89	0.49	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.89	0.44	ug/kg	
113507-82-7	PFEESA	ND	0.44	0.22	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.1	0.56	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.5	1.3	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.5	1.4	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	90%		20-150%
	13C5-PFPeA	89%		20-150%
	13C5-PFHxA	92%		20-150%
	13C4-PFHpA	93%		20-150%
	13C8-PFOA	90%		20-150%
	13C9-PFNA	83%		20-150%
	13C6-PFDA	94%		20-150%
	13C7-PFUnDA	99%		20-150%
	13C2-PFDoDA	88%		20-150%
	13C2-PFTeDA	88%		20-150%
	13C3-PFBS	81%		20-150%
	13C3-PFHxS	84%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-9-20.0	Date Sampled:	02/06/24
Lab Sample ID:	FC13254-14	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	89.6
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	90%		20-150%
	13C8-FOSA	86%		20-150%
	d3-MeFOSA	88%		20-150%
	d5-EtFOSA	91%		20-150%
	d3-MeFOSAA	94%		20-150%
	d5-EtFOSAA	99%		20-150%
	d7-MeFOSE	88%		20-150%
	d9-EtFOSE	92%		20-150%
	13C2-4:2FTS	69%		20-180%
	13C2-6:2FTS	87%		20-180%
	13C2-8:2FTS	92%		20-180%
	13C3-HFPO-DA	98%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.14
4

Report of Analysis

Client Sample ID:	FP-MW-9-25.0	Date Sampled:	02/06/24
Lab Sample ID:	FC13254-15	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	87.9
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2604.D	1	02/20/24 03:52	MV	02/14/24 08:40	OP1626	S7Q42
Run #2							

	Initial Weight	Final Volume
Run #1	4.97 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.92	0.57	ug/kg	
2706-90-3	Perfluoropentanoic acid	0.26	0.46	0.11	ug/kg	J
307-24-4	Perfluorohexanoic acid	0.15	0.23	0.11	ug/kg	J
375-85-9	Perfluoroheptanoic acid	ND	0.23	0.11	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.23	0.11	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.23	0.13	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.23	0.11	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.23	0.15	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.23	0.11	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.23	0.12	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.23	0.11	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.23	0.11	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.23	0.18	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.23	0.18	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.23	0.17	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.23	0.11	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.23	0.21	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.23	0.16	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.23	0.17	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.92	0.46	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	0.75	0.92	0.46	ug/kg	J
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.92	0.69	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.23	0.11	ug/kg	
31506-32-8	MeFOSA	ND	0.23	0.16	ug/kg	
4151-50-2	EtFOSA	ND	0.23	0.12	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-9-25.0		
Lab Sample ID:	FC13254-15	Date Sampled:	02/06/24
Matrix:	SO - Soil	Date Received:	02/09/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	87.9
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.23	0.18	ug/kg	
2991-50-6	EtFOSAA	ND	0.23	0.23	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.3	1.1	ug/kg	
1691-99-2	EtFOSE	ND	2.3	1.1	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.92	0.33	ug/kg	
919005-14-4	ADONA	ND	0.92	0.38	ug/kg	
377-73-1	PFMPA	ND	0.46	0.23	ug/kg	
863090-89-5	PFMBA	ND	0.46	0.23	ug/kg	
151772-58-6	NFDHA	ND	0.46	0.28	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.92	0.50	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.92	0.46	ug/kg	
113507-82-7	PFEESA	ND	0.46	0.23	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.1	0.58	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.7	1.3	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.7	1.5	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	90%		20-150%
	13C5-PFPeA	88%		20-150%
	13C5-PFHxA	90%		20-150%
	13C4-PFHpA	93%		20-150%
	13C8-PFOA	88%		20-150%
	13C9-PFNA	83%		20-150%
	13C6-PFDA	92%		20-150%
	13C7-PFUnDA	99%		20-150%
	13C2-PFDoDA	88%		20-150%
	13C2-PFTeDA	85%		20-150%
	13C3-PFBS	78%		20-150%
	13C3-PFHxS	81%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-9-25.0	Date Sampled:	02/06/24
Lab Sample ID:	FC13254-15	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	87.9
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	85%		20-150%
	13C8-FOSA	85%		20-150%
	d3-MeFOSA	91%		20-150%
	d5-EtFOSA	96%		20-150%
	d3-MeFOSAA	95%		20-150%
	d5-EtFOSAA	95%		20-150%
	d7-MeFOSE	92%		20-150%
	d9-EtFOSE	95%		20-150%
	13C2-4:2FTS	62%		20-180%
	13C2-6:2FTS	82%		20-180%
	13C2-8:2FTS	99%		20-180%
	13C3-HFPO-DA	98%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.15
4

Report of Analysis

Client Sample ID:	FP-MW-10-5.0	Date Sampled:	02/07/24
Lab Sample ID:	FC13254-16	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	90.4
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2605.D	1	02/20/24 04:06	MV	02/14/24 08:40	OP1626	S7Q42
Run #2							

Run #	Initial Weight	Final Volume
Run #1	4.95 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.89	0.56	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.45	0.11	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.22	0.11	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.22	0.11	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.22	0.11	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.22	0.13	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.22	0.11	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.22	0.15	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.22	0.11	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.22	0.11	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.22	0.11	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.22	0.11	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.22	0.18	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.22	0.18	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.22	0.16	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.22	0.11	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.22	0.20	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.22	0.16	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.22	0.17	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.89	0.45	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.89	0.45	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.89	0.67	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.22	0.11	ug/kg	
31506-32-8	MeFOSA	ND	0.22	0.15	ug/kg	
4151-50-2	EtFOSA	ND	0.22	0.11	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-10-5.0		
Lab Sample ID:	FC13254-16	Date Sampled:	02/07/24
Matrix:	SO - Soil	Date Received:	02/09/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	90.4
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.22	0.18	ug/kg	
2991-50-6	EtFOSAA	ND	0.22	0.22	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.2	1.1	ug/kg	
1691-99-2	EtFOSE	ND	2.2	1.1	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.89	0.32	ug/kg	
919005-14-4	ADONA	ND	0.89	0.38	ug/kg	
377-73-1	PFMPA	ND	0.45	0.22	ug/kg	
863090-89-5	PFMBA	ND	0.45	0.22	ug/kg	
151772-58-6	NFDHA	ND	0.45	0.27	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.89	0.49	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.89	0.45	ug/kg	
113507-82-7	PFEESA	ND	0.45	0.22	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.1	0.57	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.6	1.3	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.6	1.4	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	82%		20-150%
	13C5-PFPeA	78%		20-150%
	13C5-PFHxA	82%		20-150%
	13C4-PFHpA	84%		20-150%
	13C8-PFOA	79%		20-150%
	13C9-PFNA	79%		20-150%
	13C6-PFDA	80%		20-150%
	13C7-PFUnDA	85%		20-150%
	13C2-PFDoDA	77%		20-150%
	13C2-PFTeDA	71%		20-150%
	13C3-PFBS	73%		20-150%
	13C3-PFHxS	74%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-10-5.0	Date Sampled:	02/07/24
Lab Sample ID:	FC13254-16	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	90.4
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	79%		20-150%
	13C8-FOSA	78%		20-150%
	d3-MeFOSA	69%		20-150%
	d5-EtFOSA	71%		20-150%
	d3-MeFOSAA	83%		20-150%
	d5-EtFOSAA	89%		20-150%
	d7-MeFOSE	80%		20-150%
	d9-EtFOSE	81%		20-150%
	13C2-4:2FTS	65%		20-180%
	13C2-6:2FTS	82%		20-180%
	13C2-8:2FTS	84%		20-180%
	13C3-HFPO-DA	91%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.16
4

Report of Analysis

Client Sample ID:	FP-MW-10-10.0	Date Sampled:	02/07/24
Lab Sample ID:	FC13254-17	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	85.6
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2608.D	1	02/20/24 04:47	MV	02/14/24 08:40	OP1626	S7Q42
Run #2							

Run #	Initial Weight	Final Volume
Run #1	4.97 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.94	0.59	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.47	0.12	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.24	0.12	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.24	0.12	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.24	0.12	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.24	0.14	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.24	0.12	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.24	0.16	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.24	0.12	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.24	0.12	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.24	0.12	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.24	0.12	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.24	0.18	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.24	0.19	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.24	0.17	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.24	0.12	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.24	0.21	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.24	0.17	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.24	0.18	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.94	0.47	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.94	0.47	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.94	0.71	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.24	0.12	ug/kg	
31506-32-8	MeFOSA	ND	0.24	0.16	ug/kg	
4151-50-2	EtFOSA	ND	0.24	0.12	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-10-10.0	Date Sampled:	02/07/24
Lab Sample ID:	FC13254-17	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	85.6
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.24	0.19	ug/kg	
2991-50-6	EtFOSAA	ND	0.24	0.23	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.4	1.2	ug/kg	
1691-99-2	EtFOSE	ND	2.4	1.2	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.94	0.34	ug/kg	
919005-14-4	ADONA	ND	0.94	0.39	ug/kg	
377-73-1	PFMPA	ND	0.47	0.24	ug/kg	
863090-89-5	PFMBA	ND	0.47	0.24	ug/kg	
151772-58-6	NFDHA	ND	0.47	0.29	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.94	0.52	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.94	0.47	ug/kg	
113507-82-7	PFEESA	ND	0.47	0.24	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.2	0.60	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.9	1.4	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.9	1.5	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	78%		20-150%
	13C5-PFPeA	76%		20-150%
	13C5-PFHxA	79%		20-150%
	13C4-PFHpA	81%		20-150%
	13C8-PFOA	74%		20-150%
	13C9-PFNA	73%		20-150%
	13C6-PFDA	73%		20-150%
	13C7-PFUnDA	81%		20-150%
	13C2-PFDoDA	71%		20-150%
	13C2-PFTeDA	75%		20-150%
	13C3-PFBS	68%		20-150%
	13C3-PFHxS	72%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-10-10.0	Date Sampled:	02/07/24
Lab Sample ID:	FC13254-17	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	85.6
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	74%		20-150%
	13C8-FOSA	75%		20-150%
	d3-MeFOSA	67%		20-150%
	d5-EtFOSA	69%		20-150%
	d3-MeFOSAA	87%		20-150%
	d5-EtFOSAA	83%		20-150%
	d7-MeFOSE	76%		20-150%
	d9-EtFOSE	78%		20-150%
	13C2-4:2FTS	62%		20-180%
	13C2-6:2FTS	71%		20-180%
	13C2-8:2FTS	79%		20-180%
	13C3-HFPO-DA	85%		20-150%

ND = Not detectedMDL = Method Detection LimitJ = Indicates an estimated value

RL = Reporting LimitB = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration rangeN = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-10-15.0	Date Sampled:	02/07/24
Lab Sample ID:	FC13254-18	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	86.3
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2609.D	1	02/20/24 05:01	MV	02/14/24 08:40	OP1626	S7Q42
Run #2							

Run #	Initial Weight	Final Volume
Run #1	5.03 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.92	0.58	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.46	0.12	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.23	0.12	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.23	0.12	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.23	0.12	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.23	0.13	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.23	0.12	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.23	0.15	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.23	0.12	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.23	0.12	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.23	0.12	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.23	0.12	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.23	0.18	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.23	0.18	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.23	0.17	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.18	0.23	0.12	ug/kg	J
68259-12-1	Perfluorononanesulfonic acid	ND	0.23	0.21	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.23	0.16	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.23	0.17	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.92	0.46	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.92	0.46	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.92	0.69	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.23	0.12	ug/kg	
31506-32-8	MeFOSA	ND	0.23	0.16	ug/kg	
4151-50-2	EtFOSA	ND	0.23	0.12	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-10-15.0		
Lab Sample ID:	FC13254-18	Date Sampled:	02/07/24
Matrix:	SO - Soil	Date Received:	02/09/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	86.3
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.23	0.18	ug/kg	
2991-50-6	EtFOSAA	ND	0.23	0.23	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.3	1.2	ug/kg	
1691-99-2	EtFOSE	ND	2.3	1.2	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.92	0.33	ug/kg	
919005-14-4	ADONA	ND	0.92	0.39	ug/kg	
377-73-1	PFMPA	ND	0.46	0.23	ug/kg	
863090-89-5	PFMBA	ND	0.46	0.23	ug/kg	
151772-58-6	NFDHA	ND	0.46	0.28	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.92	0.51	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.92	0.46	ug/kg	
113507-82-7	PFEESA	ND	0.46	0.23	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.2	0.59	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.8	1.3	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.8	1.5	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	83%		20-150%
	13C5-PFPeA	80%		20-150%
	13C5-PFHxA	83%		20-150%
	13C4-PFHpA	83%		20-150%
	13C8-PFOA	82%		20-150%
	13C9-PFNA	78%		20-150%
	13C6-PFDA	84%		20-150%
	13C7-PFUnDA	85%		20-150%
	13C2-PFDoDA	79%		20-150%
	13C2-PFTeDA	76%		20-150%
	13C3-PFBS	75%		20-150%
	13C3-PFHxS	75%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-10-15.0	Date Sampled:	02/07/24
Lab Sample ID:	FC13254-18	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	86.3
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	76%		20-150%
	13C8-FOSA	78%		20-150%
	d3-MeFOSA	73%		20-150%
	d5-EtFOSA	74%		20-150%
	d3-MeFOSAA	91%		20-150%
	d5-EtFOSAA	91%		20-150%
	d7-MeFOSE	79%		20-150%
	d9-EtFOSE	82%		20-150%
	13C2-4:2FTS	66%		20-180%
	13C2-6:2FTS	81%		20-180%
	13C2-8:2FTS	92%		20-180%
	13C3-HFPO-DA	86%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.18
4

Report of Analysis

Client Sample ID:	FP-MW-10-20.0	Date Sampled:	02/07/24
Lab Sample ID:	FC13254-19	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	88.8
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2610.D	1	02/20/24 05:15	MV	02/14/24 08:40	OP1626	S7Q42
Run #2							

Run #	Initial Weight	Final Volume
Run #1	5.00 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.90	0.56	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.45	0.11	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.23	0.11	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.23	0.11	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.23	0.11	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.23	0.13	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.23	0.11	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.23	0.15	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.23	0.11	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.23	0.11	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.23	0.11	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.23	0.11	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.23	0.18	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.23	0.18	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.23	0.16	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.30	0.23	0.11	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.23	0.20	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.23	0.16	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.23	0.17	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.90	0.45	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.90	0.45	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.90	0.68	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.23	0.11	ug/kg	
31506-32-8	MeFOSA	ND	0.23	0.15	ug/kg	
4151-50-2	EtFOSA	ND	0.23	0.11	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-10-20.0	Date Sampled:	02/07/24
Lab Sample ID:	FC13254-19	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	88.8
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.23	0.18	ug/kg	
2991-50-6	EtFOSAA	ND	0.23	0.22	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.3	1.1	ug/kg	
1691-99-2	EtFOSE	ND	2.3	1.1	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.90	0.33	ug/kg	
919005-14-4	ADONA	ND	0.90	0.38	ug/kg	
377-73-1	PFMPA	ND	0.45	0.23	ug/kg	
863090-89-5	PFMBA	ND	0.45	0.23	ug/kg	
151772-58-6	NFDHA	ND	0.45	0.27	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.90	0.49	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.90	0.45	ug/kg	
113507-82-7	PFEESA	ND	0.45	0.23	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.1	0.57	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.6	1.3	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.6	1.4	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	82%		20-150%
	13C5-PFPeA	77%		20-150%
	13C5-PFHxA	80%		20-150%
	13C4-PFHpA	82%		20-150%
	13C8-PFOA	79%		20-150%
	13C9-PFNA	77%		20-150%
	13C6-PFDA	81%		20-150%
	13C7-PFUnDA	81%		20-150%
	13C2-PFDoDA	76%		20-150%
	13C2-PFTeDA	75%		20-150%
	13C3-PFBS	73%		20-150%
	13C3-PFHxS	74%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-10-20.0	Date Sampled:	02/07/24
Lab Sample ID:	FC13254-19	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	88.8
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	73%		20-150%
	13C8-FOSA	76%		20-150%
	d3-MeFOSA	71%		20-150%
	d5-EtFOSA	76%		20-150%
	d3-MeFOSAA	88%		20-150%
	d5-EtFOSAA	90%		20-150%
	d7-MeFOSE	77%		20-150%
	d9-EtFOSE	81%		20-150%
	13C2-4:2FTS	63%		20-180%
	13C2-6:2FTS	81%		20-180%
	13C2-8:2FTS	86%		20-180%
	13C3-HFPO-DA	91%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.19
4

Report of Analysis

Client Sample ID:	FP-MW-11-5.0	Date Sampled:	02/05/24
Lab Sample ID:	FC13254-20	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	87.8
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2625.D	1	02/20/24 14:10	MV	02/15/24 08:25	OP1652	S7Q43
Run #2							

Run #	Initial Weight	Final Volume
Run #1	4.96 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.92	0.57	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.46	0.11	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.23	0.11	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.23	0.11	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.23	0.11	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.23	0.13	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.23	0.11	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.23	0.15	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.23	0.11	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.23	0.12	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.23	0.11	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.23	0.11	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.23	0.18	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.23	0.18	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.23	0.17	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	1.5	0.23	0.11	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.23	0.21	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.23	0.16	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.23	0.17	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.92	0.46	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.92	0.46	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.92	0.69	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.23	0.11	ug/kg	
31506-32-8	MeFOSA	ND	0.23	0.16	ug/kg	
4151-50-2	EtFOSA	ND	0.23	0.12	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-11-5.0		
Lab Sample ID:	FC13254-20	Date Sampled:	02/05/24
Matrix:	SO - Soil	Date Received:	02/09/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	87.8
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.23	0.18	ug/kg	
2991-50-6	EtFOSAA	ND	0.23	0.23	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.3	1.1	ug/kg	
1691-99-2	EtFOSE	ND	2.3	1.1	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.92	0.33	ug/kg	
919005-14-4	ADONA	ND	0.92	0.39	ug/kg	
377-73-1	PFMPA	ND	0.46	0.23	ug/kg	
863090-89-5	PFMBA	ND	0.46	0.23	ug/kg	
151772-58-6	NFDHA	ND	0.46	0.28	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.92	0.50	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.92	0.46	ug/kg	
113507-82-7	PFEESA	ND	0.46	0.23	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.1	0.58	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.7	1.3	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.7	1.5	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	92%		20-150%
	13C5-PFPeA	89%		20-150%
	13C5-PFHxA	94%		20-150%
	13C4-PFHpA	94%		20-150%
	13C8-PFOA	89%		20-150%
	13C9-PFNA	86%		20-150%
	13C6-PFDA	98%		20-150%
	13C7-PFUnDA	94%		20-150%
	13C2-PFDoDA	89%		20-150%
	13C2-PFTeDA	86%		20-150%
	13C3-PFBS	86%		20-150%
	13C3-PFHxS	88%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-11-5.0	Date Sampled:	02/05/24
Lab Sample ID:	FC13254-20	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	87.8
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	90%		20-150%
	13C8-FOSA	89%		20-150%
	d3-MeFOSA	92%		20-150%
	d5-EtFOSA	94%		20-150%
	d3-MeFOSAA	91%		20-150%
	d5-EtFOSAA	96%		20-150%
	d7-MeFOSE	93%		20-150%
	d9-EtFOSE	97%		20-150%
	13C2-4:2FTS	72%		20-180%
	13C2-6:2FTS	83%		20-180%
	13C2-8:2FTS	102%		20-180%
	13C3-HFPO-DA	99%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.20
4

Report of Analysis

Client Sample ID:	FP-MW-11-10.0	Date Sampled:	02/05/24
Lab Sample ID:	FC13254-21	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	85.7
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2626.D	1	02/20/24 14:24	MV	02/15/24 08:25	OP1652	S7Q43
Run #2							

	Initial Weight	Final Volume
Run #1	5.04 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.93	0.58	ug/kg	J
2706-90-3	Perfluoropentanoic acid	0.18	0.46	0.12	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.23	0.12	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.23	0.12	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.23	0.12	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.23	0.13	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.23	0.12	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.23	0.15	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.23	0.12	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.23	0.12	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.23	0.12	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.23	0.12	ug/kg
2706-91-4	Perfluoropentanesulfonic acid	ND	0.23	0.18	ug/kg
355-46-4	Perfluorohexanesulfonic acid	ND	0.23	0.18	ug/kg
375-92-8	Perfluoroheptanesulfonic acid	ND	0.23	0.17	ug/kg
1763-23-1	Perfluorooctanesulfonic acid	3.5	0.23	0.12	ug/kg
68259-12-1	Perfluorononanesulfonic acid	ND	0.23	0.21	ug/kg
335-77-3	Perfluorodecanesulfonic acid	ND	0.23	0.17	ug/kg
79780-39-5	Perfluorododecanesulfonic aci	ND	0.23	0.17	ug/kg

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.93	0.46	ug/kg
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.93	0.46	ug/kg
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.93	0.69	ug/kg

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.23	0.12	ug/kg
31506-32-8	MeFOSA	ND	0.23	0.16	ug/kg
4151-50-2	EtFOSA	ND	0.23	0.12	ug/kg

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-11-10.0		
Lab Sample ID:	FC13254-21	Date Sampled:	02/05/24
Matrix:	SO - Soil	Date Received:	02/09/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	85.7
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.23	0.18	ug/kg	
2991-50-6	EtFOSAA	ND	0.23	0.23	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.3	1.2	ug/kg	
1691-99-2	EtFOSE	ND	2.3	1.2	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.93	0.33	ug/kg	
919005-14-4	ADONA	ND	0.93	0.39	ug/kg	
377-73-1	PFMPA	ND	0.46	0.23	ug/kg	
863090-89-5	PFMBA	ND	0.46	0.23	ug/kg	
151772-58-6	NFDHA	ND	0.46	0.28	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.93	0.51	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.93	0.46	ug/kg	
113507-82-7	PFEESA	ND	0.46	0.23	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.2	0.59	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.8	1.3	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.8	1.5	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	92%		20-150%
	13C5-PFPeA	87%		20-150%
	13C5-PFHxA	91%		20-150%
	13C4-PFHpA	93%		20-150%
	13C8-PFOA	93%		20-150%
	13C9-PFNA	86%		20-150%
	13C6-PFDA	94%		20-150%
	13C7-PFUnDA	96%		20-150%
	13C2-PFDoDA	88%		20-150%
	13C2-PFTeDA	87%		20-150%
	13C3-PFBS	88%		20-150%
	13C3-PFHxS	91%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-11-10.0	Date Sampled:	02/05/24
Lab Sample ID:	FC13254-21	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	85.7
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	86%		20-150%
	13C8-FOSA	88%		20-150%
	d3-MeFOSA	82%		20-150%
	d5-EtFOSA	88%		20-150%
	d3-MeFOSAA	93%		20-150%
	d5-EtFOSAA	96%		20-150%
	d7-MeFOSE	90%		20-150%
	d9-EtFOSE	91%		20-150%
	13C2-4:2FTS	73%		20-180%
	13C2-6:2FTS	91%		20-180%
	13C2-8:2FTS	100%		20-180%
	13C3-HFPO-DA	99%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.21
4

Report of Analysis

Client Sample ID:	FP-MW-11-15.0	Date Sampled:	02/05/24
Lab Sample ID:	FC13254-22	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	89.5
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2627.D	1	02/20/24 14:38	MV	02/15/24 08:25	OP1652	S7Q43
Run #2							

	Initial Weight	Final Volume
Run #1	5.01 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.89	0.56	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.45	0.11	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.22	0.11	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.22	0.11	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.22	0.11	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.22	0.13	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.22	0.11	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.22	0.15	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.22	0.11	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.22	0.11	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.22	0.11	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.22	0.11	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.22	0.18	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.22	0.18	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.22	0.16	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	1.8	0.22	0.11	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.22	0.20	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.22	0.16	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.22	0.17	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.89	0.45	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.89	0.45	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.89	0.67	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.22	0.11	ug/kg	
31506-32-8	MeFOSA	ND	0.22	0.15	ug/kg	
4151-50-2	EtFOSA	ND	0.22	0.11	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-11-15.0		
Lab Sample ID:	FC13254-22	Date Sampled:	02/05/24
Matrix:	SO - Soil	Date Received:	02/09/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	89.5
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.22	0.18	ug/kg	
2991-50-6	EtFOSAA	ND	0.22	0.22	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.2	1.1	ug/kg	
1691-99-2	EtFOSE	ND	2.2	1.1	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.89	0.32	ug/kg	
919005-14-4	ADONA	ND	0.89	0.37	ug/kg	
377-73-1	PFMPA	ND	0.45	0.22	ug/kg	
863090-89-5	PFMBA	ND	0.45	0.22	ug/kg	
151772-58-6	NFDHA	ND	0.45	0.27	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.89	0.49	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.89	0.45	ug/kg	
113507-82-7	PFEESA	ND	0.45	0.22	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.1	0.57	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.6	1.3	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.6	1.4	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	88%		20-150%
	13C5-PFPeA	83%		20-150%
	13C5-PFHxA	86%		20-150%
	13C4-PFHpA	87%		20-150%
	13C8-PFOA	88%		20-150%
	13C9-PFNA	82%		20-150%
	13C6-PFDA	87%		20-150%
	13C7-PFUnDA	92%		20-150%
	13C2-PFDoDA	85%		20-150%
	13C2-PFTeDA	85%		20-150%
	13C3-PFBS	81%		20-150%
	13C3-PFHxS	84%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-11-15.0	Date Sampled:	02/05/24
Lab Sample ID:	FC13254-22	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	89.5
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	80%		20-150%
	13C8-FOSA	79%		20-150%
	d3-MeFOSA	83%		20-150%
	d5-EtFOSA	83%		20-150%
	d3-MeFOSAA	91%		20-150%
	d5-EtFOSAA	92%		20-150%
	d7-MeFOSE	85%		20-150%
	d9-EtFOSE	89%		20-150%
	13C2-4:2FTS	69%		20-180%
	13C2-6:2FTS	83%		20-180%
	13C2-8:2FTS	91%		20-180%
	13C3-HFPO-DA	94%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-11-20.0	Date Sampled:	02/05/24
Lab Sample ID:	FC13254-23	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	90.4
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2628.D	1	02/20/24 14:52	MV	02/15/24 08:25	OP1652	S7Q43
Run #2							

Run #	Initial Weight	Final Volume
Run #1	4.96 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.89	0.56	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.45	0.11	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.22	0.11	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.22	0.11	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.22	0.11	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.22	0.13	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.22	0.11	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.22	0.15	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.22	0.11	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.22	0.11	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.22	0.11	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.22	0.11	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.22	0.18	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.22	0.18	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.22	0.16	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.15	0.22	0.11	ug/kg	J
68259-12-1	Perfluorononanesulfonic acid	ND	0.22	0.20	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.22	0.16	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.22	0.17	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.89	0.45	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.89	0.45	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.89	0.67	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.22	0.11	ug/kg	
31506-32-8	MeFOSA	ND	0.22	0.15	ug/kg	
4151-50-2	EtFOSA	ND	0.22	0.11	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-11-20.0	Date Sampled:	02/05/24
Lab Sample ID:	FC13254-23	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	90.4
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.22	0.18	ug/kg	
2991-50-6	EtFOSAA	ND	0.22	0.22	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.2	1.1	ug/kg	
1691-99-2	EtFOSE	ND	2.2	1.1	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.89	0.32	ug/kg	
919005-14-4	ADONA	ND	0.89	0.37	ug/kg	
377-73-1	PFMPA	ND	0.45	0.22	ug/kg	
863090-89-5	PFMBA	ND	0.45	0.22	ug/kg	
151772-58-6	NFDHA	ND	0.45	0.27	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.89	0.49	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.89	0.45	ug/kg	
113507-82-7	PFEESA	ND	0.45	0.22	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.1	0.57	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.6	1.3	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.6	1.4	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	90%		20-150%
	13C5-PFPeA	85%		20-150%
	13C5-PFHxA	88%		20-150%
	13C4-PFHpA	91%		20-150%
	13C8-PFOA	85%		20-150%
	13C9-PFNA	84%		20-150%
	13C6-PFDA	93%		20-150%
	13C7-PFUnDA	97%		20-150%
	13C2-PFDoDA	89%		20-150%
	13C2-PFTeDA	82%		20-150%
	13C3-PFBS	85%		20-150%
	13C3-PFHxS	88%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-11-20.0	Date Sampled:	02/05/24
Lab Sample ID:	FC13254-23	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	90.4
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	80%		20-150%
	13C8-FOSA	88%		20-150%
	d3-MeFOSA	88%		20-150%
	d5-EtFOSA	93%		20-150%
	d3-MeFOSAA	95%		20-150%
	d5-EtFOSAA	93%		20-150%
	d7-MeFOSE	92%		20-150%
	d9-EtFOSE	96%		20-150%
	13C2-4:2FTS	70%		20-180%
	13C2-6:2FTS	85%		20-180%
	13C2-8:2FTS	92%		20-180%
	13C3-HFPO-DA	96%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.23
4

Report of Analysis

Client Sample ID:	FP-MW-12-5.0	Date Sampled:	02/05/24
Lab Sample ID:	FC13254-24	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	83.5
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2629.D	1	02/20/24 15:06	MV	02/15/24 08:25	OP1652	S7Q43
Run #2	7Q2698.D	2	02/21/24 16:01	MV	02/15/24 08:25	OP1652	S7Q44

	Initial Weight	Final Volume
Run #1	5.03 g	5.0 ml
Run #2	5.03 g	5.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.95	0.60	ug/kg	
2706-90-3	Perfluoropentanoic acid	0.17	0.48	0.12	ug/kg	J
307-24-4	Perfluorohexanoic acid	0.17	0.24	0.12	ug/kg	J
375-85-9	Perfluoroheptanoic acid	ND	0.24	0.12	ug/kg	
335-67-1	Perfluorooctanoic acid	0.14	0.24	0.12	ug/kg	J
375-95-1	Perfluorononanoic acid	ND	0.24	0.14	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.24	0.12	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.24	0.16	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.24	0.12	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.24	0.12	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.24	0.12	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	0.16	0.24	0.12	ug/kg	J
2706-91-4	Perfluoropentanesulfonic acid	0.34	0.24	0.19	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	5.7	0.24	0.19	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	0.93	0.24	0.17	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	75.4 ^a	0.48	0.24	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.24	0.22	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.24	0.17	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.24	0.18	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.95	0.48	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.95	0.48	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.95	0.71	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.24	0.12	ug/kg	
31506-32-8	MeFOSA	ND	0.24	0.16	ug/kg	
4151-50-2	EtFOSA	ND	0.24	0.12	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-12-5.0	Date Sampled:	02/05/24
Lab Sample ID:	FC13254-24	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	83.5
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.24	0.19	ug/kg	
2991-50-6	EtFOSAA	ND	0.24	0.23	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.4	1.2	ug/kg	
1691-99-2	EtFOSE	ND	2.4	1.2	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.95	0.34	ug/kg	
919005-14-4	ADONA	ND	0.95	0.40	ug/kg	
377-73-1	PFMPA	ND	0.48	0.24	ug/kg	
863090-89-5	PFMBA	ND	0.48	0.24	ug/kg	
151772-58-6	NFDHA	ND	0.48	0.29	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.95	0.52	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.95	0.48	ug/kg	
113507-82-7	PFEESA	ND	0.48	0.24	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.2	0.61	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	6.0	1.4	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	6.0	1.5	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	89%	88%	20-150%
	13C5-PFPeA	84%	82%	20-150%
	13C5-PFHxA	88%	88%	20-150%
	13C4-PFHpA	90%	89%	20-150%
	13C8-PFOA	86%	85%	20-150%
	13C9-PFNA	85%	81%	20-150%
	13C6-PFDA	96%	90%	20-150%
	13C7-PFUnDA	95%	91%	20-150%
	13C2-PFDoDA	92%	82%	20-150%
	13C2-PFTeDA	98%	78%	20-150%
	13C3-PFBS	83%	84%	20-150%
	13C3-PFHxS	88%	80%	20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-12-5.0	Date Sampled:	02/05/24
Lab Sample ID:	FC13254-24	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	83.5
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	77%	82%	20-150%
	13C8-FOSA	85%	70%	20-150%
	d3-MeFOSA	81%	66%	20-150%
	d5-EtFOSA	83%	65%	20-150%
	d3-MeFOSAA	92%	97%	20-150%
	d5-EtFOSAA	91%	91%	20-150%
	d7-MeFOSE	87%	76%	20-150%
	d9-EtFOSE	88%	70%	20-150%
	13C2-4:2FTS	69%	67%	20-180%
	13C2-6:2FTS	82%	83%	20-180%
	13C2-8:2FTS	91%	80%	20-180%
	13C3-HFPO-DA	99%	92%	20-150%

(a) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.24
4

Report of Analysis

Client Sample ID:	FP-MW-12-10.0	Date Sampled:	02/05/24
Lab Sample ID:	FC13254-25	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	88.1
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2701.D	1	02/21/24 16:43	MV	02/15/24 08:25	OP1652	S7Q44
Run #2							

Run #	Initial Weight	Final Volume
Run #1	5.01 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.91	0.57	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.45	0.11	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.23	0.11	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.23	0.11	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.23	0.11	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.23	0.13	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.23	0.11	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.23	0.15	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.23	0.11	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.23	0.12	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.23	0.11	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.23	0.11	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.23	0.18	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	1.4	0.23	0.18	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	0.19	0.23	0.16	ug/kg	J
1763-23-1	Perfluorooctanesulfonic acid	15.8	0.23	0.11	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.23	0.21	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.23	0.16	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.23	0.17	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.91	0.45	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.91	0.45	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.91	0.68	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.23	0.11	ug/kg	
31506-32-8	MeFOSA	ND	0.23	0.15	ug/kg	
4151-50-2	EtFOSA	ND	0.23	0.11	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-12-10.0		
Lab Sample ID:	FC13254-25	Date Sampled:	02/05/24
Matrix:	SO - Soil	Date Received:	02/09/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	88.1
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.23	0.18	ug/kg	
2991-50-6	EtFOSAA	ND	0.23	0.22	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.3	1.1	ug/kg	
1691-99-2	EtFOSE	ND	2.3	1.1	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.91	0.33	ug/kg	
919005-14-4	ADONA	ND	0.91	0.38	ug/kg	
377-73-1	PFMPA	ND	0.45	0.23	ug/kg	
863090-89-5	PFMBA	ND	0.45	0.23	ug/kg	
151772-58-6	NFDHA	ND	0.45	0.28	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.91	0.50	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.91	0.45	ug/kg	
113507-82-7	PFEESA	ND	0.45	0.23	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.1	0.58	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.7	1.3	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.7	1.4	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	89%		20-150%
	13C5-PFPeA	83%		20-150%
	13C5-PFHxA	87%		20-150%
	13C4-PFHpA	93%		20-150%
	13C8-PFOA	89%		20-150%
	13C9-PFNA	86%		20-150%
	13C6-PFDA	91%		20-150%
	13C7-PFUnDA	95%		20-150%
	13C2-PFDoDA	89%		20-150%
	13C2-PFTeDA	73%		20-150%
	13C3-PFBS	83%		20-150%
	13C3-PFHxS	88%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-12-10.0	Date Sampled:	02/05/24
Lab Sample ID:	FC13254-25	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	88.1
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	82%		20-150%
	13C8-FOSA	73%		20-150%
	d3-MeFOSA	70%		20-150%
	d5-EtFOSA	66%		20-150%
	d3-MeFOSAA	91%		20-150%
	d5-EtFOSAA	92%		20-150%
	d7-MeFOSE	81%		20-150%
	d9-EtFOSE	76%		20-150%
	13C2-4:2FTS	76%		20-180%
	13C2-6:2FTS	94%		20-180%
	13C2-8:2FTS	88%		20-180%
	13C3-HFPO-DA	96%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.25
4

Report of Analysis

Client Sample ID:	FP-MW-12-15.0	Date Sampled:	02/05/24
Lab Sample ID:	FC13254-26	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	84.0
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2631.D	1	02/20/24 15:33	MV	02/15/24 08:25	OP1652	S7Q43
Run #2							

Run #	Initial Weight	Final Volume
Run #1	4.99 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.95	0.60	ug/kg	J
2706-90-3	Perfluoropentanoic acid	0.19	0.48	0.12	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.24	0.12	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.24	0.12	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.24	0.12	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.24	0.14	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.24	0.12	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.24	0.16	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.24	0.12	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.24	0.12	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.24	0.12	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.24	0.12	ug/kg	J
2706-91-4	Perfluoropentanesulfonic acid	ND	0.24	0.19	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	2.6	0.24	0.19	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	0.31	0.24	0.17	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	35.3	0.24	0.12	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.24	0.22	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	0.18	0.24	0.17	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.24	0.18	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.95	0.48	ug/kg
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.95	0.48	ug/kg
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.95	0.72	ug/kg

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.24	0.12	ug/kg
31506-32-8	MeFOSA	ND	0.24	0.16	ug/kg
4151-50-2	EtFOSA	ND	0.24	0.12	ug/kg

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-12-15.0	Date Sampled:	02/05/24
Lab Sample ID:	FC13254-26	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	84.0
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.24	0.19	ug/kg	
2991-50-6	EtFOSAA	ND	0.24	0.23	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.4	1.2	ug/kg	
1691-99-2	EtFOSE	ND	2.4	1.2	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.95	0.34	ug/kg	
919005-14-4	ADONA	ND	0.95	0.40	ug/kg	
377-73-1	PFMPA	ND	0.48	0.24	ug/kg	
863090-89-5	PFMBA	ND	0.48	0.24	ug/kg	
151772-58-6	NFDHA	ND	0.48	0.29	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.95	0.52	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.95	0.48	ug/kg	
113507-82-7	PFEESA	ND	0.48	0.24	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.2	0.61	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	6.0	1.4	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	6.0	1.5	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	90%		20-150%
	13C5-PFPeA	84%		20-150%
	13C5-PFHxA	89%		20-150%
	13C4-PFHpA	89%		20-150%
	13C8-PFOA	88%		20-150%
	13C9-PFNA	85%		20-150%
	13C6-PFDA	92%		20-150%
	13C7-PFUnDA	95%		20-150%
	13C2-PFDoDA	91%		20-150%
	13C2-PFTeDA	89%		20-150%
	13C3-PFBS	86%		20-150%
	13C3-PFHxS	87%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-12-15.0	Date Sampled:	02/05/24
Lab Sample ID:	FC13254-26	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	84.0
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	87%		20-150%
	13C8-FOSA	89%		20-150%
	d3-MeFOSA	83%		20-150%
	d5-EtFOSA	86%		20-150%
	d3-MeFOSAA	96%		20-150%
	d5-EtFOSAA	97%		20-150%
	d7-MeFOSE	90%		20-150%
	d9-EtFOSE	92%		20-150%
	13C2-4:2FTS	71%		20-180%
	13C2-6:2FTS	89%		20-180%
	13C2-8:2FTS	96%		20-180%
	13C3-HFPO-DA	100%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.26
4

Report of Analysis

Client Sample ID:	FP-MW-12-20.0	Date Sampled:	02/05/24
Lab Sample ID:	FC13254-27	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	85.4
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2634.D	1	02/20/24 16:15	MV	02/15/24 08:25	OP1652	S7Q43
Run #2							

Run #	Initial Weight	Final Volume
Run #1	5.02 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.93	0.58	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.47	0.12	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.23	0.12	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.23	0.12	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.23	0.12	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.23	0.13	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.23	0.12	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.23	0.16	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.23	0.12	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.23	0.12	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.23	0.12	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.23	0.12	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.23	0.18	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.23	0.19	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.23	0.17	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.23	0.12	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.23	0.21	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.23	0.17	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.23	0.17	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.93	0.47	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.93	0.47	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.93	0.70	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.23	0.12	ug/kg	
31506-32-8	MeFOSA	ND	0.23	0.16	ug/kg	
4151-50-2	EtFOSA	ND	0.23	0.12	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-12-20.0	Date Sampled:	02/05/24
Lab Sample ID:	FC13254-27	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	85.4
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.23	0.18	ug/kg	
2991-50-6	EtFOSAA	ND	0.23	0.23	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.3	1.2	ug/kg	
1691-99-2	EtFOSE	ND	2.3	1.2	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.93	0.34	ug/kg	
919005-14-4	ADONA	ND	0.93	0.39	ug/kg	
377-73-1	PFMPA	ND	0.47	0.23	ug/kg	
863090-89-5	PFMBA	ND	0.47	0.23	ug/kg	
151772-58-6	NFDHA	ND	0.47	0.28	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.93	0.51	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.93	0.47	ug/kg	
113507-82-7	PFEESA	ND	0.47	0.23	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.2	0.59	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.8	1.3	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.8	1.5	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	94%		20-150%
	13C5-PFPeA	88%		20-150%
	13C5-PFHxA	92%		20-150%
	13C4-PFHpA	92%		20-150%
	13C8-PFOA	92%		20-150%
	13C9-PFNA	85%		20-150%
	13C6-PFDA	96%		20-150%
	13C7-PFUnDA	98%		20-150%
	13C2-PFDoDA	92%		20-150%
	13C2-PFTeDA	88%		20-150%
	13C3-PFBS	84%		20-150%
	13C3-PFHxS	87%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-12-20.0	Date Sampled:	02/05/24
Lab Sample ID:	FC13254-27	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	85.4
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	84%		20-150%
	13C8-FOSA	86%		20-150%
	d3-MeFOSA	85%		20-150%
	d5-EtFOSA	89%		20-150%
	d3-MeFOSAA	101%		20-150%
	d5-EtFOSAA	98%		20-150%
	d7-MeFOSE	87%		20-150%
	d9-EtFOSE	91%		20-150%
	13C2-4:2FTS	70%		20-180%
	13C2-6:2FTS	88%		20-180%
	13C2-8:2FTS	94%		20-180%
	13C3-HFPO-DA	102%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.27
4

Report of Analysis

Client Sample ID:	FP-MW-12-25.0	Date Sampled:	02/05/24
Lab Sample ID:	FC13254-28	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	87.6
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2635.D	1	02/20/24 16:28	MV	02/15/24 08:25	OP1652	S7Q43
Run #2							

Run #	Initial Weight	Final Volume
Run #1	5.00 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.91	0.57	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.46	0.11	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.23	0.11	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.23	0.11	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.23	0.11	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.23	0.13	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.23	0.11	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.23	0.15	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.23	0.11	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.23	0.12	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.23	0.11	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.23	0.11	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.23	0.18	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.23	0.18	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.23	0.17	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.23	0.11	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.23	0.21	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.23	0.16	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.23	0.17	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.91	0.46	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.91	0.46	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.91	0.68	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.23	0.11	ug/kg	
31506-32-8	MeFOSA	ND	0.23	0.16	ug/kg	
4151-50-2	EtFOSA	ND	0.23	0.12	ug/kg	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
 RL = Reporting Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: FP-MW-12-25.0

Lab Sample ID: FC13254-28

Matrix: SO - Soil

Method: EPA DRAFT 1633 EPA 1633 DRAFT

Project: Paine Field; Everett, WA

Date Sampled: 02/05/24

Date Received: 02/09/24

Percent Solids: 87.6

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.23	0.18	ug/kg	
2991-50-6	EtFOSAA	ND	0.23	0.22	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.3	1.1	ug/kg	
1691-99-2	EtFOSE	ND	2.3	1.1	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.91	0.33	ug/kg	
919005-14-4	ADONA	ND	0.91	0.38	ug/kg	
377-73-1	PFMPA	ND	0.46	0.23	ug/kg	
863090-89-5	PFMBA	ND	0.46	0.23	ug/kg	
151772-58-6	NFDHA	ND	0.46	0.28	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.91	0.50	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.91	0.46	ug/kg	
113507-82-7	PFEESA	ND	0.46	0.23	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.1	0.58	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.7	1.3	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.7	1.4	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	94%		20-150%
	13C5-PFPeA	90%		20-150%
	13C5-PFHxA	92%		20-150%
	13C4-PFHpA	96%		20-150%
	13C8-PFOA	91%		20-150%
	13C9-PFNA	88%		20-150%
	13C6-PFDA	94%		20-150%
	13C7-PFUnDA	97%		20-150%
	13C2-PFDoDA	93%		20-150%
	13C2-PFTeDA	88%		20-150%
	13C3-PFBS	83%		20-150%
	13C3-PFHxS	87%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW-12-25.0	Date Sampled:	02/05/24
Lab Sample ID:	FC13254-28	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	87.6
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	86%		20-150%
	13C8-FOSA	89%		20-150%
	d3-MeFOSA	88%		20-150%
	d5-EtFOSA	90%		20-150%
	d3-MeFOSAA	97%		20-150%
	d5-EtFOSAA	100%		20-150%
	d7-MeFOSE	91%		20-150%
	d9-EtFOSE	93%		20-150%
	13C2-4:2FTS	71%		20-180%
	13C2-6:2FTS	89%		20-180%
	13C2-8:2FTS	95%		20-180%
	13C3-HFPO-DA	107%		20-150%

ND = Not detectedMDL = Method Detection LimitJ = Indicates an estimated value

RL = Reporting LimitB = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration rangeN = Indicates presumptive evidence of a compound

4.28
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Report of Analysis

Client Sample ID:	FP-B1-5.0	Date Sampled:	02/08/24
Lab Sample ID:	FC13254-23	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	82.7
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2636.D	1	02/20/24 16:42	MV	02/15/24 08:25	OP1652	S7Q43
Run #2							

Run #	Initial Weight	Final Volume
Run #1	5.03 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.96	0.60	ug/kg	J
2706-90-3	Perfluoropentanoic acid	0.44	0.48	0.12	ug/kg	
307-24-4	Perfluorohexanoic acid	0.45	0.24	0.12	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.24	0.12	ug/kg	
335-67-1	Perfluorooctanoic acid	0.26	0.24	0.12	ug/kg	
375-95-1	Perfluorononanoic acid	0.25	0.24	0.14	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.24	0.12	ug/kg	
2058-94-8	Perfluoroundecanoic acid	0.55	0.24	0.16	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.24	0.12	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.24	0.12	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.24	0.12	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.24	0.12	ug/kg	J
2706-91-4	Perfluoropentanesulfonic acid	ND	0.24	0.19	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	4.8	0.24	0.19	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	0.37	0.24	0.17	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	34.6	0.24	0.12	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	0.93	0.24	0.22	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	0.20	0.24	0.17	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.24	0.18	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.96	0.48	ug/kg
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.96	0.48	ug/kg
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.96	0.72	ug/kg

PERFLUOROOCTANE SULFONAMIDES

754-91-6	PFOSA	0.45	0.24	0.12	ug/kg
31506-32-8	MeFOSA	ND	0.24	0.16	ug/kg
4151-50-2	EtFOSA	ND	0.24	0.12	ug/kg

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-B1-5.0		
Lab Sample ID:	FC13254-29	Date Sampled:	02/08/24
Matrix:	SO - Soil	Date Received:	02/09/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	82.7
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.24	0.19	ug/kg	
2991-50-6	EtFOSAA	ND	0.24	0.24	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.4	1.2	ug/kg	
1691-99-2	EtFOSE	ND	2.4	1.2	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.96	0.35	ug/kg	
919005-14-4	ADONA	ND	0.96	0.40	ug/kg	
377-73-1	PFMPA	ND	0.48	0.24	ug/kg	
863090-89-5	PFMBA	ND	0.48	0.24	ug/kg	
151772-58-6	NFDHA	ND	0.48	0.29	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.96	0.53	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.96	0.48	ug/kg	
113507-82-7	PFEESA	ND	0.48	0.24	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.2	0.61	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	6.0	1.4	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	6.0	1.5	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	52%		20-150%
	13C5-PFPeA	50%		20-150%
	13C5-PFHxA	52%		20-150%
	13C4-PFHpA	53%		20-150%
	13C8-PFOA	51%		20-150%
	13C9-PFNA	49%		20-150%
	13C6-PFDA	54%		20-150%
	13C7-PFUnDA	55%		20-150%
	13C2-PFDoDA	53%		20-150%
	13C2-PFTeDA	54%		20-150%
	13C3-PFBS	50%		20-150%
	13C3-PFHxS	52%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-B1-5.0	Date Sampled:	02/08/24
Lab Sample ID:	FC13254-29	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	82.7
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	46%		20-150%
	13C8-FOSA	51%		20-150%
	d3-MeFOSA	46%		20-150%
	d5-EtFOSA	48%		20-150%
	d3-MeFOSAA	57%		20-150%
	d5-EtFOSAA	56%		20-150%
	d7-MeFOSE	50%		20-150%
	d9-EtFOSE	53%		20-150%
	13C2-4:2FTS	39%		20-180%
	13C2-6:2FTS	47%		20-180%
	13C2-8:2FTS	49%		20-180%
	13C3-HFPO-DA	58%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.29
4

Report of Analysis

Client Sample ID:	FP-B1-10.0		
Lab Sample ID:	FC13254-30	Date Sampled:	02/08/24
Matrix:	SO - Soil	Date Received:	02/09/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	87.8
Project:	Paine Field; Everett, WA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2637.D	1	02/20/24 16:56	MV	02/15/24 08:25	OP1652	S7Q43
Run #2							

	Initial Weight	Final Volume
Run #1	5.02 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.91	0.57	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.45	0.11	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.23	0.11	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.23	0.11	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.23	0.11	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.23	0.13	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.23	0.11	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.23	0.15	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.23	0.11	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.23	0.12	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.23	0.11	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.23	0.11	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.23	0.18	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	1.4	0.23	0.18	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.23	0.16	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	7.4	0.23	0.11	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.23	0.21	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.23	0.16	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.23	0.17	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.91	0.45	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.91	0.45	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.91	0.68	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.23	0.11	ug/kg	
31506-32-8	MeFOSA	ND	0.23	0.15	ug/kg	
4151-50-2	EtFOSA	ND	0.23	0.11	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-B1-10.0		
Lab Sample ID:	FC13254-30	Date Sampled:	02/08/24
Matrix:	SO - Soil	Date Received:	02/09/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	87.8
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.23	0.18	ug/kg	
2991-50-6	EtFOSAA	ND	0.23	0.22	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.3	1.1	ug/kg	
1691-99-2	EtFOSE	ND	2.3	1.1	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.91	0.33	ug/kg	
919005-14-4	ADONA	ND	0.91	0.38	ug/kg	
377-73-1	PFMPA	ND	0.45	0.23	ug/kg	
863090-89-5	PFMBA	ND	0.45	0.23	ug/kg	
151772-58-6	NFDHA	ND	0.45	0.28	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.91	0.50	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.91	0.45	ug/kg	
113507-82-7	PFEESA	ND	0.45	0.23	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.1	0.58	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.7	1.3	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.7	1.4	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	92%		20-150%
	13C5-PFPeA	86%		20-150%
	13C5-PFHxA	91%		20-150%
	13C4-PFHpA	93%		20-150%
	13C8-PFOA	89%		20-150%
	13C9-PFNA	84%		20-150%
	13C6-PFDA	94%		20-150%
	13C7-PFUnDA	96%		20-150%
	13C2-PFDoDA	92%		20-150%
	13C2-PFTeDA	92%		20-150%
	13C3-PFBS	83%		20-150%
	13C3-PFHxS	86%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-B1-10.0	Date Sampled:	02/08/24
Lab Sample ID:	FC13254-30	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	87.8
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	81%		20-150%
	13C8-FOSA	89%		20-150%
	d3-MeFOSA	84%		20-150%
	d5-EtFOSA	85%		20-150%
	d3-MeFOSAA	96%		20-150%
	d5-EtFOSAA	97%		20-150%
	d7-MeFOSE	89%		20-150%
	d9-EtFOSE	95%		20-150%
	13C2-4:2FTS	69%		20-180%
	13C2-6:2FTS	87%		20-180%
	13C2-8:2FTS	94%		20-180%
	13C3-HFPO-DA	98%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.30
4

Report of Analysis

Client Sample ID:	FP-B1-15.0		
Lab Sample ID:	FC13254-31	Date Sampled:	02/08/24
Matrix:	SO - Soil	Date Received:	02/09/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	85.7
Project:	Paine Field; Everett, WA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2638.D	1	02/20/24 17:10	MV	02/15/24 08:25	OP1652	S7Q43
Run #2							

	Initial Weight	Final Volume
Run #1	4.96 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.94	0.59	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.47	0.12	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.24	0.12	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.24	0.12	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.24	0.12	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.24	0.14	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.24	0.12	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.24	0.16	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.24	0.12	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.24	0.12	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.24	0.12	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.24	0.12	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.24	0.18	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	2.3	0.24	0.19	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.24	0.17	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.27	0.24	0.12	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.24	0.21	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.24	0.17	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.24	0.18	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.94	0.47	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.94	0.47	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.94	0.71	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.24	0.12	ug/kg	
31506-32-8	MeFOSA	ND	0.24	0.16	ug/kg	
4151-50-2	EtFOSA	ND	0.24	0.12	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-B1-15.0		
Lab Sample ID:	FC13254-31	Date Sampled:	02/08/24
Matrix:	SO - Soil	Date Received:	02/09/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	85.7
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.24	0.19	ug/kg	
2991-50-6	EtFOSAA	ND	0.24	0.23	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.4	1.2	ug/kg	
1691-99-2	EtFOSE	ND	2.4	1.2	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.94	0.34	ug/kg	
919005-14-4	ADONA	ND	0.94	0.40	ug/kg	
377-73-1	PFMPA	ND	0.47	0.24	ug/kg	
863090-89-5	PFMBA	ND	0.47	0.24	ug/kg	
151772-58-6	NFDHA	ND	0.47	0.29	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.94	0.52	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.94	0.47	ug/kg	
113507-82-7	PFEESA	ND	0.47	0.24	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.2	0.60	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.9	1.4	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.9	1.5	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	84%		20-150%
	13C5-PFPeA	80%		20-150%
	13C5-PFHxA	85%		20-150%
	13C4-PFHpA	85%		20-150%
	13C8-PFOA	82%		20-150%
	13C9-PFNA	80%		20-150%
	13C6-PFDA	88%		20-150%
	13C7-PFUnDA	89%		20-150%
	13C2-PFDoDA	85%		20-150%
	13C2-PFTeDA	81%		20-150%
	13C3-PFBS	77%		20-150%
	13C3-PFHxS	81%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-B1-15.0	Date Sampled:	02/08/24
Lab Sample ID:	FC13254-31	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	85.7
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	78%		20-150%
	13C8-FOSA	79%		20-150%
	d3-MeFOSA	74%		20-150%
	d5-EtFOSA	74%		20-150%
	d3-MeFOSAA	88%		20-150%
	d5-EtFOSAA	86%		20-150%
	d7-MeFOSE	82%		20-150%
	d9-EtFOSE	84%		20-150%
	13C2-4:2FTS	66%		20-180%
	13C2-6:2FTS	82%		20-180%
	13C2-8:2FTS	91%		20-180%
	13C3-HFPO-DA	89%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.31
4

Report of Analysis

Client Sample ID:	FP-B1-20.0		
Lab Sample ID:	FC13254-32	Date Sampled:	02/08/24
Matrix:	SO - Soil	Date Received:	02/09/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	91.5
Project:	Paine Field; Everett, WA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2639.D	1	02/20/24 17:24	MV	02/15/24 08:25	OP1652	S7Q43
Run #2							

	Initial Weight	Final Volume
Run #1	4.97 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.88	0.55	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.44	0.11	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.22	0.11	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.22	0.11	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.22	0.11	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.22	0.13	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.22	0.11	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.22	0.15	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.22	0.11	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.22	0.11	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.22	0.11	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.22	0.11	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.22	0.17	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	0.46	0.22	0.17	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.22	0.16	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.22	0.11	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.22	0.20	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.22	0.16	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.22	0.16	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.88	0.44	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.88	0.44	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.88	0.66	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.22	0.11	ug/kg	
31506-32-8	MeFOSA	ND	0.22	0.15	ug/kg	
4151-50-2	EtFOSA	ND	0.22	0.11	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-B1-20.0		
Lab Sample ID:	FC13254-32	Date Sampled:	02/08/24
Matrix:	SO - Soil	Date Received:	02/09/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	91.5
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.22	0.17	ug/kg	
2991-50-6	EtFOSAA	ND	0.22	0.22	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.2	1.1	ug/kg	
1691-99-2	EtFOSE	ND	2.2	1.1	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.88	0.32	ug/kg	
919005-14-4	ADONA	ND	0.88	0.37	ug/kg	
377-73-1	PFMPA	ND	0.44	0.22	ug/kg	
863090-89-5	PFMBA	ND	0.44	0.22	ug/kg	
151772-58-6	NFDHA	ND	0.44	0.27	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.88	0.48	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.88	0.44	ug/kg	
113507-82-7	PFEESA	ND	0.44	0.22	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.1	0.56	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.5	1.3	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.5	1.4	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	95%		20-150%
	13C5-PFPeA	91%		20-150%
	13C5-PFHxA	95%		20-150%
	13C4-PFHpA	95%		20-150%
	13C8-PFOA	91%		20-150%
	13C9-PFNA	88%		20-150%
	13C6-PFDA	93%		20-150%
	13C7-PFUnDA	98%		20-150%
	13C2-PFDoDA	89%		20-150%
	13C2-PFTeDA	93%		20-150%
	13C3-PFBS	89%		20-150%
	13C3-PFHxS	89%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-B1-20.0	Date Sampled:	02/08/24
Lab Sample ID:	FC13254-32	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	91.5
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	83%		20-150%
	13C8-FOSA	87%		20-150%
	d3-MeFOSA	89%		20-150%
	d5-EtFOSA	93%		20-150%
	d3-MeFOSAA	95%		20-150%
	d5-EtFOSAA	96%		20-150%
	d7-MeFOSE	90%		20-150%
	d9-EtFOSE	94%		20-150%
	13C2-4:2FTS	76%		20-180%
	13C2-6:2FTS	90%		20-180%
	13C2-8:2FTS	99%		20-180%
	13C3-HFPO-DA	106%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.32
4

Report of Analysis

Client Sample ID:	FP-B1-25.0		
Lab Sample ID:	FC13254-33	Date Sampled:	02/08/24
Matrix:	SO - Soil	Date Received:	02/09/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	89.9
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2640.D	1	02/20/24 17:38	MV	02/15/24 08:25	OP1652	S7Q43
Run #2							

Run #	Initial Weight	Final Volume
Run #1	4.95 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.90	0.56	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.45	0.11	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.22	0.11	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.22	0.11	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.22	0.11	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.22	0.13	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.22	0.11	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.22	0.15	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.22	0.11	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.22	0.11	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.22	0.11	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.22	0.11	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.22	0.18	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	1.5	0.22	0.18	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.22	0.16	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.22	0.11	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.22	0.20	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.22	0.16	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.22	0.17	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.90	0.45	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.90	0.45	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.90	0.67	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.22	0.11	ug/kg	
31506-32-8	MeFOSA	ND	0.22	0.15	ug/kg	
4151-50-2	EtFOSA	ND	0.22	0.11	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-B1-25.0		
Lab Sample ID:	FC13254-33	Date Sampled:	02/08/24
Matrix:	SO - Soil	Date Received:	02/09/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	89.9
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.22	0.18	ug/kg	
2991-50-6	EtFOSAA	ND	0.22	0.22	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.2	1.1	ug/kg	
1691-99-2	EtFOSE	ND	2.2	1.1	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.90	0.32	ug/kg	
919005-14-4	ADONA	ND	0.90	0.38	ug/kg	
377-73-1	PFMPA	ND	0.45	0.22	ug/kg	
863090-89-5	PFMBA	ND	0.45	0.22	ug/kg	
151772-58-6	NFDHA	ND	0.45	0.27	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.90	0.49	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.90	0.45	ug/kg	
113507-82-7	PFEESA	ND	0.45	0.22	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.1	0.57	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.6	1.3	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.6	1.4	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	91%		20-150%
	13C5-PFPeA	87%		20-150%
	13C5-PFHxA	91%		20-150%
	13C4-PFHpA	93%		20-150%
	13C8-PFOA	90%		20-150%
	13C9-PFNA	85%		20-150%
	13C6-PFDA	93%		20-150%
	13C7-PFUnDA	98%		20-150%
	13C2-PFDoDA	86%		20-150%
	13C2-PFTeDA	86%		20-150%
	13C3-PFBS	82%		20-150%
	13C3-PFHxS	82%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-B1-25.0	Date Sampled:	02/08/24
Lab Sample ID:	FC13254-33	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	89.9
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	80%		20-150%
	13C8-FOSA	84%		20-150%
	d3-MeFOSA	85%		20-150%
	d5-EtFOSA	91%		20-150%
	d3-MeFOSAA	94%		20-150%
	d5-EtFOSAA	95%		20-150%
	d7-MeFOSE	89%		20-150%
	d9-EtFOSE	93%		20-150%
	13C2-4:2FTS	67%		20-180%
	13C2-6:2FTS	86%		20-180%
	13C2-8:2FTS	96%		20-180%
	13C3-HFPO-DA	101%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value

RL = Reporting Limit B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.33
4

Report of Analysis

Client Sample ID:	FP-B1-30.0	Date Sampled:	02/08/24
Lab Sample ID:	FC13254-34	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	90.1
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2641.D	1	02/20/24 17:51	MV	02/15/24 08:25	OP1652	S7Q43
Run #2							

Run #	Initial Weight	Final Volume
Run #1	4.96 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.90	0.56	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.45	0.11	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.22	0.11	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.22	0.11	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.22	0.11	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.22	0.13	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.22	0.11	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.22	0.15	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.22	0.11	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.22	0.11	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.22	0.11	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.22	0.11	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	0.22	0.22	0.18	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	1.5	0.22	0.18	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.22	0.16	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	5.2	0.22	0.11	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.22	0.20	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.22	0.16	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.22	0.17	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.90	0.45	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.90	0.45	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.90	0.67	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.22	0.11	ug/kg	
31506-32-8	MeFOSA	ND	0.22	0.15	ug/kg	
4151-50-2	EtFOSA	ND	0.22	0.11	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-B1-30.0		
Lab Sample ID:	FC13254-34	Date Sampled:	02/08/24
Matrix:	SO - Soil	Date Received:	02/09/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	90.1
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.22	0.18	ug/kg	
2991-50-6	EtFOSAA	ND	0.22	0.22	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.2	1.1	ug/kg	
1691-99-2	EtFOSE	ND	2.2	1.1	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.90	0.32	ug/kg	
919005-14-4	ADONA	ND	0.90	0.38	ug/kg	
377-73-1	PFMPA	ND	0.45	0.22	ug/kg	
863090-89-5	PFMBA	ND	0.45	0.22	ug/kg	
151772-58-6	NFDHA	ND	0.45	0.27	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.90	0.49	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.90	0.45	ug/kg	
113507-82-7	PFEESA	ND	0.45	0.22	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.1	0.57	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.6	1.3	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.6	1.4	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	91%		20-150%
	13C5-PFPeA	87%		20-150%
	13C5-PFHxA	91%		20-150%
	13C4-PFHpA	94%		20-150%
	13C8-PFOA	89%		20-150%
	13C9-PFNA	87%		20-150%
	13C6-PFDA	92%		20-150%
	13C7-PFUnDA	95%		20-150%
	13C2-PFDoDA	88%		20-150%
	13C2-PFTeDA	89%		20-150%
	13C3-PFBS	88%		20-150%
	13C3-PFHxS	89%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-B1-30.0	Date Sampled:	02/08/24
Lab Sample ID:	FC13254-34	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	90.1
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	83%		20-150%
	13C8-FOSA	86%		20-150%
	d3-MeFOSA	85%		20-150%
	d5-EtFOSA	88%		20-150%
	d3-MeFOSAA	89%		20-150%
	d5-EtFOSAA	95%		20-150%
	d7-MeFOSE	86%		20-150%
	d9-EtFOSE	90%		20-150%
	13C2-4:2FTS	74%		20-180%
	13C2-6:2FTS	90%		20-180%
	13C2-8:2FTS	95%		20-180%
	13C3-HFPO-DA	100%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.34
4

Report of Analysis

Client Sample ID:	FP-B2-5.0	Date Sampled:	02/08/24
Lab Sample ID:	FC13254-35	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	89.5
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2642.D	1	02/20/24 18:05	MV	02/15/24 08:25	OP1652	S7Q43
Run #2	7Q2703.D	2	02/21/24 17:10	MV	02/15/24 08:25	OP1652	S7Q44

	Initial Weight	Final Volume
Run #1	5.02 g	5.0 ml
Run #2	5.02 g	5.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.89	0.56	ug/kg	
2706-90-3	Perfluoropentanoic acid	0.35	0.45	0.11	ug/kg	J
307-24-4	Perfluorohexanoic acid	0.27	0.22	0.11	ug/kg	
375-85-9	Perfluoroheptanoic acid	0.37	0.22	0.11	ug/kg	
335-67-1	Perfluorooctanoic acid	1.5	0.22	0.11	ug/kg	
375-95-1	Perfluorononanoic acid	1.9	0.22	0.13	ug/kg	
335-76-2	Perfluorodecanoic acid	1.5	0.22	0.11	ug/kg	
2058-94-8	Perfluoroundecanoic acid	1.3	0.22	0.15	ug/kg	
307-55-1	Perfluorododecanoic acid	0.11	0.22	0.11	ug/kg	J
72629-94-8	Perfluorotridecanoic acid	0.95	0.22	0.11	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.22	0.11	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.22	0.11	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.22	0.17	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	1.9	0.22	0.18	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.22	0.16	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	92.5 ^a	0.45	0.22	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	2.1	0.22	0.20	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	0.86	0.22	0.16	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	0.17	0.22	0.17	ug/kg	J

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.89	0.45	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	1.7	0.89	0.45	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	62.5	0.89	0.67	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	1.6	0.22	0.11	ug/kg	
31506-32-8	MeFOSA	ND	0.22	0.15	ug/kg	
4151-50-2	EtFOSA	ND	0.22	0.11	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-B2-5.0		
Lab Sample ID:	FC13254-35	Date Sampled:	02/08/24
Matrix:	SO - Soil	Date Received:	02/09/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	89.5
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.22	0.18	ug/kg	
2991-50-6	EtFOSAA	ND	0.22	0.22	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.2	1.1	ug/kg	
1691-99-2	EtFOSE	ND	2.2	1.1	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.89	0.32	ug/kg	
919005-14-4	ADONA	ND	0.89	0.37	ug/kg	
377-73-1	PFMPA	ND	0.45	0.22	ug/kg	
863090-89-5	PFMBA	ND	0.45	0.22	ug/kg	
151772-58-6	NFDHA	ND	0.45	0.27	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.89	0.49	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.89	0.45	ug/kg	
113507-82-7	PFEESA	ND	0.45	0.22	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.1	0.57	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.6	1.3	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.6	1.4	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	86%	86%	20-150%
	13C5-PFPeA	82%	78%	20-150%
	13C5-PFHxA	86%	82%	20-150%
	13C4-PFHpA	87%	83%	20-150%
	13C8-PFOA	83%	82%	20-150%
	13C9-PFNA	82%	81%	20-150%
	13C6-PFDA	88%	88%	20-150%
	13C7-PFUnDA	88%	90%	20-150%
	13C2-PFDoDA	83%	84%	20-150%
	13C2-PFTeDA	84%	74%	20-150%
	13C3-PFBS	75%	81%	20-150%
	13C3-PFHxS	79%	83%	20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-B2-5.0	Date Sampled:	02/08/24
Lab Sample ID:	FC13254-35	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	89.5
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	77%	74%	20-150%
	13C8-FOSA	87%	68%	20-150%
	d3-MeFOSA	80%	63%	20-150%
	d5-EtFOSA	85%	61%	20-150%
	d3-MeFOSAA	92%	85%	20-150%
	d5-EtFOSAA	90%	82%	20-150%
	d7-MeFOSE	88%	76%	20-150%
	d9-EtFOSE	91%	71%	20-150%
	13C2-4:2FTS	62%	80%	20-180%
	13C2-6:2FTS	76%	93%	20-180%
	13C2-8:2FTS	89%	92%	20-180%
	13C3-HFPO-DA	93%	87%	20-150%

