

SUBMITTED TO:
Fairbanks International
Airport
6450 Airport Way, Suite 1
Fairbanks, Alaska 99709



BY:
Shannon & Wilson, Inc.
2355 Hill Road
Fairbanks, Alaska 99709

(907)479-0600
www.shannonwilson.com

REPORT
Fairbanks International Airport Fire
Training Pit Corrective Action
FAIRBANKS, ALASKA



PAGE INTENTIONALLY LEFT BLANK FOR DOUBLE-SIDED PRINTING

Submitted To: Fairbanks International Airport
6450 Airport Way, Suite 1
Fairbanks, Alaska 99709
Attn: Sammy Cummings and Angie Spear

Subject: REPORT, FAIRBANKS INTERNATIONAL AIRPORT FIRE TRAINING PIT
CORRECTIVE ACTION, FAIRBANKS, ALASKA

Shannon & Wilson prepared this report to document the Fairbanks International Airport (FAI) fire training pit (FTP) corrective action effort in 2019 and 2021. This report was prepared on behalf of the Alaska Department of Transportation & Public Facilities (DOT&PF) in accordance with the terms and conditions of Shannon & Wilson's proposals dated July 2, August 1, September 9, and September 20, 2019, and April 28, May 13, and August 12, 2020.

Shannon & Wilson's services were authorized by Professional Services Agreement Number 25-19-1-013 issued by DOT&PF on December 19, 2018, and the following contract amendments:

- Amendment 14, Notice to Proceed (NTP) 4-9 dated July 17, 2019,
- Amendment 15, NTP 4-10 dated August 6, 2019,
- Amendment 16, NTP 4-9a dated September 11, 2019,
- Amendment 18, NTP 4-9b dated September 23, 2019,
- Amendment 26, NTPs 4-11 and 4-12 dated June 15, 2020, and
- Amendment 28, NTP 4-11a dated October 22, 2020.

We appreciate the opportunity to be of service to you on this project. If you have questions concerning this report, or we may be of further service, please contact us.

Kristen Freiburger for:
Marcy Nadel
Geologist, Project Manager

Kristen Freiburger
Associate, Statewide Project Manager

MDN:KRF:CBD/kdm

EXECUTIVE SUMMARY

The Fairbanks International Airport (FAI) Fire Training Pit (FTP) corrective action effort included dewatering approximately 165,000 gallons of per- and polyfluoroalkyl substances (PFAS) and petroleum contaminated water and capping the remaining FTP contents. The FTP is a lined, over-200-foot diameter basin near the southwest end of the small aircraft runway (Figure 1; 2R-20L). FAI Aircraft Rescue and Firefighting personnel utilized aqueous film forming foam (AFFF) for fire training exercises at FTP from 1993 to 2017 (Figure 1). AFFF contains PFAS compounds including perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA).

The FTP training props and fuel piping were removed and approximately 30 cubic yards (cy) of PFOS-contaminated soil were excavated and placed within the FTP in September 2019. The FTP was backfilled with offsite, structural fill and capped with a 40-mil geomembrane liner in October and November 2019. The FTP cap was completed in May and June 2020 with the placement of silty fill, topsoil, and hydroseed (Figure 2). Cap design plans are included in Appendix A. Dewatering occurred in both 2019, concurrent with cap construction, and 2020. The FTP water was treated offsite by NRC Alaska LLC US Ecology. As of fall 2020, the water level in the FTP was 1.7 feet above the base of the permanent sump, equivalent to 2.4 feet of water above the lower FTP liner (Figure 3).

Shannon & Wilson installed two clusters of groundwater monitoring wells (MWs) near the FTP, each with 15-, 40-, 80-, and 150-foot wells (Figure 4). The MWs were sampled for PFAS, diesel range organics (DRO), and/or volatile organic compounds (VOCs) in September and October 2019, June 2020, October 2020, January 2021, and April 2021. Before the FTP was capped, soil and water samples were collected from its contents for determination of PFAS, petroleum compounds, glycol, and/or metals. Contaminant concentrations within the lined FTP are multiple orders of magnitude higher than those found in nearby soil and groundwater. Monitoring of the downgradient FTP monitoring wells will continue until DEC approves of terminating the monitoring program.