(a) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
 RL = Reporting Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-B2-10.0		
Lab Sample ID:	FC13254-36	Date Sampled:	02/08/24
Matrix:	SO - Soil	Date Received:	02/09/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	91.3
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2704.D	1	02/21/24 17:24	MV	02/15/24 08:25	OP1652	S7Q44
Run #2							

Run #	Initial Weight	Final Volume
Run #1	5.03 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.87	0.54	ug/kg	
2706-90-3	Perfluoropentanoic acid	0.32	0.44	0.11	ug/kg	J
307-24-4	Perfluorohexanoic acid	0.33	0.22	0.11	ug/kg	
375-85-9	Perfluoroheptanoic acid	0.44	0.22	0.11	ug/kg	
335-67-1	Perfluorooctanoic acid	0.88	0.22	0.11	ug/kg	
375-95-1	Perfluorononanoic acid	0.63	0.22	0.13	ug/kg	
335-76-2	Perfluorodecanoic acid	0.15	0.22	0.11	ug/kg	J
2058-94-8	Perfluoroundecanoic acid	0.17	0.22	0.14	ug/kg	J
307-55-1	Perfluorododecanoic acid	ND	0.22	0.11	ug/kg	
72629-94-8	Perfluorotridecanoic acid	0.13	0.22	0.11	ug/kg	J
376-06-7	Perfluorotetradecanoic acid	ND	0.22	0.11	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.22	0.11	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.22	0.17	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	1.3	0.22	0.17	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.22	0.16	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	37.1	0.22	0.11	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	0.33	0.22	0.20	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.22	0.16	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.22	0.16	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.87	0.44	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	0.97	0.87	0.44	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	31.1	0.87	0.65	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	0.36	0.22	0.11	ug/kg	
31506-32-8	MeFOSA	ND	0.22	0.15	ug/kg	
4151-50-2	EtFOSA	ND	0.22	0.11	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-B2-10.0		
Lab Sample ID:	FC13254-36	Date Sampled:	02/08/24
Matrix:	SO - Soil	Date Received:	02/09/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	91.3
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.22	0.17	ug/kg	
2991-50-6	EtFOSAA	ND	0.22	0.21	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.2	1.1	ug/kg	
1691-99-2	EtFOSE	ND	2.2	1.1	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.87	0.31	ug/kg	
919005-14-4	ADONA	ND	0.87	0.37	ug/kg	
377-73-1	PFMPA	ND	0.44	0.22	ug/kg	
863090-89-5	PFMBA	ND	0.44	0.22	ug/kg	
151772-58-6	NFDHA	ND	0.44	0.27	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.87	0.48	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.87	0.44	ug/kg	
113507-82-7	PFEESA	ND	0.44	0.22	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.1	0.55	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.4	1.3	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.4	1.4	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	92%		20-150%
	13C5-PFPeA	87%		20-150%
	13C5-PFHxA	92%		20-150%
	13C4-PFHpA	94%		20-150%
	13C8-PFOA	91%		20-150%
	13C9-PFNA	85%		20-150%
	13C6-PFDA	98%		20-150%
	13C7-PFUnDA	99%		20-150%
	13C2-PFDoDA	92%		20-150%
	13C2-PFTeDA	75%		20-150%
	13C3-PFBS	85%		20-150%
	13C3-PFHxS	86%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-B2-10.0	Date Sampled:	02/08/24
Lab Sample ID:	FC13254-36	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	91.3
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	84%		20-150%
	13C8-FOSA	75%		20-150%
	d3-MeFOSA	77%		20-150%
	d5-EtFOSA	72%		20-150%
	d3-MeFOSAA	91%		20-150%
	d5-EtFOSAA	92%		20-150%
	d7-MeFOSE	85%		20-150%
	d9-EtFOSE	81%		20-150%
	13C2-4:2FTS	77%		20-180%
	13C2-6:2FTS	93%		20-180%
	13C2-8:2FTS	90%		20-180%
	13C3-HFPO-DA	98%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.36
4

Report of Analysis

Client Sample ID:	FP-B2-15.0		
Lab Sample ID:	FC13254-37	Date Sampled:	02/08/24
Matrix:	SO - Soil	Date Received:	02/09/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	86.3
Project:	Paine Field; Everett, WA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2646.D	1	02/20/24 19:00	MV	02/15/24 08:25	OP1652	S7Q43
Run #2							

	Initial Weight	Final Volume
Run #1	5.00 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.93	0.58	ug/kg	
2706-90-3	Perfluoropentanoic acid	0.18	0.46	0.12	ug/kg	J
307-24-4	Perfluorohexanoic acid	0.18	0.23	0.12	ug/kg	J
375-85-9	Perfluoroheptanoic acid	0.16	0.23	0.12	ug/kg	J
335-67-1	Perfluorooctanoic acid	0.67	0.23	0.12	ug/kg	
375-95-1	Perfluorononanoic acid	1.7	0.23	0.13	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.23	0.12	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.23	0.15	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.23	0.12	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.23	0.12	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.23	0.12	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.23	0.12	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.23	0.18	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	1.3	0.23	0.18	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.23	0.17	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	51.2	0.23	0.12	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.23	0.21	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.23	0.17	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.23	0.17	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.93	0.46	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.93	0.46	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	0.76	0.93	0.70	ug/kg	J

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.23	0.12	ug/kg	
31506-32-8	MeFOSA	ND	0.23	0.16	ug/kg	
4151-50-2	EtFOSA	ND	0.23	0.12	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-B2-15.0		
Lab Sample ID:	FC13254-37	Date Sampled:	02/08/24
Matrix:	SO - Soil	Date Received:	02/09/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	86.3
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.23	0.18	ug/kg	
2991-50-6	EtFOSAA	ND	0.23	0.23	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.3	1.2	ug/kg	
1691-99-2	EtFOSE	ND	2.3	1.2	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.93	0.33	ug/kg	
919005-14-4	ADONA	ND	0.93	0.39	ug/kg	
377-73-1	PFMPA	ND	0.46	0.23	ug/kg	
863090-89-5	PFMBA	ND	0.46	0.23	ug/kg	
151772-58-6	NFDHA	ND	0.46	0.28	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.93	0.51	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.93	0.46	ug/kg	
113507-82-7	PFEESA	ND	0.46	0.23	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.2	0.59	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.8	1.3	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.8	1.5	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	97%		20-150%
	13C5-PFPeA	91%		20-150%
	13C5-PFHxA	96%		20-150%
	13C4-PFHpA	97%		20-150%
	13C8-PFOA	95%		20-150%
	13C9-PFNA	88%		20-150%
	13C6-PFDA	101%		20-150%
	13C7-PFUnDA	100%		20-150%
	13C2-PFDoDA	93%		20-150%
	13C2-PFTeDA	89%		20-150%
	13C3-PFBS	90%		20-150%
	13C3-PFHxS	89%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-B2-15.0	Date Sampled:	02/08/24
Lab Sample ID:	FC13254-37	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	86.3
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	87%		20-150%
	13C8-FOSA	88%		20-150%
	d3-MeFOSA	90%		20-150%
	d5-EtFOSA	94%		20-150%
	d3-MeFOSAA	97%		20-150%
	d5-EtFOSAA	96%		20-150%
	d7-MeFOSE	92%		20-150%
	d9-EtFOSE	96%		20-150%
	13C2-4:2FTS	70%		20-180%
	13C2-6:2FTS	93%		20-180%
	13C2-8:2FTS	100%		20-180%
	13C3-HFPO-DA	110%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.37
4

Report of Analysis

Client Sample ID:	FP-B2-20.0		
Lab Sample ID:	FC13254-38	Date Sampled:	02/08/24
Matrix:	SO - Soil	Date Received:	02/09/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	82.2
Project:	Paine Field; Everett, WA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q2647.D	1	02/20/24 19:14	MV	02/15/24 08:25	OP1652	S7Q43
Run #2							

	Initial Weight	Final Volume
Run #1	4.95 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.98	0.61	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.49	0.12	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.25	0.12	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.25	0.12	ug/kg	
335-67-1	Perfluorooctanoic acid	0.42	0.25	0.12	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.25	0.14	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.25	0.12	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.25	0.16	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.25	0.12	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.25	0.13	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.25	0.12	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.25	0.12	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.25	0.19	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	0.78	0.25	0.20	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.25	0.18	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	6.4	0.25	0.12	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.25	0.22	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.25	0.18	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.25	0.18	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.98	0.49	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.98	0.49	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.98	0.74	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.25	0.12	ug/kg	
31506-32-8	MeFOSA	ND	0.25	0.17	ug/kg	
4151-50-2	EtFOSA	ND	0.25	0.12	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-B2-20.0		
Lab Sample ID:	FC13254-38	Date Sampled:	02/08/24
Matrix:	SO - Soil	Date Received:	02/09/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	82.2
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.25	0.19	ug/kg	
2991-50-6	EtFOSAA	ND	0.25	0.24	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.5	1.2	ug/kg	
1691-99-2	EtFOSE	ND	2.5	1.2	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.98	0.36	ug/kg	
919005-14-4	ADONA	ND	0.98	0.41	ug/kg	
377-73-1	PFMPA	ND	0.49	0.25	ug/kg	
863090-89-5	PFMBA	ND	0.49	0.25	ug/kg	
151772-58-6	NFDHA	ND	0.49	0.30	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.98	0.54	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.98	0.49	ug/kg	
113507-82-7	PFEESA	ND	0.49	0.25	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.2	0.63	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	6.1	1.4	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	6.1	1.6	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	89%		20-150%
	13C5-PFPeA	85%		20-150%
	13C5-PFHxA	90%		20-150%
	13C4-PFHpA	90%		20-150%
	13C8-PFOA	89%		20-150%
	13C9-PFNA	83%		20-150%
	13C6-PFDA	91%		20-150%
	13C7-PFUnDA	94%		20-150%
	13C2-PFDoDA	86%		20-150%
	13C2-PFTeDA	82%		20-150%
	13C3-PFBS	81%		20-150%
	13C3-PFHxS	83%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-B2-20.0	Date Sampled:	02/08/24
Lab Sample ID:	FC13254-38	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	82.2
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	80%		20-150%
	13C8-FOSA	85%		20-150%
	d3-MeFOSA	86%		20-150%
	d5-EtFOSA	91%		20-150%
	d3-MeFOSAA	96%		20-150%
	d5-EtFOSAA	94%		20-150%
	d7-MeFOSE	88%		20-150%
	d9-EtFOSE	91%		20-150%
	13C2-4:2FTS	64%		20-180%
	13C2-6:2FTS	80%		20-180%
	13C2-8:2FTS	93%		20-180%
	13C3-HFPO-DA	95%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-B2-25.0		
Lab Sample ID:	FC13254-39	Date Sampled:	02/08/24
Matrix:	SO - Soil	Date Received:	02/09/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	88.6
Project:	Paine Field; Everett, WA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q31378.D	1	02/24/24 06:50	MV	02/21/24 08:55	OP1753	S6Q442
Run #2							

	Initial Weight	Final Volume
Run #1	5.03 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.90	0.56	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.45	0.11	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.22	0.11	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.22	0.11	ug/kg	
335-67-1	Perfluorooctanoic acid	0.31	0.22	0.11	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.22	0.13	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.22	0.11	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.22	0.15	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.22	0.11	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.22	0.11	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.22	0.11	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.22	0.11	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.22	0.18	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	0.45	0.22	0.18	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.22	0.16	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	1.5	0.22	0.11	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.22	0.20	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.22	0.16	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.22	0.17	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.90	0.45	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.90	0.45	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate ^a	ND	0.90	0.67	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.22	0.11	ug/kg	
31506-32-8	MeFOSA	ND	0.22	0.15	ug/kg	
4151-50-2	EtFOSA	ND	0.22	0.11	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-B2-25.0		
Lab Sample ID:	FC13254-39	Date Sampled:	02/08/24
Matrix:	SO - Soil	Date Received:	02/09/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	88.6
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.22	0.18	ug/kg	
2991-50-6	EtFOSAA	ND	0.22	0.22	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.2	1.1	ug/kg	
1691-99-2	EtFOSE	ND	2.2	1.1	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.90	0.32	ug/kg	
919005-14-4	ADONA	ND	0.90	0.38	ug/kg	
377-73-1	PFMPA	ND	0.45	0.22	ug/kg	
863090-89-5	PFMBA	ND	0.45	0.22	ug/kg	
151772-58-6	NFDHA	ND	0.45	0.27	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.90	0.49	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.90	0.45	ug/kg	
113507-82-7	PFEESA	ND	0.45	0.22	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.1	0.57	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.6	1.3	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.6	1.4	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	86%		20-150%
	13C5-PFPeA	87%		20-150%
	13C5-PFHxA	85%		20-150%
	13C4-PFHpA	84%		20-150%
	13C8-PFOA	85%		20-150%
	13C9-PFNA	80%		20-150%
	13C6-PFDA	87%		20-150%
	13C7-PFUnDA	90%		20-150%
	13C2-PFDoDA	83%		20-150%
	13C2-PFTeDA	79%		20-150%
	13C3-PFBS	82%		20-150%
	13C3-PFHxS	80%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-B2-25.0	Date Sampled:	02/08/24
Lab Sample ID:	FC13254-39	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	88.6
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	87%		20-150%
	13C8-FOSA	92%		20-150%
	d3-MeFOSA	92%		20-150%
	d5-EtFOSA	99%		20-150%
	d3-MeFOSAA	87%		20-150%
	d5-EtFOSAA	81%		20-150%
	d7-MeFOSE	94%		20-150%
	d9-EtFOSE	94%		20-150%
	13C2-4:2FTS	74%		20-180%
	13C2-6:2FTS	82%		20-180%
	13C2-8:2FTS	93%		20-180%
	13C3-HFPO-DA	86%		20-150%

(a) Associated CCV outside control limits high. Sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S DUP-1-20240206	Date Sampled:	02/08/24
Lab Sample ID:	FC13254-40	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	86.9
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q31379.D	1	02/24/24 07:04	MV	02/21/24 08:55	OP1753	S6Q442
Run #2							

Run #	Initial Weight	Final Volume
Run #1	4.99 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.92	0.58	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.46	0.12	ug/kg	
307-24-4	Perfluorohexanoic acid	0.15	0.23	0.12	ug/kg	J
375-85-9	Perfluoroheptanoic acid	ND	0.23	0.12	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.23	0.12	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.23	0.13	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.23	0.12	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.23	0.15	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.23	0.12	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.23	0.12	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.23	0.12	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.23	0.12	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.23	0.18	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.23	0.18	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.23	0.17	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	1.6	0.23	0.12	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.23	0.21	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.23	0.16	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.23	0.17	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.92	0.46	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.92	0.46	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate ^a	ND	0.92	0.69	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.23	0.12	ug/kg	
31506-32-8	MeFOSA	ND	0.23	0.16	ug/kg	
4151-50-2	EtFOSA	ND	0.23	0.12	ug/kg	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
 RL = Reporting Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S DUP-1-20240206		
Lab Sample ID:	FC13254-40	Date Sampled:	02/08/24
Matrix:	SO - Soil	Date Received:	02/09/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	86.9
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.23	0.18	ug/kg	
2991-50-6	EtFOSAA	ND	0.23	0.23	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.3	1.2	ug/kg	
1691-99-2	EtFOSE	ND	2.3	1.2	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.92	0.33	ug/kg	
919005-14-4	ADONA	ND	0.92	0.39	ug/kg	
377-73-1	PFMPA	ND	0.46	0.23	ug/kg	
863090-89-5	PFMBA	ND	0.46	0.23	ug/kg	
151772-58-6	NFDHA	ND	0.46	0.28	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.92	0.51	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.92	0.46	ug/kg	
113507-82-7	PFEESA	ND	0.46	0.23	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.2	0.59	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.8	1.3	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.8	1.5	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	68%		20-150%
	13C5-PFPeA	66%		20-150%
	13C5-PFHxA	67%		20-150%
	13C4-PFHpA	64%		20-150%
	13C8-PFOA	65%		20-150%
	13C9-PFNA	65%		20-150%
	13C6-PFDA	66%		20-150%
	13C7-PFUnDA	73%		20-150%
	13C2-PFDoDA	67%		20-150%
	13C2-PFTeDA	69%		20-150%
	13C3-PFBS	69%		20-150%
	13C3-PFHxS	65%		20-150%

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S DUP-1-20240206	Date Sampled:	02/08/24
Lab Sample ID:	FC13254-40	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	86.9
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	68%		20-150%
	13C8-FOSA	71%		20-150%
	d3-MeFOSA	62%		20-150%
	d5-EtFOSA	65%		20-150%
	d3-MeFOSAA	74%		20-150%
	d5-EtFOSAA	73%		20-150%
	d7-MeFOSE	73%		20-150%
	d9-EtFOSE	68%		20-150%
	13C2-4:2FTS	79%		20-180%
	13C2-6:2FTS	67%		20-180%
	13C2-8:2FTS	76%		20-180%
	13C3-HFPO-DA	61%		20-150%

(a) Associated CCV outside control limits high. Sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S DUP-2-20240206	Date Sampled:	02/08/24
Lab Sample ID:	FC13254-41	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	86.1
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q31382.D	1	02/24/24 07:47	MV	02/21/24 08:55	OP1753	S6Q442
Run #2							

Run #	Initial Weight	Final Volume
Run #1	5.04 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.92	0.58	ug/kg	
2706-90-3	Perfluoropentanoic acid	0.20	0.46	0.12	ug/kg	J
307-24-4	Perfluorohexanoic acid	0.24	0.23	0.12	ug/kg	
375-85-9	Perfluoroheptanoic acid	0.19	0.23	0.12	ug/kg	J
335-67-1	Perfluorooctanoic acid	0.77	0.23	0.12	ug/kg	
375-95-1	Perfluorononanoic acid	1.6	0.23	0.13	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.23	0.12	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.23	0.15	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.23	0.12	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.23	0.12	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.23	0.12	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.23	0.12	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.23	0.18	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	1.3	0.23	0.18	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.23	0.17	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	37.8	0.23	0.12	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.23	0.21	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.23	0.16	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.23	0.17	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.92	0.46	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.92	0.46	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate ^a	ND	0.92	0.69	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.23	0.12	ug/kg	
31506-32-8	MeFOSA	ND	0.23	0.16	ug/kg	
4151-50-2	EtFOSA	ND	0.23	0.12	ug/kg	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
 RL = Reporting Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S DUP-2-20240206		
Lab Sample ID:	FC13254-41	Date Sampled:	02/08/24
Matrix:	SO - Soil	Date Received:	02/09/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	86.1
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.23	0.18	ug/kg	
2991-50-6	EtFOSAA	ND	0.23	0.23	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.3	1.2	ug/kg	
1691-99-2	EtFOSE	ND	2.3	1.2	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.92	0.33	ug/kg	
919005-14-4	ADONA	ND	0.92	0.39	ug/kg	
377-73-1	PFMPA	ND	0.46	0.23	ug/kg	
863090-89-5	PFMBA	ND	0.46	0.23	ug/kg	
151772-58-6	NFDHA	ND	0.46	0.28	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.92	0.51	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.92	0.46	ug/kg	
113507-82-7	PFEESA	ND	0.46	0.23	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	ND	1.2	0.59	ug/kg	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	5.8	1.3	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.8	1.5	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	86%		20-150%
	13C5-PFPeA	86%		20-150%
	13C5-PFHxA	83%		20-150%
	13C4-PFHpA	83%		20-150%
	13C8-PFOA	80%		20-150%
	13C9-PFNA	86%		20-150%
	13C6-PFDA	85%		20-150%
	13C7-PFUnDA	84%		20-150%
	13C2-PFDoDA	84%		20-150%
	13C2-PFTeDA	87%		20-150%
	13C3-PFBS	87%		20-150%
	13C3-PFHxS	87%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
 RL = Reporting Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S DUP-2-20240206	Date Sampled:	02/08/24
Lab Sample ID:	FC13254-41	Date Received:	02/09/24
Matrix:	SO - Soil	Percent Solids:	86.1
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	90%		20-150%
	13C8-FOSA	96%		20-150%
	d3-MeFOSA	82%		20-150%
	d5-EtFOSA	106%		20-150%
	d3-MeFOSAA	79%		20-150%
	d5-EtFOSAA	86%		20-150%
	d7-MeFOSE	95%		20-150%
	d9-EtFOSE	100%		20-150%
	13C2-4:2FTS	82%		20-180%
	13C2-6:2FTS	86%		20-180%
	13C2-8:2FTS	93%		20-180%
	13C3-HFPO-DA	87%		20-150%

(a) Associated CCV outside control limits high. Sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-SW1-20240207	Date Sampled:	02/07/24
Lab Sample ID:	FC13254-42	Date Received:	02/09/24
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q31017.D	1	02/15/24 03:39	MV	02/13/24 09:00	OP1599	S6Q436
Run #2	6Q31051.D	10	02/18/24 13:47	MV	02/13/24 09:00	OP1599	S6Q437

	Initial Volume	Final Volume
Run #1	530 ml	5.0 ml
Run #2	530 ml	5.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	0.604	0.0075	0.0038	ug/l	
2706-90-3	Perfluoropentanoic acid	4.56 ^a	0.038	0.0094	ug/l	
307-24-4	Perfluorohexanoic acid	2.06 ^a	0.019	0.0047	ug/l	
375-85-9	Perfluoroheptanoic acid	0.518	0.0019	0.00047	ug/l	
335-67-1	Perfluorooctanoic acid	0.0834	0.0019	0.00047	ug/l	
375-95-1	Perfluorononanoic acid	0.0192	0.0019	0.00058	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0019	0.00047	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0019	0.00057	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0019	0.00057	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0019	0.00079	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0019	0.00047	ug/l	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	0.0529	0.0019	0.00094	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0605	0.0019	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.349	0.0019	0.00094	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0154	0.0019	0.00094	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.151	0.0019	0.00094	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0019	0.00094	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0019	0.00094	ug/l	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.0019	0.0011	ug/l	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0075	0.0038	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	1.96	0.0075	0.0038	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0075	0.0039	ug/l	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.0019	0.00094	ug/l	
31506-32-8	MeFOSA	ND	0.0019	0.00094	ug/l	
4151-50-2	EtFOSA	ND	0.0019	0.00094	ug/l	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-SW1-20240207	Date Sampled:	02/07/24
Lab Sample ID:	FC13254-42	Date Received:	02/09/24
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.0019	0.00094	ug/l	
2991-50-6	EtFOSAA	ND	0.0019	0.0013	ug/l	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	0.019	0.0094	ug/l	
1691-99-2	EtFOSE	ND	0.019	0.0094	ug/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.0075	0.0019	ug/l	
919005-14-4	ADONA	ND	0.0075	0.0019	ug/l	
377-73-1	PFMPA	ND	0.0038	0.00094	ug/l	
863090-89-5	PFMBA	ND	0.0038	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0038	0.0011	ug/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0075	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0075	0.0019	ug/l	
113507-82-7	PFEESA	ND	0.0038	0.00094	ug/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	0.0084	0.0094	0.0047	ug/l	J
914637-49-3	5:3 Fluorotelomer carboxylate	0.0167	0.047	0.0094	ug/l	J
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.047	0.0094	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	51%	47%	20-150%
	13C5-PFPeA	93%	92%	20-150%
	13C5-PFHxA	102%	97%	20-150%
	13C4-PFHpA	118%	102%	20-150%
	13C8-PFOA	115%	94%	20-150%
	13C9-PFNA	106%	101%	20-150%
	13C6-PFDA	103%	98%	20-150%
	13C7-PFUnDA	98%	84%	20-150%
	13C2-PFDoDA	90%	78%	20-150%
	13C2-PFTeDA	66%	72%	20-150%
	13C3-PFBS	108%	97%	20-150%
	13C3-PFHxS	109%	103%	20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-SW1-20240207	Date Sampled:	02/07/24
Lab Sample ID:	FC13254-42	Date Received:	02/09/24
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	100%	100%	20-150%
	13C8-FOSA	95%	85%	20-150%
	d3-MeFOSA	86%	107%	20-150%
	d5-EtFOSA	79%	93%	20-150%
	d3-MeFOSAA	94%	114%	20-150%
	d5-EtFOSAA	99%	98%	20-150%
	d7-MeFOSE	78%	84%	20-150%
	d9-EtFOSE	74%	80%	20-150%
	13C2-4:2FTS	166%	179%	20-180%
	13C2-6:2FTS	109%	152%	20-180%
	13C2-8:2FTS	111%	117%	20-180%
	13C3-HFPO-DA	116%	101%	20-150%

(a) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.42
4

Report of Analysis

Client Sample ID:	FP-SW2-20240206	Date Sampled:	02/06/24
Lab Sample ID:	FC13254-43	Date Received:	02/09/24
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q31018.D	1	02/15/24 03:54	MV	02/13/24 09:00	OP1599	S6Q436
Run #2	6Q31052.D	10	02/18/24 14:02	MV	02/13/24 09:00	OP1599	S6Q437

	Initial Volume	Final Volume
Run #1	500 ml	5.0 ml
Run #2	500 ml	5.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	0.827	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	4.50 ^a	0.040	0.010	ug/l	
307-24-4	Perfluorohexanoic acid	2.02 ^a	0.020	0.0050	ug/l	
375-85-9	Perfluoroheptanoic acid	0.655 ^a	0.020	0.0050	ug/l	
335-67-1	Perfluorooctanoic acid	0.216	0.0020	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	0.0153	0.0020	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0020	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0020	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0020	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0020	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0020	0.00050	ug/l	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	0.0543	0.0020	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0758	0.0020	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.345	0.0020	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0134	0.0020	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.116	0.0020	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0020	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0020	0.0010	ug/l	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.0020	0.0011	ug/l	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	4.30 ^a	0.080	0.040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0041	ug/l	

PERFLUOROOCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.0020	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0020	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0020	0.0010	ug/l	

ND = Not detected	MDL = Method Detection Limit	J = Indicates an estimated value
RL = Reporting Limit		B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range		N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: FP-SW2-20240206

Lab Sample ID: FC13254-43

Matrix: AQ - Surface Water

Method: EPA DRAFT 1633 EPA 1633 DRAFT

Project: Paine Field; Everett, WA

Date Sampled: 02/06/24

Date Received: 02/09/24

Percent Solids: n/a

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9 MeFOSAA ND 0.0020 0.0010 ug/l

2991-50-6 EtFOSAA ND 0.0020 0.0013 ug/l

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7 MeFOSE ND 0.020 0.010 ug/l

1691-99-2 EtFOSE ND 0.020 0.010 ug/l

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6 HFPO-DA (GenX) ND 0.0080 0.0020 ug/l

919005-14-4 ADONA ND 0.0080 0.0020 ug/l

377-73-1 PFMPA^b ND 0.0040 0.0010 ug/l

863090-89-5 PFMBA ND 0.0040 0.0011 ug/l

151772-58-6 NFDHA ND 0.0040 0.0012 ug/l

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1 9Cl-PF3ONS (F-53B Major) ND 0.0080 0.0020 ug/l

763051-92-9 11Cl-PF3OUdS (F-53B Minor) ND 0.0080 0.0020 ug/l

113507-82-7 PFEEESA ND 0.0040 0.0010 ug/l

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5 3:3 Fluorotelomer carboxylat^b ND 0.010 0.0050 ug/l

914637-49-3 5:3 Fluorotelomer carboxylate 0.0176 0.050 0.010 ug/l J

812-70-4 7:3 Fluorotelomer carboxylate ND 0.050 0.010 ug/l

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits

13C4-PFBA 107% 97% 20-150%

13C5-PFPeA 97% 89% 20-150%

13C5-PFHxA 107% 96% 20-150%

13C4-PFHpA 113% 92% 20-150%

13C8-PFOA 110% 100% 20-150%

13C9-PFNA 117% 109% 20-150%

13C6-PFDA 106% 81% 20-150%

13C7-PFUnDA 94% 91% 20-150%

13C2-PFDoDA 93% 74% 20-150%

13C2-PFTeDA 72% 62% 20-150%

13C3-PFBS 112% 93% 20-150%

13C3-PFHxS 111% 91% 20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-SW2-20240206	Date Sampled:	02/06/24
Lab Sample ID:	FC13254-43	Date Received:	02/09/24
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	104%	77%	20-150%
	13C8-FOSA	98%	90%	20-150%
	d3-MeFOSA	86%	71%	20-150%
	d5-EtFOSA	88%	76%	20-150%
	d3-MeFOSAA	93%	86%	20-150%
	d5-EtFOSAA	94%	71%	20-150%
	d7-MeFOSE	90%	83%	20-150%
	d9-EtFOSE	90%	73%	20-150%
	13C2-4:2FTS	180%	139%	20-180%
	13C2-6:2FTS	138%	170%	20-180%
	13C2-8:2FTS	127%	108%	20-180%
	13C3-HFPO-DA	120%	96%	20-150%

- (a) Result is from Run# 2
(b) Associated BS recovery outside control limits.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.43
4

Report of Analysis

Client Sample ID:	FP-SEEP-20240207	Date Sampled:	02/07/24
Lab Sample ID:	FC13254-44	Date Received:	02/09/24
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q31019.D	1	02/15/24 04:08	MV	02/13/24 09:00	OP1599	S6Q436
Run #2	6Q31053.D	10	02/18/24 14:16	MV	02/13/24 09:00	OP1599	S6Q437

	Initial Volume	Final Volume
Run #1	440 ml	5.0 ml
Run #2	440 ml	5.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	0.451	0.0091	0.0045	ug/l	
2706-90-3	Perfluoropentanoic acid	2.89 ^a	0.045	0.011	ug/l	
307-24-4	Perfluorohexanoic acid	1.35 ^a	0.023	0.0057	ug/l	
375-85-9	Perfluoroheptanoic acid	0.398	0.0023	0.00057	ug/l	
335-67-1	Perfluorooctanoic acid	0.185	0.0023	0.00057	ug/l	
375-95-1	Perfluorononanoic acid	0.135	0.0023	0.00069	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0023	0.00057	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0023	0.00068	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0023	0.00068	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0023	0.00095	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0023	0.00057	ug/l	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	0.102	0.0023	0.0011	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.130	0.0023	0.0013	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.844 ^a	0.023	0.011	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0427	0.0023	0.0011	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	1.16 ^a	0.023	0.011	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0023	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0023	0.0011	ug/l	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.0023	0.0013	ug/l	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0091	0.0045	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.992	0.0091	0.0045	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0091	0.0047	ug/l	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.0023	0.0011	ug/l	
31506-32-8	MeFOSA	ND	0.0023	0.0011	ug/l	
4151-50-2	EtFOSA	ND	0.0023	0.0011	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
 RL = Reporting Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-SEEP-20240207	Date Sampled:	02/07/24
Lab Sample ID:	FC13254-44	Date Received:	02/09/24
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.0023	0.0011	ug/l	
2991-50-6	EtFOSAA	ND	0.0023	0.0015	ug/l	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	0.023	0.011	ug/l	
1691-99-2	EtFOSE	ND	0.023	0.011	ug/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.0091	0.0023	ug/l	
919005-14-4	ADONA	ND	0.0091	0.0023	ug/l	
377-73-1	PFMPA	ND	0.0045	0.0011	ug/l	
863090-89-5	PFMBA	ND	0.0045	0.0013	ug/l	
151772-58-6	NFDHA	ND	0.0045	0.0014	ug/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0091	0.0023	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0091	0.0023	ug/l	
113507-82-7	PFEESA	ND	0.0045	0.0011	ug/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	0.0068	0.011	0.0057	ug/l	J
914637-49-3	5:3 Fluorotelomer carboxylate	0.0242	0.057	0.011	ug/l	J
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.057	0.011	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	86%	81%	20-150%
	13C5-PFPeA	94%	104%	20-150%
	13C5-PFHxA	106%	101%	20-150%
	13C4-PFHpA	115%	96%	20-150%
	13C8-PFOA	115%	108%	20-150%
	13C9-PFNA	102%	95%	20-150%
	13C6-PFDA	109%	96%	20-150%
	13C7-PFUnDA	106%	97%	20-150%
	13C2-PFDoDA	105%	98%	20-150%
	13C2-PFTeDA	75%	62%	20-150%
	13C3-PFBS	114%	104%	20-150%
	13C3-PFHxS	109%	96%	20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-SEEP-20240207	Date Sampled:	02/07/24
Lab Sample ID:	FC13254-44	Date Received:	02/09/24
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	114%	84%	20-150%
	13C8-FOSA	119%	101%	20-150%
	d3-MeFOSA	100%	88%	20-150%
	d5-EtFOSA	94%	98%	20-150%
	d3-MeFOSAA	108%	84%	20-150%
	d5-EtFOSAA	104%	80%	20-150%
	d7-MeFOSE	91%	82%	20-150%
	d9-EtFOSE	94%	90%	20-150%
	13C2-4:2FTS	178%	111%	20-180%
	13C2-6:2FTS	143%	147%	20-180%
	13C2-8:2FTS	133%	93%	20-180%
	13C3-HFPO-DA	113%	101%	20-150%

(a) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound



Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody



SGS North America Inc - Orlando

Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, FL 32811
TEL: 407-425-6700 FAX: 407-425-0707
www.sgs.com

FC13254

SGS - ORLANDO JOB # :

PAGE 1 OF 4

Client / Reporting Information			Project Information			Analytical Information										Matrix Codes						
Company Name: Geo Engineers			Project Name: Paine Field Former Fire Pit													DW - Drinking Water						
Address: 2101 4th Ave, Suite 950			Street													GW - Ground Water						
City: Seattle State: WA Zip: 98121			City: Everett State: WA													WW - Water						
Project Contact: Jacob Letts Email: jletts@geoengineers.com			Project # 05530-015-00													SW - Surface Water						
Phone #:			Fax #													SO - Soil						
Sampler(s) Name(s) (Printed): Meredith			Client Purchase Order #													SL - Sludge						
Sampler 1:			Sampler 2:													OI - Oil						
SGS Orlando Sample #			Field ID / Point of Collection			COLLECTION			CONTAINER INFORMATION							LAB USE ONLY						
						DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NOVE	FOI	NaOH	PHOS	H2SO4	NaOH/NaCl	DISTILL	MEOH			
1			FW-7-5.0			2/7/24	0917	GEI	SO	1												
2			FP-MW7-10.0				0122															
3			FP-MW7-15.0				0130															
4			FP-MW7-20.0				0140															
5			FP-MW8-5.0			2/6/24	1240															
6			FP-MW8-10.0				1200															
7			FP-MW8-15.0				1235															
8			FP-MW8-20.0				1230															
9			FP-MW8-25.0				1240															
10			FP-MW8-27.5				1300															
11			FP-MW9-5.0				0838															
12			FP-MW9-10.0				0845															
Turnaround Time (Business days)			Data Deliverable Information			Comments / Remarks																
10 Day (Business) STAMPED Approved By: / Date:			☐ COMMERCIAL "A" (RESULTS ONLY)			also email Katy Atakturk katakaturk@geoengineers. 3.0 IR#1																
7 Day			☐ COMMERCIAL "B" (RESULTS PLUS QC)																			
5 Day			☐ REDT1 (EPA LEVEL 3)																			
3 Day RUSH			☐ FULLT1 (EPA LEVEL 4)																			
2 Day RUSH			☐ EDD'S																			
1 Day RUSH																						
Other																						
Rush T/A Data Available VIA Email or Lablink																						
Relinquished by Sampler/Affiliation			Date Time:			Received By/Affiliation			Date Time:			Received By/Affiliation										
1 Geo Engineers			2/6/24 1330			2 James D			2/9/24 1045			3										
Relinquished by/Affiliation			Date Time:			Received By/Affiliation			Date Time:			Received By/Affiliation										
5						6						7										
Lab Use Only : Cooler Temperature (s) Celsius (corrected):													http://www.sgs.com/en/terms-and-conditions									

ORLD-SMT-0001-03-FORM-COC (4).xls Rev 031318

FC13254: Chain of Custody

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SGS North America Inc - Orlando

Chain of Custody

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TEL: 407-425-6700 FAX: 407-425-0707
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FC13254

SGS - ORLANDO JOB #:

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Client / Reporting Information		Project Information		Analytical Information										Matrix Codes	
Company Name:		Project Name:		X PAS ERA 1633										DW - Drinking Water	
Address:		Street:												GW - Ground Water	
City:		City:												WW - Wastewater	
State:		State:												SW - Surface Water	
Zip:		Zip:												SO - Soil	
Project Contact:		Project #												SL - Sludge	
Email:		Fax #												OI - Oil	
Phone #:		Client Purchase Order #												LIQ - Other Liquid	
Sampler(s) Name(s) (Printed)														AIR - Air	
Sampler 1:		Sampler 2:												SOL - Other Solid	
SGS	Field ID / Point of Collection	DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	PC	NaOH	H2O2	H2SO4	NaOH-ZnA	DI WATER	MEDIA	LAB USE ONLY
Orlando															
Sample #															
13	FP-MW9-15.0	2/16/24	0650	CEI	SO	1									
14	FP-MW9-20.0		0655												
15	FP-MW9-25.0		0925												
16	FP-MW10-5.0	2/17/24	1050												
17	FP-MW10-10.0		1105												
18	FP-MW10-15.0		1110												
19	FP-MW10-20.0		1115												
20	FP-MW11-5.0	2/15/24	0912												
21	FP-MW11-10.0		0917												
22	FP-MW11-15.0		0920												
23	FP-MW11-20.0		0930												
24	FP-MW12-5.0		1245												
Turnaround Time (Business days)		Data Deliverable Information										Comments / Remarks			
10 Day (Business) <u>EXTRA</u> Approved By: / Date:		☐ COMMERCIAL "A" (RESULTS ONLY)													
7 Day		☐ COMMERCIAL "B" (RESULTS PLUS QC)													
5 Day		☐ REDT1 (EPA LEVEL 3)													
3 Day RUSH		☐ FULLT1 (EPA LEVEL 4)													
2 Day RUSH		☐ EDD'S													
1 Day RUSH															
Other															
Rush T/A Data Available VIA Email or LabLink		Sample Custody must be documented below each time samples change possession, including courier delivery.													
Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Date Time:	Relinquished By/Affiliation	Date Time:	Received By/Affiliation	Date Time:	Relinquished By/Affiliation	Date Time:	Received By/Affiliation	Date Time:	Received By/Affiliation	Date Time:	Received By/Affiliation	Date Time:
1 <u>CEI</u>	2/16/24 1330	2 <u>James</u>	2/19/24 1005	3		4		5		6		7		8	
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Date Time:	Relinquished By/Affiliation	Date Time:	Received By/Affiliation	Date Time:	Relinquished By/Affiliation	Date Time:	Received By/Affiliation	Date Time:	Relinquished By/Affiliation	Date Time:	Received By/Affiliation	Date Time:
5		6		7		8		9		10		11		12	
Lab Use Only: Cooler Temperature (s) Celsius (corrected):															http://www.sgs.com/en/terms-and-conditions

ORLD-SMT-0001-03-FORM-COC (4).xls Rev 031318

FC13254: Chain of Custody

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Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, FL 32811
TEL: 407-425-6700 FAX: 407-425-0707
www.sps.com

SGS - ORLANDO JOB # :

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FC13254

[illegible]

ORLD-SMT-0001-03-FORM-COC (4).xls Rev 031318

<http://www.sqs.com/en/terms-and-conditions>

FC13254: Chain of Custody

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SGS North America Inc - Orlando

Chain of Custody

4405 Vinland Road, Suite C-15 Orlando, FL 32811
TEL: 407-425-6700 FAX: 407-425-0707
www.sgs.com

FC13254

SGS - ORLANDO JOB # :

PAGE 4 OF 4

Client / Reporting Information		Project Information		Analytical Information										Matrix Codes		
Company Name:		Project Name:		PFAS EPA 1633										DW - Drinking Water		
Address:		Street												GW - Ground Water		
City:		City												WW - Water		
State:		State												SW - Surface Water		
Zip:		Zip												SO - Soil		
Project Contact:		Project #												SL - Sludge		
Email:		Fax #												OI - Oil		
Phone #:		Client Purchase Order #												LIQ - Other Liquid		
Sampler(s) Name(s) (Printed)														AIR - Air		
Sampler 1:		Sampler 2:												SOL - Other Solid		
SGS	Field ID / Point of Collection	DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	PCD	AgOH	PHOS	P2504	NACH-SNAK	DI WATER	MEOH	LAB USE ONLY
Orlando																
Sample #																
37	FR-B2-15.0	2/6/24	0922	CEI	SW	1										
38	FR-B2-20.0		0930													
39	FR-B2-25.0		0936													
40	S DUP-1-20240206	2/1/24	120													
41	S DUP-2-20240206	2/1/24	0922													
42	FR-SW 1-20240207	2/7/24	120		SW											
43	FR-SW 2-20240206	2/6/24	1130													
44	FR-SW 2-20240207	2/7/24	1250													
Turnaround Time (Business days)		Data Deliverable Information		Comments / Remarks												
10 Day (Business) <u>STANDARD</u> Approved By: / Date:		☐ COMMERCIAL "A" (RESULTS ONLY)														
7 Day		☐ COMMERCIAL "B" (RESULTS PLUS QC)														
5 Day		☐ REDT1 (EPA LEVEL 3)														
3 Day RUSH		☐ FULLT1 (EPA LEVEL 4)														
2 Day RUSH		☐ EDD'S														
1 Day RUSH																
Other																
Rush T/A Data Available VIA Email or Lablink		Sample Custody must be documented below each time samples change possession, including courier delivery.														
Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Date Time:	Relinquished By/Affiliation	Date Time:	Received By/Affiliation	Date Time:	Relinquished By/Affiliation	Date Time:	Received By/Affiliation	Date Time:	Relinquished By/Affiliation	Date Time:	Received By/Affiliation	Date Time:	Received By/Affiliation
1. <u>[Signature]</u>	2/6/24 1330	2. <u>[Signature]</u>	2/9/24 1015	3. <u>[Signature]</u>		4. <u>[Signature]</u>		5. <u>[Signature]</u>		6. <u>[Signature]</u>		7. <u>[Signature]</u>		8. <u>[Signature]</u>		9. <u>[Signature]</u>
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Date Time:	Relinquished By/Affiliation	Date Time:	Received By/Affiliation	Date Time:	Relinquished By/Affiliation	Date Time:	Received By/Affiliation	Date Time:	Relinquished By/Affiliation	Date Time:	Received By/Affiliation	Date Time:	Received By/Affiliation
5. <u>[Signature]</u>		6. <u>[Signature]</u>		7. <u>[Signature]</u>		8. <u>[Signature]</u>		9. <u>[Signature]</u>		10. <u>[Signature]</u>		11. <u>[Signature]</u>		12. <u>[Signature]</u>		13. <u>[Signature]</u>
Lab Use Only : Cooler Temperature (s) Celsius (corrected):																

ORLD-SMT-0001-03-FORM-COC (4).xls Rev 031318

<http://www.sgs.com/en/terms-and-conditions>

FC13254: Chain of Custody

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SGS - Orlando Sample Receipt Summary

Job Number: fc13254

Client: GEO ENGINEERS

Project: PAINE FIELD FORMER FIRE PIT

Date / Time Received: 2/9/2024 10:15:00 AM

Delivery Method: FED EX

Airbill #'s: 270780568400

Cooler Temps (Raw Measured) °C: Cooler 1: (3.0);
Cooler Temps (Corrected) °C: Cooler 1: (4.0);

Cooler Information	Y	or	N
1. Custody Seals Present:	☒		☐
2. Custody Seals Intact:	☒		☐
3. Temp criteria achieved:	☒		☐
4. Cooler temp verification:			IR Gun
5. Cooler media:			Ice (Bag)

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☐	☒
2. Trip Blank listed on COC:	☐		☐	☒

	W	or	S	N/A
3. Type of TB Received	☐		☐	☒

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles:	☒		☐	
2. Samples presented properly	☒		☐	
3. Sufficient volume/containers recv'd for analysis	☒		☐	
4. Condition of sample:			Intact	
5. Sample recv'd within HT	☒		☐	
6. Dates/Times/IDs on COC match sample label	☒		☐	
7. VOCs have headspace	☐		☐	☒
8. Bottles received for unspecified tests	☐		☒	
9. Compositing instructions clear	☐		☐	☒
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☒
11. % Solids Jar Received?	☐		☐	☒
12. Residual Chlorine Present?	☐		☐	☒

Misc Information

Number of Encores: 25 Gram5 Gram

Test Strip Lot #s: pH 0-3: 226422

Residual Chlorine Test Strip Lot #

Number of Lab Filtered Metals:

pH 10-12: Other: (Specify) pH 1.0 - 12.0 222221

Comments

Sample Receipt Summary 112723 EK Technician: SHAYLAP

Date: 2/9/2024 1:52:38 PM

Reviewer:

Date:



MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

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Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1599-MB	6Q31008.D	1	02/15/24	MV	02/13/24	OP1599	S6Q436

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-42, FC13254-43, FC13254-44

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0020	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0020	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0020	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0020	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0020	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0020	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0020	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0020	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0020	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0020	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0020	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0020	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0020	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0020	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0020	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0020	0.0010	ug/l	
79780-39-5	Perfluorododecanesulfonic acid	ND	0.0020	0.0011	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0041	ug/l	
754-91-6	PFOSA	ND	0.0020	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0020	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0020	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0020	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0020	0.0013	ug/l	
24448-09-7	MeFOSE	ND	0.020	0.010	ug/l	
1691-99-2	EtFOSE	ND	0.020	0.010	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
377-73-1	PFMPA	ND	0.0040	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.0040	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0040	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

Method Blank Summary

Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1599-MB	6Q31008.D	1	02/15/24	MV	02/13/24	OP1599	S6Q436

The QC reported here applies to the following samples: Method: EPA DRAFT 1633
FC13254-42, FC13254-43, FC13254-44

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.0040	0.0010	ug/l	
356-02-5	3:3 Fluorotelomer carboxylate	ND	0.010	0.0050	ug/l	
914637-49-35:3	Fluorotelomer carboxylate	ND	0.050	0.010	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.050	0.010	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	105% 20-150%
	13C5-PFPeA	109% 20-150%
	13C5-PFHxA	107% 20-150%
	13C4-PFHpA	105% 20-150%
	13C8-PFOA	107% 20-150%
	13C9-PFNA	103% 20-150%
	13C6-PFDA	111% 20-150%
	13C7-PFUnDA	101% 20-150%
	13C2-PFDoDA	94% 20-150%
	13C2-PFTeDA	87% 20-150%
	13C3-PFBS	103% 20-150%
	13C3-PFHxS	102% 20-150%
	13C8-PFOS	88% 20-150%
	13C8-FOSA	79% 20-150%
	d3-MeFOSA	88% 20-150%
	d5-EtFOSA	81% 20-150%
	d3-MeFOSAA	91% 20-150%
	d5-EtFOSAA	101% 20-150%
	d7-MeFOSE	78% 20-150%
	d9-EtFOSE	82% 20-150%
	13C2-4:2FTS	130% 20-180%
	13C2-6:2FTS	119% 20-180%
	13C2-8:2FTS	101% 20-180%
	13C3-HFPO-DA	105% 20-150%

Method Blank Summary

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Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1626-MB	7Q2585.D	1	02/19/24	MV	02/14/24	OP1626	S7Q42

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-1, FC13254-2, FC13254-3, FC13254-4, FC13254-5, FC13254-6, FC13254-7, FC13254-8, FC13254-9, FC13254-10, FC13254-11, FC13254-12, FC13254-13, FC13254-14, FC13254-15, FC13254-16, FC13254-17, FC13254-18, FC13254-19

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.80	0.50	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.40	0.10	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.20	0.10	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.20	0.10	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.20	0.10	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.20	0.12	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.20	0.10	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.20	0.13	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.20	0.10	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.20	0.10	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.20	0.10	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	0.20	0.10	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.20	0.16	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.20	0.16	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.20	0.15	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.20	0.10	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.20	0.18	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.20	0.14	ug/kg	
79780-39-5	Perfluorododecanesulfonic acid	ND	0.20	0.15	ug/kg	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.80	0.40	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.80	0.40	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.80	0.60	ug/kg	
754-91-6	PFOSA	ND	0.20	0.10	ug/kg	
31506-32-8	MeFOSA	ND	0.20	0.14	ug/kg	
4151-50-2	EtFOSA	ND	0.20	0.10	ug/kg	
2355-31-9	MeFOSAA	ND	0.20	0.16	ug/kg	
2991-50-6	EtFOSAA	ND	0.20	0.20	ug/kg	
24448-09-7	MeFOSE	ND	2.0	1.0	ug/kg	
1691-99-2	EtFOSE	ND	2.0	1.0	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	0.80	0.29	ug/kg	
919005-14-4	ADONA	ND	0.80	0.34	ug/kg	
377-73-1	PFMPA	ND	0.40	0.20	ug/kg	
863090-89-5	PFMBA	ND	0.40	0.20	ug/kg	
151772-58-6	NFDHA	ND	0.40	0.24	ug/kg	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.80	0.44	ug/kg	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.80	0.40	ug/kg	

Method Blank Summary

Page 2 of 2

Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1626-MB	7Q2585.D	1	02/19/24	MV	02/14/24	OP1626	S7Q42

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-1, FC13254-2, FC13254-3, FC13254-4, FC13254-5, FC13254-6, FC13254-7, FC13254-8, FC13254-9, FC13254-10, FC13254-11, FC13254-12, FC13254-13, FC13254-14, FC13254-15, FC13254-16, FC13254-17, FC13254-18, FC13254-19

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.40	0.20	ug/kg	
356-02-5	3:3 Fluorotelomer carboxylate	ND	1.0	0.51	ug/kg	
914637-49-35:3	Fluorotelomer carboxylate	ND	5.0	1.2	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.0	1.3	ug/kg	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	81% 20-150%
	13C5-PFPeA	77% 20-150%
	13C5-PFHxA	81% 20-150%
	13C4-PFHpA	82% 20-150%
	13C8-PFOA	80% 20-150%
	13C9-PFNA	72% 20-150%
	13C6-PFDA	79% 20-150%
	13C7-PFUnDA	80% 20-150%
	13C2-PFDoDA	72% 20-150%
	13C2-PFTeDA	69% 20-150%
	13C3-PFBS	74% 20-150%
	13C3-PFHxS	77% 20-150%
	13C8-PFOS	71% 20-150%
	13C8-FOSA	72% 20-150%
	d3-MeFOSA	69% 20-150%
	d5-EtFOSA	72% 20-150%
	d3-MeFOSAA	81% 20-150%
	d5-EtFOSAA	83% 20-150%
	d7-MeFOSE	72% 20-150%
	d9-EtFOSE	74% 20-150%
	13C2-4:2FTS	62% 20-180%
	13C2-6:2FTS	80% 20-180%
	13C2-8:2FTS	86% 20-180%
	13C3-HFPO-DA	87% 20-150%

Method Blank Summary

Page 1 of 2

Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1652-MB	7Q2624.D	1	02/20/24	MV	02/15/24	OP1652	S7Q43

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-20, FC13254-21, FC13254-22, FC13254-23, FC13254-24, FC13254-25, FC13254-26, FC13254-27, FC13254-28, FC13254-29, FC13254-30, FC13254-31, FC13254-32, FC13254-33, FC13254-34, FC13254-35, FC13254-36, FC13254-37, FC13254-38

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.80	0.50	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.40	0.10	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.20	0.10	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.20	0.10	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.20	0.10	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.20	0.12	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.20	0.10	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.20	0.13	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.20	0.10	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.20	0.10	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.20	0.10	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	0.20	0.10	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.20	0.16	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.20	0.16	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.20	0.15	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.20	0.10	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.20	0.18	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.20	0.14	ug/kg	
79780-39-5	Perfluorododecanesulfonic acid	ND	0.20	0.15	ug/kg	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.80	0.40	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.80	0.40	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.80	0.60	ug/kg	
754-91-6	PFOSA	ND	0.20	0.10	ug/kg	
31506-32-8	MeFOSA	ND	0.20	0.14	ug/kg	
4151-50-2	EtFOSA	ND	0.20	0.10	ug/kg	
2355-31-9	MeFOSAA	ND	0.20	0.16	ug/kg	
2991-50-6	EtFOSAA	ND	0.20	0.20	ug/kg	
24448-09-7	MeFOSE	ND	2.0	1.0	ug/kg	
1691-99-2	EtFOSE	ND	2.0	1.0	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	0.80	0.29	ug/kg	
919005-14-4	ADONA	ND	0.80	0.34	ug/kg	
377-73-1	PFMPA	ND	0.40	0.20	ug/kg	
863090-89-5	PFMBA	ND	0.40	0.20	ug/kg	
151772-58-6	NFDHA	ND	0.40	0.24	ug/kg	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.80	0.44	ug/kg	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.80	0.40	ug/kg	

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Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1652-MB	7Q2624.D	1	02/20/24	MV	02/15/24	OP1652	S7Q43

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-20, FC13254-21, FC13254-22, FC13254-23, FC13254-24, FC13254-25, FC13254-26, FC13254-27, FC13254-28, FC13254-29, FC13254-30, FC13254-31, FC13254-32, FC13254-33, FC13254-34, FC13254-35, FC13254-36, FC13254-37, FC13254-38

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.40	0.20	ug/kg	
356-02-5	3:3 Fluorotelomer carboxylate	ND	1.0	0.51	ug/kg	
914637-49-35	3:3 Fluorotelomer carboxylate	ND	5.0	1.2	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.0	1.3	ug/kg	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	89% 20-150%
	13C5-PFPeA	86% 20-150%
	13C5-PFHxA	88% 20-150%
	13C4-PFHpA	93% 20-150%
	13C8-PFOA	86% 20-150%
	13C9-PFNA	83% 20-150%
	13C6-PFDA	85% 20-150%
	13C7-PFUnDA	89% 20-150%
	13C2-PFDoDA	79% 20-150%
	13C2-PFTeDA	77% 20-150%
	13C3-PFBS	82% 20-150%
	13C3-PFHxS	87% 20-150%
	13C8-PFOS	78% 20-150%
	13C8-FOSA	83% 20-150%
	d3-MeFOSA	82% 20-150%
	d5-EtFOSA	87% 20-150%
	d3-MeFOSAA	90% 20-150%
	d5-EtFOSAA	93% 20-150%
	d7-MeFOSE	85% 20-150%
	d9-EtFOSE	88% 20-150%
	13C2-4:2FTS	68% 20-180%
	13C2-6:2FTS	87% 20-180%
	13C2-8:2FTS	96% 20-180%
	13C3-HFPO-DA	97% 20-150%

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Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1753-MB	6Q31377.D	1	02/24/24	MV	02/21/24	OP1753	S6Q442

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-39, FC13254-40, FC13254-41

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.80	0.50	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.40	0.10	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.20	0.10	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.20	0.10	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.20	0.10	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.20	0.12	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.20	0.10	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.20	0.13	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.20	0.10	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.20	0.10	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.20	0.10	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	0.20	0.10	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.20	0.16	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.20	0.16	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.20	0.15	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.20	0.10	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.20	0.18	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.20	0.14	ug/kg	
79780-39-5	Perfluorododecanesulfonic acid	ND	0.20	0.15	ug/kg	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.80	0.40	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.80	0.40	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.80	0.60	ug/kg	
754-91-6	PFOSA	ND	0.20	0.10	ug/kg	
31506-32-8	MeFOSA	ND	0.20	0.14	ug/kg	
4151-50-2	EtFOSA	ND	0.20	0.10	ug/kg	
2355-31-9	MeFOSAA	ND	0.20	0.16	ug/kg	
2991-50-6	EtFOSAA	ND	0.20	0.20	ug/kg	
24448-09-7	MeFOSE	ND	2.0	1.0	ug/kg	
1691-99-2	EtFOSE	ND	2.0	1.0	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	0.80	0.29	ug/kg	
919005-14-4	ADONA	ND	0.80	0.34	ug/kg	
377-73-1	PFMPA	ND	0.40	0.20	ug/kg	
863090-89-5	PFMBA	ND	0.40	0.20	ug/kg	
151772-58-6	NFDHA	ND	0.40	0.24	ug/kg	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.80	0.44	ug/kg	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.80	0.40	ug/kg	

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Job Number: FC13254

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1753-MB	6Q31377.D	1	02/24/24	MV	02/21/24	OP1753	S6Q442

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-39, FC13254-40, FC13254-41

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.40	0.20	ug/kg	
356-02-5	3:3 Fluorotelomer carboxylate	ND	1.0	0.51	ug/kg	
914637-49-35:3	Fluorotelomer carboxylate	ND	5.0	1.2	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.0	1.3	ug/kg	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	50% 20-150%
	13C5-PFPeA	51% 20-150%
	13C5-PFHxA	48% 20-150%
	13C4-PFHpA	47% 20-150%
	13C8-PFOA	51% 20-150%
	13C9-PFNA	47% 20-150%
	13C6-PFDA	54% 20-150%
	13C7-PFUnDA	54% 20-150%
	13C2-PFDoDA	51% 20-150%
	13C2-PFTeDA	52% 20-150%
	13C3-PFBS	47% 20-150%
	13C3-PFHxS	51% 20-150%
	13C8-PFOS	45% 20-150%
	13C8-FOSA	55% 20-150%
	d3-MeFOSA	43% 20-150%
	d5-EtFOSA	47% 20-150%
	d3-MeFOSAA	47% 20-150%
	d5-EtFOSAA	47% 20-150%
	d7-MeFOSE	49% 20-150%
	d9-EtFOSE	47% 20-150%
	13C2-4:2FTS	54% 20-180%
	13C2-6:2FTS	50% 20-180%
	13C2-8:2FTS	50% 20-180%
	13C3-HFPO-DA	48% 20-150%

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Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1753-MB	6Q31439.D	1	02/25/24	MV	02/21/24	OP1753	S6Q443

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-39, FC13254-40, FC13254-41

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.80	0.50	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.40	0.10	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.20	0.10	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.20	0.10	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.20	0.10	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.20	0.12	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.20	0.10	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.20	0.13	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.20	0.10	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.20	0.10	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.20	0.10	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	0.20	0.10	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.20	0.16	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.20	0.16	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.20	0.15	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.20	0.10	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.20	0.18	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.20	0.14	ug/kg	
79780-39-5	Perfluorododecanesulfonic acid	ND	0.20	0.15	ug/kg	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.80	0.40	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.80	0.40	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.80	0.60	ug/kg	
754-91-6	PFOSA	ND	0.20	0.10	ug/kg	
31506-32-8	MeFOSA	ND	0.20	0.14	ug/kg	
4151-50-2	EtFOSA	ND	0.20	0.10	ug/kg	
2355-31-9	MeFOSAA	ND	0.20	0.16	ug/kg	
2991-50-6	EtFOSAA	ND	0.20	0.20	ug/kg	
24448-09-7	MeFOSE	ND	2.0	1.0	ug/kg	
1691-99-2	EtFOSE	ND	2.0	1.0	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	0.80	0.29	ug/kg	
919005-14-4	ADONA	ND	0.80	0.34	ug/kg	
377-73-1	PFMPA	ND	0.40	0.20	ug/kg	
863090-89-5	PFMBA	ND	0.40	0.20	ug/kg	
151772-58-6	NFDHA	ND	0.40	0.24	ug/kg	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.80	0.44	ug/kg	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.80	0.40	ug/kg	

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Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1753-MB	6Q31439.D	1	02/25/24	MV	02/21/24	OP1753	S6Q443

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-39, FC13254-40, FC13254-41

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.40	0.20	ug/kg	
356-02-5	3:3 Fluorotelomer carboxylate	ND	1.0	0.51	ug/kg	
914637-49-35:3	Fluorotelomer carboxylate	ND	5.0	1.2	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	5.0	1.3	ug/kg	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	51% 20-150%
	13C5-PFPeA	52% 20-150%
	13C5-PFHxA	51% 20-150%
	13C4-PFHpA	49% 20-150%
	13C8-PFOA	50% 20-150%
	13C9-PFNA	49% 20-150%
	13C6-PFDA	57% 20-150%
	13C7-PFUnDA	52% 20-150%
	13C2-PFDoDA	46% 20-150%
	13C2-PFTeDA	53% 20-150%
	13C3-PFBS	50% 20-150%
	13C3-PFHxS	51% 20-150%
	13C8-PFOS	51% 20-150%
	13C8-FOSA	58% 20-150%
	d3-MeFOSA	47% 20-150%
	d5-EtFOSA	50% 20-150%
	d3-MeFOSAA	49% 20-150%
	d5-EtFOSAA	48% 20-150%
	d7-MeFOSE	52% 20-150%
	d9-EtFOSE	50% 20-150%
	13C2-4:2FTS	54% 20-180%
	13C2-6:2FTS	60% 20-180%
	13C2-8:2FTS	59% 20-180%
	13C3-HFPO-DA	48% 20-150%

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Job Number: FC13254

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q435-IBLK	6Q30908.D	1	02/13/24	MV	n/a	n/a	S6Q435

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-42, FC13254-43, FC13254-44

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.00064	ug/l	
79780-39-5	Perfluorododecanesulfonic acid	ND	0.0050	0.0011	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.020	0.0032	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.020	0.0035	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.020	0.0041	ug/l	
754-91-6	PFOSA	ND	0.0040	0.00067	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0080	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0050	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0050	0.0013	ug/l	
24448-09-7	MeFOSE	ND	0.040	0.0044	ug/l	
1691-99-2	EtFOSE	ND	0.040	0.0074	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0040	0.0010	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0019	ug/l	
377-73-1	PFMPA	ND	0.0080	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.0080	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0080	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0014	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0018	ug/l	

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Job Number: FC13254

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q435-IBLK	6Q30908.D	1	02/13/24	MV	n/a	n/a	S6Q435

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-42, FC13254-43, FC13254-44

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.0080	0.00078	ug/l	
356-02-5	3:3 Fluorotelomer carboxylate	ND	0.020	0.0045	ug/l	
914637-49-35:3	Fluorotelomer carboxylate	ND	0.10	0.0087	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.10	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	99% 20-150%
	13C5-PFPeA	102% 20-150%
	13C5-PFHxA	103% 20-150%
	13C4-PFHpA	101% 20-150%
	13C8-PFOA	100% 20-150%
	13C9-PFNA	104% 20-150%
	13C6-PFDA	107% 20-150%
	13C7-PFUnDA	99% 20-150%
	13C2-PFDoDA	99% 20-150%
	13C2-PFTeDA	99% 20-150%
	13C3-PFBS	105% 20-150%
	13C3-PFHxS	104% 20-150%
	13C8-PFOS	99% 20-150%
	13C8-FOSA	104% 20-150%
	d3-MeFOSAA	102% 20-150%
	d5-EtFOSAA	108% 20-150%
	13C2-4:2FTS	115% 20-180%
	13C2-6:2FTS	107% 20-180%
	13C2-8:2FTS	95% 20-180%

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Job Number: FC13254

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q436-IBLK	6Q30965.D	1	02/14/24	MV	n/a	n/a	S6Q436

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-42, FC13254-43, FC13254-44

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.00064	ug/l	
79780-39-5	Perfluorododecanesulfonic acid	ND	0.0050	0.0011	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.020	0.0032	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.020	0.0035	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.020	0.0041	ug/l	
754-91-6	PFOSA	ND	0.0040	0.00067	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0080	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0050	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0050	0.0013	ug/l	
24448-09-7	MeFOSE	ND	0.040	0.0044	ug/l	
1691-99-2	EtFOSE	ND	0.040	0.0074	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0040	0.0010	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0019	ug/l	
377-73-1	PFMPA	ND	0.0080	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.0080	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0080	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0014	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0018	ug/l	
113507-82-7	PFEESA	ND	0.0080	0.00078	ug/l	
356-02-5	3:3 Fluorotelomer carboxylate	ND	0.020	0.0045	ug/l	

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Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q436-IBLK	6Q30965.D	1	02/14/24	MV	n/a	n/a	S6Q436

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-42, FC13254-43, FC13254-44

CAS No.	Compound	Result	RL	MDL	Units	Q
914637-49-35:3	Fluorotelomer carboxylate	ND	0.10	0.0087	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.10	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	99%
	13C5-PFPeA	97%
	13C5-PFHxA	99%
	13C4-PFHpA	96%
	13C8-PFOA	101%
	13C9-PFNA	107%
	13C6-PFDA	103%
	13C7-PFUnDA	102%
	13C2-PFDoDA	105%
	13C2-PFTeDA	100%
	13C3-PFBS	102%
	13C3-PFHxS	107%
	13C8-PFOS	100%
	13C8-FOSA	102%
	d3-MeFOSAA	103%
	d5-EtFOSAA	104%
	13C2-4:2FTS	111%
	13C2-6:2FTS	108%
	13C2-8:2FTS	106%

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Job Number: FC13254

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q40-IBLK	7Q2456.D	1	02/15/24	MV	n/a	n/a	S7Q40

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-1, FC13254-2, FC13254-3, FC13254-4, FC13254-5, FC13254-6, FC13254-7, FC13254-8, FC13254-9, FC13254-10, FC13254-11, FC13254-12, FC13254-13, FC13254-14, FC13254-15, FC13254-16, FC13254-17, FC13254-18, FC13254-19, FC13254-20, FC13254-21, FC13254-22, FC13254-23, FC13254-24, FC13254-25, FC13254-26, FC13254-27, FC13254-28, FC13254-29, FC13254-30, FC13254-31, FC13254-32, FC13254-33, FC13254-34, FC13254-

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	2.0	0.31	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	1.0	0.10	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	1.0	0.10	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	1.0	0.10	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	1.0	0.10	ug/kg	
375-95-1	Perfluorononanoic acid	ND	1.0	0.12	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	1.0	0.10	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	1.0	0.13	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	1.0	0.10	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	1.0	0.10	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	1.0	0.10	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	1.0	0.10	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.0	0.16	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	1.0	0.16	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.0	0.15	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.0	0.10	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	1.0	0.18	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	1.0	0.14	ug/kg	
79780-39-5	Perfluorododecanesulfonic acid	ND	1.0	0.15	ug/kg	
757124-72-44:2	Fluorotelomer sulfonate	ND	2.0	0.30	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	2.0	0.35	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	2.0	0.61	ug/kg	
754-91-6	PFOSA	ND	1.0	0.10	ug/kg	
31506-32-8	MeFOSA	ND	1.0	0.14	ug/kg	
4151-50-2	EtFOSA	ND	1.0	0.10	ug/kg	
2355-31-9	MeFOSAA	ND	1.0	0.16	ug/kg	
2991-50-6	EtFOSAA	ND	1.0	0.20	ug/kg	
24448-09-7	MeFOSE	ND	5.0	0.64	ug/kg	
1691-99-2	EtFOSE	ND	5.0	0.83	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	2.0	0.29	ug/kg	
919005-14-4	ADONA	ND	2.0	0.34	ug/kg	
377-73-1	PFMPA	ND	1.0	0.11	ug/kg	
863090-89-5	PFMBA	ND	1.0	0.10	ug/kg	
151772-58-6	NFDHA	ND	2.0	0.24	ug/kg	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	2.0	0.44	ug/kg	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	2.0	0.36	ug/kg	

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Job Number: FC13254**Account:** GEOEWAT GeoEngineers, Inc.**Project:** Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q40-IBLK	7Q2456.D	1	02/15/24	MV	n/a	n/a	S7Q40

The QC reported here applies to the following samples:**Method:** EPA DRAFT 1633

FC13254-1, FC13254-2, FC13254-3, FC13254-4, FC13254-5, FC13254-6, FC13254-7, FC13254-8, FC13254-9, FC13254-10, FC13254-11, FC13254-12, FC13254-13, FC13254-14, FC13254-15, FC13254-16, FC13254-17, FC13254-18, FC13254-19, FC13254-20, FC13254-21, FC13254-22, FC13254-23, FC13254-24, FC13254-25, FC13254-26, FC13254-27, FC13254-28, FC13254-29, FC13254-30, FC13254-31, FC13254-32, FC13254-33, FC13254-34, FC13254-

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	1.0	0.10	ug/kg	
356-02-5	3:3 Fluorotelomer carboxylate	ND	2.5	0.51	ug/kg	
914637-49-35	3:3 Fluorotelomer carboxylate	ND	13	1.2	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	13	1.3	ug/kg	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	100% 20-150%
	13C5-PFPeA	100% 20-150%
	13C5-PFHxA	99% 20-150%
	13C4-PFHpA	102% 20-150%
	13C8-PFOA	100% 20-150%
	13C9-PFNA	98% 20-150%
	13C6-PFDA	108% 20-150%
	13C7-PFUnDA	101% 20-150%
	13C2-PFDoDA	100% 20-150%
	13C2-PFTeDA	98% 20-150%
	13C3-PFBS	94% 20-150%
	13C3-PFHxS	95% 20-150%
	13C8-PFOS	102% 20-150%
	13C8-FOSA	106% 20-150%
	d3-MeFOSA	102% 20-150%
	d5-EtFOSA	105% 20-150%
	d3-MeFOSAA	107% 20-150%
	d5-EtFOSAA	101% 20-150%
	d7-MeFOSE	104% 20-150%
	d9-EtFOSE	105% 20-150%
	13C2-4:2FTS	101% 20-180%
	13C2-6:2FTS	93% 20-180%
	13C2-8:2FTS	89% 20-180%
	13C3-HFPO-DA	96% 20-150%

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Job Number: FC13254

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q437-IBLK	6Q31041.D	1	02/18/24	MV	n/a	n/a	S6Q437

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-42, FC13254-43, FC13254-44

CAS No.	Compound	Result	RL	MDL	Units	Q
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.00050	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.00070	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.00054	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.020	0.0035	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	100% 20-150%
	13C5-PFPeA	97% 20-150%
	13C5-PFHxA	96% 20-150%
	13C4-PFHpA	95% 20-150%
	13C8-PFOA	107% 20-150%
	13C9-PFNA	103% 20-150%
	13C6-PFDA	106% 20-150%
	13C7-PFUnDA	100% 20-150%
	13C2-PFDoDA	111% 20-150%
	13C2-PFTeDA	97% 20-150%
	13C3-PFBS	97% 20-150%
	13C3-PFHxS	101% 20-150%
	13C8-PFOS	98% 20-150%
	13C8-FOSA	111% 20-150%
	d3-MeFOSA	108% 20-150%
	d5-EtFOSA	114% 20-150%
	d3-MeFOSAA	100% 20-150%
	d5-EtFOSAA	104% 20-150%
	d7-MeFOSE	112% 20-150%
	d9-EtFOSE	117% 20-150%
	13C2-4:2FTS	102% 20-180%
	13C2-6:2FTS	104% 20-180%
	13C2-8:2FTS	102% 20-180%
	13C3-HFPO-DA	96% 20-150%

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Job Number: FC13254

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q42-IBLK	7Q2552.D	1	02/19/24	MV	n/a	n/a	S7Q42

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-1, FC13254-2, FC13254-3, FC13254-4, FC13254-5, FC13254-6, FC13254-7, FC13254-8, FC13254-9, FC13254-10, FC13254-11, FC13254-12, FC13254-13, FC13254-14, FC13254-15, FC13254-16, FC13254-17, FC13254-18, FC13254-19

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	2.0	0.31	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	1.0	0.10	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	1.0	0.10	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	1.0	0.10	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	1.0	0.10	ug/kg	
375-95-1	Perfluorononanoic acid	ND	1.0	0.12	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	1.0	0.10	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	1.0	0.13	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	1.0	0.10	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	1.0	0.10	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	1.0	0.10	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	1.0	0.10	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.0	0.16	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	1.0	0.16	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.0	0.15	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.0	0.10	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	1.0	0.18	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	1.0	0.14	ug/kg	
79780-39-5	Perfluorododecanesulfonic acid	ND	1.0	0.15	ug/kg	
757124-72-44:2	Fluorotelomer sulfonate	ND	2.0	0.30	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	2.0	0.35	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	2.0	0.61	ug/kg	
754-91-6	PFOSA	ND	1.0	0.10	ug/kg	
31506-32-8	MeFOSA	ND	1.0	0.14	ug/kg	
4151-50-2	EtFOSA	ND	1.0	0.10	ug/kg	
2355-31-9	MeFOSAA	ND	1.0	0.16	ug/kg	
2991-50-6	EtFOSAA	ND	1.0	0.20	ug/kg	
24448-09-7	MeFOSE	ND	5.0	0.64	ug/kg	
1691-99-2	EtFOSE	ND	5.0	0.83	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	2.0	0.29	ug/kg	
919005-14-4	ADONA	ND	2.0	0.34	ug/kg	
377-73-1	PFMPA	ND	1.0	0.11	ug/kg	
863090-89-5	PFMBA	ND	1.0	0.10	ug/kg	
151772-58-6	NFDHA	ND	2.0	0.24	ug/kg	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	2.0	0.44	ug/kg	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	2.0	0.36	ug/kg	

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Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q42-IBLK	7Q2552.D	1	02/19/24	MV	n/a	n/a	S7Q42

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-1, FC13254-2, FC13254-3, FC13254-4, FC13254-5, FC13254-6, FC13254-7, FC13254-8, FC13254-9, FC13254-10, FC13254-11, FC13254-12, FC13254-13, FC13254-14, FC13254-15, FC13254-16, FC13254-17, FC13254-18, FC13254-19

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	1.0	0.10	ug/kg	
356-02-5	3:3 Fluorotelomer carboxylate	ND	2.5	0.51	ug/kg	
914637-49-35	3:3 Fluorotelomer carboxylate	ND	13	1.2	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	13	1.3	ug/kg	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	101% 20-150%
	13C5-PFPeA	100% 20-150%
	13C5-PFHxA	102% 20-150%
	13C4-PFHpA	105% 20-150%
	13C8-PFOA	102% 20-150%
	13C9-PFNA	102% 20-150%
	13C6-PFDA	104% 20-150%
	13C7-PFUnDA	108% 20-150%
	13C2-PFDoDA	97% 20-150%
	13C2-PFTeDA	95% 20-150%
	13C3-PFBS	93% 20-150%
	13C3-PFHxS	97% 20-150%
	13C8-PFOS	93% 20-150%
	13C8-FOSA	93% 20-150%
	d3-MeFOSA	97% 20-150%
	d5-EtFOSA	99% 20-150%
	d3-MeFOSAA	113% 20-150%
	d5-EtFOSAA	109% 20-150%
	d7-MeFOSE	95% 20-150%
	d9-EtFOSE	99% 20-150%
	13C2-4:2FTS	107% 20-180%
	13C2-6:2FTS	116% 20-180%
	13C2-8:2FTS	112% 20-180%
	13C3-HFPO-DA	105% 20-150%

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Job Number: FC13254

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q43-IBLK	7Q2619.D	1	02/20/24	MV	n/a	n/a	S7Q43

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-20, FC13254-21, FC13254-22, FC13254-23, FC13254-24, FC13254-26, FC13254-27, FC13254-28, FC13254-29, FC13254-30, FC13254-31, FC13254-32, FC13254-33, FC13254-34, FC13254-35, FC13254-37, FC13254-38

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	2.0	0.31	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	1.0	0.10	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	1.0	0.10	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	1.0	0.10	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	1.0	0.10	ug/kg	
375-95-1	Perfluorononanoic acid	ND	1.0	0.12	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	1.0	0.10	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	1.0	0.13	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	1.0	0.10	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	1.0	0.10	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	1.0	0.10	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	1.0	0.10	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.0	0.16	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	1.0	0.16	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.0	0.15	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.0	0.10	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	1.0	0.18	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	1.0	0.14	ug/kg	
79780-39-5	Perfluorododecanesulfonic acid	ND	1.0	0.15	ug/kg	
757124-72-44:2	Fluorotelomer sulfonate	ND	2.0	0.30	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	2.0	0.35	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	2.0	0.61	ug/kg	
754-91-6	PFOSA	ND	1.0	0.10	ug/kg	
31506-32-8	MeFOSA	ND	1.0	0.14	ug/kg	
4151-50-2	EtFOSA	0.11	1.0	0.10	ug/kg	J
2355-31-9	MeFOSAA	ND	1.0	0.16	ug/kg	
2991-50-6	EtFOSAA	ND	1.0	0.20	ug/kg	
24448-09-7	MeFOSE	ND	5.0	0.64	ug/kg	
1691-99-2	EtFOSE	ND	5.0	0.83	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	2.0	0.29	ug/kg	
919005-14-4	ADONA	ND	2.0	0.34	ug/kg	
377-73-1	PFMPA	ND	1.0	0.11	ug/kg	
863090-89-5	PFMBA	ND	1.0	0.10	ug/kg	
151772-58-6	NFDHA	ND	2.0	0.24	ug/kg	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	2.0	0.44	ug/kg	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	2.0	0.36	ug/kg	

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Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q43-IBLK	7Q2619.D	1	02/20/24	MV	n/a	n/a	S7Q43

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-20, FC13254-21, FC13254-22, FC13254-23, FC13254-24, FC13254-26, FC13254-27, FC13254-28, FC13254-29, FC13254-30, FC13254-31, FC13254-32, FC13254-33, FC13254-34, FC13254-35, FC13254-37, FC13254-38

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	1.0	0.10	ug/kg	
356-02-5	3:3 Fluorotelomer carboxylate	ND	2.5	0.51	ug/kg	
914637-49-35	3:3 Fluorotelomer carboxylate	ND	13	1.2	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	13	1.3	ug/kg	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	104% 20-150%
	13C5-PFPeA	99% 20-150%
	13C5-PFHxA	102% 20-150%
	13C4-PFHpA	103% 20-150%
	13C8-PFOA	101% 20-150%
	13C9-PFNA	97% 20-150%
	13C6-PFDA	101% 20-150%
	13C7-PFUnDA	107% 20-150%
	13C2-PFDoDA	96% 20-150%
	13C2-PFTeDA	89% 20-150%
	13C3-PFBS	94% 20-150%
	13C3-PFHxS	100% 20-150%
	13C8-PFOS	101% 20-150%
	13C8-FOSA	96% 20-150%
	d3-MeFOSA	93% 20-150%
	d5-EtFOSA	97% 20-150%
	d3-MeFOSAA	118% 20-150%
	d5-EtFOSAA	117% 20-150%
	d7-MeFOSE	97% 20-150%
	d9-EtFOSE	98% 20-150%
	13C2-4:2FTS	109% 20-180%
	13C2-6:2FTS	112% 20-180%
	13C2-8:2FTS	123% 20-180%
	13C3-HFPO-DA	115% 20-150%

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Job Number: FC13254

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q44-IBLK	7Q2686.D	1	02/21/24	MV	n/a	n/a	S7Q44

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-24, FC13254-25, FC13254-35, FC13254-36

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	2.0	0.31	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	1.0	0.10	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	1.0	0.10	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	1.0	0.10	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	1.0	0.10	ug/kg	
375-95-1	Perfluorononanoic acid	ND	1.0	0.12	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	1.0	0.10	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	1.0	0.13	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	1.0	0.10	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	1.0	0.10	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	1.0	0.10	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	1.0	0.10	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.0	0.16	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	1.0	0.16	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.0	0.15	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.0	0.10	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	1.0	0.18	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	1.0	0.14	ug/kg	
79780-39-5	Perfluorododecanesulfonic acid	ND	1.0	0.15	ug/kg	
757124-72-44:2	Fluorotelomer sulfonate	ND	2.0	0.30	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	2.0	0.35	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	2.0	0.61	ug/kg	
754-91-6	PFOSA	ND	1.0	0.10	ug/kg	
31506-32-8	MeFOSA	ND	1.0	0.14	ug/kg	
4151-50-2	EtFOSA	ND	1.0	0.10	ug/kg	
2355-31-9	MeFOSAA	ND	1.0	0.16	ug/kg	
2991-50-6	EtFOSAA	ND	1.0	0.20	ug/kg	
24448-09-7	MeFOSE	ND	5.0	0.64	ug/kg	
1691-99-2	EtFOSE	ND	5.0	0.83	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	2.0	0.29	ug/kg	
919005-14-4	ADONA	ND	2.0	0.34	ug/kg	
377-73-1	PFMPA	ND	1.0	0.11	ug/kg	
863090-89-5	PFMBA	ND	1.0	0.10	ug/kg	
151772-58-6	NFDHA	ND	2.0	0.24	ug/kg	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	2.0	0.44	ug/kg	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	2.0	0.36	ug/kg	

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Job Number: FC13254**Account:** GEOEWAT GeoEngineers, Inc.**Project:** Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q44-IBLK	7Q2686.D	1	02/21/24	MV	n/a	n/a	S7Q44

The QC reported here applies to the following samples:**Method:** EPA DRAFT 1633

FC13254-24, FC13254-25, FC13254-35, FC13254-36

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	1.0	0.10	ug/kg	
356-02-5	3:3 Fluorotelomer carboxylate	ND	2.5	0.51	ug/kg	
914637-49-35:3	Fluorotelomer carboxylate	ND	13	1.2	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	13	1.3	ug/kg	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	103% 20-150%
	13C5-PFPeA	97% 20-150%
	13C5-PFHxA	101% 20-150%
	13C4-PFHpA	103% 20-150%
	13C8-PFOA	99% 20-150%
	13C9-PFNA	93% 20-150%
	13C6-PFDA	104% 20-150%
	13C7-PFUnDA	111% 20-150%
	13C2-PFDoDA	98% 20-150%
	13C2-PFTeDA	81% 20-150%
	13C3-PFBS	94% 20-150%
	13C3-PFHxS	97% 20-150%
	13C8-PFOS	101% 20-150%
	13C8-FOSA	89% 20-150%
	d3-MeFOSA	91% 20-150%
	d5-EtFOSA	84% 20-150%
	d3-MeFOSAA	113% 20-150%
	d5-EtFOSAA	112% 20-150%
	d7-MeFOSE	97% 20-150%
	d9-EtFOSE	92% 20-150%
	13C2-4:2FTS	109% 20-180%
	13C2-6:2FTS	124% 20-180%
	13C2-8:2FTS	115% 20-180%
	13C3-HFPO-DA	102% 20-150%

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Job Number: FC13254

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q442-IBLK	6Q31316.D	1	02/23/24	MV	n/a	n/a	S6Q442

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-39, FC13254-40, FC13254-41

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	2.0	0.31	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	1.0	0.10	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	1.0	0.10	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	1.0	0.10	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	1.0	0.10	ug/kg	
375-95-1	Perfluorononanoic acid	ND	1.0	0.12	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	1.0	0.10	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	1.0	0.13	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	1.0	0.10	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	1.0	0.10	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	1.0	0.10	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	1.0	0.10	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.0	0.16	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	1.0	0.16	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.0	0.15	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.0	0.10	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	1.0	0.18	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	1.0	0.14	ug/kg	
79780-39-5	Perfluorododecanesulfonic acid	ND	1.0	0.15	ug/kg	
757124-72-44:2	Fluorotelomer sulfonate	ND	2.0	0.30	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	2.0	0.35	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	2.0	0.61	ug/kg	
754-91-6	PFOSA	ND	1.0	0.10	ug/kg	
31506-32-8	MeFOSA	ND	1.0	0.14	ug/kg	
4151-50-2	EtFOSA	ND	1.0	0.10	ug/kg	
2355-31-9	MeFOSAA	ND	1.0	0.16	ug/kg	
2991-50-6	EtFOSAA	ND	1.0	0.20	ug/kg	
24448-09-7	MeFOSE	ND	5.0	0.64	ug/kg	
1691-99-2	EtFOSE	ND	5.0	0.83	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	2.0	0.29	ug/kg	
919005-14-4	ADONA	ND	2.0	0.34	ug/kg	
377-73-1	PFMPA	ND	1.0	0.11	ug/kg	
863090-89-5	PFMBA	ND	1.0	0.10	ug/kg	
151772-58-6	NFDHA	ND	2.0	0.24	ug/kg	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	2.0	0.44	ug/kg	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	2.0	0.36	ug/kg	

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Job Number: FC13254**Account:** GEOEWAT GeoEngineers, Inc.**Project:** Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q442-IBLK	6Q31316.D	1	02/23/24	MV	n/a	n/a	S6Q442

The QC reported here applies to the following samples:**Method:** EPA DRAFT 1633

FC13254-39, FC13254-40, FC13254-41

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	1.0	0.10	ug/kg	
356-02-5	3:3 Fluorotelomer carboxylate	ND	2.5	0.51	ug/kg	
914637-49-35:3	Fluorotelomer carboxylate	ND	13	1.2	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	13	1.3	ug/kg	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	100% 20-150%
	13C5-PFPeA	104% 20-150%
	13C5-PFHxA	104% 20-150%
	13C4-PFHpA	101% 20-150%
	13C8-PFOA	94% 20-150%
	13C9-PFNA	98% 20-150%
	13C6-PFDA	93% 20-150%
	13C7-PFUnDA	106% 20-150%
	13C2-PFDoDA	86% 20-150%
	13C2-PFTeDA	93% 20-150%
	13C3-PFBS	103% 20-150%
	13C3-PFHxS	97% 20-150%
	13C8-PFOS	95% 20-150%
	13C8-FOSA	98% 20-150%
	d3-MeFOSA	94% 20-150%
	d5-EtFOSA	101% 20-150%
	d3-MeFOSAA	94% 20-150%
	d5-EtFOSAA	103% 20-150%
	d7-MeFOSE	96% 20-150%
	d9-EtFOSE	99% 20-150%
	13C2-4:2FTS	109% 20-180%
	13C2-6:2FTS	104% 20-180%
	13C2-8:2FTS	104% 20-180%
	13C3-HFPO-DA	97% 20-150%

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Job Number: FC13254

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q436-ICCB	6Q31012.D	1	02/15/24	MV	n/a	n/a	S6Q436

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-42, FC13254-43, FC13254-44

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.00064	ug/l	
79780-39-5	Perfluorododecanesulfonic acid	ND	0.0050	0.0011	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.020	0.0032	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.020	0.0035	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.020	0.0041	ug/l	
754-91-6	PFOSA	ND	0.0040	0.00067	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0080	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0050	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0050	0.0013	ug/l	
24448-09-7	MeFOSE	ND	0.040	0.0044	ug/l	
1691-99-2	EtFOSE	ND	0.040	0.0074	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0040	0.0010	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0019	ug/l	
377-73-1	PFMPA	ND	0.0080	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.0080	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0080	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0014	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0018	ug/l	
113507-82-7	PFEESA	ND	0.0080	0.00078	ug/l	
356-02-5	3:3 Fluorotelomer carboxylate	ND	0.020	0.0045	ug/l	

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Job Number: FC13254

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q436-ICCB	6Q31012.D	1	02/15/24	MV	n/a	n/a	S6Q436

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-42, FC13254-43, FC13254-44

CAS No.	Compound	Result	RL	MDL	Units	Q
914637-49-35:3	Fluorotelomer carboxylate	ND	0.10	0.0087	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.10	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	101%
	13C5-PFPeA	101%
	13C5-PFHxA	103%
	13C4-PFHpA	100%
	13C8-PFOA	106%
	13C9-PFNA	102%
	13C6-PFDA	106%
	13C7-PFUnDA	100%
	13C2-PFDoDA	99%
	13C2-PFTeDA	95%
	13C3-PFBS	97%
	13C3-PFHxS	99%
	13C8-PFOS	102%
	13C8-FOSA	106%
	d3-MeFOSAA	104%
	d5-EtFOSAA	103%
	13C2-4:2FTS	122%
	13C2-6:2FTS	105%
	13C2-8:2FTS	107%

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Job Number: FC13254

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q42-ICCB	7Q2578.D	1	02/19/24	MV	n/a	n/a	S7Q42

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-1, FC13254-2, FC13254-3

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	2.0	0.31	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	1.0	0.10	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	1.0	0.10	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	1.0	0.10	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	1.0	0.10	ug/kg	
375-95-1	Perfluorononanoic acid	ND	1.0	0.12	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	1.0	0.10	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	1.0	0.13	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	1.0	0.10	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	1.0	0.10	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	1.0	0.10	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	1.0	0.10	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.0	0.16	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	1.0	0.16	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.0	0.15	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.0	0.10	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	1.0	0.18	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	1.0	0.14	ug/kg	
79780-39-5	Perfluorododecanesulfonic acid	ND	1.0	0.15	ug/kg	
757124-72-44:2	Fluorotelomer sulfonate	ND	2.0	0.30	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	2.0	0.35	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	2.0	0.61	ug/kg	
754-91-6	PFOSA	ND	1.0	0.10	ug/kg	
31506-32-8	MeFOSA	ND	1.0	0.14	ug/kg	
4151-50-2	EtFOSA	ND	1.0	0.10	ug/kg	
2355-31-9	MeFOSAA	ND	1.0	0.16	ug/kg	
2991-50-6	EtFOSAA	ND	1.0	0.20	ug/kg	
24448-09-7	MeFOSE	ND	5.0	0.64	ug/kg	
1691-99-2	EtFOSE	ND	5.0	0.83	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	2.0	0.29	ug/kg	
919005-14-4	ADONA	ND	2.0	0.34	ug/kg	
377-73-1	PFMPA	ND	1.0	0.11	ug/kg	
863090-89-5	PFMBA	ND	1.0	0.10	ug/kg	
151772-58-6	NFDHA	ND	2.0	0.24	ug/kg	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	2.0	0.44	ug/kg	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	2.0	0.36	ug/kg	

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Job Number: FC13254

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q42-ICCB	7Q2578.D	1	02/19/24	MV	n/a	n/a	S7Q42

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-1, FC13254-2, FC13254-3

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	1.0	0.10	ug/kg	
356-02-5	3:3 Fluorotelomer carboxylate	ND	2.5	0.51	ug/kg	
914637-49-35:3	Fluorotelomer carboxylate	ND	13	1.2	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	13	1.3	ug/kg	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	103% 20-150%
	13C5-PFPeA	100% 20-150%
	13C5-PFHxA	105% 20-150%
	13C4-PFHpA	106% 20-150%
	13C8-PFOA	101% 20-150%
	13C9-PFNA	96% 20-150%
	13C6-PFDA	101% 20-150%
	13C7-PFUnDA	110% 20-150%
	13C2-PFDoDA	100% 20-150%
	13C2-PFTeDA	93% 20-150%
	13C3-PFBS	92% 20-150%
	13C3-PFHxS	94% 20-150%
	13C8-PFOS	99% 20-150%
	13C8-FOSA	97% 20-150%
	d3-MeFOSA	96% 20-150%
	d5-EtFOSA	95% 20-150%
	d3-MeFOSAA	115% 20-150%
	d5-EtFOSAA	114% 20-150%
	d7-MeFOSE	98% 20-150%
	d9-EtFOSE	96% 20-150%
	13C2-4:2FTS	108% 20-180%
	13C2-6:2FTS	113% 20-180%
	13C2-8:2FTS	123% 20-180%
	13C3-HFPO-DA	117% 20-150%

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Job Number: FC13254

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q42-ICCB	7Q2590.D	1	02/20/24	MV	n/a	n/a	S7Q42

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-4, FC13254-5, FC13254-6, FC13254-7, FC13254-8, FC13254-9, FC13254-10, FC13254-11, FC13254-12, FC13254-13

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	2.0	0.31	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	1.0	0.10	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	1.0	0.10	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	1.0	0.10	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	1.0	0.10	ug/kg	
375-95-1	Perfluorononanoic acid	ND	1.0	0.12	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	1.0	0.10	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	1.0	0.13	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	1.0	0.10	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	1.0	0.10	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	1.0	0.10	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	1.0	0.10	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.0	0.16	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	1.0	0.16	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.0	0.15	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.0	0.10	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	1.0	0.18	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	1.0	0.14	ug/kg	
79780-39-5	Perfluorododecanesulfonic acid	ND	1.0	0.15	ug/kg	
757124-72-44:2	Fluorotelomer sulfonate	ND	2.0	0.30	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	2.0	0.35	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	2.0	0.61	ug/kg	
754-91-6	PFOSA	ND	1.0	0.10	ug/kg	
31506-32-8	MeFOSA	ND	1.0	0.14	ug/kg	
4151-50-2	EtFOSA	ND	1.0	0.10	ug/kg	
2355-31-9	MeFOSAA	ND	1.0	0.16	ug/kg	
2991-50-6	EtFOSAA	ND	1.0	0.20	ug/kg	
24448-09-7	MeFOSE	ND	5.0	0.64	ug/kg	
1691-99-2	EtFOSE	ND	5.0	0.83	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	2.0	0.29	ug/kg	
919005-14-4	ADONA	ND	2.0	0.34	ug/kg	
377-73-1	PFMPA	ND	1.0	0.11	ug/kg	
863090-89-5	PFMBA	ND	1.0	0.10	ug/kg	
151772-58-6	NFDHA	ND	2.0	0.24	ug/kg	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	2.0	0.44	ug/kg	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	2.0	0.36	ug/kg	

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Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q42-ICCB	7Q2590.D	1	02/20/24	MV	n/a	n/a	S7Q42

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-4, FC13254-5, FC13254-6, FC13254-7, FC13254-8, FC13254-9, FC13254-10, FC13254-11, FC13254-12, FC13254-13

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	1.0	0.10	ug/kg	
356-02-5	3:3 Fluorotelomer carboxylate	ND	2.5	0.51	ug/kg	
914637-49-35:3	Fluorotelomer carboxylate	ND	13	1.2	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	13	1.3	ug/kg	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	103% 20-150%
	13C5-PFPeA	97% 20-150%
	13C5-PFHxA	100% 20-150%
	13C4-PFHpA	104% 20-150%
	13C8-PFOA	100% 20-150%
	13C9-PFNA	93% 20-150%
	13C6-PFDA	104% 20-150%
	13C7-PFUnDA	107% 20-150%
	13C2-PFDoDA	97% 20-150%
	13C2-PFTeDA	92% 20-150%
	13C3-PFBS	92% 20-150%
	13C3-PFHxS	96% 20-150%
	13C8-PFOS	91% 20-150%
	13C8-FOSA	94% 20-150%
	d3-MeFOSA	93% 20-150%
	d5-EtFOSA	94% 20-150%
	d3-MeFOSAA	111% 20-150%
	d5-EtFOSAA	112% 20-150%
	d7-MeFOSE	92% 20-150%
	d9-EtFOSE	93% 20-150%
	13C2-4:2FTS	108% 20-180%
	13C2-6:2FTS	112% 20-180%
	13C2-8:2FTS	113% 20-180%
	13C3-HFPO-DA	105% 20-150%

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Job Number: FC13254

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q42-ICCB	7Q2602.D	1	02/20/24	MV	n/a	n/a	S7Q42

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-14, FC13254-15, FC13254-16, FC13254-17, FC13254-18, FC13254-19

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	2.0	0.31	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	1.0	0.10	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	1.0	0.10	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	1.0	0.10	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	1.0	0.10	ug/kg	
375-95-1	Perfluorononanoic acid	ND	1.0	0.12	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	1.0	0.10	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	1.0	0.13	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	1.0	0.10	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	1.0	0.10	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	1.0	0.10	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	1.0	0.10	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.0	0.16	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	1.0	0.16	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.0	0.15	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.0	0.10	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	1.0	0.18	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	1.0	0.14	ug/kg	
79780-39-5	Perfluorododecanesulfonic acid	ND	1.0	0.15	ug/kg	
757124-72-44:2	Fluorotelomer sulfonate	ND	2.0	0.30	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	2.0	0.35	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	2.0	0.61	ug/kg	
754-91-6	PFOSA	ND	1.0	0.10	ug/kg	
31506-32-8	MeFOSA	ND	1.0	0.14	ug/kg	
4151-50-2	EtFOSA	ND	1.0	0.10	ug/kg	
2355-31-9	MeFOSAA	ND	1.0	0.16	ug/kg	
2991-50-6	EtFOSAA	ND	1.0	0.20	ug/kg	
24448-09-7	MeFOSE	ND	5.0	0.64	ug/kg	
1691-99-2	EtFOSE	ND	5.0	0.83	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	2.0	0.29	ug/kg	
919005-14-4	ADONA	ND	2.0	0.34	ug/kg	
377-73-1	PFMPA	ND	1.0	0.11	ug/kg	
863090-89-5	PFMBA	ND	1.0	0.10	ug/kg	
151772-58-6	NFDHA	ND	2.0	0.24	ug/kg	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	2.0	0.44	ug/kg	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	2.0	0.36	ug/kg	

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Job Number: FC13254

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q42-ICCB	7Q2602.D	1	02/20/24	MV	n/a	n/a	S7Q42

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-14, FC13254-15, FC13254-16, FC13254-17, FC13254-18, FC13254-19

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	1.0	0.10	ug/kg	
356-02-5	3:3 Fluorotelomer carboxylate	ND	2.5	0.51	ug/kg	
914637-49-35:3	Fluorotelomer carboxylate	ND	13	1.2	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	13	1.3	ug/kg	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	103% 20-150%
	13C5-PFPeA	97% 20-150%
	13C5-PFHxA	103% 20-150%
	13C4-PFHpA	105% 20-150%
	13C8-PFOA	102% 20-150%
	13C9-PFNA	97% 20-150%
	13C6-PFDA	101% 20-150%
	13C7-PFUnDA	109% 20-150%
	13C2-PFDoDA	98% 20-150%
	13C2-PFTeDA	95% 20-150%
	13C3-PFBS	93% 20-150%
	13C3-PFHxS	97% 20-150%
	13C8-PFOS	97% 20-150%
	13C8-FOSA	96% 20-150%
	d3-MeFOSA	97% 20-150%
	d5-EtFOSA	99% 20-150%
	d3-MeFOSAA	115% 20-150%
	d5-EtFOSAA	120% 20-150%
	d7-MeFOSE	98% 20-150%
	d9-EtFOSE	102% 20-150%
	13C2-4:2FTS	108% 20-180%
	13C2-6:2FTS	115% 20-180%
	13C2-8:2FTS	125% 20-180%
	13C3-HFPO-DA	108% 20-150%

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Job Number: FC13254

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q42-ICCB	7Q2612.D	1	02/20/24	MV	n/a	n/a	S7Q42

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-14, FC13254-15, FC13254-16, FC13254-17, FC13254-18, FC13254-19

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	2.0	0.31	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	1.0	0.10	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	1.0	0.10	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	1.0	0.10	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	1.0	0.10	ug/kg	
375-95-1	Perfluorononanoic acid	ND	1.0	0.12	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	1.0	0.10	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	1.0	0.13	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	1.0	0.10	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	1.0	0.10	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	1.0	0.10	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	1.0	0.10	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.0	0.16	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	1.0	0.16	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.0	0.15	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.0	0.10	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	1.0	0.18	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	1.0	0.14	ug/kg	
79780-39-5	Perfluorododecanesulfonic acid	ND	1.0	0.15	ug/kg	
757124-72-44:2	Fluorotelomer sulfonate	ND	2.0	0.30	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	2.0	0.35	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	2.0	0.61	ug/kg	
754-91-6	PFOSA	ND	1.0	0.10	ug/kg	
31506-32-8	MeFOSA	ND	1.0	0.14	ug/kg	
4151-50-2	EtFOSA	ND	1.0	0.10	ug/kg	
2355-31-9	MeFOSAA	ND	1.0	0.16	ug/kg	
2991-50-6	EtFOSAA	ND	1.0	0.20	ug/kg	
24448-09-7	MeFOSE	ND	5.0	0.64	ug/kg	
1691-99-2	EtFOSE	ND	5.0	0.83	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	2.0	0.29	ug/kg	
919005-14-4	ADONA	ND	2.0	0.34	ug/kg	
377-73-1	PFMPA	ND	1.0	0.11	ug/kg	
863090-89-5	PFMBA	ND	1.0	0.10	ug/kg	
151772-58-6	NFDHA	ND	2.0	0.24	ug/kg	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	2.0	0.44	ug/kg	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	2.0	0.36	ug/kg	

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Job Number: FC13254

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q42-ICCB	7Q2612.D	1	02/20/24	MV	n/a	n/a	S7Q42

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-14, FC13254-15, FC13254-16, FC13254-17, FC13254-18, FC13254-19

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	1.0	0.10	ug/kg	
356-02-5	3:3 Fluorotelomer carboxylate	ND	2.5	0.51	ug/kg	
914637-49-35:3	Fluorotelomer carboxylate	ND	13	1.2	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	13	1.3	ug/kg	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	102% 20-150%
	13C5-PFPeA	98% 20-150%
	13C5-PFHxA	103% 20-150%
	13C4-PFHpA	106% 20-150%
	13C8-PFOA	102% 20-150%
	13C9-PFNA	94% 20-150%
	13C6-PFDA	105% 20-150%
	13C7-PFUnDA	112% 20-150%
	13C2-PFDoDA	100% 20-150%
	13C2-PFTeDA	98% 20-150%
	13C3-PFBS	96% 20-150%
	13C3-PFHxS	98% 20-150%
	13C8-PFOS	97% 20-150%
	13C8-FOSA	97% 20-150%
	d3-MeFOSA	93% 20-150%
	d5-EtFOSA	99% 20-150%
	d3-MeFOSAA	121% 20-150%
	d5-EtFOSAA	117% 20-150%
	d7-MeFOSE	99% 20-150%
	d9-EtFOSE	98% 20-150%
	13C2-4:2FTS	111% 20-180%
	13C2-6:2FTS	113% 20-180%
	13C2-8:2FTS	116% 20-180%
	13C3-HFPO-DA	109% 20-150%

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Job Number: FC13254

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q43-ICCB	7Q2633.D	1	02/20/24	MV	n/a	n/a	S7Q43

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-27, FC13254-28, FC13254-29, FC13254-30, FC13254-31, FC13254-32, FC13254-33, FC13254-34, FC13254-35

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	2.0	0.31	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	1.0	0.10	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	1.0	0.10	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	1.0	0.10	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	1.0	0.10	ug/kg	
375-95-1	Perfluorononanoic acid	ND	1.0	0.12	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	1.0	0.10	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	1.0	0.13	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	1.0	0.10	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	1.0	0.10	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	1.0	0.10	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	1.0	0.10	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.0	0.16	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	1.0	0.16	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.0	0.15	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.0	0.10	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	1.0	0.18	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	1.0	0.14	ug/kg	
79780-39-5	Perfluorododecanesulfonic acid	ND	1.0	0.15	ug/kg	
757124-72-44:2	Fluorotelomer sulfonate	ND	2.0	0.30	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	2.0	0.35	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	2.0	0.61	ug/kg	
754-91-6	PFOSA	ND	1.0	0.10	ug/kg	
31506-32-8	MeFOSA	ND	1.0	0.14	ug/kg	
4151-50-2	EtFOSA	ND	1.0	0.10	ug/kg	
2355-31-9	MeFOSAA	ND	1.0	0.16	ug/kg	
2991-50-6	EtFOSAA	ND	1.0	0.20	ug/kg	
24448-09-7	MeFOSE	ND	5.0	0.64	ug/kg	
1691-99-2	EtFOSE	ND	5.0	0.83	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	2.0	0.29	ug/kg	
919005-14-4	ADONA	ND	2.0	0.34	ug/kg	
377-73-1	PFMPA	ND	1.0	0.11	ug/kg	
863090-89-5	PFMBA	ND	1.0	0.10	ug/kg	
151772-58-6	NFDHA	ND	2.0	0.24	ug/kg	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	2.0	0.44	ug/kg	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	2.0	0.36	ug/kg	

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Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q43-ICCB	7Q2633.D	1	02/20/24	MV	n/a	n/a	S7Q43

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-27, FC13254-28, FC13254-29, FC13254-30, FC13254-31, FC13254-32, FC13254-33, FC13254-34, FC13254-35

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	1.0	0.10	ug/kg	
356-02-5	3:3 Fluorotelomer carboxylate	ND	2.5	0.51	ug/kg	
914637-49-35:3	Fluorotelomer carboxylate	ND	13	1.2	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	13	1.3	ug/kg	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	103% 20-150%
	13C5-PFPeA	100% 20-150%
	13C5-PFHxA	105% 20-150%
	13C4-PFHpA	106% 20-150%
	13C8-PFOA	100% 20-150%
	13C9-PFNA	95% 20-150%
	13C6-PFDA	105% 20-150%
	13C7-PFUnDA	110% 20-150%
	13C2-PFDoDA	101% 20-150%
	13C2-PFTeDA	96% 20-150%
	13C3-PFBS	91% 20-150%
	13C3-PFHxS	94% 20-150%
	13C8-PFOS	101% 20-150%
	13C8-FOSA	95% 20-150%
	d3-MeFOSA	94% 20-150%
	d5-EtFOSA	96% 20-150%
	d3-MeFOSAA	119% 20-150%
	d5-EtFOSAA	116% 20-150%
	d7-MeFOSE	99% 20-150%
	d9-EtFOSE	98% 20-150%
	13C2-4:2FTS	107% 20-180%
	13C2-6:2FTS	109% 20-180%
	13C2-8:2FTS	109% 20-180%
	13C3-HFPO-DA	111% 20-150%

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Job Number: FC13254

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q43-ICCB	7Q2645.D	1	02/20/24	MV	n/a	n/a	S7Q43

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-37, FC13254-38

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	2.0	0.31	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	1.0	0.10	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	1.0	0.10	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	1.0	0.10	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	1.0	0.10	ug/kg	
375-95-1	Perfluorononanoic acid	ND	1.0	0.12	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	1.0	0.10	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	1.0	0.13	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	1.0	0.10	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	1.0	0.10	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	1.0	0.10	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	1.0	0.10	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.0	0.16	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	1.0	0.16	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.0	0.15	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.0	0.10	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	1.0	0.18	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	1.0	0.14	ug/kg	
79780-39-5	Perfluorododecanesulfonic acid	ND	1.0	0.15	ug/kg	
757124-72-44:2	Fluorotelomer sulfonate	ND	2.0	0.30	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	2.0	0.35	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	2.0	0.61	ug/kg	
754-91-6	PFOSA	ND	1.0	0.10	ug/kg	
31506-32-8	MeFOSA	ND	1.0	0.14	ug/kg	
4151-50-2	EtFOSA	ND	1.0	0.10	ug/kg	
2355-31-9	MeFOSAA	ND	1.0	0.16	ug/kg	
2991-50-6	EtFOSAA	ND	1.0	0.20	ug/kg	
24448-09-7	MeFOSE	ND	5.0	0.64	ug/kg	
1691-99-2	EtFOSE	ND	5.0	0.83	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	2.0	0.29	ug/kg	
919005-14-4	ADONA	ND	2.0	0.34	ug/kg	
377-73-1	PFMPA	ND	1.0	0.11	ug/kg	
863090-89-5	PFMBA	ND	1.0	0.10	ug/kg	
151772-58-6	NFDHA	ND	2.0	0.24	ug/kg	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	2.0	0.44	ug/kg	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	2.0	0.36	ug/kg	

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Job Number: FC13254

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q43-ICCB	7Q2645.D	1	02/20/24	MV	n/a	n/a	S7Q43

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-37, FC13254-38

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	1.0	0.10	ug/kg	
356-02-5	3:3 Fluorotelomer carboxylate	ND	2.5	0.51	ug/kg	
914637-49-35:3	Fluorotelomer carboxylate	ND	13	1.2	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	13	1.3	ug/kg	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	102% 20-150%
	13C5-PFPeA	99% 20-150%
	13C5-PFHxA	104% 20-150%
	13C4-PFHpA	105% 20-150%
	13C8-PFOA	102% 20-150%
	13C9-PFNA	98% 20-150%
	13C6-PFDA	108% 20-150%
	13C7-PFUnDA	110% 20-150%
	13C2-PFDoDA	102% 20-150%
	13C2-PFTeDA	97% 20-150%
	13C3-PFBS	94% 20-150%
	13C3-PFHxS	95% 20-150%
	13C8-PFOS	95% 20-150%
	13C8-FOSA	97% 20-150%
	d3-MeFOSA	95% 20-150%
	d5-EtFOSA	95% 20-150%
	d3-MeFOSAA	118% 20-150%
	d5-EtFOSAA	114% 20-150%
	d7-MeFOSE	96% 20-150%
	d9-EtFOSE	96% 20-150%
	13C2-4:2FTS	105% 20-180%
	13C2-6:2FTS	110% 20-180%
	13C2-8:2FTS	119% 20-180%
	13C3-HFPO-DA	111% 20-150%

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Job Number: FC13254

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q44-ICCB	7Q2700.D	1	02/21/24	MV	n/a	n/a	S7Q44

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-25, FC13254-35, FC13254-36

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	2.0	0.31	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	1.0	0.10	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	1.0	0.10	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	1.0	0.10	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	1.0	0.10	ug/kg	
375-95-1	Perfluorononanoic acid	ND	1.0	0.12	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	1.0	0.10	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	1.0	0.13	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	1.0	0.10	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	1.0	0.10	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	1.0	0.10	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	1.0	0.10	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.0	0.16	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	1.0	0.16	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.0	0.15	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.0	0.10	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	1.0	0.18	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	1.0	0.14	ug/kg	
79780-39-5	Perfluorododecanesulfonic acid	ND	1.0	0.15	ug/kg	
757124-72-44:2	Fluorotelomer sulfonate	ND	2.0	0.30	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	2.0	0.35	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	2.0	0.61	ug/kg	
754-91-6	PFOSA	ND	1.0	0.10	ug/kg	
31506-32-8	MeFOSA	ND	1.0	0.14	ug/kg	
4151-50-2	EtFOSA	ND	1.0	0.10	ug/kg	
2355-31-9	MeFOSAA	ND	1.0	0.16	ug/kg	
2991-50-6	EtFOSAA	ND	1.0	0.20	ug/kg	
24448-09-7	MeFOSE	ND	5.0	0.64	ug/kg	
1691-99-2	EtFOSE	ND	5.0	0.83	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	2.0	0.29	ug/kg	
919005-14-4	ADONA	ND	2.0	0.34	ug/kg	
377-73-1	PFMPA	ND	1.0	0.11	ug/kg	
863090-89-5	PFMBA	ND	1.0	0.10	ug/kg	
151772-58-6	NFDHA	ND	2.0	0.24	ug/kg	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	2.0	0.44	ug/kg	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	2.0	0.36	ug/kg	

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Job Number: FC13254

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q44-ICCB	7Q2700.D	1	02/21/24	MV	n/a	n/a	S7Q44

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-25, FC13254-35, FC13254-36

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	1.0	0.10	ug/kg	
356-02-5	3:3 Fluorotelomer carboxylate	ND	2.5	0.51	ug/kg	
914637-49-35:3	Fluorotelomer carboxylate	ND	13	1.2	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	13	1.3	ug/kg	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	103% 20-150%
	13C5-PFPeA	97% 20-150%
	13C5-PFHxA	104% 20-150%
	13C4-PFHpA	106% 20-150%
	13C8-PFOA	100% 20-150%
	13C9-PFNA	95% 20-150%
	13C6-PFDA	101% 20-150%
	13C7-PFUnDA	107% 20-150%
	13C2-PFDoDA	100% 20-150%
	13C2-PFTeDA	84% 20-150%
	13C3-PFBS	94% 20-150%
	13C3-PFHxS	99% 20-150%
	13C8-PFOS	94% 20-150%
	13C8-FOSA	83% 20-150%
	d3-MeFOSA	82% 20-150%
	d5-EtFOSA	77% 20-150%
	d3-MeFOSAA	111% 20-150%
	d5-EtFOSAA	114% 20-150%
	d7-MeFOSE	91% 20-150%
	d9-EtFOSE	84% 20-150%
	13C2-4:2FTS	116% 20-180%
	13C2-6:2FTS	119% 20-180%
	13C2-8:2FTS	113% 20-180%
	13C3-HFPO-DA	115% 20-150%

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Job Number: FC13254

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q442-ICCB	6Q31374.D	1	02/24/24	MV	n/a	n/a	S6Q442

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-39, FC13254-40, FC13254-41

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	2.0	0.31	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	1.0	0.10	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	1.0	0.10	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	1.0	0.10	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	1.0	0.10	ug/kg	
375-95-1	Perfluorononanoic acid	ND	1.0	0.12	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	1.0	0.10	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	1.0	0.13	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	1.0	0.10	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	1.0	0.10	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	1.0	0.10	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	1.0	0.10	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.0	0.16	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	1.0	0.16	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.0	0.15	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.0	0.10	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	1.0	0.18	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	1.0	0.14	ug/kg	
79780-39-5	Perfluorododecanesulfonic acid	ND	1.0	0.15	ug/kg	
757124-72-44:2	Fluorotelomer sulfonate	ND	2.0	0.30	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	2.0	0.35	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	2.0	0.61	ug/kg	
754-91-6	PFOSA	ND	1.0	0.10	ug/kg	
31506-32-8	MeFOSA	ND	1.0	0.14	ug/kg	
4151-50-2	EtFOSA	ND	1.0	0.10	ug/kg	
2355-31-9	MeFOSAA	ND	1.0	0.16	ug/kg	
2991-50-6	EtFOSAA	ND	1.0	0.20	ug/kg	
24448-09-7	MeFOSE	ND	5.0	0.64	ug/kg	
1691-99-2	EtFOSE	ND	5.0	0.83	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	2.0	0.29	ug/kg	
919005-14-4	ADONA	ND	2.0	0.34	ug/kg	
377-73-1	PFMPA	ND	1.0	0.11	ug/kg	
863090-89-5	PFMBA	ND	1.0	0.10	ug/kg	
151772-58-6	NFDHA	ND	2.0	0.24	ug/kg	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	2.0	0.44	ug/kg	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	2.0	0.36	ug/kg	

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Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q442-ICCB	6Q31374.D	1	02/24/24	MV	n/a	n/a	S6Q442

The QC reported here applies to the following samples: Method: EPA DRAFT 1633
FC13254-39, FC13254-40, FC13254-41

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	1.0	0.10	ug/kg	
356-02-5	3:3 Fluorotelomer carboxylate	ND	2.5	0.51	ug/kg	
914637-49-35:3	Fluorotelomer carboxylate	ND	13	1.2	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	13	1.3	ug/kg	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	101% 20-150%
	13C5-PFPeA	102% 20-150%
	13C5-PFHxA	103% 20-150%
	13C4-PFHpA	99% 20-150%
	13C8-PFOA	98% 20-150%
	13C9-PFNA	93% 20-150%
	13C6-PFDA	106% 20-150%
	13C7-PFUnDA	108% 20-150%
	13C2-PFDoDA	107% 20-150%
	13C2-PFTeDA	98% 20-150%
	13C3-PFBS	108% 20-150%
	13C3-PFHxS	104% 20-150%
	13C8-PFOS	95% 20-150%
	13C8-FOSA	106% 20-150%
	d3-MeFOSA	97% 20-150%
	d5-EtFOSA	104% 20-150%
	d3-MeFOSAA	101% 20-150%
	d5-EtFOSAA	101% 20-150%
	d7-MeFOSE	96% 20-150%
	d9-EtFOSE	101% 20-150%
	13C2-4:2FTS	120% 20-180%
	13C2-6:2FTS	105% 20-180%
	13C2-8:2FTS	105% 20-180%
	13C3-HFPO-DA	95% 20-150%

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Job Number: FC13254

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q442-ICCB	6Q31387.D	1	02/24/24	MV	n/a	n/a	S6Q442

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-39, FC13254-40, FC13254-41

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	2.0	0.31	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	1.0	0.10	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	1.0	0.10	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	1.0	0.10	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	1.0	0.10	ug/kg	
375-95-1	Perfluorononanoic acid	ND	1.0	0.12	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	1.0	0.10	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	1.0	0.13	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	1.0	0.10	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	1.0	0.10	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	1.0	0.10	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	1.0	0.10	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.0	0.16	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	1.0	0.16	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.0	0.15	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.0	0.10	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	1.0	0.18	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	1.0	0.14	ug/kg	
79780-39-5	Perfluorododecanesulfonic acid	ND	1.0	0.15	ug/kg	
757124-72-44:2	Fluorotelomer sulfonate	ND	2.0	0.30	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	2.0	0.35	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	2.0	0.61	ug/kg	
754-91-6	PFOSA	ND	1.0	0.10	ug/kg	
31506-32-8	MeFOSA	ND	1.0	0.14	ug/kg	
4151-50-2	EtFOSA	ND	1.0	0.10	ug/kg	
2355-31-9	MeFOSAA	ND	1.0	0.16	ug/kg	
2991-50-6	EtFOSAA	ND	1.0	0.20	ug/kg	
24448-09-7	MeFOSE	ND	5.0	0.64	ug/kg	
1691-99-2	EtFOSE	ND	5.0	0.83	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	2.0	0.29	ug/kg	
919005-14-4	ADONA	ND	2.0	0.34	ug/kg	
377-73-1	PFMPA	ND	1.0	0.11	ug/kg	
863090-89-5	PFMBA	ND	1.0	0.10	ug/kg	
151772-58-6	NFDHA	ND	2.0	0.24	ug/kg	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	2.0	0.44	ug/kg	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	2.0	0.36	ug/kg	

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Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q442-ICCB	6Q31387.D	1	02/24/24	MV	n/a	n/a	S6Q442

The QC reported here applies to the following samples: Method: EPA DRAFT 1633
FC13254-39, FC13254-40, FC13254-41

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	1.0	0.10	ug/kg	
356-02-5	3:3 Fluorotelomer carboxylate	ND	2.5	0.51	ug/kg	
914637-49-35:3	Fluorotelomer carboxylate	ND	13	1.2	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	13	1.3	ug/kg	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	99% 20-150%
	13C5-PFPeA	104% 20-150%
	13C5-PFHxA	97% 20-150%
	13C4-PFHpA	98% 20-150%
	13C8-PFOA	105% 20-150%
	13C9-PFNA	104% 20-150%
	13C6-PFDA	91% 20-150%
	13C7-PFUnDA	96% 20-150%
	13C2-PFDoDA	95% 20-150%
	13C2-PFTeDA	90% 20-150%
	13C3-PFBS	107% 20-150%
	13C3-PFHxS	100% 20-150%
	13C8-PFOS	109% 20-150%
	13C8-FOSA	105% 20-150%
	d3-MeFOSA	92% 20-150%
	d5-EtFOSA	114% 20-150%
	d3-MeFOSAA	114% 20-150%
	d5-EtFOSAA	116% 20-150%
	d7-MeFOSE	104% 20-150%
	d9-EtFOSE	108% 20-150%
	13C2-4:2FTS	107% 20-180%
	13C2-6:2FTS	100% 20-180%
	13C2-8:2FTS	97% 20-180%
	13C3-HFPO-DA	105% 20-150%

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Job Number: FC13254

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q443-IBLK	6Q31434.D	1	02/25/24	MV	n/a	n/a	S6Q443

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

OP1753-BS, OP1753-LLBS

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	2.0	0.31	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	1.0	0.10	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	1.0	0.10	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	1.0	0.10	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	1.0	0.10	ug/kg	
375-95-1	Perfluorononanoic acid	ND	1.0	0.12	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	1.0	0.10	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	1.0	0.13	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	1.0	0.10	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	1.0	0.10	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	1.0	0.10	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	1.0	0.10	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.0	0.16	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	1.0	0.16	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.0	0.15	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.0	0.10	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	1.0	0.18	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	1.0	0.14	ug/kg	
79780-39-5	Perfluorododecanesulfonic acid	ND	1.0	0.15	ug/kg	
757124-72-44:2	Fluorotelomer sulfonate	ND	2.0	0.30	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	2.0	0.35	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	2.0	0.61	ug/kg	
754-91-6	PFOSA	ND	1.0	0.10	ug/kg	
31506-32-8	MeFOSA	ND	1.0	0.14	ug/kg	
4151-50-2	EtFOSA	ND	1.0	0.10	ug/kg	
2355-31-9	MeFOSAA	ND	1.0	0.16	ug/kg	
2991-50-6	EtFOSAA	ND	1.0	0.20	ug/kg	
24448-09-7	MeFOSE	ND	5.0	0.64	ug/kg	
1691-99-2	EtFOSE	ND	5.0	0.83	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	2.0	0.29	ug/kg	
919005-14-4	ADONA	ND	2.0	0.34	ug/kg	
377-73-1	PFMPA	ND	1.0	0.11	ug/kg	
863090-89-5	PFMBA	ND	1.0	0.10	ug/kg	
151772-58-6	NFDHA	ND	2.0	0.24	ug/kg	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	2.0	0.44	ug/kg	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	2.0	0.36	ug/kg	

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Job Number: FC13254**Account:** GEOEWAT GeoEngineers, Inc.**Project:** Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q443-IBLK	6Q31434.D	1	02/25/24	MV	n/a	n/a	S6Q443

The QC reported here applies to the following samples:**Method:** EPA DRAFT 1633

OP1753-BS, OP1753-LLBS

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	1.0	0.10	ug/kg	
356-02-5	3:3 Fluorotelomer carboxylate	ND	2.5	0.51	ug/kg	
914637-49-35:3	Fluorotelomer carboxylate	ND	13	1.2	ug/kg	
812-70-4	7:3 Fluorotelomer carboxylate	ND	13	1.3	ug/kg	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	100% 20-150%
	13C5-PFPeA	96% 20-150%
	13C5-PFHxA	93% 20-150%
	13C4-PFHpA	92% 20-150%
	13C8-PFOA	97% 20-150%
	13C9-PFNA	102% 20-150%
	13C6-PFDA	103% 20-150%
	13C7-PFUnDA	97% 20-150%
	13C2-PFDoDA	97% 20-150%
	13C2-PFTeDA	90% 20-150%
	13C3-PFBS	103% 20-150%
	13C3-PFHxS	105% 20-150%
	13C8-PFOS	99% 20-150%
	13C8-FOSA	98% 20-150%
	d3-MeFOSA	98% 20-150%
	d5-EtFOSA	106% 20-150%
	d3-MeFOSAA	95% 20-150%
	d5-EtFOSAA	95% 20-150%
	d7-MeFOSE	97% 20-150%
	d9-EtFOSE	98% 20-150%
	13C2-4:2FTS	113% 20-180%
	13C2-6:2FTS	112% 20-180%
	13C2-8:2FTS	121% 20-180%
	13C3-HFPO-DA	97% 20-150%

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Job Number: FC13254

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q436-ICCB	6Q31001.D	1	02/14/24	MV	n/a	n/a	S6Q436

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

OP1599-BS, OP1599-LLBS, OP1599-MB

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.00064	ug/l	
79780-39-5	Perfluorododecanesulfonic acid	ND	0.0050	0.0011	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.020	0.0032	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.020	0.0035	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.020	0.0041	ug/l	
754-91-6	PFOSA	ND	0.0040	0.00067	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0080	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0050	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0050	0.0013	ug/l	
24448-09-7	MeFOSE	ND	0.040	0.0044	ug/l	
1691-99-2	EtFOSE	ND	0.040	0.0074	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0040	0.0010	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0019	ug/l	
377-73-1	PFMPA	ND	0.0080	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.0080	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0080	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0014	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0018	ug/l	

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Job Number: FC13254

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q436-ICCB	6Q31001.D	1	02/14/24	MV	n/a	n/a	S6Q436

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

OP1599-BS, OP1599-LLBS, OP1599-MB

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.0080	0.00078	ug/l	
356-02-5	3:3 Fluorotelomer carboxylate	ND	0.020	0.0045	ug/l	
914637-49-35:3	Fluorotelomer carboxylate	ND	0.10	0.0087	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.10	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	101% 20-150%
	13C5-PFPeA	105% 20-150%
	13C5-PFHxA	107% 20-150%
	13C4-PFHpA	105% 20-150%
	13C8-PFOA	99% 20-150%
	13C9-PFNA	102% 20-150%
	13C6-PFDA	101% 20-150%
	13C7-PFUnDA	108% 20-150%
	13C2-PFDoDA	106% 20-150%
	13C2-PFTeDA	102% 20-150%
	13C3-PFBS	101% 20-150%
	13C3-PFHxS	99% 20-150%
	13C8-PFOS	107% 20-150%
	13C8-FOSA	102% 20-150%
	d3-MeFOSAA	111% 20-150%
	d5-EtFOSAA	111% 20-150%
	13C2-4:2FTS	125% 20-180%
	13C2-6:2FTS	118% 20-180%
	13C2-8:2FTS	103% 20-180%

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Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1599-LLBS	6Q31007.D	1	02/15/24	MV	02/13/24	OP1599	S6Q436

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-42, FC13254-43, FC13254-44

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.016	0.0134	84	40-150
2706-90-3	Perfluoropentanoic acid	0.008	0.0069	86	40-150
307-24-4	Perfluorohexanoic acid	0.004	0.0034	85	40-150
375-85-9	Perfluoroheptanoic acid	0.004	0.0034	85	40-150
335-67-1	Perfluorooctanoic acid	0.004	0.0031	78	40-150
375-95-1	Perfluorononanoic acid	0.004	0.0037	93	40-150
335-76-2	Perfluorodecanoic acid	0.004	0.0033	83	40-150
2058-94-8	Perfluoroundecanoic acid	0.004	0.0036	90	40-150
307-55-1	Perfluorododecanoic acid	0.004	0.0031	78	40-150
72629-94-8	Perfluorotridecanoic acid	0.004	0.0032	80	40-150
376-06-7	Perfluorotetradecanoic acid	0.004	0.0036	90	40-150
375-73-5	Perfluorobutanesulfonic acid	0.00355	0.0028	79	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.00376	0.0031	82	40-150
355-46-4	Perfluorohexanesulfonic acid	0.00366	0.0029	79	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.00381	0.0034	89	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.00371	0.0036	97	40-150
68259-12-1	Perfluorononanesulfonic acid	0.00385	0.0035	91	40-150
335-77-3	Perfluorodecanesulfonic acid	0.00386	0.0038	98	40-150
79780-39-5	Perfluorododecanesulfonic acid	0.00388	0.0030	77	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.015	0.0119	79	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.0152	0.0126	83	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.0154	0.0152	99	40-150
754-91-6	PFOSA	0.004	0.0034	85	40-150
31506-32-8	MeFOSA	0.008	0.0073	91	40-150
4151-50-2	EtFOSA	0.008	0.0075	94	40-150
2355-31-9	MeFOSAA	0.004	0.0036	90	40-150
2991-50-6	EtFOSAA	0.004	0.0032	80	40-150
24448-09-7	MeFOSE	0.02	0.0145	73	40-150
1691-99-2	EtFOSE	0.02	0.0186	93	40-150
13252-13-6	HFPO-DA (GenX)	0.008	0.0068	85	40-150
919005-14-4	ADONA	0.00756	0.0063	83	40-150
377-73-1	PFMPA	0.008	0.0067	84	40-150
863090-89-5	PFMBA	0.008	0.0068	85	40-150
151772-58-6	NFDHA	0.008	0.0068	85	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.00748	0.0063	84	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.00756	0.0059	78	40-150

* = Outside of Control Limits.

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Job Number: FC13254

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1599-LLBS	6Q31007.D	1	02/15/24	MV	02/13/24	OP1599	S6Q436

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-42, FC13254-43, FC13254-44

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.00712	0.0054	76	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.02	0.0153	77	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.1	0.0848	85	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.1	0.0751	75	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	107%	20-150%
	13C5-PFPeA	108%	20-150%
	13C5-PFHxA	106%	20-150%
	13C4-PFHpA	103%	20-150%
	13C8-PFOA	112%	20-150%
	13C9-PFNA	102%	20-150%
	13C6-PFDA	107%	20-150%
	13C7-PFUnDA	108%	20-150%
	13C2-PFDoDA	106%	20-150%
	13C2-PFTeDA	95%	20-150%
	13C3-PFBS	102%	20-150%
	13C3-PFHxS	105%	20-150%
	13C8-PFOS	112%	20-150%
	13C8-FOSA	106%	20-150%
	d3-MeFOSA	88%	20-150%
	d5-EtFOSA	89%	20-150%
	d3-MeFOSAA	117%	20-150%
	d5-EtFOSAA	119%	20-150%
	d7-MeFOSE	92%	20-150%
	d9-EtFOSE	95%	20-150%
	13C2-4:2FTS	134%	20-180%
	13C2-6:2FTS	125%	20-180%
	13C2-8:2FTS	103%	20-180%
	13C3-HFPO-DA	101%	20-150%

* = Outside of Control Limits.

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Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1626-LLBS	7Q2584.D	1	02/19/24	MV	02/14/24	OP1626	S7Q42

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-1, FC13254-2, FC13254-3, FC13254-4, FC13254-5, FC13254-6, FC13254-7, FC13254-8, FC13254-9, FC13254-10, FC13254-11, FC13254-12, FC13254-13, FC13254-14, FC13254-15, FC13254-16, FC13254-17, FC13254-18, FC13254-19

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
375-22-4	Perfluorobutanoic acid	1.6	1.5	94	40-150
2706-90-3	Perfluoropentanoic acid	0.8	0.77	96	40-150
307-24-4	Perfluorohexanoic acid	0.4	0.38	95	40-150
375-85-9	Perfluoroheptanoic acid	0.4	0.38	95	40-150
335-67-1	Perfluorooctanoic acid	0.4	0.38	95	40-150
375-95-1	Perfluorononanoic acid	0.4	0.41	103	40-150
335-76-2	Perfluorodecanoic acid	0.4	0.38	95	40-150
2058-94-8	Perfluoroundecanoic acid	0.4	0.36	90	40-150
307-55-1	Perfluorododecanoic acid	0.4	0.41	103	40-150
72629-94-8	Perfluorotridecanoic acid	0.4	0.40	100	40-150
376-06-7	Perfluorotetradecanoic acid	0.4	0.37	93	40-150
375-73-5	Perfluorobutanesulfonic acid	0.355	0.33	93	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.376	0.35	93	40-150
355-46-4	Perfluorohexanesulfonic acid	0.366	0.41	112	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.381	0.39	102	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.371	0.39	105	40-150
68259-12-1	Perfluorononanesulfonic acid	0.385	0.40	104	40-150
335-77-3	Perfluorodecanesulfonic acid	0.386	0.37	96	40-150
79780-39-5	Perfluorododecanesulfonic acid	0.388	0.37	95	40-150
757124-72-44:2	Fluorotelomer sulfonate	1.5	1.3	87	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	1.52	1.4	92	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	1.54	1.5	98	40-150
754-91-6	PFOSA	0.4	0.36	90	40-150
31506-32-8	MeFOSA	0.8	0.76	95	40-150
4151-50-2	EtFOSA	0.8	0.62	78	40-150
2355-31-9	MeFOSAA	0.4	0.46	115	40-150
2991-50-6	EtFOSAA	0.4	0.41	103	40-150
24448-09-7	MeFOSE	2	1.6	80	40-150
1691-99-2	EtFOSE	2	2.0	100	40-150
13252-13-6	HFPO-DA (GenX)	0.8	0.75	94	40-150
919005-14-4	ADONA	0.756	0.64	85	40-150
377-73-1	PFMPA	0.8	0.76	95	40-150
863090-89-5	PFMBA	0.8	0.74	93	40-150
151772-58-6	NFDHA	0.8	0.80	100	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.748	0.68	91	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.756	0.66	87	40-150

* = Outside of Control Limits.

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Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1626-LLBS	7Q2584.D	1	02/19/24	MV	02/14/24	OP1626	S7Q42

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-1, FC13254-2, FC13254-3, FC13254-4, FC13254-5, FC13254-6, FC13254-7, FC13254-8, FC13254-9, FC13254-10, FC13254-11, FC13254-12, FC13254-13, FC13254-14, FC13254-15, FC13254-16, FC13254-17, FC13254-18, FC13254-19

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
113507-82-7	PFEESA	0.712	0.70	98	40-150
356-02-5	3:3 Fluorotelomer carboxylate	2	1.8	90	40-150
914637-49-35	3:3 Fluorotelomer carboxylate	10	9.2	92	40-150
812-70-4	7:3 Fluorotelomer carboxylate	10	9.7	97	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	87%	20-150%
	13C5-PFPeA	85%	20-150%
	13C5-PFHxA	88%	20-150%
	13C4-PFHpA	90%	20-150%
	13C8-PFOA	84%	20-150%
	13C9-PFNA	82%	20-150%
	13C6-PFDA	88%	20-150%
	13C7-PFUnDA	91%	20-150%
	13C2-PFDoDA	82%	20-150%
	13C2-PFTeDA	82%	20-150%
	13C3-PFBS	84%	20-150%
	13C3-PFHxS	84%	20-150%
	13C8-PFOS	77%	20-150%
	13C8-FOSA	80%	20-150%
	d3-MeFOSA	77%	20-150%
	d5-EtFOSA	82%	20-150%
	d3-MeFOSAA	93%	20-150%
	d5-EtFOSAA	87%	20-150%
	d7-MeFOSE	82%	20-150%
	d9-EtFOSE	83%	20-150%
	13C2-4:2FTS	69%	20-180%
	13C2-6:2FTS	88%	20-180%
	13C2-8:2FTS	93%	20-180%
	13C3-HFPO-DA	94%	20-150%

* = Outside of Control Limits.

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Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1652-LLBS	7Q2623.D	1	02/20/24	MV	02/15/24	OP1652	S7Q43

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-20, FC13254-21, FC13254-22, FC13254-23, FC13254-24, FC13254-25, FC13254-26, FC13254-27, FC13254-28, FC13254-29, FC13254-30, FC13254-31, FC13254-32, FC13254-33, FC13254-34, FC13254-35, FC13254-36, FC13254-37, FC13254-38

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
375-22-4	Perfluorobutanoic acid	1.6	1.5	94	40-150
2706-90-3	Perfluoropentanoic acid	0.8	0.80	100	40-150
307-24-4	Perfluorohexanoic acid	0.4	0.40	100	40-150
375-85-9	Perfluoroheptanoic acid	0.4	0.40	100	40-150
335-67-1	Perfluorooctanoic acid	0.4	0.41	103	40-150
375-95-1	Perfluorononanoic acid	0.4	0.42	105	40-150
335-76-2	Perfluorodecanoic acid	0.4	0.40	100	40-150
2058-94-8	Perfluoroundecanoic acid	0.4	0.39	98	40-150
307-55-1	Perfluorododecanoic acid	0.4	0.41	103	40-150
72629-94-8	Perfluorotridecanoic acid	0.4	0.42	105	40-150
376-06-7	Perfluorotetradecanoic acid	0.4	0.43	108	40-150
375-73-5	Perfluorobutanesulfonic acid	0.355	0.37	104	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.376	0.38	101	40-150
355-46-4	Perfluorohexanesulfonic acid	0.366	0.43	118	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.381	0.37	97	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.371	0.39	105	40-150
68259-12-1	Perfluorononanesulfonic acid	0.385	0.38	99	40-150
335-77-3	Perfluorodecanesulfonic acid	0.386	0.38	98	40-150
79780-39-5	Perfluorododecanesulfonic acid	0.388	0.36	93	40-150
757124-72-44:2	Fluorotelomer sulfonate	1.5	1.4	93	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	1.52	1.5	99	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	1.54	1.5	98	40-150
754-91-6	PFOSA	0.4	0.39	98	40-150
31506-32-8	MeFOSA	0.8	0.82	103	40-150
4151-50-2	EtFOSA	0.8	0.67	84	40-150
2355-31-9	MeFOSAA	0.4	0.45	113	40-150
2991-50-6	EtFOSAA	0.4	0.31	78	40-150
24448-09-7	MeFOSE	2	1.7	85	40-150
1691-99-2	EtFOSE	2	2.0	100	40-150
13252-13-6	HFPO-DA (GenX)	0.8	0.72	90	40-150
919005-14-4	ADONA	0.756	0.65	86	40-150
377-73-1	PFMPA	0.8	0.80	100	40-150
863090-89-5	PFMBA	0.8	0.76	95	40-150
151772-58-6	NFDHA	0.8	0.79	99	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.748	0.67	90	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.756	0.66	87	40-150

* = Outside of Control Limits.