- 1 Introduction 1
 - 1.1 Objectives and Background..... 1
 - 1.2 Geology and Hydrology..... 3
 - 1.3 Contaminants of Concern and Action Levels 4
 - 1.4 Scope of Services 5
- 2 Field Activities 7
 - 2.1 Access and Permits 7
 - 2.2 Fire Training Pit Corrective Action 3
 - 2.2.1 Cap Design..... 3
 - 2.2.2 AST, Infrastructure, and Training Props 4
 - 2.2.3 Dewatering..... 6
 - 2.2.3.1 FTP Water Samples 10
 - 2.2.4 Cap Construction..... 10
 - 2.2.4.1 Deviations from Design..... 11
 - 2.2.5 Cap Institutional Controls..... 12
 - 2.3 Monitoring Wells 12
 - 2.3.1 Existing Monitoring Wells 13
 - 2.3.2 Installation..... 13
 - 2.3.3 Groundwater Elevation..... 15
 - 2.3.4 Development and Sampling 15
 - 2.3.5 Groundwater Monitoring 16
 - 2.4 Soil Sampling..... 16
 - 2.4.1 PFOS Soil Excavation 16
 - 2.4.2 Fire Training Pit Soil..... 17
 - 2.5 Sample Custody, Storage, and Shipping..... 17
 - 2.6 Investigation-Derived Waste..... 17
 - 2.7 Deviations..... 18
- 3 Analytical Results..... 19
 - 3.1 Fire Training Pit 19
 - 3.1.1 Water Treatment..... 20

- 3.2 Monitoring Wells 21
- 3.3 Soil Samples..... 22
 - 3.3.1 Soil Borings..... 22
 - 3.3.2 PFOS Excavation..... 22
 - 3.3.3 Fire Training Pit 22
- 4 Conceptual Site Model 23
 - 4.1 Description of Potential Receptors 24
 - 4.2 Potential Exposure Pathways..... 24
 - 4.2.1 Groundwater Exposure..... 24
 - 4.2.2 Surface Water Exposure 25
 - 4.2.3 Soil and Sediment Exposure 25
 - 4.2.4 Other Media 25
- 5 Discussion and Recommendations 26
 - 5.1 Comparison to Regulatory Levels 26
 - 5.1.1 Soil 26
 - 5.1.2 Groundwater..... 26
 - 5.2 Groundwater and Surface Water Elevation..... 27
 - 5.3 Dewatering and Cap Institutional Controls..... 30
 - 5.4 Closure..... 30
- 6 References 32
 - Sample Handling..... 3
 - Analytical Sensitivity 3
 - Accuracy 6
 - Precision..... 7
 - Additional Quality Control Discrepancies..... 8
 - Data Quality Summary 8

Exhibits

Exhibit 1-1: FTP from the air (July 12, 2018)..... 2

Exhibit 1-2: Applicable Cleanup Levels 5

Exhibit 1-3: FTP sump extension (May 12, 2020) 6

Exhibit 2-1: Locating the existing FTP liner (September 19, 2019)..... 3

Exhibit 2-2: FTP piping and training prop removal (September 10, 2019) 5

Exhibit 2-3: Onsite water treatment system (September 9, 2019) 6

Exhibit 2-4: Pre-treatment FTP water 7

Exhibit 2-5: Fire Training Pit Water Samples 8

Exhibit 2-6: FTP geomembrane liner installation 11

Exhibit 2-7: Installing MW-1901 well cluster (September 22, 2019) 13

Exhibit 2-8: Sampling MW-1902 cluster (June 26, 2020)..... 15

Exhibit 2-9: PFOS soil excavation outside FTP (September 19, 2019)..... 17

Exhibit 2-10: Dewatering for offsite water treatment 18

Exhibit 3-1: FTP dewatering (October 1, 2019)..... 20

Exhibit 3-2: FTP soil sampling (October 1, 2019) 23

Exhibit 5-1: Elevation Comparison in Feet Above Sea Level, September 2019 to February 2020 28

Exhibit 5-2: Elevation Comparison in Feet Above Sea Level, March 2020 to August 2020.... 29

Exhibit 5-3: Elevation Comparison in Feet Above Sea Level, September 2020 to February 2021 29

Tables

Table 1: Fire Training Pit Water Sample Results

Table 2: Post-Treatment Fire Training Pit Water Results

Table 3: September and October 2019 Monitoring Well Results

Table 4: Soil Boring PFAS Results

Table 5: June 2020 Monitoring Well Results

Table 6: October 2020 Monitoring Well Results

Table 7: January 2021 Monitoring Well Results

Table 8: April 2021 Monitoring Well Results

Table 9: Soil Excavation PFAS Results

Table 10: Fire Training Pit Soil Results

Figures

- Figure 1: Fairbanks International Airport Vicinity
- Figure 2: Fire Training Pit Cap Extent
- Figure 3: Fire Training Pit Cross Section
- Figure 4: Sample Location Overview
- Figure 5: Soil Sample Results
- Figure 6: Highest Water Sample Results
- Figure 7: Quarterly Line Graph MW-1901-15
- Figure 8: Quarterly Line Graph MW-1901-40
- Figure 9: Quarterly Line Graph MW-1902-15