Blank Spike Summary

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Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1652-LLBS	7Q2623.D	1	02/20/24	MV	02/15/24	OP1652	S7Q43

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-20, FC13254-21, FC13254-22, FC13254-23, FC13254-24, FC13254-25, FC13254-26, FC13254-27, FC13254-28, FC13254-29, FC13254-30, FC13254-31, FC13254-32, FC13254-33, FC13254-34, FC13254-35, FC13254-36, FC13254-37, FC13254-38

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
113507-82-7	PFEESA	0.712	0.70	98	40-150
356-02-5	3:3 Fluorotelomer carboxylate	2	1.9	95	40-150
914637-49-35:3	Fluorotelomer carboxylate	10	9.5	95	40-150
812-70-4	7:3 Fluorotelomer carboxylate	10	10.1	101	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	89%	20-150%
	13C5-PFPeA	84%	20-150%
	13C5-PFHxA	89%	20-150%
	13C4-PFHpA	88%	20-150%
	13C8-PFOA	86%	20-150%
	13C9-PFNA	82%	20-150%
	13C6-PFDA	89%	20-150%
	13C7-PFUnDA	92%	20-150%
	13C2-PFDoDA	82%	20-150%
	13C2-PFTeDA	78%	20-150%
	13C3-PFBS	83%	20-150%
	13C3-PFHxS	82%	20-150%
	13C8-PFOS	83%	20-150%
	13C8-FOSA	86%	20-150%
	d3-MeFOSA	87%	20-150%
	d5-EtFOSA	92%	20-150%
	d3-MeFOSAA	90%	20-150%
	d5-EtFOSAA	96%	20-150%
	d7-MeFOSE	86%	20-150%
	d9-EtFOSE	92%	20-150%
	13C2-4:2FTS	70%	20-180%
	13C2-6:2FTS	85%	20-180%
	13C2-8:2FTS	94%	20-180%
	13C3-HFPO-DA	98%	20-150%

* = Outside of Control Limits.

Blank Spike Summary

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Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1753-LLBS	6Q31376.D	1	02/24/24	MV	02/21/24	OP1753	S6Q442

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-39, FC13254-40, FC13254-41

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
375-22-4	Perfluorobutanoic acid	1.6	1.5	94	40-150
2706-90-3	Perfluoropentanoic acid	0.8	0.77	96	40-150
307-24-4	Perfluorohexanoic acid	0.4	0.40	100	40-150
375-85-9	Perfluoroheptanoic acid	0.4	0.39	98	40-150
335-67-1	Perfluorooctanoic acid	0.4	0.43	108	40-150
375-95-1	Perfluorononanoic acid	0.4	0.36	90	40-150
335-76-2	Perfluorodecanoic acid	0.4	0.42	105	40-150
2058-94-8	Perfluoroundecanoic acid	0.4	0.42	105	40-150
307-55-1	Perfluorododecanoic acid	0.4	0.41	103	40-150
72629-94-8	Perfluorotridecanoic acid	0.4	0.48	120	40-150
376-06-7	Perfluorotetradecanoic acid	0.4	0.36	90	40-150
375-73-5	Perfluorobutanesulfonic acid	0.355	0.36	101	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.376	0.35	93	40-150
355-46-4	Perfluorohexanesulfonic acid	0.366	0.36	98	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.381	0.38	100	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.371	0.42	113	40-150
68259-12-1	Perfluorononanesulfonic acid	0.385	0.37	96	40-150
335-77-3	Perfluorodecanesulfonic acid	0.386	0.37	96	40-150
79780-39-5	Perfluorododecanesulfonic acid	0.388	0.49	126	40-150
757124-72-44:2	Fluorotelomer sulfonate	1.5	1.4	93	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	1.52	1.6	105	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	1.54	1.2	78	40-150
754-91-6	PFOSA	0.4	0.40	100	40-150
31506-32-8	MeFOSA	0.8	0.83	104	40-150
4151-50-2	EtFOSA	0.8	0.90	113	40-150
2355-31-9	MeFOSAA	0.4	0.46	115	40-150
2991-50-6	EtFOSAA	0.4	0.36	90	40-150
24448-09-7	MeFOSE	2	2.4	120	40-150
1691-99-2	EtFOSE	2	1.9	95	40-150
13252-13-6	HFPO-DA (GenX)	0.8	0.84	105	40-150
919005-14-4	ADONA	0.756	0.74	98	40-150
377-73-1	PFMPA	0.8	0.71	89	40-150
863090-89-5	PFMBA	0.8	0.78	98	40-150
151772-58-6	NFDHA	0.8	0.70	88	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.748	0.76	102	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.756	0.76	101	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1753-LLBS	6Q31376.D	1	02/24/24	MV	02/21/24	OP1753	S6Q442

The QC reported here applies to the following samples: Method: EPA DRAFT 1633
FC13254-39, FC13254-40, FC13254-41

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
113507-82-7	PFEESA	0.712	0.64	90	40-150
356-02-5	3:3 Fluorotelomer carboxylate	2	1.8	90	40-150
914637-49-35:3	Fluorotelomer carboxylate	10	9.0	90	40-150
812-70-4	7:3 Fluorotelomer carboxylate	10	10.4	104	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	59%	20-150%
	13C5-PFPeA	61%	20-150%
	13C5-PFHxA	59%	20-150%
	13C4-PFHpA	56%	20-150%
	13C8-PFOA	60%	20-150%
	13C9-PFNA	61%	20-150%
	13C6-PFDA	60%	20-150%
	13C7-PFUnDA	57%	20-150%
	13C2-PFDoDA	55%	20-150%
	13C2-PFTeDA	60%	20-150%
	13C3-PFBS	58%	20-150%
	13C3-PFHxS	62%	20-150%
	13C8-PFOS	64%	20-150%
	13C8-FOSA	65%	20-150%
	d3-MeFOSA	55%	20-150%
	d5-EtFOSA	57%	20-150%
	d3-MeFOSAA	60%	20-150%
	d5-EtFOSAA	67%	20-150%
	d7-MeFOSE	65%	20-150%
	d9-EtFOSE	64%	20-150%
	13C2-4:2FTS	62%	20-180%
	13C2-6:2FTS	57%	20-180%
	13C2-8:2FTS	68%	20-180%
	13C3-HFPO-DA	58%	20-150%

* = Outside of Control Limits.

Blank Spike Summary

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Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1753-LLBS	6Q31438.D	1	02/25/24	MV	02/21/24	OP1753	S6Q443

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-39, FC13254-40, FC13254-41

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
375-22-4	Perfluorobutanoic acid	1.6	1.4	88	40-150
2706-90-3	Perfluoropentanoic acid	0.8	0.75	94	40-150
307-24-4	Perfluorohexanoic acid	0.4	0.44	110	40-150
375-85-9	Perfluoroheptanoic acid	0.4	0.37	93	40-150
335-67-1	Perfluorooctanoic acid	0.4	0.42	105	40-150
375-95-1	Perfluorononanoic acid	0.4	0.40	100	40-150
335-76-2	Perfluorodecanoic acid	0.4	0.32	80	40-150
2058-94-8	Perfluoroundecanoic acid	0.4	0.33	83	40-150
307-55-1	Perfluorododecanoic acid	0.4	0.35	88	40-150
72629-94-8	Perfluorotridecanoic acid	0.4	0.42	105	40-150
376-06-7	Perfluorotetradecanoic acid	0.4	0.35	88	40-150
375-73-5	Perfluorobutanesulfonic acid	0.355	0.36	101	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.376	0.33	88	40-150
355-46-4	Perfluorohexanesulfonic acid	0.366	0.43	118	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.381	0.34	89	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.371	0.38	102	40-150
68259-12-1	Perfluorononanesulfonic acid	0.385	0.33	86	40-150
335-77-3	Perfluorodecanesulfonic acid	0.386	0.38	98	40-150
79780-39-5	Perfluorododecanesulfonic acid	0.388	0.40	103	40-150
757124-72-44:2	Fluorotelomer sulfonate	1.5	1.2	80	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	1.52	1.5	99	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	1.54	1.4	91	40-150
754-91-6	PFOSA	0.4	0.43	108	40-150
31506-32-8	MeFOSA	0.8	0.76	95	40-150
4151-50-2	EtFOSA	0.8	0.80	100	40-150
2355-31-9	MeFOSAA	0.4	0.34	85	40-150
2991-50-6	EtFOSAA	0.4	0.40	100	40-150
24448-09-7	MeFOSE	2	2.3	115	40-150
1691-99-2	EtFOSE	2	2.2	110	40-150
13252-13-6	HFPO-DA (GenX)	0.8	0.85	106	40-150
919005-14-4	ADONA	0.756	0.75	99	40-150
377-73-1	PFMPA	0.8	0.77	96	40-150
863090-89-5	PFMBA	0.8	0.80	100	40-150
151772-58-6	NFDHA	0.8	0.91	114	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.748	0.83	111	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.756	0.75	99	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1753-LLBS	6Q31438.D	1	02/25/24	MV	02/21/24	OP1753	S6Q443

The QC reported here applies to the following samples: Method: EPA DRAFT 1633
FC13254-39, FC13254-40, FC13254-41

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
113507-82-7	PFEESA	0.712	0.67	94	40-150
356-02-5	3:3 Fluorotelomer carboxylate	2	1.7	85	40-150
914637-49-35:3	Fluorotelomer carboxylate	10	9.3	93	40-150
812-70-4	7:3 Fluorotelomer carboxylate	10	9.7	97	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	58%	20-150%
	13C5-PFPeA	57%	20-150%
	13C5-PFHxA	56%	20-150%
	13C4-PFHpA	54%	20-150%
	13C8-PFOA	57%	20-150%
	13C9-PFNA	58%	20-150%
	13C6-PFDA	65%	20-150%
	13C7-PFUnDA	62%	20-150%
	13C2-PFDoDA	58%	20-150%
	13C2-PFTeDA	60%	20-150%
	13C3-PFBS	55%	20-150%
	13C3-PFHxS	60%	20-150%
	13C8-PFOS	67%	20-150%
	13C8-FOSA	63%	20-150%
	d3-MeFOSA	60%	20-150%
	d5-EtFOSA	61%	20-150%
	d3-MeFOSAA	65%	20-150%
	d5-EtFOSAA	63%	20-150%
	d7-MeFOSE	64%	20-150%
	d9-EtFOSE	65%	20-150%
	13C2-4:2FTS	66%	20-180%
	13C2-6:2FTS	61%	20-180%
	13C2-8:2FTS	62%	20-180%
	13C3-HFPO-DA	56%	20-150%

* = Outside of Control Limits.

Blank Spike Summary

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Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1599-BS	6Q31006.D	1	02/15/24	MV	02/13/24	OP1599	S6Q436

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-42, FC13254-43, FC13254-44

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.1	0.0880	88	40-150
2706-90-3	Perfluoropentanoic acid	0.05	0.0453	91	40-150
307-24-4	Perfluorohexanoic acid	0.025	0.0215	86	40-150
375-85-9	Perfluoroheptanoic acid	0.025	0.0222	89	40-150
335-67-1	Perfluorooctanoic acid	0.025	0.0230	92	40-150
375-95-1	Perfluorononanoic acid	0.025	0.0227	91	40-150
335-76-2	Perfluorodecanoic acid	0.025	0.0226	90	40-150
2058-94-8	Perfluoroundecanoic acid	0.025	0.0234	94	40-150
307-55-1	Perfluorododecanoic acid	0.025	0.0210	84	40-150
72629-94-8	Perfluorotridecanoic acid	0.025	0.0221	88	40-150
376-06-7	Perfluorotetradecanoic acid	0.025	0.0237	95	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0222	0.0190	86	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0235	0.0215	91	40-150
355-46-4	Perfluorohexanesulfonic acid	0.0229	0.0212	93	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.0238	0.0227	95	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.0232	0.0211	91	40-150
68259-12-1	Perfluorononanesulfonic acid	0.0241	0.0239	99	40-150
335-77-3	Perfluorodecanesulfonic acid	0.0241	0.0243	101	40-150
79780-39-5	Perfluorododecanesulfonic acid	0.0243	0.0211	87	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0938	0.0857	91	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.095	0.0835	88	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.096	0.0936	98	40-150
754-91-6	PFOSA	0.025	0.0212	85	40-150
31506-32-8	MeFOSA	0.05	0.0494	99	40-150
4151-50-2	EtFOSA	0.05	0.0443	89	40-150
2355-31-9	MeFOSAA	0.025	0.0236	94	40-150
2991-50-6	EtFOSAA	0.025	0.0190	76	40-150
24448-09-7	MeFOSE	0.125	0.116	93	40-150
1691-99-2	EtFOSE	0.125	0.119	95	40-150
13252-13-6	HFPO-DA (GenX)	0.05	0.0444	89	40-150
919005-14-4	ADONA	0.0473	0.0453	96	40-150
377-73-1	PFMPA	0.05	0.0188	38*	40-150
863090-89-5	PFMBA	0.05	0.0478	96	40-150
151772-58-6	NFDHA	0.05	0.0440	88	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0468	0.0429	92	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0473	0.0397	84	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1599-BS	6Q31006.D	1	02/15/24	MV	02/13/24	OP1599	S6Q436

The QC reported here applies to the following samples: Method: EPA DRAFT 1633

FC13254-42, FC13254-43, FC13254-44

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0445	0.0371	83	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.125	0.215	172*	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.625	0.502	80	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.625	0.547	88	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	22%	20-150%
	13C5-PFPeA	100%	20-150%
	13C5-PFHxA	110%	20-150%
	13C4-PFHpA	106%	20-150%
	13C8-PFOA	116%	20-150%
	13C9-PFNA	104%	20-150%
	13C6-PFDA	111%	20-150%
	13C7-PFUnDA	105%	20-150%
	13C2-PFDoDA	110%	20-150%
	13C2-PFTeDA	104%	20-150%
	13C3-PFBS	111%	20-150%
	13C3-PFHxS	107%	20-150%
	13C8-PFOS	109%	20-150%
	13C8-FOSA	105%	20-150%
	d3-MeFOSA	91%	20-150%
	d5-EtFOSA	100%	20-150%
	d3-MeFOSAA	103%	20-150%
	d5-EtFOSAA	121%	20-150%
	d7-MeFOSE	78%	20-150%
	d9-EtFOSE	91%	20-150%
	13C2-4:2FTS	128%	20-180%
	13C2-6:2FTS	119%	20-180%
	13C2-8:2FTS	114%	20-180%
	13C3-HFPO-DA	104%	20-150%

* = Outside of Control Limits.

Blank Spike Summary

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Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1626-BS	7Q2583.D	1	02/19/24	MV	02/14/24	OP1626	S7Q42

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-1, FC13254-2, FC13254-3, FC13254-4, FC13254-5, FC13254-6, FC13254-7, FC13254-8, FC13254-9, FC13254-10, FC13254-11, FC13254-12, FC13254-13, FC13254-14, FC13254-15, FC13254-16, FC13254-17, FC13254-18, FC13254-19

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
375-22-4	Perfluorobutanoic acid	10	9.4	94	40-150
2706-90-3	Perfluoropentanoic acid	5	4.9	98	40-150
307-24-4	Perfluorohexanoic acid	2.5	2.4	96	40-150
375-85-9	Perfluoroheptanoic acid	2.5	2.5	100	40-150
335-67-1	Perfluorooctanoic acid	2.5	2.5	100	40-150
375-95-1	Perfluorononanoic acid	2.5	2.4	96	40-150
335-76-2	Perfluorodecanoic acid	2.5	2.4	96	40-150
2058-94-8	Perfluoroundecanoic acid	2.5	2.4	96	40-150
307-55-1	Perfluorododecanoic acid	2.5	2.5	100	40-150
72629-94-8	Perfluorotridecanoic acid	2.5	2.6	104	40-150
376-06-7	Perfluorotetradecanoic acid	2.5	2.4	96	40-150
375-73-5	Perfluorobutanesulfonic acid	2.22	2.3	104	40-150
2706-91-4	Perfluoropentanesulfonic acid	2.35	2.2	94	40-150
355-46-4	Perfluorohexanesulfonic acid	2.29	2.3	101	40-150
375-92-8	Perfluoroheptanesulfonic acid	2.38	2.4	101	40-150
1763-23-1	Perfluorooctanesulfonic acid	2.32	2.4	103	40-150
68259-12-1	Perfluorononanesulfonic acid	2.41	2.4	100	40-150
335-77-3	Perfluorodecanesulfonic acid	2.41	2.4	99	40-150
79780-39-5	Perfluorododecanesulfonic acid	2.43	2.3	95	40-150
757124-72-44:2	Fluorotelomer sulfonate	9.38	9.5	101	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	9.5	9.6	101	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	9.6	9.5	99	40-150
754-91-6	PFOSA	2.5	2.4	96	40-150
31506-32-8	MeFOSA	5	4.8	96	40-150
4151-50-2	EtFOSA	5	4.2	84	40-150
2355-31-9	MeFOSAA	2.5	2.4	96	40-150
2991-50-6	EtFOSAA	2.5	2.4	96	40-150
24448-09-7	MeFOSE	12.5	9.8	78	40-150
1691-99-2	EtFOSE	12.5	11.9	95	40-150
13252-13-6	HFPO-DA (GenX)	5	4.9	98	40-150
919005-14-4	ADONA	4.73	4.2	89	40-150
377-73-1	PFMPA	5	4.8	96	40-150
863090-89-5	PFMBA	5	4.8	96	40-150
151772-58-6	NFDHA	5	4.7	94	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	4.68	4.2	90	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	4.73	4.1	87	40-150

* = Outside of Control Limits.

Blank Spike Summary

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Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1626-BS	7Q2583.D	1	02/19/24	MV	02/14/24	OP1626	S7Q42

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-1, FC13254-2, FC13254-3, FC13254-4, FC13254-5, FC13254-6, FC13254-7, FC13254-8, FC13254-9, FC13254-10, FC13254-11, FC13254-12, FC13254-13, FC13254-14, FC13254-15, FC13254-16, FC13254-17, FC13254-18, FC13254-19

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
113507-82-7	PFEESA	4.45	4.4	99	40-150
356-02-5	3:3 Fluorotelomer carboxylate	12.5	11.1	89	40-150
914637-49-35:3	Fluorotelomer carboxylate	62.5	59.3	95	40-150
812-70-4	7:3 Fluorotelomer carboxylate	62.5	61.1	98	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	86%	20-150%
	13C5-PFPeA	81%	20-150%
	13C5-PFHxA	85%	20-150%
	13C4-PFHpA	86%	20-150%
	13C8-PFOA	83%	20-150%
	13C9-PFNA	81%	20-150%
	13C6-PFDA	84%	20-150%
	13C7-PFUnDA	85%	20-150%
	13C2-PFDoDA	76%	20-150%
	13C2-PFTeDA	77%	20-150%
	13C3-PFBS	82%	20-150%
	13C3-PFHxS	84%	20-150%
	13C8-PFOS	82%	20-150%
	13C8-FOSA	83%	20-150%
	d3-MeFOSA	75%	20-150%
	d5-EtFOSA	79%	20-150%
	d3-MeFOSAA	94%	20-150%
	d5-EtFOSAA	93%	20-150%
	d7-MeFOSE	81%	20-150%
	d9-EtFOSE	82%	20-150%
	13C2-4:2FTS	55%	20-180%
	13C2-6:2FTS	76%	20-180%
	13C2-8:2FTS	85%	20-180%
	13C3-HFPO-DA	94%	20-150%

* = Outside of Control Limits.

Blank Spike Summary

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Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1652-BS	7Q2622.D	1	02/20/24	MV	02/15/24	OP1652	S7Q43

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-20, FC13254-21, FC13254-22, FC13254-23, FC13254-24, FC13254-25, FC13254-26, FC13254-27, FC13254-28, FC13254-29, FC13254-30, FC13254-31, FC13254-32, FC13254-33, FC13254-34, FC13254-35, FC13254-36, FC13254-37, FC13254-38

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
375-22-4	Perfluorobutanoic acid	10	10.1	101	40-150
2706-90-3	Perfluoropentanoic acid	5	5.3	106	40-150
307-24-4	Perfluorohexanoic acid	2.5	2.6	104	40-150
375-85-9	Perfluoroheptanoic acid	2.5	2.6	104	40-150
335-67-1	Perfluorooctanoic acid	2.5	2.7	108	40-150
375-95-1	Perfluorononanoic acid	2.5	2.6	104	40-150
335-76-2	Perfluorodecanoic acid	2.5	2.6	104	40-150
2058-94-8	Perfluoroundecanoic acid	2.5	2.6	104	40-150
307-55-1	Perfluorododecanoic acid	2.5	2.7	108	40-150
72629-94-8	Perfluorotridecanoic acid	2.5	2.7	108	40-150
376-06-7	Perfluorotetradecanoic acid	2.5	2.6	104	40-150
375-73-5	Perfluorobutanesulfonic acid	2.22	2.4	108	40-150
2706-91-4	Perfluoropentanesulfonic acid	2.35	2.4	102	40-150
355-46-4	Perfluorohexanesulfonic acid	2.29	2.5	109	40-150
375-92-8	Perfluoroheptanesulfonic acid	2.38	2.4	101	40-150
1763-23-1	Perfluorooctanesulfonic acid	2.32	2.6	112	40-150
68259-12-1	Perfluorononanesulfonic acid	2.41	2.4	100	40-150
335-77-3	Perfluorodecanesulfonic acid	2.41	2.4	99	40-150
79780-39-5	Perfluorododecanesulfonic acid	2.43	2.3	95	40-150
757124-72-44:2	Fluorotelomer sulfonate	9.38	9.3	99	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	9.5	9.6	101	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	9.6	9.5	99	40-150
754-91-6	PFOSA	2.5	2.5	100	40-150
31506-32-8	MeFOSA	5	5.0	100	40-150
4151-50-2	EtFOSA	5	4.3	86	40-150
2355-31-9	MeFOSAA	2.5	2.7	108	40-150
2991-50-6	EtFOSAA	2.5	2.5	100	40-150
24448-09-7	MeFOSE	12.5	10.9	87	40-150
1691-99-2	EtFOSE	12.5	12.6	101	40-150
13252-13-6	HFPO-DA (GenX)	5	4.5	90	40-150
919005-14-4	ADONA	4.73	4.3	91	40-150
377-73-1	PFMPA	5	5.3	106	40-150
863090-89-5	PFMBA	5	5.1	102	40-150
151772-58-6	NFDHA	5	5.1	102	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	4.68	4.3	92	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	4.73	4.3	91	40-150

* = Outside of Control Limits.

Blank Spike Summary

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Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1652-BS	7Q2622.D	1	02/20/24	MV	02/15/24	OP1652	S7Q43

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-20, FC13254-21, FC13254-22, FC13254-23, FC13254-24, FC13254-25, FC13254-26, FC13254-27, FC13254-28, FC13254-29, FC13254-30, FC13254-31, FC13254-32, FC13254-33, FC13254-34, FC13254-35, FC13254-36, FC13254-37, FC13254-38

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
113507-82-7	PFEESA	4.45	4.7	106	40-150
356-02-5	3:3 Fluorotelomer carboxylate	12.5	12.5	100	40-150
914637-49-35:3	Fluorotelomer carboxylate	62.5	64.5	103	40-150
812-70-4	7:3 Fluorotelomer carboxylate	62.5	64.8	104	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	84%	20-150%
	13C5-PFPeA	80%	20-150%
	13C5-PFHxA	83%	20-150%
	13C4-PFHpA	85%	20-150%
	13C8-PFOA	81%	20-150%
	13C9-PFNA	82%	20-150%
	13C6-PFDA	85%	20-150%
	13C7-PFUnDA	83%	20-150%
	13C2-PFDoDA	79%	20-150%
	13C2-PFTeDA	74%	20-150%
	13C3-PFBS	75%	20-150%
	13C3-PFHxS	80%	20-150%
	13C8-PFOS	83%	20-150%
	13C8-FOSA	82%	20-150%
	d3-MeFOSA	81%	20-150%
	d5-EtFOSA	84%	20-150%
	d3-MeFOSAA	93%	20-150%
	d5-EtFOSAA	93%	20-150%
	d7-MeFOSE	81%	20-150%
	d9-EtFOSE	85%	20-150%
	13C2-4:2FTS	66%	20-180%
	13C2-6:2FTS	82%	20-180%
	13C2-8:2FTS	89%	20-180%
	13C3-HFPO-DA	95%	20-150%

* = Outside of Control Limits.

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Job Number: FC13254

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1753-BS	6Q31375.D	1	02/24/24	MV	02/21/24	OP1753	S6Q442

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-39, FC13254-40, FC13254-41

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
375-22-4	Perfluorobutanoic acid	10	9.7	97	40-150
2706-90-3	Perfluoropentanoic acid	5	4.8	96	40-150
307-24-4	Perfluorohexanoic acid	2.5	2.4	96	40-150
375-85-9	Perfluoroheptanoic acid	2.5	2.6	104	40-150
335-67-1	Perfluorooctanoic acid	2.5	2.3	92	40-150
375-95-1	Perfluorononanoic acid	2.5	2.7	108	40-150
335-76-2	Perfluorodecanoic acid	2.5	2.4	96	40-150
2058-94-8	Perfluoroundecanoic acid	2.5	2.5	100	40-150
307-55-1	Perfluorododecanoic acid	2.5	2.5	100	40-150
72629-94-8	Perfluorotridecanoic acid	2.5	2.7	108	40-150
376-06-7	Perfluorotetradecanoic acid	2.5	2.5	100	40-150
375-73-5	Perfluorobutanesulfonic acid	2.22	2.1	95	40-150
2706-91-4	Perfluoropentanesulfonic acid	2.35	2.1	89	40-150
355-46-4	Perfluorohexanesulfonic acid	2.29	2.2	96	40-150
375-92-8	Perfluoroheptanesulfonic acid	2.38	2.3	97	40-150
1763-23-1	Perfluorooctanesulfonic acid	2.32	2.1	91	40-150
68259-12-1	Perfluorononanesulfonic acid	2.41	2.3	96	40-150
335-77-3	Perfluorodecanesulfonic acid	2.41	2.4	99	40-150
79780-39-5	Perfluorododecanesulfonic acid	2.43	2.5	103	40-150
757124-72-44:2	Fluorotelomer sulfonate	9.38	10.8	115	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	9.5	8.9	94	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	9.6	8.1	84	40-150
754-91-6	PFOSA	2.5	2.5	100	40-150
31506-32-8	MeFOSA	5	5.1	102	40-150
4151-50-2	EtFOSA	5	4.7	94	40-150
2355-31-9	MeFOSAA	2.5	2.9	116	40-150
2991-50-6	EtFOSAA	2.5	2.5	100	40-150
24448-09-7	MeFOSE	12.5	14.3	114	40-150
1691-99-2	EtFOSE	12.5	13.9	111	40-150
13252-13-6	HFPO-DA (GenX)	5	4.6	92	40-150
919005-14-4	ADONA	4.73	4.4	93	40-150
377-73-1	PFMPA	5	4.8	96	40-150
863090-89-5	PFMBA	5	5.0	100	40-150
151772-58-6	NFDHA	5	4.8	96	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	4.68	4.3	92	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	4.73	4.8	102	40-150

* = Outside of Control Limits.

Blank Spike Summary

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Job Number: FC13254

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1753-BS	6Q31375.D	1	02/24/24	MV	02/21/24	OP1753	S6Q442

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-39, FC13254-40, FC13254-41

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
113507-82-7	PFEESA	4.45	4.2	94	40-150
356-02-5	3:3 Fluorotelomer carboxylate	12.5	10.7	86	40-150
914637-49-35:3	Fluorotelomer carboxylate	62.5	57.3	92	40-150
812-70-4	7:3 Fluorotelomer carboxylate	62.5	57.1	91	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	61%	20-150%
	13C5-PFPeA	59%	20-150%
	13C5-PFHxA	58%	20-150%
	13C4-PFHpA	55%	20-150%
	13C8-PFOA	63%	20-150%
	13C9-PFNA	54%	20-150%
	13C6-PFDA	59%	20-150%
	13C7-PFUnDA	61%	20-150%
	13C2-PFDoDA	56%	20-150%
	13C2-PFTeDA	57%	20-150%
	13C3-PFBS	62%	20-150%
	13C3-PFHxS	60%	20-150%
	13C8-PFOS	68%	20-150%
	13C8-FOSA	57%	20-150%
	d3-MeFOSA	48%	20-150%
	d5-EtFOSA	55%	20-150%
	d3-MeFOSAA	61%	20-150%
	d5-EtFOSAA	64%	20-150%
	d7-MeFOSE	60%	20-150%
	d9-EtFOSE	55%	20-150%
	13C2-4:2FTS	54%	20-180%
	13C2-6:2FTS	61%	20-180%
	13C2-8:2FTS	71%	20-180%
	13C3-HFPO-DA	60%	20-150%

* = Outside of Control Limits.

Blank Spike Summary

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Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1753-BS	6Q31437.D	1	02/25/24	MV	02/21/24	OP1753	S6Q443

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-39, FC13254-40, FC13254-41

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
375-22-4	Perfluorobutanoic acid	10	9.6	96	40-150
2706-90-3	Perfluoropentanoic acid	5	4.9	98	40-150
307-24-4	Perfluorohexanoic acid	2.5	2.4	96	40-150
375-85-9	Perfluoroheptanoic acid	2.5	2.5	100	40-150
335-67-1	Perfluorooctanoic acid	2.5	2.3	92	40-150
375-95-1	Perfluorononanoic acid	2.5	2.4	96	40-150
335-76-2	Perfluorodecanoic acid	2.5	2.5	100	40-150
2058-94-8	Perfluoroundecanoic acid	2.5	2.3	92	40-150
307-55-1	Perfluorododecanoic acid	2.5	2.5	100	40-150
72629-94-8	Perfluorotridecanoic acid	2.5	2.6	104	40-150
376-06-7	Perfluorotetradecanoic acid	2.5	2.5	100	40-150
375-73-5	Perfluorobutanesulfonic acid	2.22	2.2	99	40-150
2706-91-4	Perfluoropentanesulfonic acid	2.35	2.1	89	40-150
355-46-4	Perfluorohexanesulfonic acid	2.29	2.1	92	40-150
375-92-8	Perfluoroheptanesulfonic acid	2.38	2.1	88	40-150
1763-23-1	Perfluorooctanesulfonic acid	2.32	2.1	91	40-150
68259-12-1	Perfluorononanesulfonic acid	2.41	2.5	104	40-150
335-77-3	Perfluorodecanesulfonic acid	2.41	2.4	99	40-150
79780-39-5	Perfluorododecanesulfonic acid	2.43	2.3	95	40-150
757124-72-44:2	Fluorotelomer sulfonate	9.38	8.1	86	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	9.5	9.5	100	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	9.6	8.1	84	40-150
754-91-6	PFOSA	2.5	2.6	104	40-150
31506-32-8	MeFOSA	5	5.4	108	40-150
4151-50-2	EtFOSA	5	4.6	92	40-150
2355-31-9	MeFOSAA	2.5	3.0	120	40-150
2991-50-6	EtFOSAA	2.5	2.4	96	40-150
24448-09-7	MeFOSE	12.5	14.1	113	40-150
1691-99-2	EtFOSE	12.5	13.0	104	40-150
13252-13-6	HFPO-DA (GenX)	5	5.0	100	40-150
919005-14-4	ADONA	4.73	4.9	104	40-150
377-73-1	PFMPA	5	5.0	100	40-150
863090-89-5	PFMBA	5	5.1	102	40-150
151772-58-6	NFDHA	5	5.1	102	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	4.68	4.7	101	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	4.73	4.8	102	40-150

* = Outside of Control Limits.

Blank Spike Summary

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Job Number: FC13254

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1753-BS	6Q31437.D	1	02/25/24	MV	02/21/24	OP1753	S6Q443

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-39, FC13254-40, FC13254-41

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
113507-82-7	PFEESA	4.45	4.5	101	40-150
356-02-5	3:3 Fluorotelomer carboxylate	12.5	10.1	81	40-150
914637-49-35:3	Fluorotelomer carboxylate	62.5	56.9	91	40-150
812-70-4	7:3 Fluorotelomer carboxylate	62.5	59.5	95	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	61%	20-150%
	13C5-PFPeA	62%	20-150%
	13C5-PFHxA	61%	20-150%
	13C4-PFHpA	57%	20-150%
	13C8-PFOA	63%	20-150%
	13C9-PFNA	59%	20-150%
	13C6-PFDA	60%	20-150%
	13C7-PFUnDA	60%	20-150%
	13C2-PFDoDA	57%	20-150%
	13C2-PFTeDA	55%	20-150%
	13C3-PFBS	61%	20-150%
	13C3-PFHxS	65%	20-150%
	13C8-PFOS	62%	20-150%
	13C8-FOSA	56%	20-150%
	d3-MeFOSA	44%	20-150%
	d5-EtFOSA	53%	20-150%
	d3-MeFOSAA	54%	20-150%
	d5-EtFOSAA	64%	20-150%
	d7-MeFOSE	57%	20-150%
	d9-EtFOSE	56%	20-150%
	13C2-4:2FTS	75%	20-180%
	13C2-6:2FTS	67%	20-180%
	13C2-8:2FTS	83%	20-180%
	13C3-HFPO-DA	59%	20-150%

* = Outside of Control Limits.

Matrix Spike Summary

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Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1599-MS	6Q31014.D	1	02/15/24	MV	02/13/24	OP1599	S6Q436
FC13224-1	6Q31013.D	1	02/15/24	MV	02/13/24	OP1599	S6Q436

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-42, FC13254-43, FC13254-44

CAS No.	Compound	FC13224-1 ug/l	Spike Q ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.0073 U	0.0909	0.0830	91	40-150
2706-90-3	Perfluoropentanoic acid	0.0036 U	0.0455	0.0426	94	40-150
307-24-4	Perfluorohexanoic acid	0.0018 U	0.0227	0.0196	86	40-150
375-85-9	Perfluoroheptanoic acid	0.0018 U	0.0227	0.0218	96	40-150
335-67-1	Perfluorooctanoic acid	0.0018 U	0.0227	0.0211	93	40-150
375-95-1	Perfluorononanoic acid	0.0018 U	0.0227	0.0225	99	40-150
335-76-2	Perfluorodecanoic acid	0.0018 U	0.0227	0.0207	91	40-150
2058-94-8	Perfluoroundecanoic acid	0.0018 U	0.0227	0.0214	94	40-150
307-55-1	Perfluorododecanoic acid	0.0018 U	0.0227	0.0229	101	40-150
72629-94-8	Perfluorotridecanoic acid	0.0018 U	0.0227	0.0225	99	40-150
376-06-7	Perfluorotetradecanoic acid	0.0018 U	0.0227	0.0233	103	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0018 U	0.0202	0.0181	90	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0018 U	0.0214	0.0192	90	40-150
355-46-4	Perfluorohexanesulfonic acid	0.0018 U	0.0208	0.0198	95	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.0018 U	0.0217	0.0216	100	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.0018 U	0.0211	0.0211	100	40-150
68259-12-1	Perfluorononanesulfonic acid	0.0018 U	0.0219	0.0191	87	40-150
335-77-3	Perfluorodecanesulfonic acid	0.0018 U	0.0219	0.0181	83	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.0018 U	0.022	0.0173	78	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0073 U	0.0852	0.0737	86	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.0073 U	0.0864	0.0809	94	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.0073 U	0.0873	0.102	117	40-150
754-91-6	PFOSA	0.0018 U	0.0227	0.0194	85	40-150
31506-32-8	MeFOSA	0.0018 U	0.0455	0.0468	103	40-150
4151-50-2	EtFOSA	0.0018 U	0.0455	0.0416	92	40-150
2355-31-9	MeFOSAA	0.0018 U	0.0227	0.0220	97	40-150
2991-50-6	EtFOSAA	0.0018 U	0.0227	0.0206	91	40-150
24448-09-7	MeFOSE	0.018 U	0.114	0.0979	86	40-150
1691-99-2	EtFOSE	0.018 U	0.114	0.104	92	40-150
13252-13-6	HFPO-DA (GenX)	0.0073 U	0.0455	0.0453	100	40-150
919005-14-4	ADONA	0.0073 U	0.043	0.0403	94	40-150
377-73-1	PFMPA	0.0036 U	0.0455	0.0337	74	40-150
863090-89-5	PFMBA	0.0036 U	0.0455	0.0404	89	40-150
151772-58-6	NFDHA	0.0036 U	0.0455	0.0419	92	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0073 U	0.0425	0.0350	82	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0073 U	0.043	0.0340	79	40-150

* = Outside of Control Limits.

Matrix Spike Summary

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Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1599-MS	6Q31014.D	1	02/15/24	MV	02/13/24	OP1599	S6Q436
FC13224-1	6Q31013.D	1	02/15/24	MV	02/13/24	OP1599	S6Q436

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-42, FC13254-43, FC13254-44

CAS No.	Compound	FC13224-1 ug/l	Spike Q	ug/l	MS ug/l	MS %	Limits
113507-82-7	PFEESA	0.0036	U	0.0405	0.0346	86	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.0091	U	0.114	0.184	162*	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.045	U	0.568	0.489	86	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.045	U	0.568	0.472	83	40-150

CAS No.	ID Standard Recoveries	MS	FC13224-1	Limits
	13C4-PFBA	44%	56%	20-150%
	13C5-PFPeA	101%	112%	20-150%
	13C5-PFHxA	104%	111%	20-150%
	13C4-PFHpA	98%	113%	20-150%
	13C8-PFOA	110%	111%	20-150%
	13C9-PFNA	101%	105%	20-150%
	13C6-PFDA	95%	101%	20-150%
	13C7-PFUnDA	86%	92%	20-150%
	13C2-PFDoDA	76%	87%	20-150%
	13C2-PFTeDA	70%	78%	20-150%
	13C3-PFBS	106%	106%	20-150%
	13C3-PFHxS	105%	103%	20-150%
	13C8-PFOS	96%	106%	20-150%
	13C8-FOSA	102%	107%	20-150%
	d3-MeFOSA	77%	96%	20-150%
	d5-EtFOSA	78%	93%	20-150%
	d3-MeFOSAA	91%	95%	20-150%
	d5-EtFOSAA	85%	98%	20-150%
	d7-MeFOSE	77%	85%	20-150%
	d9-EtFOSE	80%	85%	20-150%
	13C2-4:2FTS	135%	124%	20-180%
	13C2-6:2FTS	114%	112%	20-180%
	13C2-8:2FTS	91%	99%	20-180%
	13C3-HFPO-DA	96%	106%	20-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 2

Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1626-MS	7Q2606.D	1	02/20/24	MV	02/14/24	OP1626	S7Q42
OP1626-MSD	7Q2607.D	1	02/20/24	MV	02/14/24	OP1626	S7Q42
FC13254-16	7Q2605.D	1	02/20/24	MV	02/14/24	OP1626	S7Q42

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-1, FC13254-2, FC13254-3, FC13254-4, FC13254-5, FC13254-6, FC13254-7, FC13254-8, FC13254-9, FC13254-10, FC13254-11, FC13254-12, FC13254-13, FC13254-14, FC13254-15, FC13254-16, FC13254-17, FC13254-18, FC13254-19

CAS No.	Compound	FC13254-16 ug/kg	Spike Q ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	ND	11.1	10.7	96	11	10.4	95	3	40-150/30
2706-90-3	Perfluoropentanoic acid	ND	5.56	5.6	101	5.5	5.5	100	2	40-150/30
307-24-4	Perfluorohexanoic acid	ND	2.78	2.9	104	2.75	2.7	98	7	40-150/30
375-85-9	Perfluoroheptanoic acid	ND	2.78	2.7	97	2.75	2.6	95	4	40-150/30
335-67-1	Perfluorooctanoic acid	ND	2.78	2.8	101	2.75	2.7	98	4	40-150/30
375-95-1	Perfluorononanoic acid	ND	2.78	2.9	104	2.75	2.8	102	4	40-150/30
335-76-2	Perfluorodecanoic acid	ND	2.78	2.8	101	2.75	2.8	102	0	40-150/30
2058-94-8	Perfluoroundecanoic acid	ND	2.78	2.6	93	2.75	2.7	98	4	40-150/30
307-55-1	Perfluorododecanoic acid	ND	2.78	2.7	97	2.75	2.6	95	4	40-150/30
72629-94-8	Perfluorotridecanoic acid	ND	2.78	2.8	101	2.75	2.8	102	0	40-150/30
376-06-7	Perfluorotetradecanoic acid	ND	2.78	2.8	101	2.75	2.8	102	0	40-150/30
375-73-5	Perfluorobutanesulfonic acid	ND	2.47	2.6	105	2.44	2.5	103	4	40-150/30
2706-91-4	Perfluoropentanesulfonic acid	ND	2.62	2.6	99	2.59	2.4	93	8	40-150/30
355-46-4	Perfluorohexanesulfonic acid	ND	2.54	2.7	106	2.51	2.6	103	4	40-150/30
375-92-8	Perfluoroheptanesulfonic acid	ND	2.65	2.6	98	2.62	2.6	99	0	40-150/30
1763-23-1	Perfluorooctanesulfonic acid	ND	2.58	2.7	105	2.55	2.8	110	4	40-150/30
68259-12-1	Perfluorononanesulfonic acid	ND	2.68	2.7	101	2.64	2.6	98	4	40-150/30
335-77-3	Perfluorodecanesulfonic acid	ND	2.68	2.7	101	2.65	2.7	102	0	40-150/30
79780-39-5	Perfluorododecanesulfonic acid	ND	2.7	2.6	96	2.67	2.5	94	4	40-150/30
757124-72-44:2	Fluorotelomer sulfonate	ND	10.4	10.1	97	10.3	10.2	99	1	40-150/30
27619-97-2	6:2 Fluorotelomer sulfonate	ND	10.6	10.8	102	10.4	10.6	101	2	40-150/30
39108-34-4	8:2 Fluorotelomer sulfonate	ND	10.7	10.9	102	10.6	10.3	98	6	40-150/30
754-91-6	PFOSA	ND	2.78	2.8	101	2.75	2.7	98	4	40-150/30
31506-32-8	MeFOSA	ND	5.56	5.3	95	5.5	5.2	95	2	40-150/30
4151-50-2	EtFOSA	ND	5.56	4.7	84	5.5	4.4	80	7	40-150/30
2355-31-9	MeFOSAA	ND	2.78	3.0	108	2.75	2.8	102	7	40-150/30
2991-50-6	EtFOSAA	ND	2.78	2.5	90	2.75	2.5	91	0	40-150/30
24448-09-7	MeFOSE	ND	13.9	11.1	80	13.7	10.6	77	5	40-150/30
1691-99-2	EtFOSE	ND	13.9	13.9	100	13.7	13.4	97	4	40-150/30
13252-13-6	HFPO-DA (GenX)	ND	5.56	4.9	88	5.5	5.2	95	6	40-150/30
919005-14-4	ADONA	ND	5.26	4.6	87	5.2	4.8	92	4	40-150/30
377-73-1	PFMPA	ND	5.56	5.6	101	5.5	5.4	98	4	40-150/30
863090-89-5	PFMBA	ND	5.56	5.4	97	5.5	5.3	96	2	40-150/30
151772-58-6	NFDHA	ND	5.56	5.4	97	5.5	5.2	95	4	40-150/30
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	5.2	4.8	92	5.14	4.9	95	2	40-150/30
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	5.26	4.7	89	5.2	4.8	92	2	40-150/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

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Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1626-MS	7Q2606.D	1	02/20/24	MV	02/14/24	OP1626	S7Q42
OP1626-MSD	7Q2607.D	1	02/20/24	MV	02/14/24	OP1626	S7Q42
FC13254-16	7Q2605.D	1	02/20/24	MV	02/14/24	OP1626	S7Q42

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-1, FC13254-2, FC13254-3, FC13254-4, FC13254-5, FC13254-6, FC13254-7, FC13254-8, FC13254-9, FC13254-10, FC13254-11, FC13254-12, FC13254-13, FC13254-14, FC13254-15, FC13254-16, FC13254-17, FC13254-18, FC13254-19

CAS No.	Compound	FC13254-16 ug/kg	Spike Q	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
113507-82-7	PFEESA	ND	4.95	5.0	101	4.89	4.9	100	2	40-150/30
356-02-5	3:3 Fluorotelomer carboxylate	ND	13.9	12.0	86	13.7	12.0	87	0	40-150/30
914637-49-35	3:3 Fluorotelomer carboxylate	ND	69.6	65.0	93	68.7	65.2	95	0	40-150/30
812-70-4	7:3 Fluorotelomer carboxylate	ND	69.6	67.9	98	68.7	67.3	98	1	40-150/30

CAS No.	ID Standard Recoveries	MS	MSD	FC13254-16	Limits
	13C4-PFBA	87%	86%	82%	20-150%
	13C5-PFPeA	83%	81%	78%	20-150%
	13C5-PFHxA	86%	85%	82%	20-150%
	13C4-PFHpA	89%	85%	84%	20-150%
	13C8-PFOA	84%	86%	79%	20-150%
	13C9-PFNA	82%	79%	79%	20-150%
	13C6-PFDA	88%	87%	80%	20-150%
	13C7-PFUnDA	89%	89%	85%	20-150%
	13C2-PFDoDA	87%	87%	77%	20-150%
	13C2-PFTeDA	85%	85%	71%	20-150%
	13C3-PFBS	81%	78%	73%	20-150%
	13C3-PFHxS	82%	82%	74%	20-150%
	13C8-PFOS	80%	77%	79%	20-150%
	13C8-FOSA	76%	79%	78%	20-150%
	d3-MeFOSA	77%	77%	69%	20-150%
	d5-EtFOSA	79%	81%	71%	20-150%
	d3-MeFOSAA	86%	91%	83%	20-150%
	d5-EtFOSAA	88%	91%	89%	20-150%
	d7-MeFOSE	83%	85%	80%	20-150%
	d9-EtFOSE	84%	86%	81%	20-150%
	13C2-4:2FTS	70%	65%	65%	20-180%
	13C2-6:2FTS	85%	83%	82%	20-180%
	13C2-8:2FTS	92%	91%	84%	20-180%
	13C3-HFPO-DA	99%	91%	91%	20-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 2

Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1652-MS	7Q2648.D	1	02/20/24	MV	02/15/24	OP1652	S7Q43
OP1652-MSD	7Q2649.D	1	02/20/24	MV	02/15/24	OP1652	S7Q43
FC13254-38	7Q2647.D	1	02/20/24	MV	02/15/24	OP1652	S7Q43

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-20, FC13254-21, FC13254-22, FC13254-23, FC13254-24, FC13254-25, FC13254-26, FC13254-27, FC13254-28, FC13254-29, FC13254-30, FC13254-31, FC13254-32, FC13254-33, FC13254-34, FC13254-35, FC13254-36, FC13254-37, FC13254-38

CAS No.	Compound	FC13254-38		Spike	MS	MS	Spike	MSD	MSD	RPD	Limits
		ug/kg	Q	ug/kg	ug/kg	%	ug/kg	ug/kg	%		Rec/RPD
375-22-4	Perfluorobutanoic acid	ND		12.2	12.0	98	12.1	11.6	96	3	40-150/30
2706-90-3	Perfluoropentanoic acid	ND		6.12	6.5	106	6.05	6.3	104	3	40-150/30
307-24-4	Perfluorohexanoic acid	ND		3.06	3.2	105	3.02	3.1	103	3	40-150/30
375-85-9	Perfluoroheptanoic acid	ND		3.06	3.1	101	3.02	3.0	99	3	40-150/30
335-67-1	Perfluorooctanoic acid	0.42		3.06	3.6	104	3.02	3.6	105	0	40-150/30
375-95-1	Perfluorononanoic acid	ND		3.06	3.2	105	3.02	3.1	103	3	40-150/30
335-76-2	Perfluorodecanoic acid	ND		3.06	3.0	98	3.02	3.2	106	6	40-150/30
2058-94-8	Perfluoroundecanoic acid	ND		3.06	2.9	95	3.02	2.9	96	0	40-150/30
307-55-1	Perfluorododecanoic acid	ND		3.06	3.1	101	3.02	3.1	103	0	40-150/30
72629-94-8	Perfluorotridecanoic acid	ND		3.06	3.4	111	3.02	3.1	103	9	40-150/30
376-06-7	Perfluorotetradecanoic acid	ND		3.06	3.0	98	3.02	3.1	103	3	40-150/30
375-73-5	Perfluorobutanesulfonic acid	ND		2.71	2.9	107	2.68	2.8	104	4	40-150/30
2706-91-4	Perfluoropentanesulfonic acid	ND		2.88	2.8	97	2.84	2.9	102	4	40-150/30
355-46-4	Perfluorohexanesulfonic acid	0.78		2.8	3.6	101	2.76	3.7	106	3	40-150/30
375-92-8	Perfluoroheptanesulfonic acid	ND		2.92	3.0	103	2.88	3.1	108	3	40-150/30
1763-23-1	Perfluorooctanesulfonic acid	6.4		2.84	8.6	77	2.81	9.0	93	5	40-150/30
68259-12-1	Perfluorononanesulfonic acid	ND		2.94	3.2	109	2.91	3.0	103	6	40-150/30
335-77-3	Perfluorodecanesulfonic acid	ND		2.95	3.0	102	2.92	3.2	110	6	40-150/30
79780-39-5	Perfluorododecanesulfonic aci	ND		2.97	2.9	98	2.93	3.0	102	3	40-150/30
757124-72-44:2	Fluorotelomer sulfonate	ND		11.5	11.4	99	11.3	11.5	101	1	40-150/30
27619-97-2	6:2 Fluorotelomer sulfonate	ND		11.6	12.7	109	11.5	12.2	106	4	40-150/30
39108-34-4	8:2 Fluorotelomer sulfonate	ND		11.7	12.2	104	11.6	12.4	107	2	40-150/30
754-91-6	PFOSA	ND		3.06	3.1	101	3.02	2.9	96	7	40-150/30
31506-32-8	MeFOSA	ND		6.12	6.0	98	6.05	5.9	98	2	40-150/30
4151-50-2	EtFOSA	ND		6.12	5.2	85	6.05	5.1	84	2	40-150/30
2355-31-9	MeFOSAA	ND		3.06	3.4	111	3.02	3.2	106	6	40-150/30
2991-50-6	EtFOSAA	ND		3.06	2.9	95	3.02	2.9	96	0	40-150/30
24448-09-7	MeFOSE	ND		15.3	12.8	84	15.1	12.0	79	6	40-150/30
1691-99-2	EtFOSE	ND		15.3	14.7	96	15.1	14.8	98	1	40-150/30
13252-13-6	HFPO-DA (GenX)	ND		6.12	5.4	88	6.05	5.9	98	9	40-150/30
919005-14-4	ADONA	ND		5.78	5.5	95	5.71	5.4	95	2	40-150/30
377-73-1	PFMPA	ND		6.12	6.4	105	6.05	6.3	104	2	40-150/30
863090-89-5	PFMBA	ND		6.12	6.3	103	6.05	6.1	101	3	40-150/30
151772-58-6	NFDHA	ND		6.12	6.2	101	6.05	6.0	99	3	40-150/30
756426-58-19	Cl-PF3ONS (F-53B Major)	ND		5.72	6.0	105	5.65	5.6	99	7	40-150/30
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND		5.78	5.6	97	5.71	5.6	98	0	40-150/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

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Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1652-MS	7Q2648.D	1	02/20/24	MV	02/15/24	OP1652	S7Q43
OP1652-MSD	7Q2649.D	1	02/20/24	MV	02/15/24	OP1652	S7Q43
FC13254-38	7Q2647.D	1	02/20/24	MV	02/15/24	OP1652	S7Q43

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-20, FC13254-21, FC13254-22, FC13254-23, FC13254-24, FC13254-25, FC13254-26, FC13254-27, FC13254-28, FC13254-29, FC13254-30, FC13254-31, FC13254-32, FC13254-33, FC13254-34, FC13254-35, FC13254-36, FC13254-37, FC13254-38

CAS No.	Compound	FC13254-38 ug/kg	Spike Q	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
113507-82-7	PFEESA	ND	5.45	6.0	110	5.38	5.8	108	3	40-150/30
356-02-5	3:3 Fluorotelomer carboxylate	ND	15.3	13.9	91	15.1	13.5	89	3	40-150/30
914637-49-35	3:3 Fluorotelomer carboxylate	ND	76.5	78.4	102	75.6	76.1	101	3	40-150/30
812-70-4	7:3 Fluorotelomer carboxylate	ND	76.5	82.7	108	75.6	79.0	105	5	40-150/30

CAS No.	ID Standard Recoveries	MS	MSD	FC13254-38	Limits
	13C4-PFBA	95%	95%	89%	20-150%
	13C5-PFPeA	95%	94%	85%	20-150%
	13C5-PFHxA	96%	96%	90%	20-150%
	13C4-PFHpA	96%	96%	90%	20-150%
	13C8-PFOA	92%	93%	89%	20-150%
	13C9-PFNA	92%	89%	83%	20-150%
	13C6-PFDA	103%	98%	91%	20-150%
	13C7-PFUnDA	103%	103%	94%	20-150%
	13C2-PFDoDA	93%	99%	86%	20-150%
	13C2-PFTeDA	97%	82%	82%	20-150%
	13C3-PFBS	91%	87%	81%	20-150%
	13C3-PFHxS	96%	89%	83%	20-150%
	13C8-PFOS	86%	86%	80%	20-150%
	13C8-FOSA	87%	93%	85%	20-150%
	d3-MeFOSA	91%	91%	86%	20-150%
	d5-EtFOSA	94%	93%	91%	20-150%
	d3-MeFOSAA	95%	95%	96%	20-150%
	d5-EtFOSAA	101%	101%	94%	20-150%
	d7-MeFOSE	94%	97%	88%	20-150%
	d9-EtFOSE	99%	98%	91%	20-150%
	13C2-4:2FTS	34%	28%	64%	20-180%
	13C2-6:2FTS	57%	53%	80%	20-180%
	13C2-8:2FTS	79%	71%	93%	20-180%
	13C3-HFPO-DA	106%	106%	95%	20-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 2

Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1753-MS	6Q31380.D	1	02/24/24	MV	02/21/24	OP1753	S6Q442
OP1753-MSD	6Q31381.D	1	02/24/24	MV	02/21/24	OP1753	S6Q442
FC13254-40	6Q31379.D	1	02/24/24	MV	02/21/24	OP1753	S6Q442

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-39, FC13254-40, FC13254-41

CAS No.	Compound	FC13254-40 ug/kg	Spike Q ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	ND		11.5	98	11.6	11.4	98	1	40-150/30
2706-90-3	Perfluoropentanoic acid	ND		5.74	106	5.81	5.9	102	3	40-150/30
307-24-4	Perfluorohexanoic acid	0.15	J	2.87	103	2.91	2.9	95	7	40-150/30
375-85-9	Perfluoroheptanoic acid	ND		2.87	101	2.91	3.0	103	3	40-150/30
335-67-1	Perfluorooctanoic acid	ND		2.87	98	2.91	2.7	93	4	40-150/30
375-95-1	Perfluorononanoic acid	ND		2.87	108	2.91	3.1	107	0	40-150/30
335-76-2	Perfluorodecanoic acid	ND		2.87	98	2.91	3.4	117	19	40-150/30
2058-94-8	Perfluoroundecanoic acid	ND		2.87	104	2.91	2.9	100	3	40-150/30
307-55-1	Perfluorododecanoic acid	ND		2.87	111	2.91	2.9	100	10	40-150/30
72629-94-8	Perfluorotridecanoic acid	ND		2.87	101	2.91	3.0	103	3	40-150/30
376-06-7	Perfluorotetradecanoic acid	ND		2.87	98	2.91	2.6	89	7	40-150/30
375-73-5	Perfluorobutanesulfonic acid	ND		2.55	110	2.58	2.3	89	20	40-150/30
2706-91-4	Perfluoropentanesulfonic acid	ND		2.7	93	2.73	2.6	95	4	40-150/30
355-46-4	Perfluorohexanesulfonic acid	ND		2.62	95	2.66	2.8	105	11	40-150/30
375-92-8	Perfluoroheptanesulfonic acid	ND		2.74	95	2.77	2.7	97	4	40-150/30
1763-23-1	Perfluorooctanesulfonic acid	1.6		2.66	75	2.7	4.2	96	15	40-150/30
68259-12-1	Perfluorononanesulfonic acid	ND		2.76	91	2.8	2.9	104	15	40-150/30
335-77-3	Perfluorodecanesulfonic acid	ND		2.77	105	2.8	2.7	96	7	40-150/30
79780-39-5	Perfluorododecanesulfonic aci	ND		2.78	111	2.82	2.8	99	10	40-150/30
757124-72-44:2	Fluorotelomer sulfonate	ND		10.8	99	10.9	9.4	86	13	40-150/30
27619-97-2	6:2 Fluorotelomer sulfonate	ND		10.9	104	11	11.0	100	4	40-150/30
39108-34-4	8:2 Fluorotelomer sulfonate	ND		11	93	11.2	9.4	84	8	40-150/30
754-91-6	PFOSA	ND		2.87	94	2.91	2.5	86	8	40-150/30
31506-32-8	MeFOSA	ND		5.74	96	5.81	6.3	108	14	40-150/30
4151-50-2	EtFOSA	ND		5.74	103	5.81	5.7	98	3	40-150/30
2355-31-9	MeFOSAA	ND		2.87	111	2.91	3.7	127	14	40-150/30
2991-50-6	EtFOSAA	ND		2.87	80	2.91	3.0	103	26	40-150/30
24448-09-7	MeFOSE	ND		14.4	125	14.5	16.2	111	11	40-150/30
1691-99-2	EtFOSE	ND		14.4	98	14.5	14.8	102	5	40-150/30
13252-13-6	HFPO-DA (GenX)	ND		5.74	104	5.81	5.7	98	5	40-150/30
919005-14-4	ADONA	ND		5.43	100	5.49	5.3	97	2	40-150/30
377-73-1	PFMPA	ND		5.74	104	5.81	5.9	102	2	40-150/30
863090-89-5	PFMBA	ND		5.74	104	5.81	5.7	98	5	40-150/30
151772-58-6	NFDHA	ND		5.74	103	5.81	6.0	103	2	40-150/30
756426-58-19	Cl-PF3ONS (F-53B Major)	ND		5.37	104	5.43	5.5	101	2	40-150/30
763051-92-911	Cl-PF3OUdS (F-53B Minor)	ND		5.43	105	5.49	5.4	98	5	40-150/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1753-MS	6Q31380.D	1	02/24/24	MV	02/21/24	OP1753	S6Q442
OP1753-MSD	6Q31381.D	1	02/24/24	MV	02/21/24	OP1753	S6Q442
FC13254-40	6Q31379.D	1	02/24/24	MV	02/21/24	OP1753	S6Q442

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-39, FC13254-40, FC13254-41

CAS No.	Compound	FC13254-40 ug/kg	Spike Q ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
113507-82-7	PFEESA	ND	5.11	5.2	102	5.17	5.1	99	2	40-150/30
356-02-5	3:3 Fluorotelomer carboxylate	ND	14.4	12.3	86	14.5	12.9	89	5	40-150/30
914637-49-35:3	Fluorotelomer carboxylate	ND	71.8	65.4	91	72.6	68.1	94	4	40-150/30
812-70-4	7:3 Fluorotelomer carboxylate	ND	71.8	69.0	96	72.6	68.3	94	1	40-150/30

CAS No.	ID Standard Recoveries	MS	MSD	FC13254-40	Limits
	13C4-PFBA	70%	59%	68%	20-150%
	13C5-PFPeA	72%	60%	66%	20-150%
	13C5-PFHxA	72%	59%	67%	20-150%
	13C4-PFHpA	73%	58%	64%	20-150%
	13C8-PFOA	72%	62%	65%	20-150%
	13C9-PFNA	67%	53%	65%	20-150%
	13C6-PFDA	73%	50%	66%	20-150%
	13C7-PFUnDA	75%	59%	73%	20-150%
	13C2-PFDoDA	72%	59%	67%	20-150%
	13C2-PFTeDA	75%	62%	69%	20-150%
	13C3-PFBS	73%	57%	69%	20-150%
	13C3-PFHxS	81%	55%	65%	20-150%
	13C8-PFOS	70%	59%	68%	20-150%
	13C8-FOSA	71%	62%	71%	20-150%
	d3-MeFOSA	67%	49%	62%	20-150%
	d5-EtFOSA	61%	58%	65%	20-150%
	d3-MeFOSAA	64%	50%	74%	20-150%
	d5-EtFOSAA	69%	54%	73%	20-150%
	d7-MeFOSE	63%	59%	73%	20-150%
	d9-EtFOSE	68%	58%	68%	20-150%
	13C2-4:2FTS	81%	63%	79%	20-180%
	13C2-6:2FTS	70%	58%	67%	20-180%
	13C2-8:2FTS	91%	63%	76%	20-180%
	13C3-HFPO-DA	71%	61%	61%	20-150%

* = Outside of Control Limits.

Duplicate Summary

Page 1 of 2

Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1599-DUP	6Q31016.D	1	02/15/24	MV	02/13/24	OP1599	S6Q436
FC13225-1	6Q31015.D	1	02/15/24	MV	02/13/24	OP1599	S6Q436

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-42, FC13254-43, FC13254-44

CAS No.	Compound	FC13225-1 ug/l	DUP Q ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.0073 U	ND		nc	30
2706-90-3	Perfluoropentanoic acid	0.0036 U	ND		nc	30
307-24-4	Perfluorohexanoic acid	0.0018 U	ND		nc	30
375-85-9	Perfluoroheptanoic acid	0.0018 U	ND		nc	30
335-67-1	Perfluorooctanoic acid	0.0018 U	ND		nc	30
375-95-1	Perfluorononanoic acid	0.0018 U	ND		nc	30
335-76-2	Perfluorodecanoic acid	0.0018 U	ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.0018 U	ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0018 U	ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0018 U	ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0018 U	ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.0018 U	ND		nc	30
2706-91-4	Perfluoropentanesulfonic acid	0.0018 U	ND		nc	30
355-46-4	Perfluorohexanesulfonic acid	0.0018 U	ND		nc	30
375-92-8	Perfluoroheptanesulfonic acid	0.0018 U	ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0018 U	ND		nc	30
68259-12-1	Perfluorononanesulfonic acid	0.0018 U	ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0018 U	ND		nc	30
79780-39-5	Perfluorododecanesulfonic acid	0.0018 U	ND		nc	30
757124-72-44:2	Fluorotelomer sulfonate	0.0073 U	ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.0073 U	ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.0073 U	ND		nc	30
754-91-6	PFOSA	0.0018 U	ND		nc	30
31506-32-8	MeFOSA	0.0018 U	ND		nc	30
4151-50-2	EtFOSA	0.0018 U	ND		nc	30
2355-31-9	MeFOSAA	0.0018 U	ND		nc	30
2991-50-6	EtFOSAA	0.0018 U	ND		nc	30
24448-09-7	MeFOSE	0.018 U	ND		nc	30
1691-99-2	EtFOSE	0.018 U	ND		nc	30
13252-13-6	HFPO-DA (GenX)	0.0073 U	ND		nc	30
919005-14-4	ADONA	0.0073 U	ND		nc	30
377-73-1	PFMPA	0.0036 U	ND		nc	30
863090-89-5	PFMBA	0.0036 U	ND		nc	30
151772-58-6	NFDHA	0.0036 U	ND		nc	30
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0073 U	ND		nc	30
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0073 U	ND		nc	30

* = Outside of Control Limits.

Duplicate Summary

Page 2 of 2

Job Number: FC13254
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1599-DUP	6Q31016.D	1	02/15/24	MV	02/13/24	OP1599	S6Q436
FC13225-1	6Q31015.D	1	02/15/24	MV	02/13/24	OP1599	S6Q436

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13254-42, FC13254-43, FC13254-44

CAS No.	Compound	FC13225-1 ug/l	DUP Q ug/l	Q	RPD	Limits
113507-82-7PFEESA		0.0036 U	ND		nc	30
356-02-5	3:3 Fluorotelomer carboxylate	0.0091 U	ND		nc	30
914637-49-35:3	Fluorotelomer carboxylate	0.045 U	ND		nc	30
812-70-4	7:3 Fluorotelomer carboxylate	0.045 U	ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FC13225-1	Limits
	13C4-PFBA	63%	59%	20-150%
	13C5-PFPeA	113%	103%	20-150%
	13C5-PFHxA	114%	106%	20-150%
	13C4-PFHpA	110%	102%	20-150%
	13C8-PFOA	101%	103%	20-150%
	13C9-PFNA	105%	104%	20-150%
	13C6-PFDA	92%	101%	20-150%
	13C7-PFUnDA	86%	91%	20-150%
	13C2-PFDoDA	78%	81%	20-150%
	13C2-PFTeDA	68%	79%	20-150%
	13C3-PFBS	115%	110%	20-150%
	13C3-PFHxS	114%	113%	20-150%
	13C8-PFOS	98%	94%	20-150%
	13C8-FOSA	90%	94%	20-150%
	d3-MeFOSA	76%	77%	20-150%
	d5-EtFOSA	77%	79%	20-150%
	d3-MeFOSAA	95%	86%	20-150%
	d5-EtFOSAA	79%	85%	20-150%
	d7-MeFOSE	72%	76%	20-150%
	d9-EtFOSE	73%	78%	20-150%
	13C2-4:2FTS	139%	134%	20-180%
	13C2-6:2FTS	128%	112%	20-180%
	13C2-8:2FTS	119%	118%	20-180%
	13C3-HFPO-DA	109%	100%	20-150%

(a) Associated BS recovery outside control limits.

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

GeoEngineers, Inc.

Paine Field; Everett, WA

05530.015.00

SGS Job Number: FC14481

Sampling Dates: 03/26/24 - 03/28/24

Report to:

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Total number of pages in report: **107**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable unless noted in the narrative, comments or footnotes.



Norm Farmer
Technical Director

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Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001)

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Test results relate only to samples analyzed.

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Sample Summary

GeoEngineers, Inc.

Job No: FC14481

Paine Field; Everett, WA
Project No: 05530.015.00

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID

This report contains results reported as ND = Not detected. The following applies:
Organics ND = Not detected above the MDL

FC14481-1	03/28/24	09:30	MB	04/02/24	AQ	Ground Water	FP-MW13-240328
FC14481-2	03/28/24	10:50	MB	04/02/24	AQ	Surface Water	FP-SW3-240328
FC14481-3	03/28/24	13:10	MB	04/02/24	AQ	Surface Water	FP-SW4-240328
FC14481-4	03/28/24	13:40	MB	04/02/24	AQ	Surface Water	FP-SW5-240328
FC14481-5	03/28/24	09:40	MB	04/02/24	AQ	Equipment Blank	EB1-240328
FC14481-6	03/28/24	09:45	MB	04/02/24	AQ	Field Blank Water	FB-240328
FC14481-7	03/28/24	13:50	MB	04/02/24	AQ	Surface Water	WDUP-240328
FC14481-8	03/26/24	09:20	MB	04/02/24	SO	Soil	FP-MW13-5.0
FC14481-9	03/26/24	09:30	MB	04/02/24	SO	Soil	FP-MW13-10.0
FC14481-10	03/26/24	09:40	MB	04/02/24	SO	Soil	FP-MW13-15.0
FC14481-11	03/26/24	09:50	MB	04/02/24	SO	Soil	FP-MW13-20.0
FC14481-12	03/28/24	11:00	MB	04/02/24	SO	Soil	FP-B3-1.0

Soil samples reported on a dry weight basis unless otherwise indicated on result page.



Sample Summary
(continued)

GeoEngineers, Inc.

Job No: FC14481

Paine Field; Everett, WA
Project No: 05530.015.00

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
FC14481-13	03/28/24	13:15 MB	04/02/24	SO	Soil	FP-B4-0.5
FC14481-14	03/28/24	13:45 MB	04/02/24	SO	Soil	FP-B5-0.5
FC14481-15	03/28/24	11:05 MB	04/02/24	SO	Soil	SDUP-240328

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

SAMPLE DELIVERY GROUP CASE NARRATIVE

2

Client: GeoEngineers, Inc.

Job No: FC14481

Site: Paine Field; Everett, WA

Report Date: 4/29/2024 6:21:14 PM

On 04/02/2024, 13 Sample(s), 0 Trip Blank(s), 1 Equip. Blank(s) and 1 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 3.4 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC14481 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 1633

Matrix: AQ

Batch ID: OP2578

Sample(s) FC14481-3DUP, FC14556-2MS were used as the QC samples indicated.

Blank Spike Recovery(s) for EtFOSAA are outside control limits.

RPD(s) for Duplicate for Perfluoroundecanoic acid are outside control limits for sample OP2578-DUP. Probable cause is due to sample non-homogeneity.

FC14481-1 for EtFOSAA: Associated Low Level BS outside of control limits.

FC14481-3 for EtFOSAA: Associated Low Level BS outside of control limits.

FC14481-4 for EtFOSAA: Associated Low Level BS outside of control limits.

FC14481-5 for EtFOSAA: Associated Low Level BS outside of control limits.

FC14481-6 for 3:3-FTCA: Associated Low Level CCV outside of control limits high, sample was ND.

FC14481-6 for 7:3-FTCA: Associated Low Level CCV outside of control limits high, sample was ND.

FC14481-7 for 3:3-FTCA: Associated Low Level CCV outside of control limits high, sample was ND.

FC14481-7 for 7:3-FTCA: Associated Low Level CCV outside of control limits high, sample was ND.

Matrix: AQ

Batch ID: OP2811

OP2811-BS: Insufficient sample for MS/MSD.

FC14481-2: Reduced volume extracted due to high solids content.

Matrix: SO

Batch ID: OP2544

Sample(s) FC14481-10MS, FC14481-10MSD were used as the QC samples indicated.

General Chemistry By Method SM19 2540G

Matrix: SO

Batch ID: GN97120

Sample(s) FC14453-3DUP were used as the QC samples for Solids, Percent.

Matrix: SO

Batch ID: GN97121

Sample(s) FC14670-2DUP were used as the QC samples for Solids, Percent.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

Kim Benham, Report Generation (signature on file)

Summary of Hits

Job Number: FC14481
Account: GeoEngineers, Inc.
Project: Paine Field; Everett, WA
Collected: 03/26/24 thru 03/28/24



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method

FC14481-1 FP-MW13-240328

Perfluorobutanoic acid	0.0855	0.0093	0.0047	ug/l	EPA 1633
Perfluoropentanoic acid	0.536	0.0047	0.0012	ug/l	EPA 1633
Perfluorohexanoic acid	0.231	0.0023	0.00058	ug/l	EPA 1633
Perfluoroheptanoic acid	0.0481	0.0023	0.00058	ug/l	EPA 1633
Perfluorooctanoic acid	0.0025	0.0023	0.00058	ug/l	EPA 1633
Perfluorobutanesulfonic acid	0.0139	0.0023	0.0012	ug/l	EPA 1633
Perfluoropentanesulfonic acid	0.0093	0.0023	0.0013	ug/l	EPA 1633
Perfluorohexanesulfonic acid	0.0612	0.0023	0.0012	ug/l	EPA 1633

FC14481-2 FP-SW3-240328

Perfluorobutanoic acid ^a	0.105	0.067	0.033	ug/l	EPA 1633
Perfluoropentanoic acid ^a	0.573	0.033	0.0083	ug/l	EPA 1633
Perfluorohexanoic acid ^a	0.244	0.017	0.0042	ug/l	EPA 1633
Perfluoroheptanoic acid ^a	0.0845	0.017	0.0042	ug/l	EPA 1633
Perfluorobutanesulfonic acid ^a	0.0178	0.017	0.0083	ug/l	EPA 1633
Perfluoropentanesulfonic acid ^a	0.0149 J	0.017	0.0093	ug/l	EPA 1633
Perfluorohexanesulfonic acid ^a	0.0891	0.017	0.0083	ug/l	EPA 1633

FC14481-3 FP-SW4-240328

Perfluorobutanoic acid	0.0125	0.0088	0.0044	ug/l	EPA 1633
Perfluoropentanoic acid	0.0426	0.0044	0.0011	ug/l	EPA 1633
Perfluorohexanoic acid	0.0431	0.0022	0.00055	ug/l	EPA 1633
Perfluoroheptanoic acid	0.0147	0.0022	0.00055	ug/l	EPA 1633
Perfluorooctanoic acid	0.0157	0.0022	0.00055	ug/l	EPA 1633
Perfluorononanoic acid	0.0055	0.0022	0.00067	ug/l	EPA 1633
Perfluorodecanoic acid	0.0018 J	0.0022	0.00055	ug/l	EPA 1633
Perfluorobutanesulfonic acid	0.0044	0.0022	0.0011	ug/l	EPA 1633
Perfluoropentanesulfonic acid	0.0047	0.0022	0.0012	ug/l	EPA 1633
Perfluorohexanesulfonic acid	0.0472	0.0022	0.0011	ug/l	EPA 1633
Perfluoroheptanesulfonic acid	0.0014 J	0.0022	0.0011	ug/l	EPA 1633
Perfluorooctanesulfonic acid	0.0880	0.0022	0.0011	ug/l	EPA 1633
6:2-FTS	0.0554	0.0088	0.0044	ug/l	EPA 1633

FC14481-4 FP-SW5-240328

Perfluorobutanoic acid	0.0166	0.0096	0.0048	ug/l	EPA 1633
Perfluoropentanoic acid	0.0571	0.0048	0.0012	ug/l	EPA 1633
Perfluorohexanoic acid	0.0455	0.0024	0.00060	ug/l	EPA 1633
Perfluoroheptanoic acid	0.0166	0.0024	0.00060	ug/l	EPA 1633
Perfluorooctanoic acid	0.0165	0.0024	0.00060	ug/l	EPA 1633
Perfluorononanoic acid	0.0045	0.0024	0.00073	ug/l	EPA 1633

Summary of Hits

Job Number: FC14481
Account: GeoEngineers, Inc.
Project: Paine Field; Everett, WA
Collected: 03/26/24 thru 03/28/24



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Perfluorodecanoic acid		0.00092 J	0.0024	0.00060	ug/l	EPA 1633
Perfluorobutanesulfonic acid		0.0042	0.0024	0.0012	ug/l	EPA 1633
Perfluoropentanesulfonic acid		0.0079	0.0024	0.0013	ug/l	EPA 1633
Perfluorohexanesulfonic acid		0.0667	0.0024	0.0012	ug/l	EPA 1633
Perfluoroheptanesulfonic acid		0.0013 J	0.0024	0.0012	ug/l	EPA 1633
Perfluorooctanesulfonic acid		0.0971	0.0024	0.0012	ug/l	EPA 1633
6:2-FTS		0.130	0.0096	0.0048	ug/l	EPA 1633
8:2-FTS		0.0124	0.0096	0.0050	ug/l	EPA 1633

FC14481-5 EB1-240328

No hits reported in this sample.

FC14481-6 FB-240328

No hits reported in this sample.

FC14481-7 WDUP-240328

Perfluorobutanoic acid	0.0170	0.0087	0.0043	ug/l	EPA 1633
Perfluoropentanoic acid	0.0630	0.0043	0.0011	ug/l	EPA 1633
Perfluorohexanoic acid	0.0476	0.0022	0.00054	ug/l	EPA 1633
Perfluoroheptanoic acid	0.0169	0.0022	0.00054	ug/l	EPA 1633
Perfluorooctanoic acid	0.0161	0.0022	0.00054	ug/l	EPA 1633
Perfluorononanoic acid	0.0053	0.0022	0.00066	ug/l	EPA 1633
Perfluorodecanoic acid	0.00069 J	0.0022	0.00054	ug/l	EPA 1633
Perfluorobutanesulfonic acid	0.0052	0.0022	0.0011	ug/l	EPA 1633
Perfluoropentanesulfonic acid	0.0071	0.0022	0.0012	ug/l	EPA 1633
Perfluorohexanesulfonic acid	0.0779	0.0022	0.0011	ug/l	EPA 1633
Perfluoroheptanesulfonic acid	0.0028	0.0022	0.0011	ug/l	EPA 1633
Perfluorooctanesulfonic acid	0.125	0.0022	0.0011	ug/l	EPA 1633
6:2-FTS	0.103	0.0087	0.0043	ug/l	EPA 1633
8:2-FTS	0.0112	0.0087	0.0045	ug/l	EPA 1633

FC14481-8 FP-MW13-5.0

No hits reported in this sample.

FC14481-9 FP-MW13-10.0

No hits reported in this sample.

FC14481-10 FP-MW13-15.0

No hits reported in this sample.

Summary of Hits

Job Number: FC14481
Account: GeoEngineers, Inc.
Project: Paine Field; Everett, WA
Collected: 03/26/24 thru 03/28/24



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method

FC14481-11 FP-MW13-20.0

No hits reported in this sample.

FC14481-12 FP-B3-1.0

Perfluoropentanoic acid	1.3	0.52	0.13	ug/kg	EPA 1633
Perfluorohexanoic acid	0.45	0.26	0.13	ug/kg	EPA 1633
Perfluoroheptanoic acid	0.20 J	0.26	0.13	ug/kg	EPA 1633
Perfluorohexanesulfonic acid	0.40	0.26	0.21	ug/kg	EPA 1633
Perfluorooctanesulfonic acid	0.19 J	0.26	0.13	ug/kg	EPA 1633

FC14481-13 FP-B4-0.5

Perfluorooctanesulfonic acid	0.29	0.24	0.12	ug/kg	EPA 1633

FC14481-14 FP-B5-0.5

Perfluoropentanoic acid	1.1	0.65	0.16	ug/kg	EPA 1633
Perfluorohexanoic acid	0.54	0.33	0.16	ug/kg	EPA 1633
Perfluoroheptanoic acid	0.24 J	0.33	0.16	ug/kg	EPA 1633
Perfluorooctanoic acid	0.38	0.33	0.16	ug/kg	EPA 1633
Perfluorononanoic acid	0.31 J	0.33	0.19	ug/kg	EPA 1633
Perfluorodecanoic acid	0.17 J	0.33	0.16	ug/kg	EPA 1633
Perfluoroundecanoic acid	0.37	0.33	0.22	ug/kg	EPA 1633
Perfluorododecanoic acid	0.25 J	0.33	0.16	ug/kg	EPA 1633
Perfluorooctanesulfonic acid	2.9	0.33	0.16	ug/kg	EPA 1633
Perfluorodecanesulfonic acid	0.24 J	0.33	0.23	ug/kg	EPA 1633

FC14481-15 SDUP-240328

Perfluoropentanoic acid	1.1	0.53	0.13	ug/kg	EPA 1633
Perfluorohexanoic acid	0.43	0.27	0.13	ug/kg	EPA 1633
Perfluoroheptanoic acid	0.22 J	0.27	0.13	ug/kg	EPA 1633
Perfluorohexanesulfonic acid	0.38	0.27	0.21	ug/kg	EPA 1633
Perfluorooctanesulfonic acid	0.13 J	0.27	0.13	ug/kg	EPA 1633

(a) Reduced volume extracted due to high solids content.



Orlando, FL

Section 4

4

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	FP-MW13-240328	Date Sampled:	03/28/24
Lab Sample ID:	FC14481-1	Date Received:	04/02/24
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	EPA 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	8Q5006.D	1	04/19/24 13:02	AL	04/10/24 09:15	OP2578	S8Q67
Run #2							

	Initial Volume	Final Volume
Run #1	430 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	0.0855	0.0093	0.0047	ug/l	
2706-90-3	Perfluoropentanoic acid	0.536	0.0047	0.0012	ug/l	
307-24-4	Perfluorohexanoic acid	0.231	0.0023	0.00058	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0481	0.0023	0.00058	ug/l	
335-67-1	Perfluorooctanoic acid	0.0025	0.0023	0.00058	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0023	0.00071	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0023	0.00058	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0023	0.00070	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0023	0.00070	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0023	0.00098	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0023	0.00058	ug/l	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	0.0139	0.0023	0.0012	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0093	0.0023	0.0013	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0612	0.0023	0.0012	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0023	0.0012	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0023	0.0012	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0023	0.0012	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0023	0.0012	ug/l	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.0023	0.0013	ug/l	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2-FTS	ND	0.0093	0.0047	ug/l	
27619-97-2	6:2-FTS	ND	0.0093	0.0047	ug/l	
39108-34-4	8:2-FTS	ND	0.0093	0.0048	ug/l	

PERFLUOROOCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.0023	0.0012	ug/l	
31506-32-8	MeFOSA	ND	0.0047	0.0012	ug/l	
4151-50-2	EtFOSA	ND	0.0047	0.0012	ug/l	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW13-240328	Date Sampled:	03/28/24
Lab Sample ID:	FC14481-1	Date Received:	04/02/24
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	EPA 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.0023	0.0012	ug/l	
2991-50-6	EtFOSAA ^a	ND	0.0023	0.0015	ug/l	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	0.023	0.012	ug/l	
1691-99-2	EtFOSE	ND	0.023	0.012	ug/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.0047	0.0012	ug/l	
919005-14-4	ADONA	ND	0.0093	0.0023	ug/l	
377-73-1	PFMPA	ND	0.0047	0.0012	ug/l	
863090-89-5	PFMBA	ND	0.0047	0.0013	ug/l	
151772-58-6	NFDHA	ND	0.0047	0.0014	ug/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0093	0.0023	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0093	0.0023	ug/l	
113507-82-7	PFEESA	ND	0.0047	0.0012	ug/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3-FTCA	ND	0.012	0.0058	ug/l	
914637-49-3	5:3-FTCA	ND	0.058	0.012	ug/l	
812-70-4	7:3-FTCA	ND	0.058	0.012	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	100%		10-130%
	13C5-PFPeA	103%		40-130%
	13C5-PFHxA	101%		40-130%
	13C4-PFHpA	99%		40-130%
	13C8-PFOA	102%		40-130%
	13C9-PFNA	104%		40-130%
	13C6-PFDA	83%		40-130%
	13C7-PFUnDA	77%		30-130%
	13C2-PFDoDA	52%		10-130%
	13C2-PFTeDA	45%		10-130%
	13C3-PFBS	96%		40-135%
	13C3-PFHxS	92%		40-130%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW13-240328	Date Sampled:	03/28/24
Lab Sample ID:	FC14481-1	Date Received:	04/02/24
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	EPA 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	95%		40-130%
	13C8-FOSA	87%		40-130%
	d3-MeFOSA	46%		10-130%
	d5-EtFOSA	48%		10-130%
	d3-MeFOSAA	87%		40-170%
	d5-EtFOSAA	66%		25-135%
	d7-MeFOSE	48%		10-130%
	d9-EtFOSE	43%		10-130%
	13C2-4:2FTS	81%		40-200%
	13C2-6:2FTS	89%		40-200%
	13C2-8:2FTS	95%		40-300%
	13C3-HFPO-DA	101%		40-130%

(a) Associated Low Level BS outside of control limits.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-SW3-240328	Date Sampled:	03/28/24
Lab Sample ID:	FC14481-2	Date Received:	04/02/24
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	EPA 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	4Q59260.D	1	04/25/24 23:24	MV	04/23/24 08:30	OP2811	S4Q881
Run #2							

Run	Initial Volume	Final Volume
Run #1	60.0 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	0.105	0.067	0.033	ug/l	
2706-90-3	Perfluoropentanoic acid	0.573	0.033	0.0083	ug/l	
307-24-4	Perfluorohexanoic acid	0.244	0.017	0.0042	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0845	0.017	0.0042	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.017	0.0042	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.017	0.0051	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.017	0.0042	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.017	0.0050	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.017	0.0050	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.017	0.0070	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.017	0.0042	ug/l	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	0.0178	0.017	0.0083	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0149	0.017	0.0093	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0891	0.017	0.0083	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.017	0.0083	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.017	0.0083	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.017	0.0083	ug/l	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.017	0.0095	ug/l	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2-FTS	ND	0.067	0.033	ug/l	
27619-97-2	6:2-FTS	ND	0.067	0.033	ug/l	
39108-34-4	8:2-FTS	ND	0.067	0.034	ug/l	

PERFLUOROOCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.017	0.0083	ug/l	
31506-32-8	MeFOSA	ND	0.033	0.0083	ug/l	
4151-50-2	EtFOSA	ND	0.033	0.0083	ug/l	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-SW3-240328	Date Sampled:	03/28/24
Lab Sample ID:	FC14481-2	Date Received:	04/02/24
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	EPA 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.017	0.0083	ug/l	
2991-50-6	EtFOSAA	ND	0.017	0.011	ug/l	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	0.17	0.083	ug/l	
1691-99-2	EtFOSE	ND	0.17	0.083	ug/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.033	0.0083	ug/l	
919005-14-4	ADONA	ND	0.067	0.017	ug/l	
377-73-1	PFMPA	ND	0.033	0.0083	ug/l	
863090-89-5	PFMBA	ND	0.033	0.0095	ug/l	
151772-58-6	NFDHA	ND	0.033	0.010	ug/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.067	0.017	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.067	0.017	ug/l	
113507-82-7	PFEESA	ND	0.033	0.0083	ug/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3-FTCA	ND	0.083	0.042	ug/l	
914637-49-3	5:3-FTCA	ND	0.42	0.083	ug/l	
812-70-4	7:3-FTCA	ND	0.42	0.083	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	112%		10-130%
	13C5-PFPeA	113%		40-130%
	13C5-PFHxA	110%		40-130%
	13C4-PFHpA	113%		40-130%
	13C8-PFOA	111%		40-130%
	13C9-PFNA	111%		40-130%
	13C6-PFDA	110%		40-130%
	13C7-PFUnDA	101%		30-130%
	13C2-PFDoDA	99%		10-130%
	13C2-PFTeDA	92%		10-130%
	13C3-PFBS	111%		40-135%
	13C3-PFHxS	111%		40-130%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-SW3-240328	Date Sampled:	03/28/24
Lab Sample ID:	FC14481-2	Date Received:	04/02/24
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	EPA 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	113%		40-130%
	13C8-FOSA	99%		40-130%
	d3-MeFOSA	93%		10-130%
	d5-EtFOSA	95%		10-130%
	d3-MeFOSAA	113%		40-170%
	d5-EtFOSAA	107%		25-135%
	d7-MeFOSE	94%		10-130%
	d9-EtFOSE	88%		10-130%
	13C2-4:2FTS	123%		40-200%
	13C2-6:2FTS	123%		40-200%
	13C2-8:2FTS	111%		40-300%
	13C3-HFPO-DA	112%		40-130%

(a) Reduced volume extracted due to high solids content.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-SW4-240328	Date Sampled:	03/28/24
Lab Sample ID:	FC14481-3	Date Received:	04/02/24
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	EPA 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	8Q5008.D	1	04/19/24 13:34	AL	04/10/24 09:15	OP2578	S8Q67
Run #2							

Run #	Initial Volume	Final Volume
Run #1	455 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	0.0125	0.0088	0.0044	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0426	0.0044	0.0011	ug/l	
307-24-4	Perfluorohexanoic acid	0.0431	0.0022	0.00055	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0147	0.0022	0.00055	ug/l	
335-67-1	Perfluorooctanoic acid	0.0157	0.0022	0.00055	ug/l	
375-95-1	Perfluorononanoic acid	0.0055	0.0022	0.00067	ug/l	
335-76-2	Perfluorodecanoic acid	0.0018	0.0022	0.00055	ug/l	J
2058-94-8	Perfluoroundecanoic acid	ND	0.0022	0.00066	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0022	0.00066	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0022	0.00092	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0022	0.00055	ug/l	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	0.0044	0.0022	0.0011	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0047	0.0022	0.0012	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0472	0.0022	0.0011	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0014	0.0022	0.0011	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.0880	0.0022	0.0011	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0022	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0022	0.0011	ug/l	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.0022	0.0013	ug/l	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2-FTS	ND	0.0088	0.0044	ug/l	
27619-97-2	6:2-FTS	0.0554	0.0088	0.0044	ug/l	
39108-34-4	8:2-FTS	ND	0.0088	0.0045	ug/l	

PERFLUOROOCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.0022	0.0011	ug/l	
31506-32-8	MeFOSA	ND	0.0044	0.0011	ug/l	
4151-50-2	EtFOSA	ND	0.0044	0.0011	ug/l	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-SW4-240328	Date Sampled:	03/28/24
Lab Sample ID:	FC14481-3	Date Received:	04/02/24
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	EPA 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.0022	0.0011	ug/l	
2991-50-6	EtFOSAA ^a	ND	0.0022	0.0015	ug/l	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	0.022	0.011	ug/l	
1691-99-2	EtFOSE	ND	0.022	0.011	ug/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.0044	0.0011	ug/l	
919005-14-4	ADONA	ND	0.0088	0.0022	ug/l	
377-73-1	PFMPA	ND	0.0044	0.0011	ug/l	
863090-89-5	PFMBA	ND	0.0044	0.0013	ug/l	
151772-58-6	NFDHA	ND	0.0044	0.0013	ug/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0088	0.0022	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0088	0.0022	ug/l	
113507-82-7	PFEESA	ND	0.0044	0.0011	ug/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3-FTCA	ND	0.011	0.0055	ug/l	
914637-49-3	5:3-FTCA	ND	0.055	0.011	ug/l	
812-70-4	7:3-FTCA	ND	0.055	0.011	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	101%		10-130%
	13C5-PFPeA	108%		40-130%
	13C5-PFHxA	101%		40-130%
	13C4-PFHpA	108%		40-130%
	13C8-PFOA	104%		40-130%
	13C9-PFNA	107%		40-130%
	13C6-PFDA	109%		40-130%
	13C7-PFUnDA	109%		30-130%
	13C2-PFDoDA	78%		10-130%
	13C2-PFTeDA	63%		10-130%
	13C3-PFBS	100%		40-135%
	13C3-PFHxS	102%		40-130%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-SW4-240328	Date Sampled:	03/28/24
Lab Sample ID:	FC14481-3	Date Received:	04/02/24
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	EPA 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	107%		40-130%
	13C8-FOSA	88%		40-130%
	d3-MeFOSA	58%		10-130%
	d5-EtFOSA	57%		10-130%
	d3-MeFOSAA	92%		40-170%
	d5-EtFOSAA	88%		25-135%
	d7-MeFOSE	62%		10-130%
	d9-EtFOSE	58%		10-130%
	13C2-4:2FTS	82%		40-200%
	13C2-6:2FTS	94%		40-200%
	13C2-8:2FTS	95%		40-300%
	13C3-HFPO-DA	103%		40-130%

(a) Associated Low Level BS outside of control limits.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-SW5-240328	Date Sampled:	03/28/24
Lab Sample ID:	FC14481-4	Date Received:	04/02/24
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	EPA 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	8Q5010.D	1	04/19/24 14:07	AL	04/10/24 09:15	OP2578	S8Q67
Run #2							

Run #	Initial Volume	Final Volume
Run #1	415 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	0.0166	0.0096	0.0048	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0571	0.0048	0.0012	ug/l	
307-24-4	Perfluorohexanoic acid	0.0455	0.0024	0.00060	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0166	0.0024	0.00060	ug/l	
335-67-1	Perfluorooctanoic acid	0.0165	0.0024	0.00060	ug/l	
375-95-1	Perfluorononanoic acid	0.0045	0.0024	0.00073	ug/l	
335-76-2	Perfluorodecanoic acid	0.00092	0.0024	0.00060	ug/l	J
2058-94-8	Perfluoroundecanoic acid	ND	0.0024	0.00072	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0024	0.00072	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0024	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0024	0.00060	ug/l	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	0.0042	0.0024	0.0012	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0079	0.0024	0.0013	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0667	0.0024	0.0012	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0013	0.0024	0.0012	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.0971	0.0024	0.0012	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0024	0.0012	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0024	0.0012	ug/l	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.0024	0.0014	ug/l	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2-FTS	ND	0.0096	0.0048	ug/l	
27619-97-2	6:2-FTS	0.130	0.0096	0.0048	ug/l	
39108-34-4	8:2-FTS	0.0124	0.0096	0.0050	ug/l	

PERFLUOROOCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.0024	0.0012	ug/l	
31506-32-8	MeFOSA	ND	0.0048	0.0012	ug/l	
4151-50-2	EtFOSA	ND	0.0048	0.0012	ug/l	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-SW5-240328	Date Sampled:	03/28/24
Lab Sample ID:	FC14481-4	Date Received:	04/02/24
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	EPA 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.0024	0.0012	ug/l	
2991-50-6	EtFOSAA ^a	ND	0.0024	0.0016	ug/l	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	0.024	0.012	ug/l	
1691-99-2	EtFOSE	ND	0.024	0.012	ug/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.0048	0.0012	ug/l	
919005-14-4	ADONA	ND	0.0096	0.0024	ug/l	
377-73-1	PFMPA	ND	0.0048	0.0012	ug/l	
863090-89-5	PFMBA	ND	0.0048	0.0014	ug/l	
151772-58-6	NFDHA	ND	0.0048	0.0014	ug/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0096	0.0024	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0096	0.0024	ug/l	
113507-82-7	PFEESA	ND	0.0048	0.0012	ug/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3-FTCA	ND	0.012	0.0060	ug/l	
914637-49-3	5:3-FTCA	ND	0.060	0.012	ug/l	
812-70-4	7:3-FTCA	ND	0.060	0.012	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	103%		10-130%
	13C5-PFPeA	107%		40-130%
	13C5-PFHxA	100%		40-130%
	13C4-PFHpA	104%		40-130%
	13C8-PFOA	102%		40-130%
	13C9-PFNA	106%		40-130%
	13C6-PFDA	111%		40-130%
	13C7-PFUnDA	97%		30-130%
	13C2-PFDoDA	78%		10-130%
	13C2-PFTeDA	62%		10-130%
	13C3-PFBS	103%		40-135%
	13C3-PFHxS	104%		40-130%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-SW5-240328	Date Sampled:	03/28/24
Lab Sample ID:	FC14481-4	Date Received:	04/02/24
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	EPA 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	108%		40-130%
	13C8-FOSA	87%		40-130%
	d3-MeFOSA	70%		10-130%
	d5-EtFOSA	65%		10-130%
	d3-MeFOSAA	83%		40-170%
	d5-EtFOSAA	80%		25-135%
	d7-MeFOSE	66%		10-130%
	d9-EtFOSE	64%		10-130%
	13C2-4:2FTS	108%		40-200%
	13C2-6:2FTS	96%		40-200%
	13C2-8:2FTS	113%		40-300%
	13C3-HFPO-DA	104%		40-130%

(a) Associated Low Level BS outside of control limits.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	EB1-240328	Date Sampled:	03/28/24
Lab Sample ID:	FC14481-5	Date Received:	04/02/24
Matrix:	AQ - Equipment Blank	Percent Solids:	n/a
Method:	EPA 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	8Q5011.D	1	04/19/24 14:23	AL	04/10/24 09:15	OP2578	S8Q67
Run #2							

Run #	Initial Volume	Final Volume
Run #1	550 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.0073	0.0036	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0036	0.00091	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0018	0.00045	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0018	0.00045	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0018	0.00045	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0018	0.00055	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0018	0.00045	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0018	0.00055	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0018	0.00055	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0018	0.00076	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0018	0.00045	ug/l	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.0018	0.00091	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0018	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0018	0.00091	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0018	0.00091	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0018	0.00091	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0018	0.00091	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0018	0.00091	ug/l	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.0018	0.0010	ug/l	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2-FTS	ND	0.0073	0.0036	ug/l	
27619-97-2	6:2-FTS	ND	0.0073	0.0036	ug/l	
39108-34-4	8:2-FTS	ND	0.0073	0.0037	ug/l	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.0018	0.00091	ug/l	
31506-32-8	MeFOSA	ND	0.0036	0.00091	ug/l	
4151-50-2	EtFOSA	ND	0.0036	0.00091	ug/l	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	EB1-240328	Date Sampled:	03/28/24
Lab Sample ID:	FC14481-5	Date Received:	04/02/24
Matrix:	AQ - Equipment Blank	Percent Solids:	n/a
Method:	EPA 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.0018	0.00091	ug/l	
2991-50-6	EtFOSAA ^a	ND	0.0018	0.0012	ug/l	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	0.018	0.0091	ug/l	
1691-99-2	EtFOSE	ND	0.018	0.0091	ug/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.0036	0.00091	ug/l	
919005-14-4	ADONA	ND	0.0073	0.0018	ug/l	
377-73-1	PFMPA	ND	0.0036	0.00091	ug/l	
863090-89-5	PFMBA	ND	0.0036	0.0010	ug/l	
151772-58-6	NFDHA	ND	0.0036	0.0011	ug/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0073	0.0018	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0073	0.0018	ug/l	
113507-82-7	PFEESA	ND	0.0036	0.00091	ug/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3-FTCA	ND	0.0091	0.0045	ug/l	
914637-49-3	5:3-FTCA	ND	0.045	0.0091	ug/l	
812-70-4	7:3-FTCA	ND	0.045	0.0091	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	103%		10-130%
	13C5-PFPeA	104%		40-130%
	13C5-PFHxA	100%		40-130%
	13C4-PFHpA	104%		40-130%
	13C8-PFOA	102%		40-130%
	13C9-PFNA	100%		40-130%
	13C6-PFDA	107%		40-130%
	13C7-PFUnDA	98%		30-130%
	13C2-PFDoDA	88%		10-130%
	13C2-PFTeDA	72%		10-130%
	13C3-PFBS	107%		40-135%
	13C3-PFHxS	104%		40-130%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	EB1-240328	Date Sampled:	03/28/24
Lab Sample ID:	FC14481-5	Date Received:	04/02/24
Matrix:	AQ - Equipment Blank	Percent Solids:	n/a
Method:	EPA 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	105%		40-130%
	13C8-FOSA	68%		40-130%
	d3-MeFOSA	64%		10-130%
	d5-EtFOSA	67%		10-130%
	d3-MeFOSAA	88%		40-170%
	d5-EtFOSAA	81%		25-135%
	d7-MeFOSE	65%		10-130%
	d9-EtFOSE	65%		10-130%
	13C2-4:2FTS	138%		40-200%
	13C2-6:2FTS	112%		40-200%
	13C2-8:2FTS	105%		40-300%
	13C3-HFPO-DA	100%		40-130%

(a) Associated Low Level BS outside of control limits.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-240328	Date Sampled:	03/28/24
Lab Sample ID:	FC14481-6	Date Received:	04/02/24
Matrix:	AQ - Field Blank Water	Percent Solids:	n/a
Method:	EPA 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	8Q5039.D	1	04/20/24 14:38	AL	04/10/24 09:15	OP2578	S8Q68
Run #2							

Run #	Initial Volume	Final Volume
Run #1	560 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.0071	0.0036	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0036	0.00089	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0018	0.00045	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0018	0.00045	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0018	0.00045	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0018	0.00054	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0018	0.00045	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0018	0.00054	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0018	0.00054	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0018	0.00075	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0018	0.00045	ug/l	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.0018	0.00089	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0018	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0018	0.00089	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0018	0.00089	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0018	0.00089	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0018	0.00089	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0018	0.00089	ug/l	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.0018	0.0010	ug/l	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2-FTS	ND	0.0071	0.0036	ug/l	
27619-97-2	6:2-FTS	ND	0.0071	0.0036	ug/l	
39108-34-4	8:2-FTS	ND	0.0071	0.0037	ug/l	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.0018	0.00089	ug/l	
31506-32-8	MeFOSA	ND	0.0036	0.00089	ug/l	
4151-50-2	EtFOSA	ND	0.0036	0.00089	ug/l	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-240328	Date Sampled:	03/28/24
Lab Sample ID:	FC14481-6	Date Received:	04/02/24
Matrix:	AQ - Field Blank Water	Percent Solids:	n/a
Method:	EPA 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.0018	0.00089	ug/l	
2991-50-6	EtFOSAA	ND	0.0018	0.0012	ug/l	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	0.018	0.0089	ug/l	
1691-99-2	EtFOSE	ND	0.018	0.0089	ug/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.0036	0.00089	ug/l	
919005-14-4	ADONA	ND	0.0071	0.0018	ug/l	
377-73-1	PFMPA	ND	0.0036	0.00089	ug/l	
863090-89-5	PFMBA	ND	0.0036	0.0010	ug/l	
151772-58-6	NFDHA	ND	0.0036	0.0011	ug/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0071	0.0018	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0071	0.0018	ug/l	
113507-82-7	PFEESA	ND	0.0036	0.00089	ug/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3-FTCA ^a	ND	0.0089	0.0045	ug/l	
914637-49-3	5:3-FTCA	ND	0.045	0.0089	ug/l	
812-70-4	7:3-FTCA ^a	ND	0.045	0.0089	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	97%		10-130%
	13C5-PFPeA	94%		40-130%
	13C5-PFHxA	91%		40-130%
	13C4-PFHpA	89%		40-130%
	13C8-PFOA	98%		40-130%
	13C9-PFNA	107%		40-130%
	13C6-PFDA	89%		40-130%
	13C7-PFUnDA	90%		30-130%
	13C2-PFDoDA	85%		10-130%
	13C2-PFTeDA	68%		10-130%
	13C3-PFBS	99%		40-135%
	13C3-PFHxS	88%		40-130%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-240328	Date Sampled:	03/28/24
Lab Sample ID:	FC14481-6	Date Received:	04/02/24
Matrix:	AQ - Field Blank Water	Percent Solids:	n/a
Method:	EPA 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	96%		40-130%
	13C8-FOSA	79%		40-130%
	d3-MeFOSA	78%		10-130%
	d5-EtFOSA	87%		10-130%
	d3-MeFOSAA	87%		40-170%
	d5-EtFOSAA	78%		25-135%
	d7-MeFOSE	76%		10-130%
	d9-EtFOSE	77%		10-130%
	13C2-4:2FTS	129%		40-200%
	13C2-6:2FTS	109%		40-200%
	13C2-8:2FTS	117%		40-300%
	13C3-HFPO-DA	91%		40-130%

(a) Associated Low Level CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WDUP-240328	Date Sampled:	03/28/24
Lab Sample ID:	FC14481-7	Date Received:	04/02/24
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	EPA 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	8Q5040.D	1	04/20/24 14:54	AL	04/10/24 09:15	OP2578	S8Q68
Run #2							

Run #	Initial Volume	Final Volume
Run #1	460 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	0.0170	0.0087	0.0043	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0630	0.0043	0.0011	ug/l	
307-24-4	Perfluorohexanoic acid	0.0476	0.0022	0.00054	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0169	0.0022	0.00054	ug/l	
335-67-1	Perfluorooctanoic acid	0.0161	0.0022	0.00054	ug/l	
375-95-1	Perfluorononanoic acid	0.0053	0.0022	0.00066	ug/l	
335-76-2	Perfluorodecanoic acid	0.00069	0.0022	0.00054	ug/l	J
2058-94-8	Perfluoroundecanoic acid	ND	0.0022	0.00065	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0022	0.00065	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0022	0.00091	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0022	0.00054	ug/l	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	0.0052	0.0022	0.0011	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0071	0.0022	0.0012	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0779	0.0022	0.0011	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0028	0.0022	0.0011	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.125	0.0022	0.0011	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0022	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0022	0.0011	ug/l	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.0022	0.0012	ug/l	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2-FTS	ND	0.0087	0.0043	ug/l	
27619-97-2	6:2-FTS	0.103	0.0087	0.0043	ug/l	
39108-34-4	8:2-FTS	0.0112	0.0087	0.0045	ug/l	

PERFLUOROOCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.0022	0.0011	ug/l	
31506-32-8	MeFOSA	ND	0.0043	0.0011	ug/l	
4151-50-2	EtFOSA	ND	0.0043	0.0011	ug/l	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WDUP-240328	Date Sampled:	03/28/24
Lab Sample ID:	FC14481-7	Date Received:	04/02/24
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	EPA 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.0022	0.0011	ug/l	
2991-50-6	EtFOSAA	ND	0.0022	0.0014	ug/l	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	0.022	0.011	ug/l	
1691-99-2	EtFOSE	ND	0.022	0.011	ug/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.0043	0.0011	ug/l	
919005-14-4	ADONA	ND	0.0087	0.0022	ug/l	
377-73-1	PFMPA	ND	0.0043	0.0011	ug/l	
863090-89-5	PFMBA	ND	0.0043	0.0012	ug/l	
151772-58-6	NFDHA	ND	0.0043	0.0013	ug/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0087	0.0022	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0087	0.0022	ug/l	
113507-82-7	PFEESA	ND	0.0043	0.0011	ug/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3-FTCA ^a	ND	0.011	0.0054	ug/l	
914637-49-3	5:3-FTCA	ND	0.054	0.011	ug/l	
812-70-4	7:3-FTCA ^a	ND	0.054	0.011	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	98%		10-130%
	13C5-PFPeA	106%		40-130%
	13C5-PFHxA	101%		40-130%
	13C4-PFHpA	101%		40-130%
	13C8-PFOA	97%		40-130%
	13C9-PFNA	104%		40-130%
	13C6-PFDA	97%		40-130%
	13C7-PFUnDA	95%		30-130%
	13C2-PFDoDA	77%		10-130%
	13C2-PFTeDA	45%		10-130%
	13C3-PFBS	101%		40-135%
	13C3-PFHxS	95%		40-130%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WDUP-240328	Date Sampled:	03/28/24
Lab Sample ID:	FC14481-7	Date Received:	04/02/24
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	EPA 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	89%		40-130%
	13C8-FOSA	93%		40-130%
	d3-MeFOSA	55%		10-130%
	d5-EtFOSA	60%		10-130%
	d3-MeFOSAA	96%		40-170%
	d5-EtFOSAA	96%		25-135%
	d7-MeFOSE	61%		10-130%
	d9-EtFOSE	56%		10-130%
	13C2-4:2FTS	109%		40-200%
	13C2-6:2FTS	104%		40-200%
	13C2-8:2FTS	110%		40-300%
	13C3-HFPO-DA	98%		40-130%

(a) Associated Low Level CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW13-5.0	Date Sampled:	03/26/24
Lab Sample ID:	FC14481-8	Date Received:	04/02/24
Matrix:	SO - Soil	Percent Solids:	83.2
Method:	EPA 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q33689.D	1	04/18/24 22:22	MV	04/09/24 09:35	OP2544	S6Q473
Run #2							

Run #	Initial Weight	Final Volume
Run #1	4.98 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.97	0.60	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.48	0.12	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.24	0.12	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.24	0.12	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.24	0.12	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.24	0.14	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.24	0.12	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.24	0.16	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.24	0.12	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.24	0.12	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.24	0.12	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.24	0.12	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.24	0.19	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.24	0.19	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.24	0.17	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.24	0.12	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.24	0.22	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.24	0.17	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.24	0.18	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2-FTS	ND	0.97	0.48	ug/kg	
27619-97-2	6:2-FTS	ND	0.97	0.48	ug/kg	
39108-34-4	8:2-FTS	ND	0.97	0.72	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.24	0.12	ug/kg	
31506-32-8	MeFOSA	ND	0.24	0.16	ug/kg	
4151-50-2	EtFOSA	ND	0.24	0.12	ug/kg	

ND = Not detected MDL = Method Detection Limit

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E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW13-5.0	Date Sampled:	03/26/24
Lab Sample ID:	FC14481-8	Date Received:	04/02/24
Matrix:	SO - Soil	Percent Solids:	83.2
Method:	EPA 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.24	0.19	ug/kg	
2991-50-6	EtFOSAA	ND	0.24	0.24	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.4	1.2	ug/kg	
1691-99-2	EtFOSE	ND	2.4	1.2	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.97	0.35	ug/kg	
919005-14-4	ADONA	ND	0.97	0.41	ug/kg	
377-73-1	PFMPA	ND	0.48	0.24	ug/kg	
863090-89-5	PFMBA	ND	0.48	0.24	ug/kg	
151772-58-6	NFDHA	ND	0.48	0.29	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.97	0.53	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.97	0.48	ug/kg	
113507-82-7	PFEESA	ND	0.48	0.24	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3-FTCA	ND	1.2	0.61	ug/kg	
914637-49-3	5:3-FTCA	ND	6.0	1.4	ug/kg	
812-70-4	7:3-FTCA	ND	6.0	1.5	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	65%		20-150%
	13C5-PFPeA	65%		20-150%
	13C5-PFHxA	64%		20-150%
	13C4-PFHpA	59%		20-150%
	13C8-PFOA	65%		20-150%
	13C9-PFNA	55%		20-150%
	13C6-PFDA	65%		20-150%
	13C7-PFUnDA	61%		20-150%
	13C2-PFDoDA	64%		20-150%
	13C2-PFTeDA	60%		20-150%
	13C3-PFBS	61%		20-150%
	13C3-PFHxS	60%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW13-5.0	Date Sampled:	03/26/24
Lab Sample ID:	FC14481-8	Date Received:	04/02/24
Matrix:	SO - Soil	Percent Solids:	83.2
Method:	EPA 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	62%		20-150%
	13C8-FOSA	59%		20-150%
	d3-MeFOSA	57%		20-150%
	d5-EtFOSA	57%		20-150%
	d3-MeFOSAA	60%		20-150%
	d5-EtFOSAA	58%		20-150%
	d7-MeFOSE	61%		20-150%
	d9-EtFOSE	61%		20-150%
	13C2-4:2FTS	68%		20-180%
	13C2-6:2FTS	64%		20-180%
	13C2-8:2FTS	57%		20-180%
	13C3-HFPO-DA	62%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW13-10.0	Date Sampled:	03/26/24
Lab Sample ID:	FC14481-9	Date Received:	04/02/24
Matrix:	SO - Soil	Percent Solids:	90.5
Method:	EPA 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q33690.D	1	04/18/24 22:38	MV	04/09/24 09:35	OP2544	S6Q473
Run #2							

Run #	Initial Weight	Final Volume
Run #1	5.00 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.88	0.55	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.44	0.11	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.22	0.11	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.22	0.11	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.22	0.11	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.22	0.13	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.22	0.11	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.22	0.15	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.22	0.11	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.22	0.11	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.22	0.11	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.22	0.11	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.22	0.17	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.22	0.18	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.22	0.16	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.22	0.11	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.22	0.20	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.22	0.16	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.22	0.17	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2-FTS	ND	0.88	0.44	ug/kg	
27619-97-2	6:2-FTS	ND	0.88	0.44	ug/kg	
39108-34-4	8:2-FTS	ND	0.88	0.66	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.22	0.11	ug/kg	
31506-32-8	MeFOSA	ND	0.22	0.15	ug/kg	
4151-50-2	EtFOSA	ND	0.22	0.11	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW13-10.0		
Lab Sample ID:	FC14481-9	Date Sampled:	03/26/24
Matrix:	SO - Soil	Date Received:	04/02/24
Method:	EPA 1633 EPA 1633 DRAFT	Percent Solids:	90.5
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.22	0.17	ug/kg	
2991-50-6	EtFOSAA	ND	0.22	0.22	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.2	1.1	ug/kg	
1691-99-2	EtFOSE	ND	2.2	1.1	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.88	0.32	ug/kg	
919005-14-4	ADONA	ND	0.88	0.37	ug/kg	
377-73-1	PFMPA	ND	0.44	0.22	ug/kg	
863090-89-5	PFMBA	ND	0.44	0.22	ug/kg	
151772-58-6	NFDHA	ND	0.44	0.27	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.88	0.49	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.88	0.44	ug/kg	
113507-82-7	PFEESA	ND	0.44	0.22	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3-FTCA	ND	1.1	0.56	ug/kg	
914637-49-3	5:3-FTCA	ND	5.5	1.3	ug/kg	
812-70-4	7:3-FTCA	ND	5.5	1.4	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	79%		20-150%
	13C5-PFPeA	78%		20-150%
	13C5-PFHxA	76%		20-150%
	13C4-PFHpA	75%		20-150%
	13C8-PFOA	82%		20-150%
	13C9-PFNA	82%		20-150%
	13C6-PFDA	83%		20-150%
	13C7-PFUnDA	83%		20-150%
	13C2-PFDoDA	83%		20-150%
	13C2-PFTeDA	77%		20-150%
	13C3-PFBS	81%		20-150%
	13C3-PFHxS	76%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW13-10.0	Date Sampled:	03/26/24
Lab Sample ID:	FC14481-9	Date Received:	04/02/24
Matrix:	SO - Soil	Percent Solids:	90.5
Method:	EPA 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	70%		20-150%
	13C8-FOSA	71%		20-150%
	d3-MeFOSA	69%		20-150%
	d5-EtFOSA	72%		20-150%
	d3-MeFOSAA	65%		20-150%
	d5-EtFOSAA	66%		20-150%
	d7-MeFOSE	70%		20-150%
	d9-EtFOSE	71%		20-150%
	13C2-4:2FTS	78%		20-180%
	13C2-6:2FTS	77%		20-180%
	13C2-8:2FTS	71%		20-180%
	13C3-HFPO-DA	78%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW13-15.0	
Lab Sample ID:	FC14481-10	Date Sampled: 03/26/24
Matrix:	SO - Soil	Date Received: 04/02/24
Method:	EPA 1633 EPA 1633 DRAFT	Percent Solids: 86.1
Project:	Paine Field; Everett, WA	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q33686.D	1	04/18/24 21:33	MV	04/09/24 09:35	OP2544	S6Q473
Run #2							

	Initial Weight	Final Volume
Run #1	5.02 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.93	0.58	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.46	0.12	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.23	0.12	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.23	0.12	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.23	0.12	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.23	0.13	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.23	0.12	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.23	0.15	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.23	0.12	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.23	0.12	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.23	0.12	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.23	0.12	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.23	0.18	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.23	0.18	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.23	0.17	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.23	0.12	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.23	0.21	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.23	0.17	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.23	0.17	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2-FTS	ND	0.93	0.46	ug/kg	
27619-97-2	6:2-FTS	ND	0.93	0.46	ug/kg	
39108-34-4	8:2-FTS	ND	0.93	0.69	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.23	0.12	ug/kg	
31506-32-8	MeFOSA	ND	0.23	0.16	ug/kg	
4151-50-2	EtFOSA	ND	0.23	0.12	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW13-15.0	Date Sampled:	03/26/24
Lab Sample ID:	FC14481-10	Date Received:	04/02/24
Matrix:	SO - Soil	Percent Solids:	86.1
Method:	EPA 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.23	0.18	ug/kg	
2991-50-6	EtFOSAA	ND	0.23	0.23	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.3	1.2	ug/kg	
1691-99-2	EtFOSE	ND	2.3	1.2	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.93	0.33	ug/kg	
919005-14-4	ADONA	ND	0.93	0.39	ug/kg	
377-73-1	PFMPA	ND	0.46	0.23	ug/kg	
863090-89-5	PFMBA	ND	0.46	0.23	ug/kg	
151772-58-6	NFDHA	ND	0.46	0.28	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.93	0.51	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.93	0.46	ug/kg	
113507-82-7	PFEESA	ND	0.46	0.23	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3-FTCA	ND	1.2	0.59	ug/kg	
914637-49-3	5:3-FTCA	ND	5.8	1.3	ug/kg	
812-70-4	7:3-FTCA	ND	5.8	1.5	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	71%		20-150%
	13C5-PFPeA	76%		20-150%
	13C5-PFHxA	75%		20-150%
	13C4-PFHpA	76%		20-150%
	13C8-PFOA	72%		20-150%
	13C9-PFNA	72%		20-150%
	13C6-PFDA	74%		20-150%
	13C7-PFUnDA	63%		20-150%
	13C2-PFDoDA	72%		20-150%
	13C2-PFTeDA	67%		20-150%
	13C3-PFBS	66%		20-150%
	13C3-PFHxS	67%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW13-15.0	Date Sampled:	03/26/24
Lab Sample ID:	FC14481-10	Date Received:	04/02/24
Matrix:	SO - Soil	Percent Solids:	86.1
Method:	EPA 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	70%		20-150%
	13C8-FOSA	69%		20-150%
	d3-MeFOSA	66%		20-150%
	d5-EtFOSA	72%		20-150%
	d3-MeFOSAA	75%		20-150%
	d5-EtFOSAA	75%		20-150%
	d7-MeFOSE	70%		20-150%
	d9-EtFOSE	70%		20-150%
	13C2-4:2FTS	70%		20-180%
	13C2-6:2FTS	68%		20-180%
	13C2-8:2FTS	64%		20-180%
	13C3-HFPO-DA	72%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	FP-MW13-20.0		
Lab Sample ID:	FC14481-11	Date Sampled:	03/26/24
Matrix:	SO - Soil	Date Received:	04/02/24
Method:	EPA 1633 EPA 1633 DRAFT	Percent Solids:	92.2
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q33693.D	1	04/18/24 23:27	MV	04/09/24 09:35	OP2544	S6Q473
Run #2							

Run #	Initial Weight	Final Volume
Run #1	4.99 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.87	0.54	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.43	0.11	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.22	0.11	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.22	0.11	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.22	0.11	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.22	0.12	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.22	0.11	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.22	0.14	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.22	0.11	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.22	0.11	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.22	0.11	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.22	0.11	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.22	0.17	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.22	0.17	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.22	0.16	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.22	0.11	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.22	0.20	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.22	0.16	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.22	0.16	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2-FTS	ND	0.87	0.43	ug/kg	
27619-97-2	6:2-FTS	ND	0.87	0.43	ug/kg	
39108-34-4	8:2-FTS	ND	0.87	0.65	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.22	0.11	ug/kg	
31506-32-8	MeFOSA	ND	0.22	0.15	ug/kg	
4151-50-2	EtFOSA	ND	0.22	0.11	ug/kg	

ND = Not detected	MDL = Method Detection Limit	J = Indicates an estimated value
RL = Reporting Limit		B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range		N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW13-20.0		
Lab Sample ID:	FC14481-11	Date Sampled:	03/26/24
Matrix:	SO - Soil	Date Received:	04/02/24
Method:	EPA 1633 EPA 1633 DRAFT	Percent Solids:	92.2
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.22	0.17	ug/kg	
2991-50-6	EtFOSAA	ND	0.22	0.21	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.2	1.1	ug/kg	
1691-99-2	EtFOSE	ND	2.2	1.1	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.87	0.31	ug/kg	
919005-14-4	ADONA	ND	0.87	0.37	ug/kg	
377-73-1	PFMPA	ND	0.43	0.22	ug/kg	
863090-89-5	PFMBA	ND	0.43	0.22	ug/kg	
151772-58-6	NFDHA	ND	0.43	0.27	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.87	0.48	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.87	0.43	ug/kg	
113507-82-7	PFEESA	ND	0.43	0.22	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3-FTCA	ND	1.1	0.55	ug/kg	
914637-49-3	5:3-FTCA	ND	5.4	1.3	ug/kg	
812-70-4	7:3-FTCA	ND	5.4	1.4	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	68%		20-150%
	13C5-PFPeA	67%		20-150%
	13C5-PFHxA	65%		20-150%
	13C4-PFHpA	65%		20-150%
	13C8-PFOA	69%		20-150%
	13C9-PFNA	73%		20-150%
	13C6-PFDA	66%		20-150%
	13C7-PFUnDA	64%		20-150%
	13C2-PFDoDA	67%		20-150%
	13C2-PFTeDA	63%		20-150%
	13C3-PFBS	68%		20-150%
	13C3-PFHxS	70%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW13-20.0	Date Sampled:	03/26/24
Lab Sample ID:	FC14481-11	Date Received:	04/02/24
Matrix:	SO - Soil	Percent Solids:	92.2
Method:	EPA 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	62%		20-150%
	13C8-FOSA	62%		20-150%
	d3-MeFOSA	57%		20-150%
	d5-EtFOSA	64%		20-150%
	d3-MeFOSAA	61%		20-150%
	d5-EtFOSAA	66%		20-150%
	d7-MeFOSE	59%		20-150%
	d9-EtFOSE	62%		20-150%
	13C2-4:2FTS	72%		20-180%
	13C2-6:2FTS	69%		20-180%
	13C2-8:2FTS	65%		20-180%
	13C3-HFPO-DA	71%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	FP-B3-1.0		
Lab Sample ID:	FC14481-12	Date Sampled:	03/28/24
Matrix:	SO - Soil	Date Received:	04/02/24
Method:	EPA 1633 EPA 1633 DRAFT	Percent Solids:	77.0
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q33694.D	1	04/18/24 23:43	MV	04/09/24 09:35	OP2544	S6Q473
Run #2							

Run #	Initial Weight	Final Volume
Run #1	4.96 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	1.0	0.65	ug/kg	
2706-90-3	Perfluoropentanoic acid	1.3	0.52	0.13	ug/kg	
307-24-4	Perfluorohexanoic acid	0.45	0.26	0.13	ug/kg	
375-85-9	Perfluoroheptanoic acid	0.20	0.26	0.13	ug/kg	J
335-67-1	Perfluorooctanoic acid	ND	0.26	0.13	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.26	0.15	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.26	0.13	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.26	0.17	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.26	0.13	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.26	0.13	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.26	0.13	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.26	0.13	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.26	0.21	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	0.40	0.26	0.21	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.26	0.19	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.19	0.26	0.13	ug/kg	J
68259-12-1	Perfluorononanesulfonic acid	ND	0.26	0.24	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.26	0.19	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.26	0.20	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2-FTS	ND	1.0	0.52	ug/kg	
27619-97-2	6:2-FTS	ND	1.0	0.52	ug/kg	
39108-34-4	8:2-FTS	ND	1.0	0.79	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.26	0.13	ug/kg	
31506-32-8	MeFOSA	ND	0.26	0.18	ug/kg	
4151-50-2	EtFOSA	ND	0.26	0.13	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-B3-1.0		
Lab Sample ID:	FC14481-12	Date Sampled:	03/28/24
Matrix:	SO - Soil	Date Received:	04/02/24
Method:	EPA 1633 EPA 1633 DRAFT	Percent Solids:	77.0
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.26	0.21	ug/kg	
2991-50-6	EtFOSAA	ND	0.26	0.26	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.6	1.3	ug/kg	
1691-99-2	EtFOSE	ND	2.6	1.3	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	1.0	0.38	ug/kg	
919005-14-4	ADONA	ND	1.0	0.44	ug/kg	
377-73-1	PFMPA	ND	0.52	0.26	ug/kg	
863090-89-5	PFMBA	ND	0.52	0.26	ug/kg	
151772-58-6	NFDHA	ND	0.52	0.32	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	1.0	0.57	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	1.0	0.52	ug/kg	
113507-82-7	PFEESA	ND	0.52	0.26	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3-FTCA	ND	1.3	0.67	ug/kg	
914637-49-3	5:3-FTCA	ND	6.5	1.5	ug/kg	
812-70-4	7:3-FTCA	ND	6.5	1.7	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	72%		20-150%
	13C5-PFPeA	69%		20-150%
	13C5-PFHxA	67%		20-150%
	13C4-PFHpA	70%		20-150%
	13C8-PFOA	78%		20-150%
	13C9-PFNA	74%		20-150%
	13C6-PFDA	69%		20-150%
	13C7-PFUnDA	70%		20-150%
	13C2-PFDoDA	67%		20-150%
	13C2-PFTeDA	61%		20-150%
	13C3-PFBS	65%		20-150%
	13C3-PFHxS	63%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-B3-1.0	Date Sampled:	03/28/24
Lab Sample ID:	FC14481-12	Date Received:	04/02/24
Matrix:	SO - Soil	Percent Solids:	77.0
Method:	EPA 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	72%		20-150%
	13C8-FOSA	73%		20-150%
	d3-MeFOSA	66%		20-150%
	d5-EtFOSA	73%		20-150%
	d3-MeFOSAA	70%		20-150%
	d5-EtFOSAA	77%		20-150%
	d7-MeFOSE	70%		20-150%
	d9-EtFOSE	71%		20-150%
	13C2-4:2FTS	76%		20-180%
	13C2-6:2FTS	72%		20-180%
	13C2-8:2FTS	65%		20-180%
	13C3-HFPO-DA	69%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.12
4

Report of Analysis

Client Sample ID:	FP-B4-0.5						
Lab Sample ID:	FC14481-13					Date Sampled:	03/28/24
Matrix:	SO - Soil					Date Received:	04/02/24
Method:	EPA 1633 EPA 1633 DRAFT					Percent Solids:	82.9
Project:	Paine Field; Everett, WA						

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q33695.D	1	04/18/24 23:59	MV	04/09/24 09:35	OP2544	S6Q473
Run #2							

	Initial Weight	Final Volume
Run #1	5.05 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.96	0.60	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.48	0.12	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.24	0.12	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.24	0.12	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.24	0.12	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.24	0.14	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.24	0.12	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.24	0.16	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.24	0.12	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.24	0.12	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.24	0.12	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.24	0.12	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.24	0.19	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.24	0.19	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.24	0.17	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.29	0.24	0.12	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.24	0.22	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.24	0.17	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.24	0.18	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2-FTS	ND	0.96	0.48	ug/kg	
27619-97-2	6:2-FTS	ND	0.96	0.48	ug/kg	
39108-34-4	8:2-FTS	ND	0.96	0.72	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.24	0.12	ug/kg	
31506-32-8	MeFOSA	ND	0.24	0.16	ug/kg	
4151-50-2	EtFOSA	ND	0.24	0.12	ug/kg	

ND = Not detected	MDL = Method Detection Limit	J = Indicates an estimated value
RL = Reporting Limit		B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range		N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-B4-0.5	Date Sampled:	03/28/24
Lab Sample ID:	FC14481-13	Date Received:	04/02/24
Matrix:	SO - Soil	Percent Solids:	82.9
Method:	EPA 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.24	0.19	ug/kg	
2991-50-6	EtFOSAA	ND	0.24	0.24	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.4	1.2	ug/kg	
1691-99-2	EtFOSE	ND	2.4	1.2	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.96	0.35	ug/kg	
919005-14-4	ADONA	ND	0.96	0.40	ug/kg	
377-73-1	PFMPA	ND	0.48	0.24	ug/kg	
863090-89-5	PFMBA	ND	0.48	0.24	ug/kg	
151772-58-6	NFDHA	ND	0.48	0.29	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.96	0.52	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.96	0.48	ug/kg	
113507-82-7	PFEESA	ND	0.48	0.24	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3-FTCA	ND	1.2	0.61	ug/kg	
914637-49-3	5:3-FTCA	ND	6.0	1.4	ug/kg	
812-70-4	7:3-FTCA	ND	6.0	1.5	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	69%		20-150%
	13C5-PFPeA	68%		20-150%
	13C5-PFHxA	66%		20-150%
	13C4-PFHpA	68%		20-150%
	13C8-PFOA	74%		20-150%
	13C9-PFNA	69%		20-150%
	13C6-PFDA	67%		20-150%
	13C7-PFUnDA	69%		20-150%
	13C2-PFDoDA	69%		20-150%
	13C2-PFTeDA	67%		20-150%
	13C3-PFBS	62%		20-150%
	13C3-PFHxS	67%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-B4-0.5	Date Sampled:	03/28/24
Lab Sample ID:	FC14481-13	Date Received:	04/02/24
Matrix:	SO - Soil	Percent Solids:	82.9
Method:	EPA 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	70%		20-150%
	13C8-FOSA	57%		20-150%
	d3-MeFOSA	50%		20-150%
	d5-EtFOSA	54%		20-150%
	d3-MeFOSAA	67%		20-150%
	d5-EtFOSAA	61%		20-150%
	d7-MeFOSE	53%		20-150%
	d9-EtFOSE	56%		20-150%
	13C2-4:2FTS	68%		20-180%
	13C2-6:2FTS	72%		20-180%
	13C2-8:2FTS	62%		20-180%
	13C3-HFPO-DA	70%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.13
4

Report of Analysis

Client Sample ID:	FP-B5-0.5		
Lab Sample ID:	FC14481-14	Date Sampled:	03/28/24
Matrix:	SO - Soil	Date Received:	04/02/24
Method:	EPA 1633 EPA 1633 DRAFT	Percent Solids:	61.9
Project:	Paine Field; Everett, WA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q33696.D	1	04/19/24 00:16	MV	04/09/24 09:35	OP2544	S6Q473
Run #2							

	Initial Weight	Final Volume
Run #1	4.95 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	1.3	0.82	ug/kg	
2706-90-3	Perfluoropentanoic acid	1.1	0.65	0.16	ug/kg	
307-24-4	Perfluorohexanoic acid	0.54	0.33	0.16	ug/kg	
375-85-9	Perfluoroheptanoic acid	0.24	0.33	0.16	ug/kg	J
335-67-1	Perfluorooctanoic acid	0.38	0.33	0.16	ug/kg	
375-95-1	Perfluorononanoic acid	0.31	0.33	0.19	ug/kg	J
335-76-2	Perfluorodecanoic acid	0.17	0.33	0.16	ug/kg	J
2058-94-8	Perfluoroundecanoic acid	0.37	0.33	0.22	ug/kg	
307-55-1	Perfluorododecanoic acid	0.25	0.33	0.16	ug/kg	J
72629-94-8	Perfluorotridecanoic acid	ND	0.33	0.17	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.33	0.16	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.33	0.16	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.33	0.26	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.33	0.26	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.33	0.24	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	2.9	0.33	0.16	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.33	0.30	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	0.24	0.33	0.23	ug/kg	J
79780-39-5	Perfluorododecanesulfonic aci	ND	0.33	0.24	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2-FTS	ND	1.3	0.65	ug/kg	
27619-97-2	6:2-FTS	ND	1.3	0.65	ug/kg	
39108-34-4	8:2-FTS	ND	1.3	0.98	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.33	0.16	ug/kg	
31506-32-8	MeFOSA	ND	0.33	0.22	ug/kg	
4151-50-2	EtFOSA	ND	0.33	0.16	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-B5-0.5	Date Sampled:	03/28/24
Lab Sample ID:	FC14481-14	Date Received:	04/02/24
Matrix:	SO - Soil	Percent Solids:	61.9
Method:	EPA 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.33	0.26	ug/kg	
2991-50-6	EtFOSAA	ND	0.33	0.32	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	3.3	1.6	ug/kg	
1691-99-2	EtFOSE	ND	3.3	1.6	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	1.3	0.47	ug/kg	
919005-14-4	ADONA	ND	1.3	0.55	ug/kg	
377-73-1	PFMPA	ND	0.65	0.33	ug/kg	
863090-89-5	PFMBA	ND	0.65	0.33	ug/kg	
151772-58-6	NFDHA	ND	0.65	0.40	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	1.3	0.72	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	1.3	0.65	ug/kg	
113507-82-7	PFEESA	ND	0.65	0.33	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3-FTCA	ND	1.6	0.83	ug/kg	
914637-49-3	5:3-FTCA	ND	8.2	1.9	ug/kg	
812-70-4	7:3-FTCA	ND	8.2	2.1	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	74%		20-150%
	13C5-PFPeA	73%		20-150%
	13C5-PFHxA	72%		20-150%
	13C4-PFHpA	75%		20-150%
	13C8-PFOA	76%		20-150%
	13C9-PFNA	70%		20-150%
	13C6-PFDA	82%		20-150%
	13C7-PFUnDA	79%		20-150%
	13C2-PFDoDA	83%		20-150%
	13C2-PFTeDA	76%		20-150%
	13C3-PFBS	73%		20-150%
	13C3-PFHxS	71%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-B5-0.5	Date Sampled:	03/28/24
Lab Sample ID:	FC14481-14	Date Received:	04/02/24
Matrix:	SO - Soil	Percent Solids:	61.9
Method:	EPA 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	79%		20-150%
	13C8-FOSA	77%		20-150%
	d3-MeFOSA	71%		20-150%
	d5-EtFOSA	73%		20-150%
	d3-MeFOSAA	75%		20-150%
	d5-EtFOSAA	82%		20-150%
	d7-MeFOSE	75%		20-150%
	d9-EtFOSE	75%		20-150%
	13C2-4:2FTS	83%		20-180%
	13C2-6:2FTS	84%		20-180%
	13C2-8:2FTS	85%		20-180%
	13C3-HFPO-DA	70%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.14
4

Report of Analysis

Client Sample ID:	SDUP-240328	
Lab Sample ID:	FC14481-15	Date Sampled: 03/28/24
Matrix:	SO - Soil	Date Received: 04/02/24
Method:	EPA 1633 EPA 1633 DRAFT	Percent Solids: 75.6
Project:	Paine Field; Everett, WA	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q33697.D	1	04/19/24 00:32	MV	04/09/24 09:35	OP2544	S6Q473
Run #2							