Appendices

- Appendix A: Permits and Approvals
- Appendix B: Fire Training Pit Cap Documents
- Appendix C: Non-Hazardous Waste Manifests
- Appendix D: Boring Logs
- Appendix E: Field Notes
- Appendix F: Analytical Results
- Appendix G: Conceptual Site Model
- Important Information

ACRONYMS

µg/kg	micrograms per kilogram
µg/L	micrograms per liter
µS/cm	microsiemens per centimeter
AAC	Alaska Administrative Code
AFFF	aqueous film forming foam
ARFF	Aircraft Rescue and Firefighting
AST	aboveground storage tank
ASTM	American Society for Testing and Materials
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylene
CESCL	Certified Erosion and Sediment Control Lead
CSM	conceptual site model
cy	cubic yard
DEC	Alaska Department of Environmental Conservation
DOT&PF	Alaska Department of Transportation & Public Facilities
DRO	diesel range organics
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FAI	Fairbanks International Airport
FAR	field activity reports
FTP	fire training pit
GAC	granular activated carbon
GeoTek	GeoTek Alaska, Inc.
GNI	Great Northwest, Inc.
ICs	institutional controls
IDA	isotope dilution analyte
IDW	Investigation-derived waste
Layfield	Layfield USA Corporation
LOQ	limit of quantitation
MB	method blank
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
mV	millivolts
MW	monitoring well
ng/L	nanograms per liter
NRC	NRC Alaska LLC US Ecology
NTP	Notice to Proceed
ORP	oxidation reduction potential

ACRONYMS

PAH	polynuclear aromatic hydrocarbon
PFAS	per- and polyfluoroalkyl substances
PFBS	perfluorobutanesulfonic acid
PFHxA	perfluorohexanoic acid
PFHxS	perfluorohexanesulfonic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
QA	quality assurance
QC	quality control
RRO	residual range organics
SGS	SGS North America, Inc.
SWPPP	Stormwater Pollution Prevention Plan
TAH	total aromatic hydrocarbons
TAqH	total aqueous hydrocarbons
TCLP	toxicity characteristic leaching procedure
TestAmerica	Eurofins TestAmerica Laboratories, Sacramento
USGS	United States Geologic Survey
VOC	volatile organic compound
Work Plan	FAI FTP Fire Training Pit Corrective Action Work Plan REV2
YSI	multiprobe water quality meter

1 INTRODUCTION

Shannon & Wilson, Inc. has prepared this report to document our fire training pit (FTP) corrective action effort at the Fairbanks International Airport (FAI) in Fairbanks, Alaska from June 2019 to April 2021. The FTP is an active, Alaska Department of Environmental Conservation (DEC) listed contaminated site due to per- and polyfluoroalkyl substances (PFAS) and historic fuel contamination (File Number 100.38.070, Hazard ID 1071). The broader PFAS groundwater plume is listed as a separate contaminated site (File Number 100.38.277, Hazard ID 26816). The FTP is located south of the primary FAI runway, 2L-20R (Figure 1). The geographic coordinates of the FAI FTP are latitude 64.7992, longitude -147.8808.

The field effort described herein was conducted in general accordance with the *FAI FTP Fire Training Pit Corrective Action Work Plan REV2 (Work Plan)*, several Work Plan Addendums, relevant regulatory guidance documents, and 18 Alaska Administrative Code (AAC) 75.335. The Work Plan was approved by DEC on September 24, 2019. Offsite water treatment was approved in a separate letter dated September 26, 2019. Copies of these letters are included in Appendix A.

DEC's Work Plan approval requested an additional submittal to describe long-term monitoring and maintenance of the FTP cap. Shannon & Wilson submitted the *FTP Cap Institutional Controls (ICs) Addendum* on February 21, 2020. The ICs Addendum was revised to address DEC comments and resubmitted on July 9, 2020. The Addendum states a brief FTP monitoring report will be submitted on an annual basis for the first two years and every other year thereafter. Monitoring of the downgradient FTP monitoring wells will continue until DEC approves of terminating the monitoring program. In addition to summarizing the FTP corrective action effort, this report serves as the first annual FTP monitoring report.