	Initial Weight	Final Volume
Run #1	4.99 g	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	1.1	0.66	ug/kg	
2706-90-3	Perfluoropentanoic acid	1.1	0.53	0.13	ug/kg	
307-24-4	Perfluorohexanoic acid	0.43	0.27	0.13	ug/kg	
375-85-9	Perfluoroheptanoic acid	0.22	0.27	0.13	ug/kg	J
335-67-1	Perfluorooctanoic acid	ND	0.27	0.13	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.27	0.15	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.27	0.13	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.27	0.18	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.27	0.13	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.27	0.14	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.27	0.13	ug/kg	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.27	0.13	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.27	0.21	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	0.38	0.27	0.21	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.27	0.19	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.13	0.27	0.13	ug/kg	J
68259-12-1	Perfluorononanesulfonic acid	ND	0.27	0.24	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.27	0.19	ug/kg	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.27	0.20	ug/kg	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2-FTS	ND	1.1	0.53	ug/kg	
27619-97-2	6:2-FTS	ND	1.1	0.53	ug/kg	
39108-34-4	8:2-FTS	ND	1.1	0.80	ug/kg	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.27	0.13	ug/kg	
31506-32-8	MeFOSA	ND	0.27	0.18	ug/kg	
4151-50-2	EtFOSA	ND	0.27	0.13	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SDUP-240328		
Lab Sample ID:	FC14481-15	Date Sampled:	03/28/24
Matrix:	SO - Soil	Date Received:	04/02/24
Method:	EPA 1633 EPA 1633 DRAFT	Percent Solids:	75.6
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.27	0.21	ug/kg	
2991-50-6	EtFOSAA	ND	0.27	0.26	ug/kg	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	2.7	1.3	ug/kg	
1691-99-2	EtFOSE	ND	2.7	1.3	ug/kg	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	1.1	0.38	ug/kg	
919005-14-4	ADONA	ND	1.1	0.45	ug/kg	
377-73-1	PFMPA	ND	0.53	0.27	ug/kg	
863090-89-5	PFMBA	ND	0.53	0.27	ug/kg	
151772-58-6	NFDHA	ND	0.53	0.32	ug/kg	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	1.1	0.58	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	1.1	0.53	ug/kg	
113507-82-7	PFEESA	ND	0.53	0.27	ug/kg	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3-FTCA	ND	1.3	0.67	ug/kg	
914637-49-3	5:3-FTCA	ND	6.6	1.5	ug/kg	
812-70-4	7:3-FTCA	ND	6.6	1.7	ug/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	67%		20-150%
	13C5-PFPeA	63%		20-150%
	13C5-PFHxA	62%		20-150%
	13C4-PFHpA	61%		20-150%
	13C8-PFOA	74%		20-150%
	13C9-PFNA	68%		20-150%
	13C6-PFDA	71%		20-150%
	13C7-PFUnDA	68%		20-150%
	13C2-PFDoDA	71%		20-150%
	13C2-PFTeDA	68%		20-150%
	13C3-PFBS	68%		20-150%
	13C3-PFHxS	68%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SDUP-240328	Date Sampled:	03/28/24
Lab Sample ID:	FC14481-15	Date Received:	04/02/24
Matrix:	SO - Soil	Percent Solids:	75.6
Method:	EPA 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	67%		20-150%
	13C8-FOSA	64%		20-150%
	d3-MeFOSA	60%		20-150%
	d5-EtFOSA	64%		20-150%
	d3-MeFOSAA	65%		20-150%
	d5-EtFOSAA	71%		20-150%
	d7-MeFOSE	65%		20-150%
	d9-EtFOSE	64%		20-150%
	13C2-4:2FTS	66%		20-180%
	13C2-6:2FTS	63%		20-180%
	13C2-8:2FTS	67%		20-180%
	13C3-HFPO-DA	63%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.15
4

Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

SGS North America Inc - Orlando
Chain of Custody

Vineland Road, Suite C-15 Orlando, FL 32811
TEL: 407-425-6700 FAX: 407-425-0707
www.sgs.com

4405 **SGS - ORLANDO JOB # :**

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SGS - ORLANDO Quote #

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S
Information Matrix Codes

[illegible]

SGS COC Draft Rev 031318

<http://www.sqs.com/en/terms-and-conditions>

FC14481: Chain of Custody

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SGS North America Inc - Orlando
Chain of Custody

Vineland Road, Suite C-15 Orlando, FL 32811
TEL: 407-425-6700 FAX: 407-425-0707
www.sgs.com

4405

SGS - ORLANDO JOB # :

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SGS - ORLANDO Quote #

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SECRET

Information Matrix Code

[illegible]

SGS_COC_Draft Rev 031318

<http://www.sgs.com/en/terms-and-conditions>

FC14481: Chain of Custody

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SGS - Orlando Sample Receipt Summary

Job Number: fc14481 **Client:** GEOENGINEERS, INC. **Project:** PAINE FIELD FORMER FIRE PIT
Date / Time Received: 4/2/2024 10:00:00 AM **Delivery Method:** FED EX **Airbill #'s:** 2728 6360 7322

Cooler Temps (Raw Measured) °C: Cooler 1: (2.4);

Cooler Temps (Corrected) °C: Cooler 1: (3.4);

<u>Cooler Information</u>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Custody Seals Present:	☒		☐
2. Custody Seals Intact:	☒		☐
3. Temp criteria achieved:	☒		☐
4. Cooler temp verification:			IR Gun
5. Cooler media:			Ice (Bag)

<u>Trip Blank Information</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Trip Blank present / cooler:	☐		☐	☒
2. Trip Blank listed on COC:	☐		☐	☒

	<u>W</u>	<u>or</u>	<u>S</u>	<u>N/A</u>
3. Type of TB Received	☐		☐	☒

<u>Sample Information</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Sample labels present on bottles:	☒		☐	
2. Samples presented properly	☒		☐	
3. Sufficient volume/containers rec'd for analysis	☒		☐	
4. Condition of sample:			Intact	
5. Sample rec'd within HT	☒		☐	
6. Dates/Times/IDs on COC match sample label	☒		☐	
7. VOCs have headspace	☐		☐	☒
8. Bottles received for unspecified tests	☐		☒	
9. Compositing instructions clear	☐		☐	☒
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☒
11. % Solids Jar Received?	☒		☐	☐
12. Residual Chlorine Present?	☐		☐	☒

Misc Information

Number of Encores: 25 Gram	5 Gram	Number of Lab Filtered Metals:
Test Strip Lot #s: pH 0-3: <u>226422</u>	pH 10-12: _____	Other: (Specify) pH 1.0 - 12.0 <u>222221</u>
Residual Chlorine Test Strip Lot # _____		

Comments

Sample Receipt Summary 112723 EK Technician: SHAYLAP Date: 4/2/2024 11:41:02 AM Reviewer: _____ Date: _____

FC14481: Chain of Custody

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MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 2

Job Number: FC14481
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2544-MB	6Q33683.D	1	04/18/24	MV	04/09/24	OP2544	S6Q473

The QC reported here applies to the following samples:

Method: EPA 1633

FC14481-8, FC14481-9, FC14481-10, FC14481-11, FC14481-12, FC14481-13, FC14481-14, FC14481-15

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.80	0.50	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.40	0.10	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.20	0.10	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.20	0.10	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.20	0.10	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.20	0.12	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.20	0.10	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.20	0.13	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.20	0.10	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.20	0.10	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.20	0.10	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	0.20	0.10	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.20	0.16	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.20	0.16	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.20	0.15	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.20	0.10	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.20	0.18	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.20	0.14	ug/kg	
79780-39-5	Perfluorododecanesulfonic acid	ND	0.20	0.15	ug/kg	
757124-72-44:2-FTS		ND	0.80	0.40	ug/kg	
27619-97-2	6:2-FTS	ND	0.80	0.40	ug/kg	
39108-34-4	8:2-FTS	ND	0.80	0.60	ug/kg	
754-91-6	PFOSA	ND	0.20	0.10	ug/kg	
31506-32-8	MeFOSA	ND	0.20	0.14	ug/kg	
4151-50-2	EtFOSA	ND	0.20	0.10	ug/kg	
2355-31-9	MeFOSAA	ND	0.20	0.16	ug/kg	
2991-50-6	EtFOSAA	ND	0.20	0.20	ug/kg	
24448-09-7	MeFOSE	ND	2.0	1.0	ug/kg	
1691-99-2	EtFOSE	ND	2.0	1.0	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	0.80	0.29	ug/kg	
919005-14-4	ADONA	ND	0.80	0.34	ug/kg	
377-73-1	PFMPA	ND	0.40	0.20	ug/kg	
863090-89-5	PFMBA	ND	0.40	0.20	ug/kg	
151772-58-6	NFDHA	ND	0.40	0.24	ug/kg	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.80	0.44	ug/kg	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.80	0.40	ug/kg	

Method Blank Summary

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Job Number: FC14481

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2544-MB	6Q33683.D	1	04/18/24	MV	04/09/24	OP2544	S6Q473

The QC reported here applies to the following samples:

Method: EPA 1633

FC14481-8, FC14481-9, FC14481-10, FC14481-11, FC14481-12, FC14481-13, FC14481-14, FC14481-15

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.40	0.20	ug/kg	
356-02-5	3:3-FTCA	ND	1.0	0.51	ug/kg	
914637-49-35:3	FTCA	ND	5.0	1.2	ug/kg	
812-70-4	7:3-FTCA	ND	5.0	1.3	ug/kg	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	73% 20-150%
	13C5-PFPeA	78% 20-150%
	13C5-PFHxA	72% 20-150%
	13C4-PFHpA	73% 20-150%
	13C8-PFOA	71% 20-150%
	13C9-PFNA	79% 20-150%
	13C6-PFDA	73% 20-150%
	13C7-PFUnDA	71% 20-150%
	13C2-PFDoDA	71% 20-150%
	13C2-PFTeDA	76% 20-150%
	13C3-PFBS	71% 20-150%
	13C3-PFHxS	74% 20-150%
	13C8-PFOS	66% 20-150%
	13C8-FOSA	63% 20-150%
	d3-MeFOSA	42% 20-150%
	d5-EtFOSA	45% 20-150%
	d3-MeFOSAA	64% 20-150%
	d5-EtFOSAA	60% 20-150%
	d7-MeFOSE	63% 20-150%
	d9-EtFOSE	63% 20-150%
	13C2-4:2FTS	76% 20-180%
	13C2-6:2FTS	73% 20-180%
	13C2-8:2FTS	72% 20-180%
	13C3-HFPO-DA	71% 20-150%

Method Blank Summary

Page 1 of 2

Job Number: FC14481
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2578-MB	8Q4994.D	1	04/19/24	AL	04/10/24	OP2578	S8Q67

The QC reported here applies to the following samples:

Method: EPA 1633

FC14481-1, FC14481-3, FC14481-4, FC14481-5, FC14481-6, FC14481-7

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0020	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0020	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0020	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0020	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0020	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0020	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0020	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0020	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0020	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0020	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0020	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0020	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0020	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0020	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0020	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0020	0.0010	ug/l	
79780-39-5	Perfluorododecanesulfonic acid	ND	0.0020	0.0011	ug/l	
757124-72-44:2-FTS		ND	0.0080	0.0040	ug/l	
27619-97-2	6:2-FTS	ND	0.0080	0.0040	ug/l	
39108-34-4	8:2-FTS	ND	0.0080	0.0041	ug/l	
754-91-6	PFOSA	ND	0.0020	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0040	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0020	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0020	0.0013	ug/l	
24448-09-7	MeFOSE	ND	0.020	0.010	ug/l	
1691-99-2	EtFOSE	ND	0.020	0.010	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0040	0.0010	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
377-73-1	PFMPA	ND	0.0040	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.0040	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0040	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

Method Blank Summary

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Job Number: FC14481
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2578-MB	8Q4994.D	1	04/19/24	AL	04/10/24	OP2578	S8Q67

The QC reported here applies to the following samples:

Method: EPA 1633

FC14481-1, FC14481-3, FC14481-4, FC14481-5, FC14481-6, FC14481-7

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.0040	0.0010	ug/l	
356-02-5	3:3-FTCA	ND	0.010	0.0050	ug/l	
914637-49-35:3	FTCA	ND	0.050	0.010	ug/l	
812-70-4	7:3-FTCA	ND	0.050	0.010	ug/l	

CAS No.	ID Standard Recoveries	Limits	
	13C4-PFBA	100%	10-130%
	13C5-PFPeA	104%	40-130%
	13C5-PFHxA	104%	40-130%
	13C4-PFHpA	101%	40-130%
	13C8-PFOA	96%	40-130%
	13C9-PFNA	99%	40-130%
	13C6-PFDA	100%	40-130%
	13C7-PFUnDA	111%	30-130%
	13C2-PFDoDA	83%	10-130%
	13C2-PFTeDA	59%	10-130%
	13C3-PFBS	97%	40-135%
	13C3-PFHxS	97%	40-130%
	13C8-PFOS	109%	40-130%
	13C8-FOSA	66%	40-130%
	d3-MeFOSA	41%	10-130%
	d5-EtFOSA	48%	10-130%
	d3-MeFOSAA	105%	40-170%
	d5-EtFOSAA	95%	25-135%
	d7-MeFOSE	49%	10-130%
	d9-EtFOSE	51%	10-130%
	13C2-4:2FTS	120%	40-200%
	13C2-6:2FTS	103%	40-200%
	13C2-8:2FTS	97%	40-300%
	13C3-HFPO-DA	97%	40-130%

Method Blank Summary

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Job Number: FC14481**Account:** GEOEWAT GeoEngineers, Inc.**Project:** Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2578-MB	8Q5038.D	1	04/20/24	AL	04/10/24	OP2578	S8Q68

The QC reported here applies to the following samples:**Method:** EPA 1633

FC14481-1, FC14481-3, FC14481-4, FC14481-5, FC14481-6, FC14481-7

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0020	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0020	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0020	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0020	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0020	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0020	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0020	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0020	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0020	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0020	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0020	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0020	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0020	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0020	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0020	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0020	0.0010	ug/l	
79780-39-5	Perfluorododecanesulfonic acid	ND	0.0020	0.0011	ug/l	
757124-72-44:2-FTS		ND	0.0080	0.0040	ug/l	
27619-97-2	6:2-FTS	ND	0.0080	0.0040	ug/l	
39108-34-4	8:2-FTS	ND	0.0080	0.0041	ug/l	
754-91-6	PFOSA	ND	0.0020	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0040	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0020	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0020	0.0013	ug/l	
24448-09-7	MeFOSE	ND	0.020	0.010	ug/l	
1691-99-2	EtFOSE	ND	0.020	0.010	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0040	0.0010	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
377-73-1	PFMPA	ND	0.0040	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.0040	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0040	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

Method Blank Summary

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Job Number: FC14481

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2578-MB	8Q5038.D	1	04/20/24	AL	04/10/24	OP2578	S8Q68

The QC reported here applies to the following samples:

Method: EPA 1633

FC14481-1, FC14481-3, FC14481-4, FC14481-5, FC14481-6, FC14481-7

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.0040	0.0010	ug/l	
356-02-5	3:3-FTCA	ND	0.010	0.0050	ug/l	
914637-49-35:3	FTCA	ND	0.050	0.010	ug/l	
812-70-4	7:3-FTCA	ND	0.050	0.010	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	96% 10-130%
	13C5-PFPeA	98% 40-130%
	13C5-PFHxA	96% 40-130%
	13C4-PFHpA	99% 40-130%
	13C8-PFOA	98% 40-130%
	13C9-PFNA	102% 40-130%
	13C6-PFDA	101% 40-130%
	13C7-PFUnDA	106% 30-130%
	13C2-PFDoDA	85% 10-130%
	13C2-PFTeDA	57% 10-130%
	13C3-PFBS	92% 40-135%
	13C3-PFHxS	90% 40-130%
	13C8-PFOS	97% 40-130%
	13C8-FOSA	64% 40-130%
	d3-MeFOSA	45% 10-130%
	d5-EtFOSA	47% 10-130%
	d3-MeFOSAA	89% 40-170%
	d5-EtFOSAA	95% 25-135%
	d7-MeFOSE	50% 10-130%
	d9-EtFOSE	50% 10-130%
	13C2-4:2FTS	118% 40-200%
	13C2-6:2FTS	121% 40-200%
	13C2-8:2FTS	115% 40-300%
	13C3-HFPO-DA	92% 40-130%

Method Blank Summary

Page 1 of 2

Job Number: FC14481**Account:** GEOEWAT GeoEngineers, Inc.**Project:** Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2811-MB	4Q59252.D	1	04/25/24	MV	04/23/24	OP2811	S4Q881

The QC reported here applies to the following samples:**Method:** EPA 1633

FC14481-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0020	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0020	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0020	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0020	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0020	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0020	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0020	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0020	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0020	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0020	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0020	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0020	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0020	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0020	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0020	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0020	0.0010	ug/l	
79780-39-5	Perfluorododecanesulfonic acid	ND	0.0020	0.0011	ug/l	
757124-72-44:2-FTS		ND	0.0080	0.0040	ug/l	
27619-97-2	6:2-FTS	ND	0.0080	0.0040	ug/l	
39108-34-4	8:2-FTS	ND	0.0080	0.0041	ug/l	
754-91-6	PFOSA	ND	0.0020	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0040	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0020	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0020	0.0013	ug/l	
24448-09-7	MeFOSE	ND	0.020	0.010	ug/l	
1691-99-2	EtFOSE	ND	0.020	0.010	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0040	0.0010	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
377-73-1	PFMPA	ND	0.0040	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.0040	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0040	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

Method Blank Summary

Job Number: FC14481
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2811-MB	4Q59252.D	1	04/25/24	MV	04/23/24	OP2811	S4Q881

The QC reported here applies to the following samples: Method: EPA 1633

FC14481-2

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.0040	0.0010	ug/l	
356-02-5	3:3-FTCA	ND	0.010	0.0050	ug/l	
914637-49-35:3	FTCA	ND	0.050	0.010	ug/l	
812-70-4	7:3-FTCA	ND	0.050	0.010	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	113% 10-130%
	13C5-PFPeA	117% 40-130%
	13C5-PFHxA	117% 40-130%
	13C4-PFHpA	113% 40-130%
	13C8-PFOA	112% 40-130%
	13C9-PFNA	111% 40-130%
	13C6-PFDA	113% 40-130%
	13C7-PFUnDA	106% 30-130%
	13C2-PFDoDA	110% 10-130%
	13C2-PFTeDA	101% 10-130%
	13C3-PFBS	111% 40-135%
	13C3-PFHxS	117% 40-130%
	13C8-PFOS	106% 40-130%
	13C8-FOSA	90% 40-130%
	d3-MeFOSA	90% 10-130%
	d5-EtFOSA	88% 10-130%
	d3-MeFOSAA	110% 40-170%
	d5-EtFOSAA	107% 25-135%
	d7-MeFOSE	82% 10-130%
	d9-EtFOSE	79% 10-130%
	13C2-4:2FTS	170% 40-200%
	13C2-6:2FTS	136% 40-200%
	13C2-8:2FTS	129% 40-300%
	13C3-HFPO-DA	111% 40-130%

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Job Number: FC14481

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q473-IBLK	6Q33676.D	1	04/18/24	MV	n/a	n/a	S6Q473

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC14481-8, FC14481-9, FC14481-10, FC14481-11, FC14481-12, FC14481-13, FC14481-14, FC14481-15

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	2.0	0.31	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	1.0	0.10	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	1.0	0.10	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	1.0	0.10	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	1.0	0.10	ug/kg	
375-95-1	Perfluorononanoic acid	ND	1.0	0.12	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	1.0	0.10	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	1.0	0.13	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	1.0	0.10	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	1.0	0.10	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	1.0	0.10	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	1.0	0.10	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.0	0.16	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	1.0	0.16	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.0	0.15	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.0	0.10	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	1.0	0.18	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	1.0	0.14	ug/kg	
79780-39-5	Perfluorododecanesulfonic acid	ND	1.0	0.15	ug/kg	
757124-72-44:2-FTS		ND	2.0	0.30	ug/kg	
27619-97-2	6:2-FTS	ND	2.0	0.35	ug/kg	
39108-34-4	8:2-FTS	ND	2.0	0.61	ug/kg	
754-91-6	PFOSA	ND	1.0	0.10	ug/kg	
31506-32-8	MeFOSA	ND	1.0	0.14	ug/kg	
4151-50-2	EtFOSA	ND	1.0	0.10	ug/kg	
2355-31-9	MeFOSAA	ND	1.0	0.16	ug/kg	
2991-50-6	EtFOSAA	ND	1.0	0.20	ug/kg	
24448-09-7	MeFOSE	ND	5.0	0.64	ug/kg	
1691-99-2	EtFOSE	ND	5.0	0.83	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	2.0	0.29	ug/kg	
919005-14-4	ADONA	ND	2.0	0.34	ug/kg	
377-73-1	PFMPA	ND	1.0	0.11	ug/kg	
863090-89-5	PFMBA	ND	1.0	0.10	ug/kg	
151772-58-6	NFDHA	ND	2.0	0.24	ug/kg	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	2.0	0.44	ug/kg	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	2.0	0.36	ug/kg	

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Job Number: FC14481
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q473-IBLK	6Q33676.D	1	04/18/24	MV	n/a	n/a	S6Q473

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC14481-8, FC14481-9, FC14481-10, FC14481-11, FC14481-12, FC14481-13, FC14481-14, FC14481-15

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	1.0	0.10	ug/kg	
356-02-5	3:3-FTCA	ND	2.5	0.51	ug/kg	
914637-49-35:3	FTCA	ND	13	1.2	ug/kg	
812-70-4	7:3-FTCA	ND	13	1.3	ug/kg	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	102% 20-150%
	13C5-PFPeA	99% 20-150%
	13C5-PFHxA	95% 20-150%
	13C4-PFHpA	101% 20-150%
	13C8-PFOA	103% 20-150%
	13C9-PFNA	105% 20-150%
	13C6-PFDA	114% 20-150%
	13C7-PFUnDA	114% 20-150%
	13C2-PFDoDA	110% 20-150%
	13C2-PFTeDA	110% 20-150%
	13C3-PFBS	96% 20-150%
	13C3-PFHxS	92% 20-150%
	13C8-PFOS	98% 20-150%
	13C8-FOSA	95% 20-150%
	d3-MeFOSA	95% 20-150%
	d5-EtFOSA	98% 20-150%
	d3-MeFOSAA	104% 20-150%
	d5-EtFOSAA	104% 20-150%
	d7-MeFOSE	99% 20-150%
	d9-EtFOSE	100% 20-150%
	13C2-4:2FTS	98% 20-180%
	13C2-6:2FTS	96% 20-180%
	13C2-8:2FTS	86% 20-180%
	13C3-HFPO-DA	99% 20-150%

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Job Number: FC14481

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S8Q67-IBLK	8Q4950.D	1	04/18/24	AL	n/a	n/a	S8Q67

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC14481-1, FC14481-3, FC14481-4, FC14481-5

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.00064	ug/l	
79780-39-5	Perfluorododecanesulfonic acid	ND	0.0050	0.0011	ug/l	
757124-72-44:2-FTS		ND	0.020	0.0032	ug/l	
27619-97-2 6:2-FTS		ND	0.020	0.0035	ug/l	
39108-34-4 8:2-FTS		ND	0.020	0.0041	ug/l	
754-91-6 PFOSA		ND	0.0040	0.00067	ug/l	
31506-32-8 MeFOSA		ND	0.0080	0.0010	ug/l	
4151-50-2 EtFOSA		0.0012	0.0080	0.0010	ug/l	J
2355-31-9 MeFOSAA		ND	0.0050	0.0010	ug/l	
2991-50-6 EtFOSAA		ND	0.0050	0.0013	ug/l	
24448-09-7 MeFOSE		ND	0.040	0.0044	ug/l	
1691-99-2 EtFOSE		ND	0.040	0.0074	ug/l	
13252-13-6 HFPO-DA (GenX)		ND	0.0040	0.0010	ug/l	
919005-14-4ADONA		ND	0.0080	0.0019	ug/l	
377-73-1 PFMPA		ND	0.0080	0.0010	ug/l	
863090-89-5PFMBA		ND	0.0080	0.0011	ug/l	
151772-58-6NFDHA		ND	0.0080	0.0012	ug/l	
756426-58-19Cl-PF3ONS (F-53B Major)		ND	0.0080	0.0014	ug/l	
763051-92-911Cl-PF3OUdS (F-53B Minor)		ND	0.0080	0.0018	ug/l	

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Job Number: FC14481**Account:** GEOEWAT GeoEngineers, Inc.**Project:** Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S8Q67-IBLK	8Q4950.D	1	04/18/24	AL	n/a	n/a	S8Q67

The QC reported here applies to the following samples:**Method:** EPA DRAFT 1633

FC14481-1, FC14481-3, FC14481-4, FC14481-5

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.0080	0.00078	ug/l	
356-02-5	3:3-FTCA	ND	0.020	0.0045	ug/l	
914637-49-35:3	FTCA	ND	0.10	0.0087	ug/l	
812-70-4	7:3-FTCA	ND	0.10	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits	
	13C4-PFBA	100%	20-150%
	13C5-PFPeA	102%	20-150%
	13C5-PFHxA	103%	20-150%
	13C4-PFHpA	99%	20-150%
	13C8-PFOA	100%	20-150%
	13C9-PFNA	100%	20-150%
	13C6-PFDA	116%	20-150%
	13C7-PFUnDA	103%	20-150%
	13C2-PFDoDA	101%	20-150%
	13C2-PFTeDA	101%	20-150%
	13C3-PFBS	99%	20-150%
	13C3-PFHxS	89%	20-150%
	13C8-PFOS	109%	20-150%
	13C8-FOSA	101%	20-150%
	d3-MeFOSA	98%	20-150%
	d5-EtFOSA	113%	20-150%
	d3-MeFOSAA	99%	20-150%
	d5-EtFOSAA	98%	20-150%
	d7-MeFOSE	106%	20-150%
	d9-EtFOSE	103%	20-150%
	13C2-4:2FTS	115%	20-180%
	13C2-6:2FTS	109%	20-180%
	13C2-8:2FTS	103%	20-180%
	13C3-HFPO-DA	100%	20-150%

Instrument Blank

Job Number: FC14481**Account:** GEOEWAT GeoEngineers, Inc.**Project:** Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S8Q68-IBLK	8Q5031.D	1	04/20/24	AL	n/a	n/a	S8Q68

The QC reported here applies to the following samples:**Method:** EPA DRAFT 1633

FC14481-6, FC14481-7

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.00064	ug/l	
79780-39-5	Perfluorododecanesulfonic acid	ND	0.0050	0.0011	ug/l	
757124-72-44:2-FTS		ND	0.020	0.0032	ug/l	
27619-97-2 6:2-FTS		ND	0.020	0.0035	ug/l	
39108-34-4 8:2-FTS		ND	0.020	0.0041	ug/l	
754-91-6 PFOSA		ND	0.0040	0.00067	ug/l	
31506-32-8 MeFOSA		ND	0.0080	0.0010	ug/l	
4151-50-2 EtFOSA		0.0011	0.0080	0.0010	ug/l	J
2355-31-9 MeFOSAA		ND	0.0050	0.0010	ug/l	
2991-50-6 EtFOSAA		ND	0.0050	0.0013	ug/l	
24448-09-7 MeFOSE		ND	0.040	0.0044	ug/l	
1691-99-2 EtFOSE		ND	0.040	0.0074	ug/l	
13252-13-6 HFPO-DA (GenX)		ND	0.0040	0.0010	ug/l	
919005-14-4ADONA		ND	0.0080	0.0019	ug/l	
377-73-1 PFMPA		ND	0.0080	0.0010	ug/l	
863090-89-5PFMBA		ND	0.0080	0.0011	ug/l	
151772-58-6NFDHA		ND	0.0080	0.0012	ug/l	
756426-58-19Cl-PF3ONS (F-53B Major)		ND	0.0080	0.0014	ug/l	
763051-92-911Cl-PF3OUdS (F-53B Minor)		ND	0.0080	0.0018	ug/l	

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Job Number: FC14481
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S8Q68-IBLK	8Q5031.D	1	04/20/24	AL	n/a	n/a	S8Q68

The QC reported here applies to the following samples: Method: EPA DRAFT 1633
FC14481-6, FC14481-7

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.0080	0.00078	ug/l	
356-02-5	3:3-FTCA	ND	0.020	0.0045	ug/l	
914637-49-35:3	FTCA	ND	0.10	0.0087	ug/l	
812-70-4	7:3-FTCA	ND	0.10	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits	
	13C4-PFBA	99%	20-150%
	13C5-PFPeA	97%	20-150%
	13C5-PFHxA	97%	20-150%
	13C4-PFHpA	97%	20-150%
	13C8-PFOA	101%	20-150%
	13C9-PFNA	96%	20-150%
	13C6-PFDA	103%	20-150%
	13C7-PFUnDA	99%	20-150%
	13C2-PFDoDA	89%	20-150%
	13C2-PFTeDA	85%	20-150%
	13C3-PFBS	100%	20-150%
	13C3-PFHxS	106%	20-150%
	13C8-PFOS	125%	20-150%
	13C8-FOSA	106%	20-150%
	d3-MeFOSA	104%	20-150%
	d5-EtFOSA	115%	20-150%
	d3-MeFOSAA	115%	20-150%
	d5-EtFOSAA	118%	20-150%
	d7-MeFOSE	107%	20-150%
	d9-EtFOSE	109%	20-150%
	13C2-4:2FTS	129%	20-180%
	13C2-6:2FTS	109%	20-180%
	13C2-8:2FTS	94%	20-180%
	13C3-HFPO-DA	97%	20-150%

Instrument Blank

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Job Number: FC14481

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q880-IBLK	4Q59141.D	1	04/24/24	MV	n/a	n/a	S4Q880

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC14481-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.00064	ug/l	
79780-39-5	Perfluorododecanesulfonic acid	ND	0.0050	0.0011	ug/l	
757124-72-44:2-FTS		ND	0.020	0.0032	ug/l	
27619-97-2	6:2-FTS	ND	0.020	0.0035	ug/l	
39108-34-4	8:2-FTS	ND	0.020	0.0041	ug/l	
754-91-6	PFOSA	ND	0.0040	0.00067	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0080	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0050	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0050	0.0013	ug/l	
24448-09-7	MeFOSE	ND	0.040	0.0044	ug/l	
1691-99-2	EtFOSE	ND	0.040	0.0074	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0040	0.0010	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0019	ug/l	
377-73-1	PFMPA	ND	0.0080	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.0080	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0080	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0014	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0018	ug/l	

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Job Number: FC14481
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q880-IBLK	4Q59141.D	1	04/24/24	MV	n/a	n/a	S4Q880

The QC reported here applies to the following samples: Method: EPA DRAFT 1633

FC14481-2

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.0080	0.00078	ug/l	
356-02-5	3:3-FTCA	ND	0.020	0.0045	ug/l	
914637-49-35:3	FTCA	ND	0.10	0.0087	ug/l	
812-70-4	7:3-FTCA	ND	0.10	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	101% 20-150%
	13C5-PFPeA	100% 20-150%
	13C5-PFHxA	102% 20-150%
	13C4-PFHpA	101% 20-150%
	13C8-PFOA	100% 20-150%
	13C9-PFNA	102% 20-150%
	13C6-PFDA	106% 20-150%
	13C7-PFUnDA	102% 20-150%
	13C2-PFDoDA	97% 20-150%
	13C2-PFTeDA	96% 20-150%
	13C3-PFBS	103% 20-150%
	13C3-PFHxS	102% 20-150%
	13C8-PFOS	102% 20-150%
	13C8-FOSA	100% 20-150%
	d3-MeFOSA	97% 20-150%
	d5-EtFOSA	95% 20-150%
	d3-MeFOSAA	117% 20-150%
	d5-EtFOSAA	112% 20-150%
	d7-MeFOSE	99% 20-150%
	d9-EtFOSE	92% 20-150%
	13C2-4:2FTS	110% 20-180%
	13C2-6:2FTS	111% 20-180%
	13C2-8:2FTS	120% 20-180%
	13C3-HFPO-DA	99% 20-150%

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Job Number: FC14481

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q881-IBLK	4Q59241.D	1	04/25/24	MV	n/a	n/a	S4Q881

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC14481-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.00064	ug/l	
79780-39-5	Perfluorododecanesulfonic acid	ND	0.0050	0.0011	ug/l	
757124-72-44:2-FTS		ND	0.020	0.0032	ug/l	
27619-97-2	6:2-FTS	ND	0.020	0.0035	ug/l	
39108-34-4	8:2-FTS	ND	0.020	0.0041	ug/l	
754-91-6	PFOSA	ND	0.0040	0.00067	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0080	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0050	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0050	0.0013	ug/l	
24448-09-7	MeFOSE	ND	0.040	0.0044	ug/l	
1691-99-2	EtFOSE	ND	0.040	0.0074	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0040	0.0010	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0019	ug/l	
377-73-1	PFMPA	ND	0.0080	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.0080	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0080	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0014	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0018	ug/l	

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Job Number: FC14481
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q881-IBLK	4Q59241.D	1	04/25/24	MV	n/a	n/a	S4Q881

The QC reported here applies to the following samples: Method: EPA DRAFT 1633

FC14481-2

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.0080	0.00078	ug/l	
356-02-5	3:3-FTCA	ND	0.020	0.0045	ug/l	
914637-49-35:3	FTCA	ND	0.10	0.0087	ug/l	
812-70-4	7:3-FTCA	ND	0.10	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	101% 20-150%
	13C5-PFPeA	100% 20-150%
	13C5-PFHxA	99% 20-150%
	13C4-PFHpA	96% 20-150%
	13C8-PFOA	101% 20-150%
	13C9-PFNA	100% 20-150%
	13C6-PFDA	100% 20-150%
	13C7-PFUnDA	98% 20-150%
	13C2-PFDoDA	94% 20-150%
	13C2-PFTeDA	99% 20-150%
	13C3-PFBS	95% 20-150%
	13C3-PFHxS	98% 20-150%
	13C8-PFOS	101% 20-150%
	13C8-FOSA	98% 20-150%
	d3-MeFOSA	97% 20-150%
	d5-EtFOSA	95% 20-150%
	d3-MeFOSAA	104% 20-150%
	d5-EtFOSAA	104% 20-150%
	d7-MeFOSE	98% 20-150%
	d9-EtFOSE	93% 20-150%
	13C2-4:2FTS	112% 20-180%
	13C2-6:2FTS	111% 20-180%
	13C2-8:2FTS	109% 20-180%
	13C3-HFPO-DA	100% 20-150%

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Job Number: FC14481

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q473-ICCB	6Q33692.D	1	04/18/24	MV	n/a	n/a	S6Q473

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC14481-11, FC14481-12, FC14481-13, FC14481-14, FC14481-15

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	2.0	0.31	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	1.0	0.10	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	1.0	0.10	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	1.0	0.10	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	1.0	0.10	ug/kg	
375-95-1	Perfluorononanoic acid	ND	1.0	0.12	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	1.0	0.10	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	1.0	0.13	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	1.0	0.10	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	1.0	0.10	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	1.0	0.10	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	1.0	0.10	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.0	0.16	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	1.0	0.16	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.0	0.15	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.0	0.10	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	1.0	0.18	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	1.0	0.14	ug/kg	
79780-39-5	Perfluorododecanesulfonic acid	ND	1.0	0.15	ug/kg	
757124-72-44:2-FTS		ND	2.0	0.30	ug/kg	
27619-97-2	6:2-FTS	ND	2.0	0.35	ug/kg	
39108-34-4	8:2-FTS	ND	2.0	0.61	ug/kg	
754-91-6	PFOSA	ND	1.0	0.10	ug/kg	
31506-32-8	MeFOSA	ND	1.0	0.14	ug/kg	
4151-50-2	EtFOSA	ND	1.0	0.10	ug/kg	
2355-31-9	MeFOSAA	ND	1.0	0.16	ug/kg	
2991-50-6	EtFOSAA	ND	1.0	0.20	ug/kg	
24448-09-7	MeFOSE	ND	5.0	0.64	ug/kg	
1691-99-2	EtFOSE	ND	5.0	0.83	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	2.0	0.29	ug/kg	
919005-14-4	ADONA	ND	2.0	0.34	ug/kg	
377-73-1	PFMPA	ND	1.0	0.11	ug/kg	
863090-89-5	PFMBA	ND	1.0	0.10	ug/kg	
151772-58-6	NFDHA	ND	2.0	0.24	ug/kg	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	2.0	0.44	ug/kg	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	2.0	0.36	ug/kg	

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Job Number: FC14481
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q473-ICCB	6Q33692.D	1	04/18/24	MV	n/a	n/a	S6Q473

The QC reported here applies to the following samples: Method: EPA DRAFT 1633

FC14481-11, FC14481-12, FC14481-13, FC14481-14, FC14481-15

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	1.0	0.10	ug/kg	
356-02-5	3:3-FTCA	ND	2.5	0.51	ug/kg	
914637-49-35:3	FTCA	ND	13	1.2	ug/kg	
812-70-4	7:3-FTCA	ND	13	1.3	ug/kg	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	99% 20-150%
	13C5-PFPeA	98% 20-150%
	13C5-PFHxA	97% 20-150%
	13C4-PFHpA	99% 20-150%
	13C8-PFOA	109% 20-150%
	13C9-PFNA	106% 20-150%
	13C6-PFDA	102% 20-150%
	13C7-PFUnDA	96% 20-150%
	13C2-PFDoDA	106% 20-150%
	13C2-PFTeDA	98% 20-150%
	13C3-PFBS	97% 20-150%
	13C3-PFHxS	94% 20-150%
	13C8-PFOS	90% 20-150%
	13C8-FOSA	94% 20-150%
	d3-MeFOSA	93% 20-150%
	d5-EtFOSA	94% 20-150%
	d3-MeFOSAA	106% 20-150%
	d5-EtFOSAA	94% 20-150%
	d7-MeFOSE	94% 20-150%
	d9-EtFOSE	96% 20-150%
	13C2-4:2FTS	105% 20-180%
	13C2-6:2FTS	95% 20-180%
	13C2-8:2FTS	90% 20-180%
	13C3-HFPO-DA	99% 20-150%

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Job Number: FC14481
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S8Q67-ICCB	8Q5001.D	1	04/19/24	AL	n/a	n/a	S8Q67

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC14481-1, FC14481-3, FC14481-4, FC14481-5

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.00087	0.0040	0.00054	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.00064	ug/l	
79780-39-5	Perfluorododecanesulfonic acid	ND	0.0050	0.0011	ug/l	
757124-72-44:2-FTS		ND	0.020	0.0032	ug/l	
27619-97-2	6:2-FTS	ND	0.020	0.0035	ug/l	
39108-34-4	8:2-FTS	ND	0.020	0.0041	ug/l	
754-91-6	PFOSA	ND	0.0040	0.00067	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0080	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0050	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0050	0.0013	ug/l	
24448-09-7	MeFOSE	ND	0.040	0.0044	ug/l	
1691-99-2	EtFOSE	ND	0.040	0.0074	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0040	0.0010	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0019	ug/l	
377-73-1	PFMPA	ND	0.0080	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.0080	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0080	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0014	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0018	ug/l	

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Job Number: FC14481
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S8Q67-ICCB	8Q5001.D	1	04/19/24	AL	n/a	n/a	S8Q67

The QC reported here applies to the following samples: **Method:** EPA DRAFT 1633
FC14481-1, FC14481-3, FC14481-4, FC14481-5

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.0080	0.00078	ug/l	
356-02-5	3:3-FTCA	ND	0.020	0.0045	ug/l	
914637-49-35:3	FTCA	ND	0.10	0.0087	ug/l	
812-70-4	7:3-FTCA	ND	0.10	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	98% 20-150%
	13C5-PFPeA	107% 20-150%
	13C5-PFHxA	110% 20-150%
	13C4-PFHpA	101% 20-150%
	13C8-PFOA	99% 20-150%
	13C9-PFNA	105% 20-150%
	13C6-PFDA	120% 20-150%
	13C7-PFUnDA	115% 20-150%
	13C2-PFDoDA	113% 20-150%
	13C2-PFTeDA	110% 20-150%
	13C3-PFBS	99% 20-150%
	13C3-PFHxS	106% 20-150%
	13C8-PFOS	98% 20-150%
	13C8-FOSA	101% 20-150%
	d3-MeFOSA	96% 20-150%
	d5-EtFOSA	106% 20-150%
	d3-MeFOSAA	100% 20-150%
	d5-EtFOSAA	98% 20-150%
	d7-MeFOSE	98% 20-150%
	d9-EtFOSE	101% 20-150%
	13C2-4:2FTS	110% 20-180%
	13C2-6:2FTS	108% 20-180%
	13C2-8:2FTS	101% 20-180%
	13C3-HFPO-DA	103% 20-150%

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Job Number: FC14481

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q881-ICCB	4Q59257.D	1	04/25/24	MV	n/a	n/a	S4Q881

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC14481-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.00064	ug/l	
79780-39-5	Perfluorododecanesulfonic acid	ND	0.0050	0.0011	ug/l	
757124-72-44:2-FTS		ND	0.020	0.0032	ug/l	
27619-97-2	6:2-FTS	ND	0.020	0.0035	ug/l	
39108-34-4	8:2-FTS	ND	0.020	0.0041	ug/l	
754-91-6	PFOSA	ND	0.0040	0.00067	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0080	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0050	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0050	0.0013	ug/l	
24448-09-7	MeFOSE	ND	0.040	0.0044	ug/l	
1691-99-2	EtFOSE	ND	0.040	0.0074	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0040	0.0010	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0019	ug/l	
377-73-1	PFMPA	ND	0.0080	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.0080	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0080	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0014	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0018	ug/l	

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Job Number: FC14481
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q881-ICCB	4Q59257.D	1	04/25/24	MV	n/a	n/a	S4Q881

The QC reported here applies to the following samples: Method: EPA DRAFT 1633

FC14481-2

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.0080	0.00078	ug/l	
356-02-5	3:3-FTCA	ND	0.020	0.0045	ug/l	
914637-49-35:3	FTCA	ND	0.10	0.0087	ug/l	
812-70-4	7:3-FTCA	ND	0.10	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	101% 20-150%
	13C5-PFPeA	105% 20-150%
	13C5-PFHxA	106% 20-150%
	13C4-PFHpA	103% 20-150%
	13C8-PFOA	101% 20-150%
	13C9-PFNA	97% 20-150%
	13C6-PFDA	101% 20-150%
	13C7-PFUnDA	99% 20-150%
	13C2-PFDoDA	100% 20-150%
	13C2-PFTeDA	94% 20-150%
	13C3-PFBS	99% 20-150%
	13C3-PFHxS	103% 20-150%
	13C8-PFOS	98% 20-150%
	13C8-FOSA	103% 20-150%
	d3-MeFOSA	99% 20-150%
	d5-EtFOSA	108% 20-150%
	d3-MeFOSAA	105% 20-150%
	d5-EtFOSAA	100% 20-150%
	d7-MeFOSE	102% 20-150%
	d9-EtFOSE	94% 20-150%
	13C2-4:2FTS	107% 20-180%
	13C2-6:2FTS	105% 20-180%
	13C2-8:2FTS	98% 20-180%
	13C3-HFPO-DA	100% 20-150%

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Job Number: FC14481

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S8Q67-ICCB	8Q4989.D	1	04/19/24	AL	n/a	n/a	S8Q67

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

OP2578-BS, OP2578-LLBS, OP2578-MB

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.00064	ug/l	
79780-39-5	Perfluorododecanesulfonic acid	ND	0.0050	0.0011	ug/l	
757124-72-44:2-FTS		ND	0.020	0.0032	ug/l	
27619-97-2 6:2-FTS		ND	0.020	0.0035	ug/l	
39108-34-4 8:2-FTS		ND	0.020	0.0041	ug/l	
754-91-6 PFOSA		ND	0.0040	0.00067	ug/l	
31506-32-8 MeFOSA		ND	0.0080	0.0010	ug/l	
4151-50-2 EtFOSA		ND	0.0080	0.0010	ug/l	
2355-31-9 MeFOSAA		ND	0.0050	0.0010	ug/l	
2991-50-6 EtFOSAA		ND	0.0050	0.0013	ug/l	
24448-09-7 MeFOSE		ND	0.040	0.0044	ug/l	
1691-99-2 EtFOSE		ND	0.040	0.0074	ug/l	
13252-13-6 HFPO-DA (GenX)		ND	0.0040	0.0010	ug/l	
919005-14-4ADONA		ND	0.0080	0.0019	ug/l	
377-73-1 PFMPA		ND	0.0080	0.0010	ug/l	
863090-89-5PFMBA		ND	0.0080	0.0011	ug/l	
151772-58-6NFDHA		ND	0.0080	0.0012	ug/l	
756426-58-19Cl-PF3ONS (F-53B Major)		ND	0.0080	0.0014	ug/l	
763051-92-911Cl-PF3OUdS (F-53B Minor)		ND	0.0080	0.0018	ug/l	

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Job Number: FC14481

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S8Q67-ICCB	8Q4989.D	1	04/19/24	AL	n/a	n/a	S8Q67

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

OP2578-BS, OP2578-LLBS, OP2578-MB

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.0080	0.00078	ug/l	
356-02-5	3:3-FTCA	ND	0.020	0.0045	ug/l	
914637-49-35:3	FTCA	ND	0.10	0.0087	ug/l	
812-70-4	7:3-FTCA	ND	0.10	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	100% 20-150%
	13C5-PFPeA	100% 20-150%
	13C5-PFHxA	100% 20-150%
	13C4-PFHpA	99% 20-150%
	13C8-PFOA	96% 20-150%
	13C9-PFNA	103% 20-150%
	13C6-PFDA	100% 20-150%
	13C7-PFUnDA	100% 20-150%
	13C2-PFDoDA	89% 20-150%
	13C2-PFTeDA	100% 20-150%
	13C3-PFBS	101% 20-150%
	13C3-PFHxS	104% 20-150%
	13C8-PFOS	94% 20-150%
	13C8-FOSA	98% 20-150%
	d3-MeFOSA	101% 20-150%
	d5-EtFOSA	102% 20-150%
	d3-MeFOSAA	116% 20-150%
	d5-EtFOSAA	116% 20-150%
	d7-MeFOSE	101% 20-150%
	d9-EtFOSE	103% 20-150%
	13C2-4:2FTS	110% 20-180%
	13C2-6:2FTS	116% 20-180%
	13C2-8:2FTS	112% 20-180%
	13C3-HFPO-DA	99% 20-150%

Blank Spike Summary

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Job Number: FC14481**Account:** GEOEWAT GeoEngineers, Inc.**Project:** Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2544-LLBS	6Q33682.D	1	04/18/24	MV	04/09/24	OP2544	S6Q473

The QC reported here applies to the following samples:**Method:** EPA 1633

FC14481-8, FC14481-9, FC14481-10, FC14481-11, FC14481-12, FC14481-13, FC14481-14, FC14481-15

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
375-22-4	Perfluorobutanoic acid	1.6	1.2	75	40-150
2706-90-3	Perfluoropentanoic acid	0.8	0.62	78	40-150
307-24-4	Perfluorohexanoic acid	0.4	0.33	83	40-150
375-85-9	Perfluoroheptanoic acid	0.4	0.31	78	40-150
335-67-1	Perfluorooctanoic acid	0.4	0.32	80	40-150
375-95-1	Perfluorononanoic acid	0.4	0.27	68	40-150
335-76-2	Perfluorodecanoic acid	0.4	0.31	78	40-150
2058-94-8	Perfluoroundecanoic acid	0.4	0.33	83	40-150
307-55-1	Perfluorododecanoic acid	0.4	0.32	80	40-150
72629-94-8	Perfluorotridecanoic acid	0.4	0.31	78	40-150
376-06-7	Perfluorotetradecanoic acid	0.4	0.28	70	40-150
375-73-5	Perfluorobutanesulfonic acid	0.355	0.28	79	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.376	0.30	80	40-150
355-46-4	Perfluorohexanesulfonic acid	0.366	0.30	82	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.381	0.26	68	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.371	0.27	73	40-150
68259-12-1	Perfluorononanesulfonic acid	0.385	0.30	78	40-150
335-77-3	Perfluorodecanesulfonic acid	0.386	0.28	73	40-150
79780-39-5	Perfluorododecanesulfonic acid	0.388	0.28	72	40-150
757124-72-44:2-FTS		1.5	1.1	73	40-150
27619-97-2	6:2-FTS	1.52	1.2	79	40-150
39108-34-4	8:2-FTS	1.54	1.2	78	40-150
754-91-6	PFOSA	0.4	0.30	75	40-150
31506-32-8	MeFOSA	0.8	0.58	73	40-150
4151-50-2	EtFOSA	0.8	0.62	78	40-150
2355-31-9	MeFOSAA	0.4	0.30	75	40-150
2991-50-6	EtFOSAA	0.4	0.35	88	40-150
24448-09-7	MeFOSE	2	1.5	75	40-150
1691-99-2	EtFOSE	2	1.6	80	40-150
13252-13-6	HFPO-DA (GenX)	0.8	0.61	76	40-150
919005-14-4	ADONA	0.756	0.56	74	40-150
377-73-1	PFMPA	0.8	0.60	75	40-150
863090-89-5	PFMBA	0.8	0.62	78	40-150
151772-58-6	NFDHA	0.8	0.64	80	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.748	0.58	78	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.756	0.61	81	40-150

* = Outside of Control Limits.

Blank Spike Summary

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Job Number: FC14481

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2544-LLBS	6Q33682.D	1	04/18/24	MV	04/09/24	OP2544	S6Q473

The QC reported here applies to the following samples:

Method: EPA 1633

FC14481-8, FC14481-9, FC14481-10, FC14481-11, FC14481-12, FC14481-13, FC14481-14, FC14481-15

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
113507-82-7	PFEESA	0.712	0.53	74	40-150
356-02-5	3:3-FTCA	2	1.4	70	40-150
914637-49-35	3:3-FTCA	10	6.9	69	40-150
812-70-4	7:3-FTCA	10	6.5	65	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	74%	20-150%
	13C5-PFPeA	76%	20-150%
	13C5-PFHxA	79%	20-150%
	13C4-PFHpA	77%	20-150%
	13C8-PFOA	76%	20-150%
	13C9-PFNA	81%	20-150%
	13C6-PFDA	77%	20-150%
	13C7-PFUnDA	79%	20-150%
	13C2-PFDoDA	76%	20-150%
	13C2-PFTeDA	79%	20-150%
	13C3-PFBS	70%	20-150%
	13C3-PFHxS	67%	20-150%
	13C8-PFOS	75%	20-150%
	13C8-FOSA	71%	20-150%
	d3-MeFOSA	59%	20-150%
	d5-EtFOSA	59%	20-150%
	d3-MeFOSAA	71%	20-150%
	d5-EtFOSAA	75%	20-150%
	d7-MeFOSE	67%	20-150%
	d9-EtFOSE	68%	20-150%
	13C2-4:2FTS	73%	20-180%
	13C2-6:2FTS	72%	20-180%
	13C2-8:2FTS	70%	20-180%
	13C3-HFPO-DA	74%	20-150%

* = Outside of Control Limits.

Blank Spike Summary

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Job Number: FC14481
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2578-LLBS	8Q4993.D	1	04/19/24	AL	04/10/24	OP2578	S8Q67

The QC reported here applies to the following samples:

Method: EPA 1633

FC14481-1, FC14481-3, FC14481-4, FC14481-5, FC14481-6, FC14481-7

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.016	0.0125	78	70-140
2706-90-3	Perfluoropentanoic acid	0.008	0.0064	80	65-135
307-24-4	Perfluorohexanoic acid	0.004	0.0034	85	70-145
375-85-9	Perfluoroheptanoic acid	0.004	0.0032	80	70-150
335-67-1	Perfluorooctanoic acid	0.004	0.0033	83	70-150
375-95-1	Perfluorononanoic acid	0.004	0.0031	78	70-150
335-76-2	Perfluorodecanoic acid	0.004	0.0032	80	70-140
2058-94-8	Perfluoroundecanoic acid	0.004	0.0033	83	70-145
307-55-1	Perfluorododecanoic acid	0.004	0.0036	90	70-140
72629-94-8	Perfluorotridecanoic acid	0.004	0.0029	73	65-140
376-06-7	Perfluorotetradecanoic acid	0.004	0.0030	75	60-140
375-73-5	Perfluorobutanesulfonic acid	0.00355	0.0030	85	60-145
2706-91-4	Perfluoropentanesulfonic acid	0.00376	0.0034	90	65-140
355-46-4	Perfluorohexanesulfonic acid	0.00366	0.0033	90	65-145
375-92-8	Perfluoroheptanesulfonic acid	0.00381	0.0031	81	70-150
1763-23-1	Perfluorooctanesulfonic acid	0.00371	0.0039	105	55-150
68259-12-1	Perfluorononanesulfonic acid	0.00385	0.0034	88	65-145
335-77-3	Perfluorodecanesulfonic acid	0.00386	0.0027	70	60-145
79780-39-5	Perfluorododecanesulfonic acid	0.00388	0.0027	70	50-145
757124-72-44:2-FTS		0.015	0.0127	85	70-145
27619-97-2 6:2-FTS		0.0152	0.0130	86	65-155
39108-34-4 8:2-FTS		0.0154	0.0131	85	60-150
754-91-6 PFOSA		0.004	0.0032	80	70-145
31506-32-8 MeFOSA		0.008	0.0067	84	60-150
4151-50-2 EtFOSA		0.008	0.0062	78	65-145
2355-31-9 MeFOSAA		0.004	0.0037	93	50-140
2991-50-6 EtFOSAA		0.004	0.0022	55*	70-145
24448-09-7 MeFOSE		0.02	0.0160	80	70-145
1691-99-2 EtFOSE		0.02	0.0166	83	70-135
13252-13-6 HFPO-DA (GenX)		0.008	0.0058	73	70-140
919005-14-4ADONA		0.00756	0.0059	78	65-145
377-73-1 PFMPA		0.008	0.0065	81	55-140
863090-89-5PFMBA		0.008	0.0060	75	60-150
151772-58-6NFDHA		0.008	0.0067	84	50-150
756426-58-19Cl-PF3ONS (F-53B Major)		0.00748	0.0070	94	70-155
763051-92-911Cl-PF3OUdS (F-53B Minor)		0.00756	0.0056	74	55-160

* = Outside of Control Limits.

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Job Number: FC14481

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2578-LLBS	8Q4993.D	1	04/19/24	AL	04/10/24	OP2578	S8Q67

The QC reported here applies to the following samples:

Method: EPA 1633

FC14481-1, FC14481-3, FC14481-4, FC14481-5, FC14481-6, FC14481-7

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.00712	0.0057	80	70-140
356-02-5	3:3-FTCA	0.02	0.0189	95	65-130
914637-49-35:3	FTCA	0.1	0.0789	79	70-135
812-70-4	7:3-FTCA	0.1	0.0728	73	50-145

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	105%	10-130%
	13C5-PFPeA	107%	40-130%
	13C5-PFHxA	106%	40-130%
	13C4-PFHpA	106%	40-130%
	13C8-PFOA	102%	40-130%
	13C9-PFNA	103%	40-130%
	13C6-PFDA	106%	40-130%
	13C7-PFUnDA	109%	30-130%
	13C2-PFDoDA	101%	10-130%
	13C2-PFTeDA	93%	10-130%
	13C3-PFBS	102%	40-135%
	13C3-PFHxS	96%	40-130%
	13C8-PFOS	108%	40-130%
	13C8-FOSA	91%	40-130%
	d3-MeFOSA	62%	10-130%
	d5-EtFOSA	66%	10-130%
	d3-MeFOSAA	106%	40-170%
	d5-EtFOSAA	119%	25-135%
	d7-MeFOSE	71%	10-130%
	d9-EtFOSE	73%	10-130%
	13C2-4:2FTS	114%	40-200%
	13C2-6:2FTS	107%	40-200%
	13C2-8:2FTS	103%	40-300%
	13C3-HFPO-DA	106%	40-130%

* = Outside of Control Limits.

Blank Spike Summary

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Job Number: FC14481**Account:** GEOEWAT GeoEngineers, Inc.**Project:** Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2578-LLBS	8Q5037.D	1	04/20/24	AL	04/10/24	OP2578	S8Q68

The QC reported here applies to the following samples:**Method:** EPA 1633

FC14481-1, FC14481-3, FC14481-4, FC14481-5, FC14481-6, FC14481-7

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.016	0.0137	86	70-140
2706-90-3	Perfluoropentanoic acid	0.008	0.0069	86	65-135
307-24-4	Perfluorohexanoic acid	0.004	0.0034	85	70-145
375-85-9	Perfluoroheptanoic acid	0.004	0.0033	83	70-150
335-67-1	Perfluorooctanoic acid	0.004	0.0041	103	70-150
375-95-1	Perfluorononanoic acid	0.004	0.0040	100	70-150
335-76-2	Perfluorodecanoic acid	0.004	0.0033	83	70-140
2058-94-8	Perfluoroundecanoic acid	0.004	0.0042	105	70-145
307-55-1	Perfluorododecanoic acid	0.004	0.0038	95	70-140
72629-94-8	Perfluorotridecanoic acid	0.004	0.0031	78	65-140
376-06-7	Perfluorotetradecanoic acid	0.004	0.0032	80	60-140
375-73-5	Perfluorobutanesulfonic acid	0.00355	0.0029	82	60-145
2706-91-4	Perfluoropentanesulfonic acid	0.00376	0.0035	93	65-140
355-46-4	Perfluorohexanesulfonic acid	0.00366	0.0041	112	65-145
375-92-8	Perfluoroheptanesulfonic acid	0.00381	0.0040	105	70-150
1763-23-1	Perfluorooctanesulfonic acid	0.00371	0.0042	113	55-150
68259-12-1	Perfluorononanesulfonic acid	0.00385	0.0040	104	65-145
335-77-3	Perfluorodecanesulfonic acid	0.00386	0.0036	93	60-145
79780-39-5	Perfluorododecanesulfonic aci	0.00388	0.0030	77	50-145
757124-72-44:2-FTS		0.015	0.0161	107	70-145
27619-97-2 6:2-FTS		0.0152	0.0143	94	65-155
39108-34-4 8:2-FTS		0.0154	0.0126	82	60-150
754-91-6 PFOSA		0.004	0.0033	83	70-145
31506-32-8 MeFOSA		0.008	0.0061	76	60-150
4151-50-2 EtFOSA		0.008	0.0053	66	65-145
2355-31-9 MeFOSAA		0.004	0.0033	83	50-140
2991-50-6 EtFOSAA		0.004	0.0036	90	70-145
24448-09-7 MeFOSE		0.02	0.0146	73	70-145
1691-99-2 EtFOSE		0.02	0.0155	78	70-135
13252-13-6 HFPO-DA (GenX)		0.008	0.0070	88	70-140
919005-14-4ADONA		0.00756	0.0066	87	65-145
377-73-1 PFMPA		0.008	0.0066	83	55-140
863090-89-5PFMBA		0.008	0.0071	89	60-150
151772-58-6NFDHA		0.008	0.0060	75	50-150
756426-58-19Cl-PF3ONS (F-53B Major)		0.00748	0.0059	79	70-155
763051-92-911Cl-PF3OUdS (F-53B Minor)		0.00756	0.0057	75	55-160

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC14481
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2578-LLBS	8Q5037.D	1	04/20/24	AL	04/10/24	OP2578	S8Q68

The QC reported here applies to the following samples: Method: EPA 1633

FC14481-1, FC14481-3, FC14481-4, FC14481-5, FC14481-6, FC14481-7

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.00712	0.0059	83	70-140
356-02-5	3:3-FTCA	0.02	0.0192	96	65-130
914637-49-35:3	FTCA	0.1	0.0770	77	70-135
812-70-4	7:3-FTCA	0.1	0.101	101	50-145

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	105%	10-130%
	13C5-PFPeA	101%	40-130%
	13C5-PFHxA	101%	40-130%
	13C4-PFHpA	104%	40-130%
	13C8-PFOA	100%	40-130%
	13C9-PFNA	100%	40-130%
	13C6-PFDA	99%	40-130%
	13C7-PFUnDA	104%	30-130%
	13C2-PFDoDA	89%	10-130%
	13C2-PFTeDA	78%	10-130%
	13C3-PFBS	92%	40-135%
	13C3-PFHxS	90%	40-130%
	13C8-PFOS	102%	40-130%
	13C8-FOSA	90%	40-130%
	d3-MeFOSA	71%	10-130%
	d5-EtFOSA	66%	10-130%
	d3-MeFOSAA	106%	40-170%
	d5-EtFOSAA	98%	25-135%
	d7-MeFOSE	73%	10-130%
	d9-EtFOSE	74%	10-130%
	13C2-4:2FTS	125%	40-200%
	13C2-6:2FTS	113%	40-200%
	13C2-8:2FTS	104%	40-300%
	13C3-HFPO-DA	100%	40-130%

* = Outside of Control Limits.

Blank Spike Summary

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Job Number: FC14481
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2811-LLBS	4Q59251.D	1	04/25/24	MV	04/23/24	OP2811	S4Q881

The QC reported here applies to the following samples:

Method: EPA 1633

FC14481-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.016	0.0132	83	70-140
2706-90-3	Perfluoropentanoic acid	0.008	0.0065	81	65-135
307-24-4	Perfluorohexanoic acid	0.004	0.0032	80	70-145
375-85-9	Perfluoroheptanoic acid	0.004	0.0035	88	70-150
335-67-1	Perfluorooctanoic acid	0.004	0.0033	83	70-150
375-95-1	Perfluorononanoic acid	0.004	0.0035	88	70-150
335-76-2	Perfluorodecanoic acid	0.004	0.0034	85	70-140
2058-94-8	Perfluoroundecanoic acid	0.004	0.0031	78	70-145
307-55-1	Perfluorododecanoic acid	0.004	0.0034	85	70-140
72629-94-8	Perfluorotridecanoic acid	0.004	0.0032	80	65-140
376-06-7	Perfluorotetradecanoic acid	0.004	0.0034	85	60-140
375-73-5	Perfluorobutanesulfonic acid	0.00355	0.0032	90	60-145
2706-91-4	Perfluoropentanesulfonic acid	0.00376	0.0036	96	65-140
355-46-4	Perfluorohexanesulfonic acid	0.00366	0.0033	90	65-145
375-92-8	Perfluoroheptanesulfonic acid	0.00381	0.0037	97	70-150
1763-23-1	Perfluorooctanesulfonic acid	0.00371	0.0032	86	55-150
68259-12-1	Perfluorononanesulfonic acid	0.00385	0.0033	86	65-145
335-77-3	Perfluorodecanesulfonic acid	0.00386	0.0034	88	60-145
79780-39-5	Perfluorododecanesulfonic aci	0.00388	0.0028	72	50-145
757124-72-44:2-FTS		0.015	0.0121	81	70-145
27619-97-2 6:2-FTS		0.0152	0.0128	84	65-155
39108-34-4 8:2-FTS		0.0154	0.0131	85	60-150
754-91-6 PFOSA		0.004	0.0035	88	70-145
31506-32-8 MeFOSA		0.008	0.0074	93	60-150
4151-50-2 EtFOSA		0.008	0.0065	81	65-145
2355-31-9 MeFOSAA		0.004	0.0035	88	50-140
2991-50-6 EtFOSAA		0.004	0.0030	75	70-145
24448-09-7 MeFOSE		0.02	0.0156	78	70-145
1691-99-2 EtFOSE		0.02	0.0182	91	70-135
13252-13-6 HFPO-DA (GenX)		0.008	0.0075	94	70-140
919005-14-4ADONA		0.00756	0.0069	91	65-145
377-73-1 PFMPA		0.008	0.0066	83	55-140
863090-89-5PFMBA		0.008	0.0067	84	60-150
151772-58-6NFDHA		0.008	0.0072	90	50-150
756426-58-19Cl-PF3ONS (F-53B Major)		0.00748	0.0069	92	70-155
763051-92-911Cl-PF3OUdS (F-53B Minor)		0.00756	0.0061	81	55-160

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC14481
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2811-LLBS	4Q59251.D	1	04/25/24	MV	04/23/24	OP2811	S4Q881

The QC reported here applies to the following samples: Method: EPA 1633

FC14481-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.00712	0.0060	84	70-140
356-02-5	3:3-FTCA	0.02	0.0133	67	65-130
914637-49-35:3	FTCA	0.1	0.0829	83	70-135
812-70-4	7:3-FTCA	0.1	0.0804	80	50-145

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	110%	10-130%
	13C5-PFPeA	113%	40-130%
	13C5-PFHxA	110%	40-130%
	13C4-PFHpA	107%	40-130%
	13C8-PFOA	110%	40-130%
	13C9-PFNA	107%	40-130%
	13C6-PFDA	104%	40-130%
	13C7-PFUnDA	105%	30-130%
	13C2-PFDoDA	103%	10-130%
	13C2-PFTeDA	95%	10-130%
	13C3-PFBS	107%	40-135%
	13C3-PFHxS	108%	40-130%
	13C8-PFOS	106%	40-130%
	13C8-FOSA	82%	40-130%
	d3-MeFOSA	74%	10-130%
	d5-EtFOSA	79%	10-130%
	d3-MeFOSAA	111%	40-170%
	d5-EtFOSAA	109%	25-135%
	d7-MeFOSE	74%	10-130%
	d9-EtFOSE	73%	10-130%
	13C2-4:2FTS	166%	40-200%
	13C2-6:2FTS	129%	40-200%
	13C2-8:2FTS	121%	40-300%
	13C3-HFPO-DA	106%	40-130%

* = Outside of Control Limits.

Blank Spike Summary

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Job Number: FC14481
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2544-BS	6Q33681.D	1	04/18/24	MV	04/09/24	OP2544	S6Q473

The QC reported here applies to the following samples:

Method: EPA 1633

FC14481-8, FC14481-9, FC14481-10, FC14481-11, FC14481-12, FC14481-13, FC14481-14, FC14481-15

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
375-22-4	Perfluorobutanoic acid	10	8.4	84	40-150
2706-90-3	Perfluoropentanoic acid	5	4.4	88	40-150
307-24-4	Perfluorohexanoic acid	2.5	2.2	88	40-150
375-85-9	Perfluoroheptanoic acid	2.5	2.0	80	40-150
335-67-1	Perfluorooctanoic acid	2.5	2.2	88	40-150
375-95-1	Perfluorononanoic acid	2.5	2.2	88	40-150
335-76-2	Perfluorodecanoic acid	2.5	2.2	88	40-150
2058-94-8	Perfluoroundecanoic acid	2.5	2.1	84	40-150
307-55-1	Perfluorododecanoic acid	2.5	2.1	84	40-150
72629-94-8	Perfluorotridecanoic acid	2.5	2.2	88	40-150
376-06-7	Perfluorotetradecanoic acid	2.5	2.0	80	40-150
375-73-5	Perfluorobutanesulfonic acid	2.22	2.0	90	40-150
2706-91-4	Perfluoropentanesulfonic acid	2.35	2.0	85	40-150
355-46-4	Perfluorohexanesulfonic acid	2.29	1.9	83	40-150
375-92-8	Perfluoroheptanesulfonic acid	2.38	2.2	92	40-150
1763-23-1	Perfluorooctanesulfonic acid	2.32	2.0	86	40-150
68259-12-1	Perfluorononanesulfonic acid	2.41	2.2	91	40-150
335-77-3	Perfluorodecanesulfonic acid	2.41	2.3	95	40-150
79780-39-5	Perfluorododecanesulfonic acid	2.43	2.1	87	40-150
757124-72-44:2-FTS		9.38	7.4	79	40-150
27619-97-2	6:2-FTS	9.5	8.2	86	40-150
39108-34-4	8:2-FTS	9.6	7.7	80	40-150
754-91-6	PFOSA	2.5	2.1	84	40-150
31506-32-8	MeFOSA	5	4.2	84	40-150
4151-50-2	EtFOSA	5	4.1	82	40-150
2355-31-9	MeFOSAA	2.5	2.1	84	40-150
2991-50-6	EtFOSAA	2.5	1.9	76	40-150
24448-09-7	MeFOSE	12.5	10.2	82	40-150
1691-99-2	EtFOSE	12.5	10.1	81	40-150
13252-13-6	HFPO-DA (GenX)	5	4.0	80	40-150
919005-14-4	ADONA	4.73	3.8	80	40-150
377-73-1	PFMPA	5	4.1	82	40-150
863090-89-5	PFMBA	5	4.3	86	40-150
151772-58-6	NFDHA	5	4.4	88	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	4.68	3.7	79	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	4.73	3.7	78	40-150

* = Outside of Control Limits.

Blank Spike Summary

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Job Number: FC14481

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2544-BS	6Q33681.D	1	04/18/24	MV	04/09/24	OP2544	S6Q473

The QC reported here applies to the following samples:

Method: EPA 1633

FC14481-8, FC14481-9, FC14481-10, FC14481-11, FC14481-12, FC14481-13, FC14481-14, FC14481-15

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
113507-82-7	PFEESA	4.45	3.9	88	40-150
356-02-5	3:3-FTCA	12.5	8.8	70	40-150
914637-49-35:3	FTCA	62.5	46.6	75	40-150
812-70-4	7:3-FTCA	62.5	43.1	69	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	68%	20-150%
	13C5-PFPeA	66%	20-150%
	13C5-PFHxA	66%	20-150%
	13C4-PFHpA	66%	20-150%
	13C8-PFOA	63%	20-150%
	13C9-PFNA	68%	20-150%
	13C6-PFDA	61%	20-150%
	13C7-PFUnDA	67%	20-150%
	13C2-PFDoDA	65%	20-150%
	13C2-PFTeDA	70%	20-150%
	13C3-PFBS	63%	20-150%
	13C3-PFHxS	64%	20-150%
	13C8-PFOS	62%	20-150%
	13C8-FOSA	61%	20-150%
	d3-MeFOSA	48%	20-150%
	d5-EtFOSA	50%	20-150%
	d3-MeFOSAA	64%	20-150%
	d5-EtFOSAA	60%	20-150%
	d7-MeFOSE	60%	20-150%
	d9-EtFOSE	63%	20-150%
	13C2-4:2FTS	71%	20-180%
	13C2-6:2FTS	69%	20-180%
	13C2-8:2FTS	69%	20-180%
	13C3-HFPO-DA	68%	20-150%

* = Outside of Control Limits.

Blank Spike Summary

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Job Number: FC14481**Account:** GEOEWAT GeoEngineers, Inc.**Project:** Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2578-BS	8Q4992.D	1	04/19/24	AL	04/10/24	OP2578	S8Q67

The QC reported here applies to the following samples:**Method:** EPA 1633

FC14481-1, FC14481-3, FC14481-4, FC14481-5, FC14481-6, FC14481-7

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.1	0.0832	83	70-140
2706-90-3	Perfluoropentanoic acid	0.05	0.0428	86	65-135
307-24-4	Perfluoroheptanoic acid	0.025	0.0217	87	70-145
375-85-9	Perfluoroheptanoic acid	0.025	0.0223	89	70-150
335-67-1	Perfluorooctanoic acid	0.025	0.0213	85	70-150
375-95-1	Perfluorononanoic acid	0.025	0.0205	82	70-150
335-76-2	Perfluorodecanoic acid	0.025	0.0202	81	70-140
2058-94-8	Perfluoroundecanoic acid	0.025	0.0218	87	70-145
307-55-1	Perfluorododecanoic acid	0.025	0.0245	98	70-140
72629-94-8	Perfluorotridecanoic acid	0.025	0.0231	92	65-140
376-06-7	Perfluorotetradecanoic acid	0.025	0.0213	85	60-140
375-73-5	Perfluorobutanesulfonic acid	0.0222	0.0212	96	60-145
2706-91-4	Perfluoropentanesulfonic acid	0.0235	0.0193	82	65-140
355-46-4	Perfluorohexanesulfonic acid	0.0229	0.0191	84	65-145
375-92-8	Perfluoroheptanesulfonic acid	0.0238	0.0196	82	70-150
1763-23-1	Perfluorooctanesulfonic acid	0.0232	0.0198	85	55-150
68259-12-1	Perfluorononanesulfonic acid	0.0241	0.0184	77	65-145
335-77-3	Perfluorodecanesulfonic acid	0.0241	0.0190	79	60-145
79780-39-5	Perfluorododecanesulfonic aci	0.0243	0.0176	73	50-145
757124-72-44:2-FTS		0.0938	0.0896	96	70-145
27619-97-2 6:2-FTS		0.095	0.0877	92	65-155
39108-34-4 8:2-FTS		0.096	0.106	110	60-150
754-91-6 PFOSA		0.025	0.0218	87	70-145
31506-32-8 MeFOSA		0.05	0.0422	84	60-150
4151-50-2 EtFOSA		0.05	0.0385	77	65-145
2355-31-9 MeFOSAA		0.025	0.0189	76	50-140
2991-50-6 EtFOSAA		0.025	0.0196	78	70-145
24448-09-7 MeFOSE		0.125	0.105	84	70-145
1691-99-2 EtFOSE		0.125	0.111	89	70-135
13252-13-6 HFPO-DA (GenX)		0.05	0.0449	90	70-140
919005-14-4ADONA		0.0473	0.0439	93	65-145
377-73-1 PFMPA		0.05	0.0508	102	55-140
863090-89-5PFMBA		0.05	0.0440	88	60-150
151772-58-6NFDHA		0.05	0.0495	99	50-150
756426-58-19Cl-PF3ONS (F-53B Major)		0.0468	0.0466	100	70-155
763051-92-911Cl-PF3OUdS (F-53B Minor)		0.0473	0.0403	85	55-160

* = Outside of Control Limits.

Blank Spike Summary

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Job Number: FC14481

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2578-BS	8Q4992.D	1	04/19/24	AL	04/10/24	OP2578	S8Q67

The QC reported here applies to the following samples:

Method: EPA 1633

FC14481-1, FC14481-3, FC14481-4, FC14481-5, FC14481-6, FC14481-7

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0445	0.0371	83	70-140
356-02-5	3:3-FTCA	0.125	0.121	97	65-130
914637-49-35:3	FTCA	0.625	0.578	92	70-135
812-70-4	7:3-FTCA	0.625	0.536	86	50-145

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	86%	10-130%
	13C5-PFPeA	106%	40-130%
	13C5-PFHxA	105%	40-130%
	13C4-PFHpA	100%	40-130%
	13C8-PFOA	102%	40-130%
	13C9-PFNA	103%	40-130%
	13C6-PFDA	106%	40-130%
	13C7-PFUnDA	103%	30-130%
	13C2-PFDoDA	93%	10-130%
	13C2-PFTeDA	99%	10-130%
	13C3-PFBS	94%	40-135%
	13C3-PFHxS	96%	40-130%
	13C8-PFOS	109%	40-130%
	13C8-FOSA	95%	40-130%
	d3-MeFOSA	91%	10-130%
	d5-EtFOSA	97%	10-130%
	d3-MeFOSAA	129%	40-170%
	d5-EtFOSAA	116%	25-135%
	d7-MeFOSE	86%	10-130%
	d9-EtFOSE	84%	10-130%
	13C2-4:2FTS	97%	40-200%
	13C2-6:2FTS	105%	40-200%
	13C2-8:2FTS	90%	40-300%
	13C3-HFPO-DA	104%	40-130%

* = Outside of Control Limits.

Blank Spike Summary

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Job Number: FC14481

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2578-BS	8Q5036.D	1	04/20/24	AL	04/10/24	OP2578	S8Q68

The QC reported here applies to the following samples:

Method: EPA 1633

FC14481-1, FC14481-3, FC14481-4, FC14481-5, FC14481-6, FC14481-7

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.1	0.0909	91	70-140
2706-90-3	Perfluoropentanoic acid	0.05	0.0455	91	65-135
307-24-4	Perfluorohexanoic acid	0.025	0.0227	91	70-145
375-85-9	Perfluoroheptanoic acid	0.025	0.0217	87	70-150
335-67-1	Perfluorooctanoic acid	0.025	0.0200	80	70-150
375-95-1	Perfluorononanoic acid	0.025	0.0209	84	70-150
335-76-2	Perfluorodecanoic acid	0.025	0.0231	92	70-140
2058-94-8	Perfluoroundecanoic acid	0.025	0.0216	86	70-145
307-55-1	Perfluorododecanoic acid	0.025	0.0256	102	70-140
72629-94-8	Perfluorotridecanoic acid	0.025	0.0238	95	65-140
376-06-7	Perfluorotetradecanoic acid	0.025	0.0230	92	60-140
375-73-5	Perfluorobutanesulfonic acid	0.0222	0.0197	89	60-145
2706-91-4	Perfluoropentanesulfonic acid	0.0235	0.0198	84	65-140
355-46-4	Perfluorohexanesulfonic acid	0.0229	0.0208	91	65-145
375-92-8	Perfluoroheptanesulfonic acid	0.0238	0.0210	88	70-150
1763-23-1	Perfluorooctanesulfonic acid	0.0232	0.0241	104	55-150
68259-12-1	Perfluorononanesulfonic acid	0.0241	0.0213	89	65-145
335-77-3	Perfluorodecanesulfonic acid	0.0241	0.0214	89	60-145
79780-39-5	Perfluorododecanesulfonic aci	0.0243	0.0227	94	50-145
757124-72-44:2-FTS		0.0938	0.0813	87	70-145
27619-97-2 6:2-FTS		0.095	0.0783	82	65-155
39108-34-4 8:2-FTS		0.096	0.0946	99	60-150
754-91-6 PFOSA		0.025	0.0239	96	70-145
31506-32-8 MeFOSA		0.05	0.0482	96	60-150
4151-50-2 EtFOSA		0.05	0.0377	75	65-145
2355-31-9 MeFOSAA		0.025	0.0208	83	50-140
2991-50-6 EtFOSAA		0.025	0.0205	82	70-145
24448-09-7 MeFOSE		0.125	0.0965	77	70-145
1691-99-2 EtFOSE		0.125	0.109	87	70-135
13252-13-6 HFPO-DA (GenX)		0.05	0.0413	83	70-140
919005-14-4ADONA		0.0473	0.0433	92	65-145
377-73-1 PFMPA		0.05	0.0559	112	55-140
863090-89-5PFMBA		0.05	0.0461	92	60-150
151772-58-6NFDHA		0.05	0.0440	88	50-150
756426-58-19Cl-PF3ONS (F-53B Major)		0.0468	0.0429	92	70-155
763051-92-911Cl-PF3OUdS (F-53B Minor)		0.0473	0.0416	88	55-160

* = Outside of Control Limits.

Blank Spike Summary

Page 2 of 2

Job Number: FC14481

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2578-BS	8Q5036.D	1	04/20/24	AL	04/10/24	OP2578	S8Q68

The QC reported here applies to the following samples:

Method: EPA 1633

FC14481-1, FC14481-3, FC14481-4, FC14481-5, FC14481-6, FC14481-7

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0445	0.0437	98	70-140
356-02-5	3:3-FTCA	0.125	0.115	92	65-130
914637-49-35:3	FTCA	0.625	0.560	90	70-135
812-70-4	7:3-FTCA	0.625	0.546	87	50-145

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	83%	10-130%
	13C5-PFPeA	102%	40-130%
	13C5-PFHxA	99%	40-130%
	13C4-PFHpA	105%	40-130%
	13C8-PFOA	107%	40-130%
	13C9-PFNA	105%	40-130%
	13C6-PFDA	106%	40-130%
	13C7-PFUnDA	100%	30-130%
	13C2-PFDoDA	96%	10-130%
	13C2-PFTeDA	93%	10-130%
	13C3-PFBS	96%	40-135%
	13C3-PFHxS	90%	40-130%
	13C8-PFOS	108%	40-130%
	13C8-FOSA	99%	40-130%
	d3-MeFOSA	97%	10-130%
	d5-EtFOSA	100%	10-130%
	d3-MeFOSAA	109%	40-170%
	d5-EtFOSAA	109%	25-135%
	d7-MeFOSE	95%	10-130%
	d9-EtFOSE	97%	10-130%
	13C2-4:2FTS	118%	40-200%
	13C2-6:2FTS	116%	40-200%
	13C2-8:2FTS	98%	40-300%
	13C3-HFPO-DA	100%	40-130%

* = Outside of Control Limits.

Blank Spike Summary

Page 1 of 2

Job Number: FC14481
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2811-BS ^a	4Q59250.D	1	04/25/24	MV	04/23/24	OP2811	S4Q881

The QC reported here applies to the following samples:

Method: EPA 1633

FC14481-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.1	0.0811	81	70-140
2706-90-3	Perfluoropentanoic acid	0.05	0.0413	83	65-135
307-24-4	Perfluorohexanoic acid	0.025	0.0215	86	70-145
375-85-9	Perfluoroheptanoic acid	0.025	0.0205	82	70-150
335-67-1	Perfluorooctanoic acid	0.025	0.0201	80	70-150
375-95-1	Perfluorononanoic acid	0.025	0.0210	84	70-150
335-76-2	Perfluorodecanoic acid	0.025	0.0210	84	70-140
2058-94-8	Perfluoroundecanoic acid	0.025	0.0209	84	70-145
307-55-1	Perfluorododecanoic acid	0.025	0.0205	82	70-140
72629-94-8	Perfluorotridecanoic acid	0.025	0.0202	81	65-140
376-06-7	Perfluorotetradecanoic acid	0.025	0.0209	84	60-140
375-73-5	Perfluorobutanesulfonic acid	0.0222	0.0178	80	60-145
2706-91-4	Perfluoropentanesulfonic acid	0.0235	0.0198	84	65-140
355-46-4	Perfluorohexanesulfonic acid	0.0229	0.0196	86	65-145
375-92-8	Perfluoroheptanesulfonic acid	0.0238	0.0199	84	70-150
1763-23-1	Perfluorooctanesulfonic acid	0.0232	0.0184	79	55-150
68259-12-1	Perfluorononanesulfonic acid	0.0241	0.0203	84	65-145
335-77-3	Perfluorodecanesulfonic acid	0.0241	0.0204	85	60-145
79780-39-5	Perfluorododecanesulfonic aci	0.0243	0.0202	83	50-145
757124-72-44:2-FTS		0.0938	0.0794	85	70-145
27619-97-2	6:2-FTS	0.095	0.0846	89	65-155
39108-34-4	8:2-FTS	0.096	0.0817	85	60-150
754-91-6	PFOSA	0.025	0.0215	86	70-145
31506-32-8	MeFOSA	0.05	0.0448	90	60-150
4151-50-2	EtFOSA	0.05	0.0432	86	65-145
2355-31-9	MeFOSAA	0.025	0.0199	80	50-140
2991-50-6	EtFOSAA	0.025	0.0197	79	70-145
24448-09-7	MeFOSE	0.125	0.107	86	70-145
1691-99-2	EtFOSE	0.125	0.107	86	70-135
13252-13-6	HFPO-DA (GenX)	0.05	0.0433	87	70-140
919005-14-4	ADONA	0.0473	0.0414	88	65-145
377-73-1	PFMPA	0.05	0.0673	135	55-140
863090-89-5	PFMBA	0.05	0.0416	83	60-150
151772-58-6	NFDHA	0.05	0.0404	81	50-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0468	0.0399	85	70-155
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0473	0.0388	82	55-160

* = Outside of Control Limits.

Blank Spike Summary

Page 2 of 2

Job Number: FC14481

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2811-BS ^a	4Q59250.D	1	04/25/24	MV	04/23/24	OP2811	S4Q881

The QC reported here applies to the following samples:

Method: EPA 1633

FC14481-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0445	0.0386	87	70-140
356-02-5	3:3-FTCA	0.125	0.122	98	65-130
914637-49-35:3	FTCA	0.625	0.530	85	70-135
812-70-4	7:3-FTCA	0.625	0.532	85	50-145

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	63%	10-130%
	13C5-PFPeA	122%	40-130%
	13C5-PFHxA	117%	40-130%
	13C4-PFHpA	118%	40-130%
	13C8-PFOA	118%	40-130%
	13C9-PFNA	114%	40-130%
	13C6-PFDA	121%	40-130%
	13C7-PFUnDA	121%	30-130%
	13C2-PFDoDA	119%	10-130%
	13C2-PFTeDA	111%	10-130%
	13C3-PFBS	111%	40-135%
	13C3-PFHxS	111%	40-130%
	13C8-PFOS	111%	40-130%
	13C8-FOSA	93%	40-130%
	d3-MeFOSA	96%	10-130%
	d5-EtFOSA	94%	10-130%
	d3-MeFOSAA	117%	40-170%
	d5-EtFOSAA	114%	25-135%
	d7-MeFOSE	86%	10-130%
	d9-EtFOSE	82%	10-130%
	13C2-4:2FTS	142%	40-200%
	13C2-6:2FTS	118%	40-200%
	13C2-8:2FTS	120%	40-300%
	13C3-HFPO-DA	117%	40-130%

(a) Insufficient sample for MS/MSD.

* = Outside of Control Limits.

Matrix Spike Summary

Page 1 of 2

Job Number: FC14481
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2578-MS	8Q5003.D	1	04/19/24	AL	04/10/24	OP2578	S8Q67
FC14556-2	8Q5002.D	1	04/19/24	AL	04/10/24	OP2578	S8Q67

The QC reported here applies to the following samples:

Method: EPA 1633

FC14481-1, FC14481-3, FC14481-4, FC14481-5, FC14481-6, FC14481-7

CAS No.	Compound	FC14556-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.0073 U		0.0909	0.0784	86	70-140
2706-90-3	Perfluoropentanoic acid	0.0036 U		0.0455	0.0384	84	65-135
307-24-4	Perfluorohexanoic acid	0.0018 U		0.0227	0.0180	79	70-145
375-85-9	Perfluoroheptanoic acid	0.0018 U		0.0227	0.0212	93	70-150
335-67-1	Perfluorooctanoic acid	0.0018 U		0.0227	0.0203	89	70-150
375-95-1	Perfluorononanoic acid	0.0018 U		0.0227	0.0190	84	70-150
335-76-2	Perfluorodecanoic acid	0.0018 U		0.0227	0.0189	83	70-140
2058-94-8	Perfluoroundecanoic acid	0.0018 U		0.0227	0.0197	87	70-145
307-55-1	Perfluorododecanoic acid	0.0018 U		0.0227	0.0193	85	70-140
72629-94-8	Perfluorotridecanoic acid	0.0018 U		0.0227	0.0196	86	65-140
376-06-7	Perfluorotetradecanoic acid	0.0018 U		0.0227	0.0213	94	60-140
375-73-5	Perfluorobutanesulfonic acid	0.0018 U		0.0202	0.0183	91	60-145
2706-91-4	Perfluoropentanesulfonic acid	0.0018 U		0.0214	0.0177	83	65-140
355-46-4	Perfluorohexanesulfonic acid	0.0018 U		0.0208	0.0165	79	65-145
375-92-8	Perfluoroheptanesulfonic acid	0.0018 U		0.0217	0.0173	80	70-150
1763-23-1	Perfluorooctanesulfonic acid	0.0018 U		0.0211	0.0176	83	55-150
68259-12-1	Perfluorononanesulfonic acid	0.0018 U		0.0219	0.0156	71	65-145
335-77-3	Perfluorodecanesulfonic acid	0.0018 U		0.0219	0.0155	71	60-145
79780-39-5	Perfluorododecanesulfonic aci	0.0018 U		0.022	0.0153	69	50-145
757124-72-44:2-FTS		0.0073 U		0.0852	0.0748	88	70-145
27619-97-2 6:2-FTS		0.0073 U		0.0864	0.0789	91	65-155
39108-34-4 8:2-FTS		0.0073 U		0.0873	0.0785	90	60-150
754-91-6 PFOSA		0.0018 U		0.0227	0.0200	88	70-145
31506-32-8 MeFOSA		0.0036 U		0.0455	0.0423	93	60-150
4151-50-2 EtFOSA		0.0036 U		0.0455	0.0384	84	65-145
2355-31-9 MeFOSAA		0.0018 U		0.0227	0.0227	100	50-140
2991-50-6 EtFOSAA		0.0018 U		0.0227	0.0189	83	70-145
24448-09-7 MeFOSE		0.018 U		0.114	0.0987	87	70-145
1691-99-2 EtFOSE		0.018 U		0.114	0.0986	87	70-135
13252-13-6 HFPO-DA (GenX)		0.0036 U		0.0455	0.0393	86	70-140
919005-14-4ADONA		0.0073 U		0.043	0.0379	88	65-145
377-73-1 PFMPA		0.0036 U		0.0455	0.0397	87	55-140
863090-89-5PFMBA		0.0036 U		0.0455	0.0375	82	60-150
151772-58-6NFDHA		0.0036 U		0.0455	0.0337	74	50-150
756426-58-19Cl-PF3ONS (F-53B Major)		0.0073 U		0.0425	0.0400	94	70-155
763051-92-911Cl-PF3OUdS (F-53B Minor)		0.0073 U		0.043	0.0294	68	55-160

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC14481
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2578-MS	8Q5003.D	1	04/19/24	AL	04/10/24	OP2578	S8Q67
FC14556-2	8Q5002.D	1	04/19/24	AL	04/10/24	OP2578	S8Q67

The QC reported here applies to the following samples:

Method: EPA 1633

FC14481-1, FC14481-3, FC14481-4, FC14481-5, FC14481-6, FC14481-7

CAS No.	Compound	FC14556-2 ug/l	Spike Q	MS ug/l	MS %	Limits
113507-82-7	PFEESA	0.0036 U	0.0405	0.0327	81	70-140
356-02-5	3:3-FTCA	0.0091 U	0.114	0.0914	80	65-130
914637-49-35:3	FTCA	0.045 U	0.568	0.460	81	70-135
812-70-4	7:3-FTCA	0.045 U	0.568	0.445	78	50-145

CAS No.	ID Standard Recoveries	MS	FC14556-2	Limits
	13C4-PFBA	103%	101%	10-130%
	13C5-PFPeA	109%	104%	40-130%
	13C5-PFHxA	114%	102%	40-130%
	13C4-PFHpA	102%	105%	40-130%
	13C8-PFOA	103%	93%	40-130%
	13C9-PFNA	93%	100%	40-130%
	13C6-PFDA	108%	88%	40-130%
	13C7-PFUnDA	97%	78%	30-130%
	13C2-PFDoDA	88%	71%	10-130%
	13C2-PFTeDA	85%	75%	10-130%
	13C3-PFBS	100%	104%	40-135%
	13C3-PFHxS	107%	104%	40-130%
	13C8-PFOS	105%	85%	40-130%
	13C8-FOSA	89%	74%	40-130%
	d3-MeFOSA	70%	62%	10-130%
	d5-EtFOSA	80%	62%	10-130%
	d3-MeFOSAA	87%	75%	40-170%
	d5-EtFOSAA	84%	80%	25-135%
	d7-MeFOSE	74%	59%	10-130%
	d9-EtFOSE	74%	59%	10-130%
	13C2-4:2FTS	122%	118%	40-200%
	13C2-6:2FTS	112%	123%	40-200%
	13C2-8:2FTS	110%	100%	40-300%
	13C3-HFPO-DA	104%	101%	40-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 2

Job Number: FC14481
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2544-MS	6Q33687.D	1	04/18/24	MV	04/09/24	OP2544	S6Q473
OP2544-MSD	6Q33688.D	1	04/18/24	MV	04/09/24	OP2544	S6Q473
FC14481-10	6Q33686.D	1	04/18/24	MV	04/09/24	OP2544	S6Q473

The QC reported here applies to the following samples:

Method: EPA 1633

FC14481-8, FC14481-9, FC14481-10, FC14481-11, FC14481-12, FC14481-13, FC14481-14, FC14481-15

CAS No.	Compound	FC14481-10 ug/kg	Spike Q	ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	ND		11.6	9.9	86	11.7	9.9	85	0	40-150/30
2706-90-3	Perfluoropentanoic acid	ND		5.78	5.1	88	5.85	4.9	84	4	40-150/30
307-24-4	Perfluorohexanoic acid	ND		2.89	2.5	86	2.93	2.6	89	4	40-150/30
375-85-9	Perfluoroheptanoic acid	ND		2.89	2.6	90	2.93	2.7	92	4	40-150/30
335-67-1	Perfluorooctanoic acid	ND		2.89	2.6	90	2.93	2.4	82	8	40-150/30
375-95-1	Perfluorononanoic acid	ND		2.89	2.2	76	2.93	2.3	79	4	40-150/30
335-76-2	Perfluorodecanoic acid	ND		2.89	2.3	80	2.93	2.7	92	16	40-150/30
2058-94-8	Perfluoroundecanoic acid	ND		2.89	2.5	86	2.93	2.9	99	15	40-150/30
307-55-1	Perfluorododecanoic acid	ND		2.89	2.3	80	2.93	2.4	82	4	40-150/30
72629-94-8	Perfluorotridecanoic acid	ND		2.89	2.4	83	2.93	2.7	92	12	40-150/30
376-06-7	Perfluorotetradecanoic acid	ND		2.89	2.5	86	2.93	2.6	89	4	40-150/30
375-73-5	Perfluorobutanesulfonic acid	ND		2.57	2.2	86	2.6	2.2	85	0	40-150/30
2706-91-4	Perfluoropentanesulfonic acid	ND		2.72	2.2	81	2.75	2.5	91	13	40-150/30
355-46-4	Perfluorohexanesulfonic acid	ND		2.64	2.1	79	2.68	2.3	86	9	40-150/30
375-92-8	Perfluoroheptanesulfonic acid	ND		2.76	2.2	80	2.79	2.2	79	0	40-150/30
1763-23-1	Perfluorooctanesulfonic acid	ND		2.68	2.1	78	2.72	2.3	85	9	40-150/30
68259-12-1	Perfluorononanesulfonic acid	ND		2.78	2.4	86	2.82	2.5	89	4	40-150/30
335-77-3	Perfluorodecanesulfonic acid	ND		2.79	2.5	90	2.82	2.4	85	4	40-150/30
79780-39-5	Perfluorododecanesulfonic aci	ND		2.81	2.3	82	2.84	2.3	81	0	40-150/30
757124-72-44:2-FTS		ND		10.8	10.2	94	11	8.5	77	18	40-150/30
27619-97-2	6:2-FTS	ND		11	10	91	11.1	10.2	92	2	40-150/30
39108-34-4	8:2-FTS	ND		11.1	9.5	86	11.2	10.8	96	13	40-150/30
754-91-6	PFOSA	ND		2.89	2.4	83	2.93	2.4	82	0	40-150/30
31506-32-8	MeFOSA	ND		5.78	5.3	92	5.85	4.8	82	10	40-150/30
4151-50-2	EtFOSA	ND		5.78	5.0	86	5.85	4.5	77	11	40-150/30
2355-31-9	MeFOSAA	ND		2.89	2.5	86	2.93	2.4	82	4	40-150/30
2991-50-6	EtFOSAA	ND		2.89	2.5	86	2.93	2.4	82	4	40-150/30
24448-09-7	MeFOSE	ND		14.5	12.2	84	14.6	12.4	85	2	40-150/30
1691-99-2	EtFOSE	ND		14.5	13.1	91	14.6	12.3	84	6	40-150/30
13252-13-6	HFPO-DA (GenX)	ND		5.78	5.3	92	5.85	5.3	91	0	40-150/30
919005-14-4	ADONA	ND		5.47	4.6	84	5.53	4.7	85	2	40-150/30
377-73-1	PFMPA	ND		5.78	4.9	85	5.85	5.0	85	2	40-150/30
863090-89-5	PFMBA	ND		5.78	5.1	88	5.85	4.9	84	4	40-150/30
151772-58-6	NFDHA	ND		5.78	4.5	78	5.85	5.0	85	11	40-150/30
756426-58-19	Cl-PF3ONS (F-53B Major)	ND		5.41	4.5	83	5.47	4.5	82	0	40-150/30
763051-92-911	Cl-PF3OUdS (F-53B Minor)	ND		5.47	4.6	84	5.53	4.5	81	2	40-150/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC14481
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2544-MS	6Q33687.D	1	04/18/24	MV	04/09/24	OP2544	S6Q473
OP2544-MSD	6Q33688.D	1	04/18/24	MV	04/09/24	OP2544	S6Q473
FC14481-10	6Q33686.D	1	04/18/24	MV	04/09/24	OP2544	S6Q473

The QC reported here applies to the following samples: Method: EPA 1633

FC14481-8, FC14481-9, FC14481-10, FC14481-11, FC14481-12, FC14481-13, FC14481-14, FC14481-15

CAS No.	Compound	FC14481-10 ug/kg	Spike Q ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
113507-82-7PFEEESA		ND	5.15	4.1	80	5.21	4.1	79	0	40-150/30
356-02-5 3:3-FTCA		ND	14.5	11.5	80	14.6	11.5	79	0	40-150/30
914637-49-35:3-FTCA		ND	72.3	58.5	81	73.2	56.1	77	4	40-150/30
812-70-4 7:3-FTCA		ND	72.3	56.7	78	73.2	61.6	84	8	40-150/30

CAS No.	ID Standard Recoveries	MS	MSD	FC14481-10	Limits
	13C4-PFBA	77%	74%	71%	20-150%
	13C5-PFPeA	73%	76%	76%	20-150%
	13C5-PFHxA	73%	73%	75%	20-150%
	13C4-PFHpA	73%	72%	76%	20-150%
	13C8-PFOA	76%	75%	72%	20-150%
	13C9-PFNA	81%	81%	72%	20-150%
	13C6-PFDA	86%	76%	74%	20-150%
	13C7-PFUnDA	80%	72%	63%	20-150%
	13C2-PFDoDA	79%	77%	72%	20-150%
	13C2-PFTeDA	77%	75%	67%	20-150%
	13C3-PFBS	77%	71%	66%	20-150%
	13C3-PFHxS	79%	68%	67%	20-150%
	13C8-PFOS	77%	68%	70%	20-150%
	13C8-FOSA	73%	66%	69%	20-150%
	d3-MeFOSA	68%	63%	66%	20-150%
	d5-EtFOSA	77%	70%	72%	20-150%
	d3-MeFOSAA	77%	71%	75%	20-150%
	d5-EtFOSAA	80%	70%	75%	20-150%
	d7-MeFOSE	75%	66%	70%	20-150%
	d9-EtFOSE	74%	68%	70%	20-150%
	13C2-4:2FTS	81%	79%	70%	20-180%
	13C2-6:2FTS	80%	74%	68%	20-180%
	13C2-8:2FTS	78%	67%	64%	20-180%
	13C3-HFPO-DA	70%	71%	72%	20-150%

* = Outside of Control Limits.

Duplicate Summary

Page 1 of 2

Job Number: FC14481
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2578-DUP	8Q5009.D	1	04/19/24	AL	04/10/24	OP2578	S8Q67
FC14481-3	8Q5008.D	1	04/19/24	AL	04/10/24	OP2578	S8Q67

The QC reported here applies to the following samples:

Method: EPA 1633

FC14481-1, FC14481-3, FC14481-4, FC14481-5, FC14481-6, FC14481-7

CAS No.	Compound	FC14481-3 ug/l	DUP Q	DUP ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.0125		0.0124	1		21
2706-90-3	Perfluoropentanoic acid	0.0426		0.0447	5		23
307-24-4	Perfluorohexanoic acid	0.0431		0.0386	11		24
375-85-9	Perfluoroheptanoic acid	0.0147		0.0148	1		28
335-67-1	Perfluorooctanoic acid	0.0157		0.0164	4		27
375-95-1	Perfluorononanoic acid	0.0055		0.0054	2		28
335-76-2	Perfluorodecanoic acid	0.0018	J	0.0017	J	6	26
2058-94-8	Perfluoroundecanoic acid	ND		0.00070	J	200*	29
307-55-1	Perfluorododecanoic acid	ND		ND		nc	21
72629-94-8	Perfluorotridecanoic acid	ND		ND		nc	29
376-06-7	Perfluorotetradecanoic acid	ND		ND		nc	27
375-73-5	Perfluorobutanesulfonic acid	0.0044		0.0045	2		23
2706-91-4	Perfluoropentanesulfonic acid	0.0047		0.0048	2		25
355-46-4	Perfluorohexanesulfonic acid	0.0472		0.0440	7		27
375-92-8	Perfluoroheptanesulfonic acid	0.0014	J	0.0017	J	19	30
1763-23-1	Perfluorooctanesulfonic acid	0.0880		0.0836	5		29
68259-12-1	Perfluorononanesulfonic acid	ND		ND		nc	29
335-77-3	Perfluorodecanesulfonic acid	ND		ND		nc	30
79780-39-5	Perfluorododecanesulfonic aci	ND		ND		nc	35
757124-72-44:2-FTS		ND		ND		nc	27
27619-97-2	6:2-FTS	0.0554		0.0487	13		32
39108-34-4	8:2-FTS	ND		ND		nc	33
754-91-6	PFOSA	ND		ND		nc	22
31506-32-8	MeFOSA	ND		ND		nc	30
4151-50-2	EtFOSA	ND		ND		nc	26
2355-31-9	MeFOSAA	ND		ND		nc	32
2991-50-6	EtFOSAA	ND		ND		nc	28
24448-09-7	MeFOSE	ND		ND		nc	29
1691-99-2	EtFOSE	ND		ND		nc	21
13252-13-6	HFPO-DA (GenX)	ND		ND		nc	23
919005-14-4	ADONA	ND		ND		nc	23
377-73-1	PFMPA	ND		ND		nc	23
863090-89-5	PFMBA	ND		ND		nc	27
151772-58-6	NFDHA	ND		ND		nc	37
756426-58-19	Cl-PF3ONS (F-53B Major)	ND		ND		nc	30
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND		ND		nc	35

* = Outside of Control Limits.

Duplicate Summary

Page 2 of 2

Job Number: FC14481
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2578-DUP	8Q5009.D	1	04/19/24	AL	04/10/24	OP2578	S8Q67
FC14481-3	8Q5008.D	1	04/19/24	AL	04/10/24	OP2578	S8Q67

The QC reported here applies to the following samples:

Method: EPA 1633

FC14481-1, FC14481-3, FC14481-4, FC14481-5, FC14481-6, FC14481-7

CAS No.	Compound	FC14481-3 ug/l	DUP Q ug/l	Q	RPD	Limits
113507-82-7	PFEESA	ND	ND		nc	25
356-02-5	3:3-FTCA	ND	ND		nc	23
914637-49-35:3	FTCA	ND	ND		nc	24
812-70-4	7:3-FTCA	ND	ND		nc	34

CAS No.	ID Standard Recoveries	DUP	FC14481-3	Limits
	13C4-PFBA	99%	101%	10-130%
	13C5-PFPeA	103%	108%	40-130%
	13C5-PFHxA	108%	101%	40-130%
	13C4-PFHpA	103%	108%	40-130%
	13C8-PFOA	96%	104%	40-130%
	13C9-PFNA	96%	107%	40-130%
	13C6-PFDA	97%	109%	40-130%
	13C7-PFUnDA	89%	109%	30-130%
	13C2-PFDoDA	83%	78%	10-130%
	13C2-PFTeDA	56%	63%	10-130%
	13C3-PFBS	100%	100%	40-135%
	13C3-PFHxS	92%	102%	40-130%
	13C8-PFOS	96%	107%	40-130%
	13C8-FOSA	93%	88%	40-130%
	d3-MeFOSA	63%	58%	10-130%
	d5-EtFOSA	67%	57%	10-130%
	d3-MeFOSAA	98%	92%	40-170%
	d5-EtFOSAA	99%	88%	25-135%
	d7-MeFOSE	66%	62%	10-130%
	d9-EtFOSE	61%	58%	10-130%
	13C2-4:2FTS	81%	82%	40-200%
	13C2-6:2FTS	104%	94%	40-200%
	13C2-8:2FTS	114%	95%	40-300%
	13C3-HFPO-DA	106%	103%	40-130%

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

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Automated Report

Technical Report for

GeoEngineers, Inc.

Paine Field; Everett, WA

05530-015-00

SGS Job Number: FC13426

Sampling Dates: 02/13/24 - 02/14/24

Report to:

GeoEngineers, Inc
1101 Fawcett Ave Suite 200
Tacoma, WA 98402
jletts@geoengineers.com; katakturk@geoengineers.com

ATTN: Jacob Letts

Total number of pages in report: **54**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable unless noted in the narrative, comments or footnotes.



Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001)

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Test results relate only to samples analyzed.

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Sample Summary

GeoEngineers, Inc.

Job No: FC13426

Paine Field; Everett, WA
Project No: 05530-015-00

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID

This report contains results reported as ND = Not detected. The following applies:
Organics ND = Not detected above the MDL

FC13426-1	02/13/24	12:15 MR	02/16/24	AQ	Ground Water	FP-MW7-20240213
FC13426-2	02/13/24	09:45 MR	02/16/24	AQ	Ground Water	FP-MW8-20240213
FC13426-3	02/13/24	11:00 MR	02/16/24	AQ	Ground Water	FP-MW9-20240213
FC13426-4	02/13/24	13:30 MR	02/16/24	AQ	Ground Water	FP-MW10-20240213
FC13426-5	02/14/24	11:05 MR	02/16/24	AQ	Ground Water	FP-MW11-20240214
FC13426-6	02/14/24	09:00 MR	02/16/24	AQ	Ground Water	FP-MW12-20240214
FC13426-7	02/14/24	11:05 MR	02/16/24	AQ	Ground Water	FP-MWDUP-20240214
FC13426-8	02/14/24	11:35 MR	02/16/24	AQ	Equipment Blank	EB-20240214

SAMPLE DELIVERY GROUP CASE NARRATIVE

2

Client: GeoEngineers, Inc.

Job No: FC13426

Site: Paine Field; Everett, WA

Report Date: 2/28/2024 11:21:17

On 02/16/2024, 7 Sample(s), 0 Trip Blank(s), 1 Equip. Blank(s) and 0 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 4.8 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC13426 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA DRAFT 1633

Matrix:AQ

Batch ID: OP1729

Sample(s) FC13426-5MS, FC13426-6DUP were used as the QC samples indicated.

Blank Spike Recovery(s) for 3:3 Fluorotelomer carboxylate are outside control limits.

Matrix Spike Recovery(s) for Perfluorohexanesulfonic acid, Perfluorooctanesulfonic acid are outside control limits. Outside control limits due to high level in sample relative to spike amount.

RPD(s) for Duplicate for Perfluorobutanoic acid, Perfluorooctanesulfonic acid are outside control limits for sample OP1729-DUP. Probable cause is due to sample non-homogeneity.

FC13426-1 for 3:3 Fluorotelomer carboxylate: Associated BS outside control limits high, sample was ND.

FC13426-2 for 3:3 Fluorotelomer carboxylate: Associated BS outside control limits high, sample was ND.

FC13426-3 for 3:3 Fluorotelomer carboxylate: Associated BS outside control limits high, sample was ND.

FC13426-4 for 3:3 Fluorotelomer carboxylate: Associated BS outside control limits high, sample was ND.

FC13426-5 for 3:3 Fluorotelomer carboxylate: Associated BS outside control limits high, sample was ND.

FC13426-6 for 3:3 Fluorotelomer carboxylate: Associated BS outside control limits high, sample was ND.

FC13426-7 for 3:3 Fluorotelomer carboxylate: Associated BS outside control limits high, sample was ND.

FC13426-8 for 3:3 Fluorotelomer carboxylate: Associated BS outside control limits high, sample was ND.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

Kim Benham, Report Generation (signature on file)

Summary of Hits

Job Number: FC13426
Account: GeoEngineers, Inc.
Project: Paine Field; Everett, WA
Collected: 02/13/24 thru 02/14/24



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method

FC13426-1 FP-MW7-20240213

Perfluorohexanesulfonic acid	0.0029	0.0018	0.00088	ug/l	EPA DRAFT 1633
Perfluorooctanesulfonic acid	0.0010 J	0.0018	0.00088	ug/l	EPA DRAFT 1633

FC13426-2 FP-MW8-20240213

Perfluorobutanoic acid	0.240	0.0077	0.0038	ug/l	EPA DRAFT 1633
Perfluoropentanoic acid	1.16	0.0038	0.00096	ug/l	EPA DRAFT 1633
Perfluorohexanoic acid	0.737	0.019	0.0048	ug/l	EPA DRAFT 1633
Perfluoroheptanoic acid	0.360	0.0019	0.00048	ug/l	EPA DRAFT 1633
Perfluorooctanoic acid	0.207	0.0019	0.00048	ug/l	EPA DRAFT 1633
Perfluorononanoic acid	0.0111	0.0019	0.00059	ug/l	EPA DRAFT 1633
Perfluorobutanesulfonic acid	0.302	0.0019	0.00096	ug/l	EPA DRAFT 1633
Perfluoropentanesulfonic acid	0.448	0.0019	0.0011	ug/l	EPA DRAFT 1633
Perfluorohexanesulfonic acid	1.41	0.019	0.0096	ug/l	EPA DRAFT 1633
Perfluoroheptanesulfonic acid	0.0487	0.0019	0.00096	ug/l	EPA DRAFT 1633
Perfluorooctanesulfonic acid	0.270	0.0019	0.00096	ug/l	EPA DRAFT 1633
6:2 Fluorotelomer sulfonate	1.37	0.0077	0.0038	ug/l	EPA DRAFT 1633
5:3 Fluorotelomer carboxylate	0.0115 J	0.048	0.0096	ug/l	EPA DRAFT 1633

FC13426-3 FP-MW9-20240213

Perfluorobutanoic acid	0.418	0.0074	0.0037	ug/l	EPA DRAFT 1633
Perfluoropentanoic acid	2.62	0.037	0.0093	ug/l	EPA DRAFT 1633
Perfluorohexanoic acid	1.35	0.019	0.0046	ug/l	EPA DRAFT 1633
Perfluoroheptanoic acid	0.224	0.0019	0.00046	ug/l	EPA DRAFT 1633
Perfluorooctanoic acid	0.0136	0.0019	0.00046	ug/l	EPA DRAFT 1633
Perfluorononanoic acid	0.0015 J	0.0019	0.00056	ug/l	EPA DRAFT 1633
Perfluorobutanesulfonic acid	0.0015 J	0.0019	0.00093	ug/l	EPA DRAFT 1633
Perfluoropentanesulfonic acid	0.0017 J	0.0019	0.0010	ug/l	EPA DRAFT 1633
Perfluorohexanesulfonic acid	0.0109	0.0019	0.00093	ug/l	EPA DRAFT 1633
Perfluorooctanesulfonic acid	0.0045	0.0019	0.00093	ug/l	EPA DRAFT 1633
6:2 Fluorotelomer sulfonate	4.38	0.074	0.037	ug/l	EPA DRAFT 1633
5:3 Fluorotelomer carboxylate	0.0260 J	0.046	0.0093	ug/l	EPA DRAFT 1633

FC13426-4 FP-MW10-20240213

Perfluorobutanoic acid	0.0666	0.0073	0.0036	ug/l	EPA DRAFT 1633
Perfluoropentanoic acid	0.272	0.0036	0.00091	ug/l	EPA DRAFT 1633
Perfluorohexanoic acid	0.156	0.0018	0.00045	ug/l	EPA DRAFT 1633
Perfluoroheptanoic acid	0.0975	0.0018	0.00045	ug/l	EPA DRAFT 1633
Perfluorooctanoic acid	0.0902	0.0018	0.00045	ug/l	EPA DRAFT 1633
Perfluorononanoic acid	0.0059	0.0018	0.00055	ug/l	EPA DRAFT 1633
Perfluorobutanesulfonic acid	0.0481	0.0018	0.00091	ug/l	EPA DRAFT 1633

Summary of Hits

Job Number: FC13426
Account: GeoEngineers, Inc.
Project: Paine Field; Everett, WA
Collected: 02/13/24 thru 02/14/24



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Perfluoropentanesulfonic acid		0.0574	0.0018	0.0010	ug/l	EPA DRAFT 1633
Perfluorohexanesulfonic acid		0.426	0.0018	0.00091	ug/l	EPA DRAFT 1633
Perfluoroheptanesulfonic acid		0.0124	0.0018	0.00091	ug/l	EPA DRAFT 1633
Perfluorooctanesulfonic acid		0.420	0.0018	0.00091	ug/l	EPA DRAFT 1633
6:2 Fluorotelomer sulfonate		0.627	0.0073	0.0036	ug/l	EPA DRAFT 1633

FC13426-5 FP-MW11-20240214

Perfluorobutanoic acid	0.0095	0.0071	0.0036	ug/l	EPA DRAFT 1633
Perfluoropentanoic acid	0.0225	0.0036	0.00089	ug/l	EPA DRAFT 1633
Perfluorohexanoic acid	0.0208	0.0018	0.00045	ug/l	EPA DRAFT 1633
Perfluoroheptanoic acid	0.0108	0.0018	0.00045	ug/l	EPA DRAFT 1633
Perfluorooctanoic acid	0.0283	0.0018	0.00045	ug/l	EPA DRAFT 1633
Perfluorononanoic acid	0.0043	0.0018	0.00054	ug/l	EPA DRAFT 1633
Perfluorobutanesulfonic acid	0.0268	0.0018	0.00089	ug/l	EPA DRAFT 1633
Perfluoropentanesulfonic acid	0.0429	0.0018	0.0010	ug/l	EPA DRAFT 1633
Perfluorohexanesulfonic acid	0.391	0.0018	0.00089	ug/l	EPA DRAFT 1633
Perfluoroheptanesulfonic acid	0.0085	0.0018	0.00089	ug/l	EPA DRAFT 1633
Perfluorooctanesulfonic acid	0.414	0.0018	0.00089	ug/l	EPA DRAFT 1633

FC13426-6 FP-MW12-20240214

Perfluorobutanoic acid	0.0086	0.0075	0.0038	ug/l	EPA DRAFT 1633
Perfluoropentanoic acid	0.0140	0.0038	0.00094	ug/l	EPA DRAFT 1633
Perfluorohexanoic acid	0.0462	0.0019	0.00047	ug/l	EPA DRAFT 1633
Perfluoroheptanoic acid	0.0069	0.0019	0.00047	ug/l	EPA DRAFT 1633
Perfluorooctanoic acid	0.0308	0.0019	0.00047	ug/l	EPA DRAFT 1633
Perfluorobutanesulfonic acid	0.189	0.0019	0.00094	ug/l	EPA DRAFT 1633
Perfluoropentanesulfonic acid	0.165	0.0019	0.0011	ug/l	EPA DRAFT 1633
Perfluorohexanesulfonic acid	1.29	0.0094	0.0047	ug/l	EPA DRAFT 1633
Perfluoroheptanesulfonic acid	0.0240	0.0019	0.00094	ug/l	EPA DRAFT 1633
Perfluorooctanesulfonic acid	0.0115	0.0019	0.00094	ug/l	EPA DRAFT 1633

FC13426-7 FP-MWDUP-20240214

Perfluorobutanoic acid	0.0097	0.0071	0.0036	ug/l	EPA DRAFT 1633
Perfluoropentanoic acid	0.0224	0.0036	0.00089	ug/l	EPA DRAFT 1633
Perfluorohexanoic acid	0.0210	0.0018	0.00045	ug/l	EPA DRAFT 1633
Perfluoroheptanoic acid	0.0106	0.0018	0.00045	ug/l	EPA DRAFT 1633
Perfluorooctanoic acid	0.0285	0.0018	0.00045	ug/l	EPA DRAFT 1633
Perfluorononanoic acid	0.0040	0.0018	0.00054	ug/l	EPA DRAFT 1633
Perfluorobutanesulfonic acid	0.0266	0.0018	0.00089	ug/l	EPA DRAFT 1633
Perfluoropentanesulfonic acid	0.0397	0.0018	0.0010	ug/l	EPA DRAFT 1633
Perfluorohexanesulfonic acid	0.375	0.0018	0.00089	ug/l	EPA DRAFT 1633
Perfluoroheptanesulfonic acid	0.0080	0.0018	0.00089	ug/l	EPA DRAFT 1633

Summary of Hits

Job Number: FC13426
Account: GeoEngineers, Inc.
Project: Paine Field; Everett, WA
Collected: 02/13/24 thru 02/14/24



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Analyte						

Perfluorooctanesulfonic acid		0.416	0.0018	0.00089	ug/l	EPA DRAFT 1633

FC13426-8 EB-20240214

No hits reported in this sample.



Orlando, FL

Section 4

4

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	FP-MW7-20240213	Date Sampled:	02/13/24
Lab Sample ID:	FC13426-1	Date Received:	02/16/24
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q0146.D	1	02/24/24 02:13	MV	02/20/24 09:30	OP1729	S7Q45
Run #2							

Run #	Initial Volume	Final Volume
Run #1	570 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.0070	0.0035	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0035	0.00088	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0018	0.00044	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0018	0.00044	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0018	0.00044	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0018	0.00054	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0018	0.00044	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0018	0.00053	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0018	0.00053	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0018	0.00074	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0018	0.00044	ug/l	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.0018	0.00088	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0018	0.00098	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0029	0.0018	0.00088	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0018	0.00088	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0010	0.0018	0.00088	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	ND	0.0018	0.00088	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0018	0.00088	ug/l	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.0018	0.0010	ug/l	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0070	0.0035	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0070	0.0035	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0070	0.0036	ug/l	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.0018	0.00088	ug/l	
31506-32-8	MeFOSA	ND	0.0018	0.00088	ug/l	
4151-50-2	EtFOSA	ND	0.0018	0.00088	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
 RL = Reporting Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.1
4

Report of Analysis

Client Sample ID:	FP-MW7-20240213	Date Sampled:	02/13/24
Lab Sample ID:	FC13426-1	Date Received:	02/16/24
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.0018	0.00088	ug/l	
2991-50-6	EtFOSAA	ND	0.0018	0.0012	ug/l	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	0.018	0.0088	ug/l	
1691-99-2	EtFOSE	ND	0.018	0.0088	ug/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.0070	0.0018	ug/l	
919005-14-4	ADONA	ND	0.0070	0.0018	ug/l	
377-73-1	PFMPA	ND	0.0035	0.00088	ug/l	
863090-89-5	PFMBA	ND	0.0035	0.0010	ug/l	
151772-58-6	NFDHA	ND	0.0035	0.0011	ug/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0070	0.0018	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0070	0.0018	ug/l	
113507-82-7	PFEESA	ND	0.0035	0.00088	ug/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylat ^a	ND	0.0088	0.0044	ug/l	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	0.044	0.0088	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.044	0.0088	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	108%		20-150%
	13C5-PFPeA	111%		20-150%
	13C5-PFHxA	112%		20-150%
	13C4-PFHpA	110%		20-150%
	13C8-PFOA	113%		20-150%
	13C9-PFNA	111%		20-150%
	13C6-PFDA	107%		20-150%
	13C7-PFUnDA	98%		20-150%
	13C2-PFDoDA	88%		20-150%
	13C2-PFTeDA	83%		20-150%
	13C3-PFBS	116%		20-150%
	13C3-PFHxS	114%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW7-20240213	Date Sampled:	02/13/24
Lab Sample ID:	FC13426-1	Date Received:	02/16/24
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	99%		20-150%
	13C8-FOSA	85%		20-150%
	d3-MeFOSA	80%		20-150%
	d5-EtFOSA	81%		20-150%
	d3-MeFOSAA	97%		20-150%
	d5-EtFOSAA	98%		20-150%
	d7-MeFOSE	77%		20-150%
	d9-EtFOSE	79%		20-150%
	13C2-4:2FTS	100%		20-180%
	13C2-6:2FTS	110%		20-180%
	13C2-8:2FTS	103%		20-180%
	13C3-HFPO-DA	109%		20-150%

(a) Associated BS outside control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW8-20240213	Date Sampled:	02/13/24
Lab Sample ID:	FC13426-2	Date Received:	02/16/24
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q0147.D	1	02/24/24 02:26	MV	02/20/24 09:30	OP1729	S7Q45
Run #2	7Q0199.D	10	02/25/24 14:55	AL	02/20/24 09:30	OP1729	S7Q46

	Initial Volume	Final Volume
Run #1	520 ml	5.0 ml
Run #2	520 ml	5.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	0.240	0.0077	0.0038	ug/l	
2706-90-3	Perfluoropentanoic acid	1.16	0.0038	0.00096	ug/l	
307-24-4	Perfluorohexanoic acid	0.737 ^a	0.019	0.0048	ug/l	
375-85-9	Perfluoroheptanoic acid	0.360	0.0019	0.00048	ug/l	
335-67-1	Perfluorooctanoic acid	0.207	0.0019	0.00048	ug/l	
375-95-1	Perfluorononanoic acid	0.0111	0.0019	0.00059	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0019	0.00048	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0019	0.00058	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0019	0.00058	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0019	0.00081	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0019	0.00048	ug/l	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	0.302	0.0019	0.00096	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.448	0.0019	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	1.41 ^a	0.019	0.0096	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0487	0.0019	0.00096	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.270	0.0019	0.00096	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0019	0.00096	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0019	0.00096	ug/l	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.0019	0.0011	ug/l	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0077	0.0038	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	1.37	0.0077	0.0038	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0077	0.0040	ug/l	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.0019	0.00096	ug/l	
31506-32-8	MeFOSA	ND	0.0019	0.00096	ug/l	
4151-50-2	EtFOSA	ND	0.0019	0.00096	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
 RL = Reporting Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: FP-MW8-20240213

Lab Sample ID: FC13426-2

Matrix: AQ - Ground Water

Method: EPA DRAFT 1633 EPA 1633 DRAFT

Project: Paine Field; Everett, WA

Date Sampled: 02/13/24

Date Received: 02/16/24

Percent Solids: n/a

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9 MeFOSAA ND 0.0019 0.00096 ug/l

2991-50-6 EtFOSAA ND 0.0019 0.0013 ug/l

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7 MeFOSE ND 0.019 0.0096 ug/l

1691-99-2 EtFOSE ND 0.019 0.0096 ug/l

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6 HFPO-DA (GenX) ND 0.0077 0.0019 ug/l

919005-14-4 ADONA ND 0.0077 0.0019 ug/l

377-73-1 PFMPA ND 0.0038 0.00096 ug/l

863090-89-5 PFMBA ND 0.0038 0.0011 ug/l

151772-58-6 NFDHA ND 0.0038 0.0012 ug/l

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1 9Cl-PF3ONS (F-53B Major) ND 0.0077 0.0019 ug/l

763051-92-9 11Cl-PF3OUdS (F-53B Minor) ND 0.0077 0.0019 ug/l

113507-82-7 PFEEESA ND 0.0038 0.00096 ug/l

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5 3:3 Fluorotelomer carboxylat^b ND 0.0096 0.0048 ug/l

914637-49-3 5:3 Fluorotelomer carboxylate 0.0115 0.048 0.0096 ug/l J

812-70-4 7:3 Fluorotelomer carboxylate ND 0.048 0.0096 ug/l

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits

13C4-PFBA 109% 112% 20-150%

13C5-PFPeA 104% 107% 20-150%

13C5-PFHxA 115% 113% 20-150%

13C4-PFHpA 110% 114% 20-150%

13C8-PFOA 116% 119% 20-150%

13C9-PFNA 115% 118% 20-150%

13C6-PFDA 117% 113% 20-150%

13C7-PFUnDA 110% 103% 20-150%

13C2-PFDoDA 100% 89% 20-150%

13C2-PFTeDA 93% 90% 20-150%

13C3-PFBS 131% 102% 20-150%

13C3-PFHxS 114% 128% 20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW8-20240213	Date Sampled:	02/13/24
Lab Sample ID:	FC13426-2	Date Received:	02/16/24
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	121%	116%	20-150%
	13C8-FOSA	104%	122%	20-150%
	d3-MeFOSA	97%	97%	20-150%
	d5-EtFOSA	96%	112%	20-150%
	d3-MeFOSAA	106%	125%	20-150%
	d5-EtFOSAA	96%	115%	20-150%
	d7-MeFOSE	97%	114%	20-150%
	d9-EtFOSE	92%	104%	20-150%
	13C2-4:2FTS	106%	100%	20-180%
	13C2-6:2FTS	114%	151%	20-180%
	13C2-8:2FTS	117%	103%	20-180%
	13C3-HFPO-DA	119%	113%	20-150%

- (a) Result is from Run# 2
(b) Associated BS outside control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW9-20240213	Date Sampled:	02/13/24
Lab Sample ID:	FC13426-3	Date Received:	02/16/24
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q0148.D	1	02/24/24 02:40	MV	02/20/24 09:30	OP1729	S7Q45
Run #2	7Q0200.D	10	02/25/24 15:09	AL	02/20/24 09:30	OP1729	S7Q46

	Initial Volume	Final Volume
Run #1	540 ml	5.0 ml
Run #2	540 ml	5.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	0.418	0.0074	0.0037	ug/l	
2706-90-3	Perfluoropentanoic acid	2.62 ^a	0.037	0.0093	ug/l	
307-24-4	Perfluorohexanoic acid	1.35 ^a	0.019	0.0046	ug/l	
375-85-9	Perfluoroheptanoic acid	0.224	0.0019	0.00046	ug/l	
335-67-1	Perfluorooctanoic acid	0.0136	0.0019	0.00046	ug/l	
375-95-1	Perfluorononanoic acid	0.0015	0.0019	0.00056	ug/l	J
335-76-2	Perfluorodecanoic acid	ND	0.0019	0.00046	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0019	0.00056	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0019	0.00056	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0019	0.00078	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0019	0.00046	ug/l	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	0.0015	0.0019	0.00093	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0017	0.0019	0.0010	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0109	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0045	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0019	0.00093	ug/l	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.0019	0.0011	ug/l	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0074	0.0037	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	4.38 ^a	0.074	0.037	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0074	0.0038	ug/l	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA	ND	0.0019	0.00093	ug/l	
4151-50-2	EtFOSA	ND	0.0019	0.00093	ug/l	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW9-20240213	Date Sampled:	02/13/24
Lab Sample ID:	FC13426-3	Date Received:	02/16/24
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.0019	0.00093	ug/l	
2991-50-6	EtFOSAA	ND	0.0019	0.0012	ug/l	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	0.019	0.0093	ug/l	
1691-99-2	EtFOSE	ND	0.019	0.0093	ug/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.0074	0.0019	ug/l	
919005-14-4	ADONA	ND	0.0074	0.0019	ug/l	
377-73-1	PFMPA	ND	0.0037	0.00093	ug/l	
863090-89-5	PFMBA	ND	0.0037	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0037	0.0011	ug/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0074	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0074	0.0019	ug/l	
113507-82-7	PFEESA	ND	0.0037	0.00093	ug/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylat ^b	ND	0.0093	0.0046	ug/l	
914637-49-3	5:3 Fluorotelomer carboxylate	0.0260	0.046	0.0093	ug/l	J
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.046	0.0093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	113%	111%	20-150%
	13C5-PFPeA	99%	105%	20-150%
	13C5-PFHxA	110%	107%	20-150%
	13C4-PFHpA	113%	110%	20-150%
	13C8-PFOA	115%	111%	20-150%
	13C9-PFNA	113%	109%	20-150%
	13C6-PFDA	113%	115%	20-150%
	13C7-PFUnDA	112%	111%	20-150%
	13C2-PFDoDA	94%	111%	20-150%
	13C2-PFTeDA	88%	93%	20-150%
	13C3-PFBS	123%	109%	20-150%
	13C3-PFHxS	113%	119%	20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
 RL = Reporting Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW9-20240213	Date Sampled:	02/13/24
Lab Sample ID:	FC13426-3	Date Received:	02/16/24
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	108%	110%	20-150%
	13C8-FOSA	92%	96%	20-150%
	d3-MeFOSA	92%	98%	20-150%
	d5-EtFOSA	92%	90%	20-150%
	d3-MeFOSAA	104%	106%	20-150%
	d5-EtFOSAA	102%	119%	20-150%
	d7-MeFOSE	86%	85%	20-150%
	d9-EtFOSE	85%	86%	20-150%
	13C2-4:2FTS	102%	123%	20-180%
	13C2-6:2FTS	97%	179%	20-180%
	13C2-8:2FTS	116%	106%	20-180%
	13C3-HFPO-DA	116%	118%	20-150%

- (a) Result is from Run# 2
(b) Associated BS outside control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW10-20240213	Date Sampled:	02/13/24
Lab Sample ID:	FC13426-4	Date Received:	02/16/24
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q0194.D	1	02/25/24 13:46	AL	02/20/24 09:30	OP1729	S7Q46
Run #2							

Run #	Initial Volume	Final Volume
Run #1	550 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	0.0666	0.0073	0.0036	ug/l	
2706-90-3	Perfluoropentanoic acid	0.272	0.0036	0.00091	ug/l	
307-24-4	Perfluorohexanoic acid	0.156	0.0018	0.00045	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0975	0.0018	0.00045	ug/l	
335-67-1	Perfluorooctanoic acid	0.0902	0.0018	0.00045	ug/l	
375-95-1	Perfluorononanoic acid	0.0059	0.0018	0.00055	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0018	0.00045	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0018	0.00055	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0018	0.00055	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0018	0.00076	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0018	0.00045	ug/l	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	0.0481	0.0018	0.00091	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0574	0.0018	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.426	0.0018	0.00091	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0124	0.0018	0.00091	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.420	0.0018	0.00091	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0018	0.00091	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0018	0.00091	ug/l	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.0018	0.0010	ug/l	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0073	0.0036	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.627	0.0073	0.0036	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0073	0.0037	ug/l	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.0018	0.00091	ug/l	
31506-32-8	MeFOSA	ND	0.0018	0.00091	ug/l	
4151-50-2	EtFOSA	ND	0.0018	0.00091	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
 RL = Reporting Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW10-20240213		
Lab Sample ID:	FC13426-4	Date Sampled:	02/13/24
Matrix:	AQ - Ground Water	Date Received:	02/16/24
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.0018	0.00091	ug/l	
2991-50-6	EtFOSAA	ND	0.0018	0.0012	ug/l	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	0.018	0.0091	ug/l	
1691-99-2	EtFOSE	ND	0.018	0.0091	ug/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.0073	0.0018	ug/l	
919005-14-4	ADONA	ND	0.0073	0.0018	ug/l	
377-73-1	PFMPA	ND	0.0036	0.00091	ug/l	
863090-89-5	PFMBA	ND	0.0036	0.0010	ug/l	
151772-58-6	NFDHA	ND	0.0036	0.0011	ug/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0073	0.0018	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0073	0.0018	ug/l	
113507-82-7	PFEESA	ND	0.0036	0.00091	ug/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylat ^a	ND	0.0091	0.0045	ug/l	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	0.045	0.0091	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.045	0.0091	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	111%		20-150%
	13C5-PFPeA	109%		20-150%
	13C5-PFHxA	115%		20-150%
	13C4-PFHpA	116%		20-150%
	13C8-PFOA	116%		20-150%
	13C9-PFNA	111%		20-150%
	13C6-PFDA	114%		20-150%
	13C7-PFUnDA	107%		20-150%
	13C2-PFDoDA	98%		20-150%
	13C2-PFTeDA	90%		20-150%
	13C3-PFBS	120%		20-150%
	13C3-PFHxS	113%		20-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
 RL = Reporting Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW10-20240213	Date Sampled:	02/13/24
Lab Sample ID:	FC13426-4	Date Received:	02/16/24
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	108%		20-150%
	13C8-FOSA	112%		20-150%
	d3-MeFOSA	101%		20-150%
	d5-EtFOSA	99%		20-150%
	d3-MeFOSAA	99%		20-150%
	d5-EtFOSAA	105%		20-150%
	d7-MeFOSE	103%		20-150%
	d9-EtFOSE	99%		20-150%
	13C2-4:2FTS	73%		20-180%
	13C2-6:2FTS	95%		20-180%
	13C2-8:2FTS	101%		20-180%
	13C3-HFPO-DA	112%		20-150%

(a) Associated BS outside control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW11-20240214	Date Sampled:	02/14/24
Lab Sample ID:	FC13426-5	Date Received:	02/16/24
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q0152.D	1	02/24/24 03:35	MV	02/20/24 09:30	OP1729	S7Q45
Run #2							

Run #	Initial Volume	Final Volume
Run #1	560 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	0.0095	0.0071	0.0036	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0225	0.0036	0.00089	ug/l	
307-24-4	Perfluorohexanoic acid	0.0208	0.0018	0.00045	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0108	0.0018	0.00045	ug/l	
335-67-1	Perfluorooctanoic acid	0.0283	0.0018	0.00045	ug/l	
375-95-1	Perfluorononanoic acid	0.0043	0.0018	0.00054	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0018	0.00045	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0018	0.00054	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0018	0.00054	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0018	0.00075	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0018	0.00045	ug/l	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	0.0268	0.0018	0.00089	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0429	0.0018	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.391	0.0018	0.00089	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0085	0.0018	0.00089	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.414	0.0018	0.00089	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0018	0.00089	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0018	0.00089	ug/l	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.0018	0.0010	ug/l	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0071	0.0036	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0071	0.0036	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0071	0.0037	ug/l	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.0018	0.00089	ug/l	
31506-32-8	MeFOSA	ND	0.0018	0.00089	ug/l	
4151-50-2	EtFOSA	ND	0.0018	0.00089	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
 RL = Reporting Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW11-20240214	Date Sampled:	02/14/24
Lab Sample ID:	FC13426-5	Date Received:	02/16/24
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.0018	0.00089	ug/l	
2991-50-6	EtFOSAA	ND	0.0018	0.0012	ug/l	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	0.018	0.0089	ug/l	
1691-99-2	EtFOSE	ND	0.018	0.0089	ug/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.0071	0.0018	ug/l	
919005-14-4	ADONA	ND	0.0071	0.0018	ug/l	
377-73-1	PFMPA	ND	0.0036	0.00089	ug/l	
863090-89-5	PFMBA	ND	0.0036	0.0010	ug/l	
151772-58-6	NFDHA	ND	0.0036	0.0011	ug/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0071	0.0018	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0071	0.0018	ug/l	
113507-82-7	PFEESA	ND	0.0036	0.00089	ug/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylat ^a	ND	0.0089	0.0045	ug/l	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	0.045	0.0089	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.045	0.0089	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	110%		20-150%
	13C5-PFPeA	108%		20-150%
	13C5-PFHxA	111%		20-150%
	13C4-PFHpA	108%		20-150%
	13C8-PFOA	114%		20-150%
	13C9-PFNA	111%		20-150%
	13C6-PFDA	111%		20-150%
	13C7-PFUnDA	105%		20-150%
	13C2-PFDoDA	90%		20-150%
	13C2-PFTeDA	84%		20-150%
	13C3-PFBS	122%		20-150%
	13C3-PFHxS	115%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: FP-MW11-20240214		Date Sampled: 02/14/24 Date Received: 02/16/24 Percent Solids: n/a
Lab Sample ID: FC13426-5		
Matrix: AQ - Ground Water		
Method: EPA DRAFT 1633 EPA 1633 DRAFT		
Project: Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	109%		20-150%
	13C8-FOSA	105%		20-150%
	d3-MeFOSA	90%		20-150%
	d5-EtFOSA	89%		20-150%
	d3-MeFOSAA	100%		20-150%
	d5-EtFOSAA	97%		20-150%
	d7-MeFOSE	96%		20-150%
	d9-EtFOSE	86%		20-150%
	13C2-4:2FTS	99%		20-180%
	13C2-6:2FTS	121%		20-180%
	13C2-8:2FTS	107%		20-180%
	13C3-HFPO-DA	114%		20-150%

(a) Associated BS outside control limits high, sample was ND.