1.1 Objectives and Background

The purpose of the services described in this report was to implement corrective actions addressing known PFAS and hydrocarbon contamination at and near the FAI's former FTP. The FAI Aircraft Rescue and Firefighting (ARFF) program used aqueous film forming foam (AFFF) for training, systems testing, and emergency response at the FAI for many years. AFFF contains PFAS, a category of persistent organic compounds considered as emerging contaminants. Perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) are two PFAS compounds commonly found at sites where AFFF was used. The precise timeline and locations of AFFF use at the FAI are unknown. The FTP and other known or suspected AFFF release sites are shown in Figure 1.

Prior to FTP construction, other locations near what is now the southwestern end of the small aircraft runway (2R-20L) were used for fire training.

The intent of FTP corrective action was to reduce the volume of contaminated media, reduce direct exposure pathways to the FTP contents, and minimize the impact to groundwater by reducing surface-water infiltration through PFAS-contaminated soil immediately adjacent to the FTP. The primary corrective action was to cap the former FTP to prevent direct human and environmental exposure to its contents. The FTP basin has historically accumulated precipitation, requiring annual or biennial pumping and offsite treatment.



Exhibit 1-1: FTP from the air (July 12, 2018)

The FTP was constructed in 1992 and 1993 as a lined, 205-foot diameter basin surrounded by shallow soil berms. The primary barrier at the base of the FTP is an 80-mil high density polyethylene liner. Contractors in the 1990s installed a 5,000-gallon aboveground storage tank (AST), flow meter, valve, and buried piping running to the FTP. ARFF personnel conducted fire-fighting exercises utilizing AFFF in the lined FTP from 1993 to 2017. Water was used for training exercises after 2017. Training consisted of extinguishing combustible liquids within the FTP using AFFF. However, AFFF was discharged outside the lined FTP during training exercises. Training was also conducted on a defunct D6 plane, portions of smaller aircraft, vehicles, and other props around the FTP. Observations and analytical data from 2018 to 2021 found no indications the FTP liner has been compromised.

PFAS were first identified on FAI property in August 2017, near the shooting range south of the FTP. Multiple consultants have sampled groundwater, surface water and soil, and subsurface soil for PFAS on and offsite. This summary focuses on the FTP vicinity only. In 2017 PFOS was encountered above the DEC groundwater-cleanup level in a temporary well point sample near the eastern corner of the shooting range.

Through 2016, accumulated rainwater and other liquid contents were generally drained from the pit and sent to the local municipal utility wastewater treatment plant. DOT&PF typically removed 40,000 to 50,000 gallons of water from the FTP each fall, with up to 125,000 gallons during one event. The FAI's consultant estimated there were 360,000 gallons of water in the FTP in summer 2018. That fall the FAI added over 200,000 gallons of water

from the north deicing basin to the FTP (see Section 2.2.3). Some of this water evaporated over summer 2019. At the beginning of corrective action, the FTP contained precipitation accumulated from winter 2016 to 2017 through summer 2019, and deicing basin water.

FTP site characterization began in June 2018. The FAI's consultant identified PFOS, PFOA, diesel range organics (DRO), and naphthalene above DEC's migration-to-groundwater soil cleanup levels in surface soil grab samples from within the FTP. Ponded water at the center of the pit exhibited regulatory exceedances for PFOS, PFOA, DRO, residual range organics (RRO), naphthalene, and 1,2,4-trimethylbenzene. Outside the FTP, the consultant advanced seven soil borings and installed one temporary well point. An additional four borings accompanied by temporary well points were advanced at the crest of the FTP berm. PFOS and/or PFOA exceeded cleanup levels in all but one soil samples. DRO, RRO, gasoline range organics, volatile organic compounds (VOCs), and polynuclear aromatic hydrocarbons (PAHs) were not detected above the laboratory limit of quantitation (LOQ) in soil outside the FTP.

In August 2018 the consultant collected surface-water samples from multiple water bodies at the FAI, including the slough near the FTP. The Shooting Range Slough is a former oxbow of the Tanana River and nearly surrounds the FTP and shooting range area. The consultant reported PFOS at 130 nanograms per liter (ng/L) and PFOA to 9.1 ng/L in the slough northwest of the FTP. They encountered PFOS at 55 ng/L and PFOA at 7.2 ng/L in the slough southeast of the FTP.

1.2 Geology and Hydrology

The FAI PFAS plume lies at the northern edge of the Tanana Lowlands physiographic province that forms a large, arcuate band of alluvial sediments between the Alaska Range and the Yukon-Tanana Uplands. The Lowlands consist of vegetated floodplains and low benches cut by the Tanana River, and sloughs and oxbow lakes at former channel positions of the Tanana or Chena Rivers. Drilling for this corrective action effort encountered primarily sand with silt