ND = Not detected	MDL = Method Detection Limit	J = Indicates an estimated value
RL = Reporting Limit		B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range		N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW12-20240214	Date Sampled:	02/14/24
Lab Sample ID:	FC13426-6	Date Received:	02/16/24
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q0154.D	1	02/24/24 04:03	MV	02/20/24 09:30	OP1729	S7Q45
Run #2	7Q0201.D	5	02/25/24 15:23	AL	02/20/24 09:30	OP1729	S7Q46

	Initial Volume	Final Volume
Run #1	530 ml	5.0 ml
Run #2	530 ml	5.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	0.0086	0.0075	0.0038	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0140	0.0038	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	0.0462	0.0019	0.00047	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0069	0.0019	0.00047	ug/l	
335-67-1	Perfluorooctanoic acid	0.0308	0.0019	0.00047	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0019	0.00058	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0019	0.00047	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0019	0.00057	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0019	0.00057	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0019	0.00079	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0019	0.00047	ug/l	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	0.189	0.0019	0.00094	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.165	0.0019	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	1.29 ^a	0.0094	0.0047	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0240	0.0019	0.00094	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0115	0.0019	0.00094	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0019	0.00094	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0019	0.00094	ug/l	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.0019	0.0011	ug/l	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0075	0.0038	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0075	0.0038	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0075	0.0039	ug/l	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.0019	0.00094	ug/l	
31506-32-8	MeFOSA	ND	0.0019	0.00094	ug/l	
4151-50-2	EtFOSA	ND	0.0019	0.00094	ug/l	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW12-20240214	Date Sampled:	02/14/24
Lab Sample ID:	FC13426-6	Date Received:	02/16/24
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.0019	0.00094	ug/l	
2991-50-6	EtFOSAA	ND	0.0019	0.0013	ug/l	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	0.019	0.0094	ug/l	
1691-99-2	EtFOSE	ND	0.019	0.0094	ug/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.0075	0.0019	ug/l	
919005-14-4	ADONA	ND	0.0075	0.0019	ug/l	
377-73-1	PFMPA	ND	0.0038	0.00094	ug/l	
863090-89-5	PFMBA	ND	0.0038	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0038	0.0011	ug/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0075	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0075	0.0019	ug/l	
113507-82-7	PFEESA	ND	0.0038	0.00094	ug/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylat ^b	ND	0.0094	0.0047	ug/l	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	0.047	0.0094	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.047	0.0094	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	104%	101%	20-150%
	13C5-PFPeA	101%	99%	20-150%
	13C5-PFHxA	103%	98%	20-150%
	13C4-PFHpA	99%	97%	20-150%
	13C8-PFOA	100%	100%	20-150%
	13C9-PFNA	101%	91%	20-150%
	13C6-PFDA	98%	90%	20-150%
	13C7-PFUnDA	96%	98%	20-150%
	13C2-PFDoDA	83%	83%	20-150%
	13C2-PFTeDA	82%	75%	20-150%
	13C3-PFBS	106%	91%	20-150%
	13C3-PFHxS	95%	93%	20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MW12-20240214	Date Sampled:	02/14/24
Lab Sample ID:	FC13426-6	Date Received:	02/16/24
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	91%	87%	20-150%
	13C8-FOSA	94%	92%	20-150%
	d3-MeFOSA	81%	80%	20-150%
	d5-EtFOSA	80%	75%	20-150%
	d3-MeFOSAA	91%	84%	20-150%
	d5-EtFOSAA	80%	91%	20-150%
	d7-MeFOSE	86%	87%	20-150%
	d9-EtFOSE	81%	81%	20-150%
	13C2-4:2FTS	97%	90%	20-180%
	13C2-6:2FTS	111%	109%	20-180%
	13C2-8:2FTS	111%	104%	20-180%
	13C3-HFPO-DA	105%	94%	20-150%

- (a) Result is from Run# 2
(b) Associated BS outside control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MWDUP-20240214	Date Sampled:	02/14/24
Lab Sample ID:	FC13426-7	Date Received:	02/16/24
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q0195.D	1	02/25/24 14:00	AL	02/20/24 09:30	OP1729	S7Q46
Run #2							

Run #	Initial Volume	Final Volume
Run #1	560 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	0.0097	0.0071	0.0036	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0224	0.0036	0.00089	ug/l	
307-24-4	Perfluorohexanoic acid	0.0210	0.0018	0.00045	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0106	0.0018	0.00045	ug/l	
335-67-1	Perfluorooctanoic acid	0.0285	0.0018	0.00045	ug/l	
375-95-1	Perfluorononanoic acid	0.0040	0.0018	0.00054	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0018	0.00045	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0018	0.00054	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0018	0.00054	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0018	0.00075	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0018	0.00045	ug/l	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	0.0266	0.0018	0.00089	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0397	0.0018	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.375	0.0018	0.00089	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0080	0.0018	0.00089	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.416	0.0018	0.00089	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0018	0.00089	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0018	0.00089	ug/l	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.0018	0.0010	ug/l	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0071	0.0036	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0071	0.0036	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0071	0.0037	ug/l	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.0018	0.00089	ug/l	
31506-32-8	MeFOSA	ND	0.0018	0.00089	ug/l	
4151-50-2	EtFOSA	ND	0.0018	0.00089	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
 RL = Reporting Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.7
4

Report of Analysis

Client Sample ID:	FP-MWDUP-20240214	Date Sampled:	02/14/24
Lab Sample ID:	FC13426-7	Date Received:	02/16/24
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.0018	0.00089	ug/l	
2991-50-6	EtFOSAA	ND	0.0018	0.0012	ug/l	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	0.018	0.0089	ug/l	
1691-99-2	EtFOSE	ND	0.018	0.0089	ug/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.0071	0.0018	ug/l	
919005-14-4	ADONA	ND	0.0071	0.0018	ug/l	
377-73-1	PFMPA	ND	0.0036	0.00089	ug/l	
863090-89-5	PFMBA	ND	0.0036	0.0010	ug/l	
151772-58-6	NFDHA	ND	0.0036	0.0011	ug/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0071	0.0018	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0071	0.0018	ug/l	
113507-82-7	PFEESA	ND	0.0036	0.00089	ug/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylat ^a	ND	0.0089	0.0045	ug/l	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	0.045	0.0089	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.045	0.0089	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	110%		20-150%
	13C5-PFPeA	110%		20-150%
	13C5-PFHxA	111%		20-150%
	13C4-PFHpA	111%		20-150%
	13C8-PFOA	107%		20-150%
	13C9-PFNA	110%		20-150%
	13C6-PFDA	104%		20-150%
	13C7-PFUnDA	93%		20-150%
	13C2-PFDoDA	81%		20-150%
	13C2-PFTeDA	75%		20-150%
	13C3-PFBS	114%		20-150%
	13C3-PFHxS	113%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FP-MWDUP-20240214	Date Sampled:	02/14/24
Lab Sample ID:	FC13426-7	Date Received:	02/16/24
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	102%		20-150%
	13C8-FOSA	98%		20-150%
	d3-MeFOSA	89%		20-150%
	d5-EtFOSA	83%		20-150%
	d3-MeFOSAA	94%		20-150%
	d5-EtFOSAA	82%		20-150%
	d7-MeFOSE	86%		20-150%
	d9-EtFOSE	83%		20-150%
	13C2-4:2FTS	85%		20-180%
	13C2-6:2FTS	101%		20-180%
	13C2-8:2FTS	95%		20-180%
	13C3-HFPO-DA	111%		20-150%

(a) Associated BS outside control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	EB-20240214	Date Sampled:	02/14/24
Lab Sample ID:	FC13426-8	Date Received:	02/16/24
Matrix:	AQ - Equipment Blank	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7Q0157.D	1	02/24/24 04:44	MV	02/20/24 09:30	OP1729	S7Q45
Run #2							

Run #	Initial Volume	Final Volume
Run #1	560 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.0071	0.0036	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0036	0.00089	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0018	0.00045	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0018	0.00045	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0018	0.00045	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0018	0.00054	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0018	0.00045	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0018	0.00054	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0018	0.00054	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0018	0.00075	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0018	0.00045	ug/l	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	ND	0.0018	0.00089	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0018	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0018	0.00089	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0018	0.00089	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0018	0.00089	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0018	0.00089	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0018	0.00089	ug/l	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.0018	0.0010	ug/l	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0071	0.0036	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0071	0.0036	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0071	0.0037	ug/l	

PERFLUOROCTANE SULFONAMIDES

754-91-6	PFOSA	ND	0.0018	0.00089	ug/l	
31506-32-8	MeFOSA	ND	0.0018	0.00089	ug/l	
4151-50-2	EtFOSA	ND	0.0018	0.00089	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
 RL = Reporting Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	EB-20240214	Date Sampled:	02/14/24
Lab Sample ID:	FC13426-8	Date Received:	02/16/24
Matrix:	AQ - Equipment Blank	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	Compound	Result	RL	MDL	Units	Q

PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.0018	0.00089	ug/l	
2991-50-6	EtFOSAA	ND	0.0018	0.0012	ug/l	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	ND	0.018	0.0089	ug/l	
1691-99-2	EtFOSE	ND	0.018	0.0089	ug/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	ND	0.0071	0.0018	ug/l	
919005-14-4	ADONA	ND	0.0071	0.0018	ug/l	
377-73-1	PFMPA	ND	0.0036	0.00089	ug/l	
863090-89-5	PFMBA	ND	0.0036	0.0010	ug/l	
151772-58-6	NFDHA	ND	0.0036	0.0011	ug/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0071	0.0018	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0071	0.0018	ug/l	
113507-82-7	PFEESA	ND	0.0036	0.00089	ug/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylat ^a	ND	0.0089	0.0045	ug/l	
914637-49-3	5:3 Fluorotelomer carboxylate	ND	0.045	0.0089	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.045	0.0089	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	110%		20-150%
	13C5-PFPeA	110%		20-150%
	13C5-PFHxA	111%		20-150%
	13C4-PFHpA	111%		20-150%
	13C8-PFOA	112%		20-150%
	13C9-PFNA	108%		20-150%
	13C6-PFDA	116%		20-150%
	13C7-PFUnDA	122%		20-150%
	13C2-PFDoDA	100%		20-150%
	13C2-PFTeDA	91%		20-150%
	13C3-PFBS	108%		20-150%
	13C3-PFHxS	109%		20-150%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	EB-20240214	Date Sampled:	02/14/24
Lab Sample ID:	FC13426-8	Date Received:	02/16/24
Matrix:	AQ - Equipment Blank	Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT		
Project:	Paine Field; Everett, WA		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	103%		20-150%
	13C8-FOSA	95%		20-150%
	d3-MeFOSA	92%		20-150%
	d5-EtFOSA	90%		20-150%
	d3-MeFOSAA	88%		20-150%
	d5-EtFOSAA	93%		20-150%
	d7-MeFOSE	84%		20-150%
	d9-EtFOSE	89%		20-150%
	13C2-4:2FTS	114%		20-180%
	13C2-6:2FTS	111%		20-180%
	13C2-8:2FTS	119%		20-180%
	13C3-HFPO-DA	111%		20-150%

(a) Associated BS outside control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound



Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody



SGS North America Inc - Orlando

Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, FL 32811
TEL: 407-425-0700 FAX: 407-425-0707
www.sgs.com

FC13426

SGS - ORLANDO JOB #:

PAGE 1 OF 1

Client / Reporting Information			Project Information			Analytical Information										Matrix Codes
Company Name: <u>Geo Engineers Inc</u>			Project Name: <u>Faine field Former Fire Pit</u>													DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid
Address: <u>2101 4th Ave, Suite 950</u>			Street													
City: <u>Seattle</u> State: <u>WA</u> Zip: <u>98121</u>			City: <u>Everett</u> State: <u>WA</u>													
Project Contact: <u>Jacob Letts</u> Email: <u>jletts@geoengineers.com</u>			Project # <u>05530-015-00</u>													
Phone #:			Fax #:													
Sampler(s) Name(s) (Printed)			Client Purchase Order #													
Sampler 1: <u>Meredith Bush</u>			Sampler 2:													
SGS Orlando Sample #	Field ID / Point of Collection	DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	PbO2	H2SO4	NaOH-ZnAc	D WATER	MEDH	LAB USE ONLY
1	FP-MW7-20240213	2/13	1215	UAB	GW	3										
2	FP-MW8-20240213		0945													
3	FP-MW9-20240213		1100													
4	FP-MW10-20240213		1330													
5	FP-MW11-20240214	2/14	1105													
6	FP-MW12-20240214		0900													
7	FP-MW DUP-20240214		1105		GW	3										
8	EB-20240214	2/14	1135		W	2										
Turnaround Time (Business days)			Data Deliverable Information			Comments / Remarks										
10 Day (Business) Approved By: / Date:			☐ COMMERCIAL "A" (RESULTS ONLY)			INITIAL ASSESSMENT <u>[Signature]</u> LABEL VERIFICATION <u>[Signature]</u>										
7 Day			☐ COMMERCIAL "B" (RESULTS PLUS QC)													
5 Day			☐ REDT1 (EPA LEVEL 3)													
3 Day RUSH			☐ FULLT1 (EPA LEVEL 4)													
2 Day RUSH			☐ EDD'S													
1 Day RUSH																
Other																
Rush T/A Data Available VIA Email or Lablink			Sample Custody must be documented below each time samples change possession, including courier delivery.													
Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Date Time:	Relinquished By/Affiliation	Date Time:	Received By/Affiliation										
1 <u>Meredith Bush GFI</u>	2/14/24	2 <u>JSN</u>	2/16/24 930	3		4										
5		6		7		8										
Lab Use Only: Cooler Temperature (s) Celsius (corrected): <u>3.9 IRI</u>			http://www.sgs.com/en/terms-and-conditions													

ORLD-SMT-0001-03-FORM-COC (4).xls Rev 031318

FC13426: Chain of Custody

Page 1 of 2



SGS - Orlando Sample Receipt Summary

Job Number: fc13426

Client: GEO ENGINEERS INC

Project: PAIRE FIELD FORMER FIRE PIT

Date / Time Received: 2/16/2024 9:30:00 AM

Delivery Method: FEDEX

Airbill #'s: 270996036894

Cooler Temps (Raw Measured) °C: Cooler 1: (3.8);
Cooler Temps (Corrected) °C: Cooler 1: (4.8);

Cooler Information	Y	or	N
1. Custody Seals Present:	☒		☐
2. Custody Seals Intact:	☒		☐
3. Temp criteria achieved:	☒		☐
4. Cooler temp verification:			IR Gun
5. Cooler media:			Ice (Bag)

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☐	☒
2. Trip Blank listed on COC:	☐		☐	☒

	W	or	S	N/A
3. Type of TB Received	☐		☐	☒

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles:	☒		☐	
2. Samples presented properly	☒		☐	
3. Sufficient volume/containers rec'd for analysis	☒		☐	
4. Condition of sample:			Intact	
5. Sample rec'd within HT	☒		☐	
6. Dates/Times/IDs on COC match sample label	☒		☐	
7. VOCs have headspace	☐		☐	☒
8. Bottles received for unspecified tests	☐		☒	
9. Compositing instructions clear	☐		☐	☒
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☒
11. % Solids Jar Received?	☐		☐	☒
12. Residual Chlorine Present?	☐		☐	☒

Misc Information

Number of Encores: 25 Gram5 Gram

Test Strip Lot #s: pH 0-3: 226422

Residual Chlorine Test Strip Lot #

Number of Lab Filtered Metals:

pH 10-12: Other: (Specify) pH 1.0 - 12.0 222221

Comments

Sample Receipt Summary 112723 EK Technician: ZANEB

Date: 2/16/2024 1:27:01 PM

Reviewer:

Date:



MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 2

Job Number: FC13426
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1729-MB	7Q0143.D	1	02/24/24	MV	02/20/24	OP1729	S7Q45

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13426-1, FC13426-2, FC13426-3, FC13426-4, FC13426-5, FC13426-6, FC13426-7, FC13426-8

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0020	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0020	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0020	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0020	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0020	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0020	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0020	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0020	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0020	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0020	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0020	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0020	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0020	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0020	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0020	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0020	0.0010	ug/l	
79780-39-5	Perfluorododecanesulfonic acid	ND	0.0020	0.0011	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0041	ug/l	
754-91-6	PFOSA	ND	0.0020	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0020	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0020	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0020	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0020	0.0013	ug/l	
24448-09-7	MeFOSE	ND	0.020	0.010	ug/l	
1691-99-2	EtFOSE	ND	0.020	0.010	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
377-73-1	PFMPA	ND	0.0040	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.0040	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0040	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

Method Blank Summary

Page 2 of 2

Job Number: FC13426
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1729-MB	7Q0143.D	1	02/24/24	MV	02/20/24	OP1729	S7Q45

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13426-1, FC13426-2, FC13426-3, FC13426-4, FC13426-5, FC13426-6, FC13426-7, FC13426-8

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.0040	0.0010	ug/l	
356-02-5	3:3 Fluorotelomer carboxylate	ND	0.010	0.0050	ug/l	
914637-49-35:3	Fluorotelomer carboxylate	ND	0.050	0.010	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.050	0.010	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	114% 20-150%
	13C5-PFPeA	115% 20-150%
	13C5-PFHxA	113% 20-150%
	13C4-PFHpA	113% 20-150%
	13C8-PFOA	112% 20-150%
	13C9-PFNA	112% 20-150%
	13C6-PFDA	109% 20-150%
	13C7-PFUnDA	104% 20-150%
	13C2-PFDoDA	94% 20-150%
	13C2-PFTeDA	96% 20-150%
	13C3-PFBS	105% 20-150%
	13C3-PFHxS	106% 20-150%
	13C8-PFOS	104% 20-150%
	13C8-FOSA	78% 20-150%
	d3-MeFOSA	81% 20-150%
	d5-EtFOSA	83% 20-150%
	d3-MeFOSAA	98% 20-150%
	d5-EtFOSAA	95% 20-150%
	d7-MeFOSE	74% 20-150%
	d9-EtFOSE	81% 20-150%
	13C2-4:2FTS	111% 20-180%
	13C2-6:2FTS	115% 20-180%
	13C2-8:2FTS	105% 20-180%
	13C3-HFPO-DA	113% 20-150%

Instrument Blank

Page 1 of 2

Job Number: FC13426

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q45-IBLK	7Q0094.D	1	02/23/24	MV	n/a	n/a	S7Q45

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13426-1, FC13426-2, FC13426-3, FC13426-4, FC13426-5, FC13426-6, FC13426-7, FC13426-8

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.00064	ug/l	
79780-39-5	Perfluorododecanesulfonic acid	ND	0.0050	0.0011	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.020	0.0032	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.020	0.0035	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.020	0.0041	ug/l	
754-91-6	PFOSA	ND	0.0040	0.00067	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0080	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0050	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0050	0.0013	ug/l	
24448-09-7	MeFOSE	ND	0.040	0.0044	ug/l	
1691-99-2	EtFOSE	ND	0.040	0.0074	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0040	0.0010	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0019	ug/l	
377-73-1	PFMPA	ND	0.0080	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.0080	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0080	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0014	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0018	ug/l	

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Job Number: FC13426

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q45-IBLK	7Q0094.D	1	02/23/24	MV	n/a	n/a	S7Q45

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13426-1, FC13426-2, FC13426-3, FC13426-4, FC13426-5, FC13426-6, FC13426-7, FC13426-8

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.0080	0.00078	ug/l	
356-02-5	3:3 Fluorotelomer carboxylate	ND	0.020	0.0045	ug/l	
914637-49-35:3	Fluorotelomer carboxylate	ND	0.10	0.0087	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.10	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	100% 20-150%
	13C5-PFPeA	99% 20-150%
	13C5-PFHxA	101% 20-150%
	13C4-PFHpA	99% 20-150%
	13C8-PFOA	104% 20-150%
	13C9-PFNA	100% 20-150%
	13C6-PFDA	106% 20-150%
	13C7-PFUnDA	108% 20-150%
	13C2-PFDoDA	102% 20-150%
	13C2-PFTeDA	98% 20-150%
	13C3-PFBS	100% 20-150%
	13C3-PFHxS	102% 20-150%
	13C8-PFOS	100% 20-150%
	13C8-FOSA	99% 20-150%
	d3-MeFOSA	102% 20-150%
	d5-EtFOSA	102% 20-150%
	d3-MeFOSAA	99% 20-150%
	d5-EtFOSAA	105% 20-150%
	d7-MeFOSE	100% 20-150%
	d9-EtFOSE	98% 20-150%
	13C2-4:2FTS	109% 20-180%
	13C2-6:2FTS	107% 20-180%
	13C2-8:2FTS	103% 20-180%
	13C3-HFPO-DA	95% 20-150%

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Job Number: FC13426

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q46-IBLK	7Q0191.D	1	02/25/24	AL	n/a	n/a	S7Q46

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13426-2, FC13426-3, FC13426-4, FC13426-6, FC13426-7

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.00064	ug/l	
79780-39-5	Perfluorododecanesulfonic acid	ND	0.0050	0.0011	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.020	0.0032	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.020	0.0035	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.020	0.0041	ug/l	
754-91-6	PFOSA	ND	0.0040	0.00067	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0080	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0050	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0050	0.0013	ug/l	
24448-09-7	MeFOSE	ND	0.040	0.0044	ug/l	
1691-99-2	EtFOSE	ND	0.040	0.0074	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0040	0.0010	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0019	ug/l	
377-73-1	PFMPA	ND	0.0080	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.0080	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0080	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0014	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0018	ug/l	

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Job Number: FC13426
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q46-IBLK	7Q0191.D	1	02/25/24	AL	n/a	n/a	S7Q46

The QC reported here applies to the following samples: Method: EPA DRAFT 1633
FC13426-2, FC13426-3, FC13426-4, FC13426-6, FC13426-7

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.0080	0.00078	ug/l	
356-02-5	3:3 Fluorotelomer carboxylate	ND	0.020	0.0045	ug/l	
914637-49-35:3	Fluorotelomer carboxylate	ND	0.10	0.0087	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.10	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	102% 20-150%
	13C5-PFPeA	104% 20-150%
	13C5-PFHxA	100% 20-150%
	13C4-PFHpA	103% 20-150%
	13C8-PFOA	99% 20-150%
	13C9-PFNA	98% 20-150%
	13C6-PFDA	97% 20-150%
	13C7-PFUnDA	104% 20-150%
	13C2-PFDoDA	97% 20-150%
	13C2-PFTeDA	96% 20-150%
	13C3-PFBS	88% 20-150%
	13C3-PFHxS	95% 20-150%
	13C8-PFOS	98% 20-150%
	13C8-FOSA	97% 20-150%
	d3-MeFOSA	100% 20-150%
	d5-EtFOSA	110% 20-150%
	d3-MeFOSAA	103% 20-150%
	d5-EtFOSAA	102% 20-150%
	d7-MeFOSE	101% 20-150%
	d9-EtFOSE	106% 20-150%
	13C2-4:2FTS	98% 20-180%
	13C2-6:2FTS	104% 20-180%
	13C2-8:2FTS	98% 20-180%
	13C3-HFPO-DA	102% 20-150%

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Job Number: FC13426

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q45-ICCB	7Q0140.D	1	02/24/24	MV	n/a	n/a	S7Q45

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13426-1, FC13426-2, FC13426-3

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.00064	ug/l	
79780-39-5	Perfluorododecanesulfonic acid	ND	0.0050	0.0011	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.020	0.0032	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.020	0.0035	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.020	0.0041	ug/l	
754-91-6	PFOSA	ND	0.0040	0.00067	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0080	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0050	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0050	0.0013	ug/l	
24448-09-7	MeFOSE	ND	0.040	0.0044	ug/l	
1691-99-2	EtFOSE	ND	0.040	0.0074	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0040	0.0010	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0019	ug/l	
377-73-1	PFMPA	ND	0.0080	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.0080	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0080	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0014	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0018	ug/l	

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Job Number: FC13426

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q45-ICCB	7Q0140.D	1	02/24/24	MV	n/a	n/a	S7Q45

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13426-1, FC13426-2, FC13426-3

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.0080	0.00078	ug/l	
356-02-5	3:3 Fluorotelomer carboxylate	ND	0.020	0.0045	ug/l	
914637-49-35:3	Fluorotelomer carboxylate	ND	0.10	0.0087	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.10	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	100% 20-150%
	13C5-PFPeA	100% 20-150%
	13C5-PFHxA	101% 20-150%
	13C4-PFHpA	100% 20-150%
	13C8-PFOA	101% 20-150%
	13C9-PFNA	100% 20-150%
	13C6-PFDA	105% 20-150%
	13C7-PFUnDA	109% 20-150%
	13C2-PFDoDA	105% 20-150%
	13C2-PFTeDA	103% 20-150%
	13C3-PFBS	97% 20-150%
	13C3-PFHxS	102% 20-150%
	13C8-PFOS	99% 20-150%
	13C8-FOSA	97% 20-150%
	d3-MeFOSA	98% 20-150%
	d5-EtFOSA	95% 20-150%
	d3-MeFOSAA	94% 20-150%
	d5-EtFOSAA	101% 20-150%
	d7-MeFOSE	97% 20-150%
	d9-EtFOSE	95% 20-150%
	13C2-4:2FTS	108% 20-180%
	13C2-6:2FTS	108% 20-180%
	13C2-8:2FTS	105% 20-180%
	13C3-HFPO-DA	95% 20-150%

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Job Number: FC13426

Account: GEOEWAT GeoEngineers, Inc.

Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q45-ICCB	7Q0151.D	1	02/24/24	MV	n/a	n/a	S7Q45

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13426-5, FC13426-6, FC13426-8

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.00064	ug/l	
79780-39-5	Perfluorododecanesulfonic acid	ND	0.0050	0.0011	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.020	0.0032	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.020	0.0035	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.020	0.0041	ug/l	
754-91-6	PFOSA	ND	0.0040	0.00067	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0080	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0050	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0050	0.0013	ug/l	
24448-09-7	MeFOSE	ND	0.040	0.0044	ug/l	
1691-99-2	EtFOSE	ND	0.040	0.0074	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0040	0.0010	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0019	ug/l	
377-73-1	PFMPA	ND	0.0080	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.0080	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0080	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0014	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0018	ug/l	

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Job Number: FC13426
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q45-ICCB	7Q0151.D	1	02/24/24	MV	n/a	n/a	S7Q45

The QC reported here applies to the following samples: Method: EPA DRAFT 1633
FC13426-5, FC13426-6, FC13426-8

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.0080	0.00078	ug/l	
356-02-5	3:3 Fluorotelomer carboxylate	ND	0.020	0.0045	ug/l	
914637-49-35:3	Fluorotelomer carboxylate	ND	0.10	0.0087	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.10	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	100% 20-150%
	13C5-PFPeA	100% 20-150%
	13C5-PFHxA	102% 20-150%
	13C4-PFHpA	102% 20-150%
	13C8-PFOA	101% 20-150%
	13C9-PFNA	101% 20-150%
	13C6-PFDA	105% 20-150%
	13C7-PFUnDA	106% 20-150%
	13C2-PFDoDA	102% 20-150%
	13C2-PFTeDA	96% 20-150%
	13C3-PFBS	101% 20-150%
	13C3-PFHxS	103% 20-150%
	13C8-PFOS	92% 20-150%
	13C8-FOSA	95% 20-150%
	d3-MeFOSA	97% 20-150%
	d5-EtFOSA	97% 20-150%
	d3-MeFOSAA	102% 20-150%
	d5-EtFOSAA	100% 20-150%
	d7-MeFOSE	94% 20-150%
	d9-EtFOSE	93% 20-150%
	13C2-4:2FTS	117% 20-180%
	13C2-6:2FTS	117% 20-180%
	13C2-8:2FTS	110% 20-180%
	13C3-HFPO-DA	106% 20-150%

Blank Spike Summary

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Job Number: FC13426
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1729-LLBS	7Q0142.D	1	02/24/24	MV	02/20/24	OP1729	S7Q45

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13426-1, FC13426-2, FC13426-3, FC13426-4, FC13426-5, FC13426-6, FC13426-7, FC13426-8

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.016	0.0147	92	40-150
2706-90-3	Perfluoropentanoic acid	0.008	0.0074	93	40-150
307-24-4	Perfluorohexanoic acid	0.004	0.0035	88	40-150
375-85-9	Perfluoroheptanoic acid	0.004	0.0037	93	40-150
335-67-1	Perfluorooctanoic acid	0.004	0.0036	90	40-150
375-95-1	Perfluorononanoic acid	0.004	0.0034	85	40-150
335-76-2	Perfluorodecanoic acid	0.004	0.0038	95	40-150
2058-94-8	Perfluoroundecanoic acid	0.004	0.0035	88	40-150
307-55-1	Perfluorododecanoic acid	0.004	0.0038	95	40-150
72629-94-8	Perfluorotridecanoic acid	0.004	0.0036	90	40-150
376-06-7	Perfluorotetradecanoic acid	0.004	0.0036	90	40-150
375-73-5	Perfluorobutanesulfonic acid	0.00355	0.0033	93	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.00376	0.0032	85	40-150
355-46-4	Perfluorohexanesulfonic acid	0.00366	0.0038	104	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.00381	0.0036	94	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.00371	0.0038	102	40-150
68259-12-1	Perfluorononanesulfonic acid	0.00385	0.0031	81	40-150
335-77-3	Perfluorodecanesulfonic acid	0.00386	0.0036	93	40-150
79780-39-5	Perfluorododecanesulfonic acid	0.00388	0.0034	88	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.015	0.0134	89	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.0152	0.0141	93	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.0154	0.0154	100	40-150
754-91-6	PFOSA	0.004	0.0036	90	40-150
31506-32-8	MeFOSA	0.008	0.0083	104	40-150
4151-50-2	EtFOSA	0.008	0.0072	90	40-150
2355-31-9	MeFOSAA	0.004	0.0039	98	40-150
2991-50-6	EtFOSAA	0.004	0.0041	103	40-150
24448-09-7	MeFOSE	0.02	0.0209	105	40-150
1691-99-2	EtFOSE	0.02	0.0187	94	40-150
13252-13-6	HFPO-DA (GenX)	0.008	0.0077	96	40-150
919005-14-4	ADONA	0.00756	0.0068	90	40-150
377-73-1	PFMPA	0.008	0.0072	90	40-150
863090-89-5	PFMBA	0.008	0.0073	91	40-150
151772-58-6	NFDHA	0.008	0.0077	96	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.00748	0.0069	92	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.00756	0.0068	90	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC13426
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1729-LLBS	7Q0142.D	1	02/24/24	MV	02/20/24	OP1729	S7Q45

The QC reported here applies to the following samples: Method: EPA DRAFT 1633

FC13426-1, FC13426-2, FC13426-3, FC13426-4, FC13426-5, FC13426-6, FC13426-7, FC13426-8

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.00712	0.0067	94	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.02	0.0171	86	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.1	0.0916	92	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.1	0.0961	96	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	114%	20-150%
	13C5-PFPeA	117%	20-150%
	13C5-PFHxA	116%	20-150%
	13C4-PFHpA	116%	20-150%
	13C8-PFOA	115%	20-150%
	13C9-PFNA	116%	20-150%
	13C6-PFDA	117%	20-150%
	13C7-PFUnDA	118%	20-150%
	13C2-PFDoDA	111%	20-150%
	13C2-PFTeDA	108%	20-150%
	13C3-PFBS	109%	20-150%
	13C3-PFHxS	113%	20-150%
	13C8-PFOS	107%	20-150%
	13C8-FOSA	90%	20-150%
	d3-MeFOSA	79%	20-150%
	d5-EtFOSA	84%	20-150%
	d3-MeFOSAA	109%	20-150%
	d5-EtFOSAA	109%	20-150%
	d7-MeFOSE	80%	20-150%
	d9-EtFOSE	85%	20-150%
	13C2-4:2FTS	117%	20-180%
	13C2-6:2FTS	119%	20-180%
	13C2-8:2FTS	110%	20-180%
	13C3-HFPO-DA	120%	20-150%

* = Outside of Control Limits.

Blank Spike Summary

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Job Number: FC13426
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1729-BS	7Q0141.D	1	02/24/24	MV	02/20/24	OP1729	S7Q45

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13426-1, FC13426-2, FC13426-3, FC13426-4, FC13426-5, FC13426-6, FC13426-7, FC13426-8

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.1	0.0913	91	40-150
2706-90-3	Perfluoropentanoic acid	0.05	0.0449	90	40-150
307-24-4	Perfluorohexanoic acid	0.025	0.0230	92	40-150
375-85-9	Perfluoroheptanoic acid	0.025	0.0224	90	40-150
335-67-1	Perfluorooctanoic acid	0.025	0.0229	92	40-150
375-95-1	Perfluorononanoic acid	0.025	0.0224	90	40-150
335-76-2	Perfluorodecanoic acid	0.025	0.0224	90	40-150
2058-94-8	Perfluoroundecanoic acid	0.025	0.0226	90	40-150
307-55-1	Perfluorododecanoic acid	0.025	0.0214	86	40-150
72629-94-8	Perfluorotridecanoic acid	0.025	0.0218	87	40-150
376-06-7	Perfluorotetradecanoic acid	0.025	0.0221	88	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0222	0.0210	95	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0235	0.0211	90	40-150
355-46-4	Perfluorohexanesulfonic acid	0.0229	0.0217	95	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.0238	0.0203	85	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.0232	0.0200	86	40-150
68259-12-1	Perfluorononanesulfonic acid	0.0241	0.0202	84	40-150
335-77-3	Perfluorodecanesulfonic acid	0.0241	0.0196	81	40-150
79780-39-5	Perfluorododecanesulfonic acid	0.0243	0.0174	72	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0938	0.0864	92	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.095	0.0908	96	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.096	0.0865	90	40-150
754-91-6	PFOSA	0.025	0.0237	95	40-150
31506-32-8	MeFOSA	0.05	0.0487	97	40-150
4151-50-2	EtFOSA	0.05	0.0479	96	40-150
2355-31-9	MeFOSAA	0.025	0.0222	89	40-150
2991-50-6	EtFOSAA	0.025	0.0213	85	40-150
24448-09-7	MeFOSE	0.125	0.116	93	40-150
1691-99-2	EtFOSE	0.125	0.114	91	40-150
13252-13-6	HFPO-DA (GenX)	0.05	0.0477	95	40-150
919005-14-4	ADONA	0.0473	0.0457	97	40-150
377-73-1	PFMPA	0.05	0.0211	42	40-150
863090-89-5	PFMBA	0.05	0.0466	93	40-150
151772-58-6	NFDHA	0.05	0.0446	89	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0468	0.0436	93	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0473	0.0402	85	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC13426
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1729-BS	7Q0141.D	1	02/24/24	MV	02/20/24	OP1729	S7Q45

The QC reported here applies to the following samples: Method: EPA DRAFT 1633

FC13426-1, FC13426-2, FC13426-3, FC13426-4, FC13426-5, FC13426-6, FC13426-7, FC13426-8

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0445	0.0425	96	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.125	0.210	168*	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.625	0.586	94	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.625	0.602	96	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	29%	20-150%
	13C5-PFPeA	108%	20-150%
	13C5-PFHxA	110%	20-150%
	13C4-PFHpA	112%	20-150%
	13C8-PFOA	112%	20-150%
	13C9-PFNA	109%	20-150%
	13C6-PFDA	117%	20-150%
	13C7-PFUnDA	116%	20-150%
	13C2-PFDoDA	114%	20-150%
	13C2-PFTeDA	105%	20-150%
	13C3-PFBS	105%	20-150%
	13C3-PFHxS	105%	20-150%
	13C8-PFOS	110%	20-150%
	13C8-FOSA	89%	20-150%
	d3-MeFOSA	83%	20-150%
	d5-EtFOSA	83%	20-150%
	d3-MeFOSAA	110%	20-150%
	d5-EtFOSAA	108%	20-150%
	d7-MeFOSE	75%	20-150%
	d9-EtFOSE	81%	20-150%
	13C2-4:2FTS	102%	20-180%
	13C2-6:2FTS	112%	20-180%
	13C2-8:2FTS	112%	20-180%
	13C3-HFPO-DA	109%	20-150%

* = Outside of Control Limits.

Matrix Spike Summary

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Job Number: FC13426
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1729-MS	7Q0153.D	1	02/24/24	MV	02/20/24	OP1729	S7Q45
FC13426-5	7Q0152.D	1	02/24/24	MV	02/20/24	OP1729	S7Q45

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13426-1, FC13426-2, FC13426-3, FC13426-4, FC13426-5, FC13426-6, FC13426-7, FC13426-8

CAS No.	Compound	FC13426-5 ug/l	Spike Q	ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.0095		0.0893	0.0878	88	40-150
2706-90-3	Perfluoropentanoic acid	0.0225		0.0446	0.0598	84	40-150
307-24-4	Perfluorohexanoic acid	0.0208		0.0223	0.0396	84	40-150
375-85-9	Perfluoroheptanoic acid	0.0108		0.0223	0.0296	84	40-150
335-67-1	Perfluorooctanoic acid	0.0283		0.0223	0.0450	75	40-150
375-95-1	Perfluorononanoic acid	0.0043		0.0223	0.0229	83	40-150
335-76-2	Perfluorodecanoic acid	ND		0.0223	0.0198	89	40-150
2058-94-8	Perfluoroundecanoic acid	ND		0.0223	0.0203	91	40-150
307-55-1	Perfluorododecanoic acid	ND		0.0223	0.0196	88	40-150
72629-94-8	Perfluorotridecanoic acid	ND		0.0223	0.0192	86	40-150
376-06-7	Perfluorotetradecanoic acid	ND		0.0223	0.0208	93	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0268		0.0198	0.0432	83	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0429		0.021	0.0596	80	40-150
355-46-4	Perfluorohexanesulfonic acid	0.391		0.0204	0.392	5* a	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.0085		0.0213	0.0261	83	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.414		0.0207	0.392	-106* a	40-150
68259-12-1	Perfluorononanesulfonic acid	ND		0.0215	0.0175	81	40-150
335-77-3	Perfluorodecanesulfonic acid	ND		0.0215	0.0167	78	40-150
79780-39-5	Perfluorododecanesulfonic aci	ND		0.0217	0.0144	67	40-150
757124-72-44:2	Fluorotelomer sulfonate	ND		0.0837	0.0728	87	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	ND		0.0848	0.0746	88	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	ND		0.0857	0.0774	90	40-150
754-91-6	PFOSA	ND		0.0223	0.0200	90	40-150
31506-32-8	MeFOSA	ND		0.0446	0.0432	97	40-150
4151-50-2	EtFOSA	ND		0.0446	0.0409	92	40-150
2355-31-9	MeFOSAA	ND		0.0223	0.0192	86	40-150
2991-50-6	EtFOSAA	ND		0.0223	0.0219	98	40-150
24448-09-7	MeFOSE	ND		0.112	0.104	93	40-150
1691-99-2	EtFOSE	ND		0.112	0.105	94	40-150
13252-13-6	HFPO-DA (GenX)	ND		0.0446	0.0381	85	40-150
919005-14-4	ADONA	ND		0.0422	0.0357	85	40-150
377-73-1	PFMPA	ND		0.0446	0.0383	86	40-150
863090-89-5	PFMBA	ND		0.0446	0.0389	87	40-150
151772-58-6	NFDHA	ND		0.0446	0.0390	87	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	ND		0.0417	0.0333	80	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND		0.0422	0.0297	70	40-150

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC13426
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1729-MS	7Q0153.D	1	02/24/24	MV	02/20/24	OP1729	S7Q45
FC13426-5	7Q0152.D	1	02/24/24	MV	02/20/24	OP1729	S7Q45

The QC reported here applies to the following samples: Method: EPA DRAFT 1633

FC13426-1, FC13426-2, FC13426-3, FC13426-4, FC13426-5, FC13426-6, FC13426-7, FC13426-8

CAS No.	Compound	FC13426-5 ug/l	Spike Q	ug/l	MS ug/l	MS %	Limits
113507-82-7	PFEESA	ND		0.0397	0.0359	90	40-150
356-02-5	3:3 Fluorotelomer carboxylate	ND		0.112	0.0928	83	40-150
914637-49-35:3	Fluorotelomer carboxylate	ND		0.558	0.496	89	40-150
812-70-4	7:3 Fluorotelomer carboxylate	ND		0.558	0.494	89	40-150

CAS No.	ID Standard Recoveries	MS	FC13426-5	Limits
	13C4-PFBA	116%	110%	20-150%
	13C5-PFPeA	114%	108%	20-150%
	13C5-PFHxA	117%	111%	20-150%
	13C4-PFHpA	115%	108%	20-150%
	13C8-PFOA	119%	114%	20-150%
	13C9-PFNA	118%	111%	20-150%
	13C6-PFDA	121%	111%	20-150%
	13C7-PFUnDA	107%	105%	20-150%
	13C2-PFDoDA	100%	90%	20-150%
	13C2-PFTeDA	88%	84%	20-150%
	13C3-PFBS	122%	122%	20-150%
	13C3-PFHxS	113%	115%	20-150%
	13C8-PFOS	111%	109%	20-150%
	13C8-FOSA	98%	105%	20-150%
	d3-MeFOSA	88%	90%	20-150%
	d5-EtFOSA	92%	89%	20-150%
	d3-MeFOSAA	103%	100%	20-150%
	d5-EtFOSAA	95%	97%	20-150%
	d7-MeFOSE	90%	96%	20-150%
	d9-EtFOSE	89%	86%	20-150%
	13C2-4:2FTS	108%	99%	20-180%
	13C2-6:2FTS	123%	121%	20-180%
	13C2-8:2FTS	117%	107%	20-180%
	13C3-HFPO-DA	124%	114%	20-150%

(a) Outside control limits due to high level in sample relative to spike amount.

* = Outside of Control Limits.

Duplicate Summary

Page 1 of 2

Job Number: FC13426
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1729-DUP	7Q0202.D	5	02/25/24	AL	02/20/24	OP1729	S7Q46
FC13426-6	7Q0154.D	1	02/24/24	MV	02/20/24	OP1729	S7Q45
FC13426-6	7Q0201.D	5	02/25/24	AL	02/20/24	OP1729	S7Q46

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13426-1, FC13426-2, FC13426-3, FC13426-4, FC13426-5, FC13426-6, FC13426-7, FC13426-8

CAS No.	Compound	FC13426-6 ug/l	DUP Q ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.0086	ND		200*	30
2706-90-3	Perfluoropentanoic acid	0.0140	0.0144	J	3	30
307-24-4	Perfluorohexanoic acid	0.0462	0.0433		6	30
375-85-9	Perfluoroheptanoic acid	0.0069	0.0070	J	1	30
335-67-1	Perfluorooctanoic acid	0.0308	0.0286		7	30
375-95-1	Perfluorononanoic acid	ND	ND		nc	30
335-76-2	Perfluorodecanoic acid	ND	ND		nc	30
2058-94-8	Perfluoroundecanoic acid	ND	ND		nc	30
307-55-1	Perfluorododecanoic acid	ND	ND		nc	30
72629-94-8	Perfluorotridecanoic acid	ND	ND		nc	30
376-06-7	Perfluorotetradecanoic acid	ND	ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.189	0.176		7	30
2706-91-4	Perfluoropentanesulfonic acid	0.165	0.150		10	30
355-46-4	Perfluorohexanesulfonic acid	1.29 ^a	1.26		2	30
375-92-8	Perfluoroheptanesulfonic acid	0.0240	0.0209		14	30
1763-23-1	Perfluorooctanesulfonic acid	0.0115	ND		200*	30
68259-12-1	Perfluorononanesulfonic acid	ND	ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	ND	ND		nc	30
79780-39-5	Perfluorododecanesulfonic acid	ND	ND		nc	30
757124-72-44:2	Fluorotelomer sulfonate	ND	ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	ND	ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	ND	ND		nc	30
754-91-6	PFOSA	ND	ND		nc	30
31506-32-8	MeFOSA	ND	ND		nc	30
4151-50-2	EtFOSA	ND	ND		nc	30
2355-31-9	MeFOSAA	ND	ND		nc	30
2991-50-6	EtFOSAA	ND	ND		nc	30
24448-09-7	MeFOSE	ND	ND		nc	30
1691-99-2	EtFOSE	ND	ND		nc	30
13252-13-6	HFPO-DA (GenX)	ND	ND		nc	30
919005-14-4	ADONA	ND	ND		nc	30
377-73-1	PFMPA	ND	ND		nc	30
863090-89-5	PFMBA	ND	ND		nc	30
151772-58-6	NFDHA	ND	ND		nc	30
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	ND		nc	30
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	ND		nc	30

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC13426
Account: GEOEWAT GeoEngineers, Inc.
Project: Paine Field; Everett, WA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1729-DUP	7Q0202.D	5	02/25/24	AL	02/20/24	OP1729	S7Q46
FC13426-6	7Q0154.D	1	02/24/24	MV	02/20/24	OP1729	S7Q45
FC13426-6	7Q0201.D	5	02/25/24	AL	02/20/24	OP1729	S7Q46

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC13426-1, FC13426-2, FC13426-3, FC13426-4, FC13426-5, FC13426-6, FC13426-7, FC13426-8

CAS No.	Compound	FC13426-6 ug/l	DUP Q ug/l	Q	RPD	Limits
113507-82-7PFEESA		ND	ND		nc	30
356-02-5	3:3 Fluorotelomer carboxylate	ND	ND		nc	30
914637-49-35:3 Fluorotelomer carboxylate		ND	ND		nc	30
812-70-4	7:3 Fluorotelomer carboxylate	ND	ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FC13426-6	FC13426-6	Limits
	13C4-PFBA	109%	104%	101%	20-150%
	13C5-PFPeA	112%	101%	99%	20-150%
	13C5-PFHxA	115%	103%	98%	20-150%
	13C4-PFHpA	113%	99%	97%	20-150%
	13C8-PFOA	111%	100%	100%	20-150%
	13C9-PFNA	111%	101%	91%	20-150%
	13C6-PFDA	97%	98%	90%	20-150%
	13C7-PFUnDA	100%	96%	98%	20-150%
	13C2-PFDoDA	88%	83%	83%	20-150%
	13C2-PFTeDA	70%	82%	75%	20-150%
	13C3-PFBS	93%	106%	91%	20-150%
	13C3-PFHxS	94%	95%	93%	20-150%
	13C8-PFOS	110%	91%	87%	20-150%
	13C8-FOSA	97%	94%	92%	20-150%
	d3-MeFOSA	100%	81%	80%	20-150%
	d5-EtFOSA	91%	80%	75%	20-150%
	d3-MeFOSAA	109%	91%	84%	20-150%
	d5-EtFOSAA	101%	80%	91%	20-150%
	d7-MeFOSE	97%	86%	87%	20-150%
	d9-EtFOSE	92%	81%	81%	20-150%
	13C2-4:2FTS	101%	97%	90%	20-180%
	13C2-6:2FTS	106%	111%	109%	20-180%
	13C2-8:2FTS	102%	111%	104%	20-180%
	13C3-HFPO-DA	117%	105%	94%	20-150%

(a) Result is from Run #2.

* = Outside of Control Limits.

Appendix D

Field Procedures

Appendix D

Field Procedures - Initial Data Gaps Investigation

UNDERGROUND UTILITY LOCATE

Prior to drilling activities, an underground utility locate was conducted in the area of the proposed boring locations to identify subsurface utilities and/or potential underground physical hazards. The underground utility check consisted of contacting a local utility alert service (One Call) and hiring a private utility locating service to locate utilities by conductible and ground penetrating radar (GPR) technologies.

SOIL SAMPLING

Subsurface soil and groundwater conditions were evaluated at the FTP and BGC Study Areas by drilling 11 sub-surface borings (FP-B1, FP-B2, FP-MW7 through FP-MW13, BGC-B1 and BGC-B2) and completing seven shallow sub-surface borings using a hand auger (FP-B3 through FP-B5, BGC-B3 through BGC-B6). Approximate boring locations are shown in Figures 6 and 8.

Ten borings were completed with drilling equipment subcontracted to GeoEngineers. Nine soil borings (FP-B1, FP-B2, FP-MW7 through FP-MW13) were completed using continuous-flight, hollow-stem auger (HSA) equipment and direct-push drilling equipment. Discrete soil samples from selected depths were collected during hollow-stem auger drilling using a 2-inch-diameter, 18-inch-long stainless-steel split spoon sampler driven with a 300-pound auto hammer dropped from a distance of 30-inches. Two soil borings (BGC-B1 and BGC-B2) were completed with track-rigged direct push drilling equipment. The soils encountered in the borings were generally sampled at 5-foot vertical intervals with clean, plastic 1.5-inch-diameter disposable liners. Soil samples were obtained from continuous cores for field screening and possible chemical analysis. Soil samples obtained during the exploration activities were collected from the sampler with a stainless-steel knife or new gloves. Shallow sub-surface soil samples (FP-B3, BGC-B1, BGC-B3 through BGC-B6) were collected by GeoEngineers staff using a hand auger and sampled directly into laboratory-provided jars.

A representative from GeoEngineers observed and classified the soil encountered in general accordance with ASTM International (ASTM) D 2488-94 and maintained a detailed log of each exploration. The sampling equipment was decontaminated before each sampling attempt with an Alconox® solution wash and a laboratory-certified PFAS-free distilled water rinse. Soil samples were obtained from the split spoon sampler for field screening and possible chemical analysis. Undisturbed portions of selected samples were placed in laboratory-prepared vials/jars for chemical analytical testing for PFAS by U.S. Environmental Protection Agency (EPA) Method 1633 at SGS North America. The soil samples were placed in a cooler with ice for transport to the laboratory within proper hold-times under standard chain-of-custody procedures.

Drill cuttings and decontamination/purge water generated during the Initial Data Gaps Investigation were tested for characterization purposes and will be removed from the Sites by a licensed waste removal company for off-site disposal. Borings not completed as monitoring wells were backfilled with bentonite and the surface restored to match the surrounding area.

FIELD SCREENING OF SOIL SAMPLES

Soil samples obtained from the borings were screened in the field for evidence of contamination using: (1) visual examination; (2) sheen screening and (3) vapor headspace screening with a photoionization detector (PID). The results of headspace and sheen screening were included in the tables and on the boring logs.

Visual screening consisted of inspecting the soil for stains indicative of petroleum-related contamination. Visual screening is generally more effective when contamination is related to heavy petroleum hydrocarbons, such as motor oil or hydraulic oil, or when hydrocarbon concentrations are high. Sheen screening and headspace vapor screening are more sensitive methods that have been effective in detecting contamination at concentrations less than regulatory cleanup guidelines. Sheen screening involves placing soil in a pan of water and observing the water surface for signs of sheen. Sheen classifications are as follows:

- **No Sheen (NS)** No visible sheen on the water surface.
- **Slight Sheen (SS)** Light, colorless, dull sheen; spread is irregular, not rapid; sheen dissipates rapidly. Natural organic matter in the soil might produce a slight sheen.
- **Moderate Sheen (MS)** Light to heavy sheen; might have some color/iridescence; spread is irregular to flowing, maybe rapid; few remaining areas of no sheen on water surface; and
- **Heavy Sheen (HS)** Heavy sheen with color/iridescence; spread is rapid; entire water surface might be covered with sheen.

Headspace vapor screening involves placing a soil sample in a plastic sample bag. Air is captured in the bag and the bag is shaken to expose the soil to the air trapped in the bag. The probe of a PID is inserted in the bag and the instrument measures the concentration of combustible vapor in the air removed from the sample headspace. The PID measures concentrations in parts per million (ppm) and is calibrated to 100 ppm isobutylene gas. The PID is designed to quantify combustible gas and organic vapor concentrations up to 5,000 ppm. A lower threshold of significance of 1 ppm was used in this application. Field screening results are site-specific and vary with soil type, soil moisture content, temperature, and type of contaminant.

GROUNDWATER MONITORING WELL DEVELOPMENT AND SAMPLING

Following construction of the Data Gaps Investigation monitoring wells, the wells were developed using surge and purge development methods until the groundwater was relatively clear of suspended solids. Monitoring wells were left to sit undisturbed for at least 24 hours following development prior to groundwater sampling. Groundwater samples were obtained from monitoring wells FP-MW7 through FP-MW13. Groundwater samples were collected by low-flow methods using dedicated disposable PFAS-free tubing and a peristaltic pump. Groundwater samples were placed in laboratory-prepared vials/jars for chemical analytical testing at SGS North America. The samples were placed in a cooler with ice for transport to the laboratory within proper hold-times under standard chain-of-custody procedures. Purge water from groundwater sampling was placed into drums and left on site pending receipt of analytical data for characterization and disposal at a permitted off-site facility.

SAMPLE IDENTIFICATION SCHEME

Each environmental sample obtained during the investigation was identified by a unique sample designation. The sample designation was documented in the field report, on the boring log, included on the sample container label and on the laboratory chain-of-custody. The soil sample designation scheme is as follows:

- Soil samples from borings: Boring number FP-MW7- etc., followed by the depth from which the soil sample was collected, to the nearest 0.5 foot. For example, FP-MW7-10.0 is from boring number FP-MW7 sampled at a depth of 10 feet below the ground surface (bgs).
- Groundwater samples from monitoring wells: Boring number FP-MW7- etc., followed by the date. For example, FP-MW7-20240213 is the groundwater sample collected from boring/monitoring well FP-MW7 sampled on February 2, 2024.
- Surface water samples: Numbered sequentially FP-SW1- etc., followed by the date. For example, FP SW1-20240207 is the surface water sample collected from the first location and sampled on February 7, 2024.

INVESTIGATION-DERIVED WASTE MANAGEMENT

IDW includes drill cuttings, well development water, sampling equipment decontamination water, pre-sampling purge water from monitoring wells, and incidental waste. Drill cuttings, well development water, decontamination water, and pre-sampling purge water was stored in sealed drums. The drums were temporarily stored on the Site, pending waste designation and off-site disposal. The drums were labeled with the following information:

- Material contained in the drum (e.g., drill cuttings, decontamination water, etc.).
- Source of the material (e.g., investigation locations and depths where applicable).
- Date material was generated.
- Name and telephone number of the appropriate contact person.

Incidental waste to be generated during sampling activities includes items such as disposable gloves, plastic sheeting, sample bags, paper towels, and similar expended and discarded field supplies. These materials are considered *de minimis* and were disposed of in a trash receptacle or county disposal facility.

Field Procedures – Standard Operating Procedure PFAS Sampling Objective

The objective of this technical standard operating procedure (SOP) is to define the techniques and requirements for PFAS sampling. Techniques discussed in this SOP include field sampling and preservation methods using the protocols intended to be analyzed for per- and polyfluoroalkyl substances (PFAS) by EPA Method 1633.

Background

DISCUSSION

Specialized techniques and procedures are used for collecting and analyzing samples for PFAS. The field procedures are outlined in the following sections showing restricted equipment and materials that can be used when sampling for PFAS. EPA Method 1633 provides PFAS results with reporting limits of approximately 2 nanograms per liter (ng/L). Acceptable materials for sampling include stainless steel, high density polyethylene (HDPE) and polypropylene.

Additional materials may be acceptable if proven not to contain PFAS. NOTE: Grundfos pumps and bladder pumps are known to contain PFC materials (e.g., Teflon™ washers for Grundfos pumps and low-density polyethylene (LDPE) bladders for bladder pumps). Selection of sampling devices must be carefully researched. All sampling equipment components and sample containers should not come in contact with aluminum foil, LDPE, glass or polytetrafluoroethylene (PTFE, Teflon™) materials including sample bottle cap liners with a PTFE layer. Standard two step decontamination using detergent and clean water rinse should be considered for equipment that does come in contact with polyfluorinated materials. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with polyfluorinated materials must be avoided. Many food and drink packaging materials and “plumbers thread seal tape” contain PFAS. All clothing worn by sampling personnel must have been laundered multiple times and dried without using dryer sheets of any type. The sampler must wear nitrile gloves while filling and sealing the sample bottles.

Pre-cleaned sample bottles with closures, coolers, ice, sample labels and a chain-of-custody form will be provided by the laboratory.

There are special laboratory requirements and sample coolers are clearly identified for PFAS sampling. This SOP outlines the sampling procedure typically used to collect PFAS samples for analysis.

General Responsibilities

Study area Manager – The study area manager is responsible for ensuring that field personnel are trained in the use of this procedure and the required equipment, and for ensuring that PFAS samples are collected in accordance with this procedure and any other SOPs pertaining to specific media sampling. The study area manager must also ensure that the quantity and location of PFAS samples collected meet the requirements of the study area -specific sampling and/or work plans.

Field Team Leader – The field team leader is responsible for ensuring that field personnel collect PFAS samples in accordance with this SOP and other relevant procedures.

Note: All field team member responsibilities are defined in the project-specific quality assurance project plan (QAPP).

Recommended and Prohibited Field Equipment

RECOMMENDED

- Study area -specific plans (e.g., sampling, work, health and safety)
- HDPE and Silicon materials including tubing, bailers, tape, plumbing paste
- Loose paper
- Masonite or Aluminum Clipboard
- Pens
- Insulated cooler(s) provided by lab with sample containers
- Cotton construction is recommended for field clothing and should be laundered a minimum of 6 times from time of purchase due to possible PFAS related treatments. Fabric softener and dryer sheets must be avoided. Rain gear should be made from polyurethane and wax-coated materials
- Plastic zip-top bags
- Decontamination supplies – Alconox®/Liquinox®
- Sample chain-of-custody forms
- Custody seals
- Nitrile or appropriate gloves
- Lab supplied and verified “PFAS Free” water to be used for trip and decontamination blanks and decontamination procedures
- Bags of ice
- Labels and appropriate forms/documentation for sample shipment provided by Laboratory

PROHIBITED

- Teflon®-containing materials, when possible, should be avoided (e.g., tubing, bailers, tape, and plumbing paste). In cases where Teflon® -containing materials are unavoidable, ensure adequate purging is performed prior to sampling (e.g., in-well pumps) and/or rinse blanks are collected prior to sampling
- Paper products such as waterproof field books, plastic clipboards, binders, spiral hard cover notebooks, sticky notes or glue materials
- Water resistant, waterproof, stain-treated clothing or shoes including Gore-Tex™ and Tyvek® materials
- LDPE or polypropylene containing materials (e.g., bags or containers used to transport samples)

- Markers
- Chemical (blue) ice packs
- Decontamination soaps containing fluorosurfactants such as Decon 90
- Water that is not verified to be “PFAS-free” to be used for trip and decontamination blanks and decontamination processes
- Aluminum foil

SOIL SAMPLING EQUIPMENT

Acceptable materials for sampling include: stainless steel, HDPE and polypropylene. Additional materials may be acceptable if proven not to contain PFAS. All sampling equipment components and sample containers **should not** come in contact with aluminum foil, LDPE, glass or PTFE, Teflon™ materials including sample bottle cap liners with a PTFE layer. A list of acceptable equipment is provided below, but other equipment may be considered appropriate at a later date.

- Stainless steel spoon
- Stainless steel bowl

Procedures

PREPARATION

1. Review study area -specific health and safety plan and project plans before initiating sampling activity.
2. Don the appropriate personal protective clothing as indicated in the study area -specific health and safety plan.
3. Locate sampling location(s) in accordance with project documents (e.g., work plan) and document pertinent information in the appropriate field logbook. When possible, reference locations back to existing study area features such as buildings, roads, intersections, monitoring wells, etc.
4. Verify sampling depths in as specified in the study area -specific plans.
5. If decontamination of equipment and/or personnel is required, set up a decontamination zone.
6. Prepare an area near the sampling location to perform sample collection activities.

GROUNDWATER SAMPLE COLLECTION

The following steps must be followed when collecting PFAS samples for environmental purposes.

- Wear clean Nitrile gloves during handling of all sample containers and sampling devices.
- All clothing worn by sampling personnel must have been laundered multiple times and dried without using dryer sheets of any type. The sampler must wear nitrile gloves while filling and sealing the sample bottles.

- Acceptable materials for sampling include stainless steel, high density polyethylene (HDPE) and polypropylene. Sampling with a water pump and tubing with check valve is the preferred method.
- Purge the well.
- Pre-cleaned sample bottles with closures, coolers, sample labels and a chain-of-custody form will be provided by the laboratory.
- Fill the laboratory-supplied bottle(s) with the sample.
- Cap the bottles with an acceptable cap and liner closure system.
- Label the sample bottles.
- Fill out the chain-of-custody.
- Place in a cooler maintained at $4 \pm 2^{\circ}$ Celsius.
- Decontaminate reusable sampling equipment according using PFAS Free water provided by lab and Alconox/Liquinox before proceeding to other sampling locations.
- Complete the field sampling form, being sure to record all relevant information before leaving the study area. All sampling information, including well ID, sample depth, sample volume, and requisite analyses should be recorded in the field form as specified in the study area -specific sampling/work plans. Field Logbooks shall not be used.
- Properly package all samples for shipment to laboratories and complete all necessary sample shipment documentation. Remand custody of the samples to appropriate personnel.

SOIL SAMPLE COLLECTION

- The sampler must wear nitrile gloves while conducting field work and handling sample containers
- Sampling is often conducted in areas where a vegetative turf has been established. In these cases, a clean stainless- steel spoon should be used to carefully remove the turf so that it may be replaced at the conclusion of sampling. Surface soil samples (e.g., 0 to 6 inches below surface) shall then be collected using a pre-cleaned, stainless steel spoon.
- Shallow subsurface soil samples (e.g., 6 to ~36 inches below surface) may be collected by digging a hole using a stainless-steel hand auger.
- When the desired subsurface depth is reached, a pre-cleaned hand auger shall be used to obtain the sample.

SAMPLE SHIPMENT

Place the samples in a cooler with wet ice. The ice should be double bagged. The samples should be shipped for next day delivery. Always include enough ice to keep samples around 4°C , especially during summer months. The cooler drain spout should be closed and taped so that water does not flow out of the cooler.

- Always package samples securely to prevent breakage/spillage.
- Check with laboratory if Saturday delivery of samples is required.

- Be sure to include a completed chain-of-custody (COC) form in each shipment with all necessary information for both reporting and invoicing.
- Double check to make sure all samples are labeled correctly and correspond with the COC form.

Restrictions/Limitations

Acceptable materials for sampling include stainless steel, HDPE and polypropylene. Additional materials may be acceptable if proven not to contain PFAS. NOTE: Grundfos pumps and bladder pumps are known to contain PFC materials (e.g., Teflon™ washers for Grundfos pumps and LDPE bladders for bladder pumps). Selection of sampling devices must be carefully researched. All sampling equipment components and sample containers should not come in contact with aluminum foil, LDPE, glass or polytetrafluoroethylene (PTFE, Teflon™) materials including sample bottle cap liners with a PTFE layer. Standard two step decontamination using detergent and clean water rinse should be considered for equipment that does come in contact with polyfluorinated materials. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with polyfluorinated materials must be avoided. Many food and drink packaging materials and “plumbers thread seal tape” contain PFAS.

All clothing worn by sampling personnel must have been laundered multiple times and dried without using dryer sheets of any type. The sampler must wear nitrile gloves while filling and sealing the sample bottles.

Appendix E

Report Limitations and Guidelines for Use

Appendix E

Report Limitations and Guidelines for Use³

This appendix provides information to help you manage your risks with respect to the use of this report.

Read These Provisions Closely

Some clients, design professionals and contractors may not recognize that the geosciences practices (geotechnical engineering, geology and environmental science) are far less exact than other engineering and natural science disciplines. This lack of understanding can create unrealistic expectations that could lead to disappointments, claims and disputes. GeoEngineers includes these explanatory “limitations” provisions in our reports to help reduce such risks. Please confer with GeoEngineers if you are unclear how these “Report Limitations and Guidelines for Use” apply to your project or site.

Environmental Services Are Performed for Specific Purposes, Persons and Projects

This report has been prepared for the exclusive use of Snohomish County Airport, their authorized agents and regulatory agencies. This report is not intended for use by others, and the information contained herein is not applicable to other sites.

GeoEngineers structures our services to meet the specific needs of our clients. For example, an environmental site assessment or remedial action study conducted for a property owner may not fulfill the needs of a prospective purchaser of the same property. Because each environmental study is unique, each environmental report is unique, prepared solely for the specific client and project site. No one except the Snohomish County Airport should rely on this report without first conferring with GeoEngineers. This report should not be applied for any purpose or project except the one originally contemplated.

This Environmental Report Is Based on a Unique Set of Project-Specific Factors

This report applies to the former Fire Training Pit and Big Gulch Creek Sites, located at 3220 100th Street SW in Everett, Washington. GeoEngineers considered a number of unique, project-specific factors when establishing the scope of services for this project and report. Unless GeoEngineers specifically indicates otherwise, do not rely on this report if it was:

- Not prepared for you,
- Not prepared for your project,
- Not prepared for the specific site explored, or
- Completed before important project changes were made.

If important changes are made after the date of this report, GeoEngineers should be given the opportunity to review our interpretations and recommendations and provide written modifications or confirmation, as appropriate.

³ Developed based on material provided by GBA, GeoProfessional Business Association; www.geoprofessional.org.

Reliance Conditions for Third Parties

No third party may rely on the product of our services unless GeoEngineers agrees in advance, and in writing to such reliance. This is to provide our firm with reasonable protection against open-ended liability claims by third parties with whom there would otherwise be no contractual limits to their actions.

Environmental Regulations Are Always Evolving

Some substances may be present in the site vicinity in quantities or under conditions that may have led, or may lead, to contamination of the subject site, but are not included in current local, state or federal regulatory definitions of hazardous substances or do not otherwise present current potential liability. GeoEngineers cannot be responsible if the standards for appropriate inquiry, or regulatory definitions of hazardous substance, change or if more stringent environmental standards are developed in the future.

Subsurface Conditions Can Change

This report is based on conditions that existed at the time our site studies were performed. The findings and conclusions of this report may be affected by the passage of time, by manmade events such as construction on or adjacent to the site, by new releases of hazardous substances, or by natural events such as floods, earthquakes and slope instability or groundwater fluctuations. Always contact GeoEngineers before applying this report to determine if it is still applicable.

Biological Pollutants

GeoEngineers' Scope of Work specifically excludes the investigation, detection, prevention or assessment of the presence of Biological Pollutants. Accordingly, this report does not include any interpretations, recommendations, findings, or conclusions regarding the detecting, assessing, preventing or abating of Biological Pollutants and no conclusions or inferences should be drawn regarding Biological Pollutants, as they may relate to this project. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria and viruses, and/or any of their byproducts.

If Client desires these specialized services, they should be obtained from a consultant who offers services in this specialized field.

Do Not Redraw the Exploration Logs

Environmental scientists prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in an environmental report should never be redrawn for inclusion in other design drawings. Only photographic or electronic reproduction is acceptable but recognize that separating logs from the report can elevate risk.

Geotechnical, Geologic and Environmental Reports Should Not Be Interchanged

The equipment, techniques and personnel used to perform an environmental study differ significantly from those used to perform a geotechnical or geologic study and vice versa. For that reason, a geotechnical engineering or geologic report does not usually relate any environmental findings, conclusions or recommendations, e.g., about the likelihood of encountering underground storage tanks (USTs) or regulated contaminants. Similarly, environmental reports are not used to address geotechnical or geologic concerns regarding a specific project.

Soil and Groundwater End Use

The cleanup levels referenced in this report are site- and situation-specific. The cleanup levels may not be applicable for other sites or for other on-site uses of the affected media (soil and/or groundwater). Note that hazardous substances may be present in some of the site soil and/or groundwater at detectable concentrations that are less than the referenced cleanup levels. GeoEngineers should be contacted prior to the export of soil or groundwater from the subject site or reuse of the affected media on Site to evaluate the potential for associated environmental liabilities. We cannot be responsible for potential environmental liability arising out of the transfer of soil and/or groundwater from the subject Site to another location or its reuse on site in instances that we were not aware of or could not control.

Environmental Findings Are Professional Opinions

Our interpretations of subsurface conditions are based on field observations and chemical analytical data from widely spaced sampling locations at the site. Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. GeoEngineers reviewed field and laboratory data and then applied our professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ – sometimes significantly – from those indicated in this report. Our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions.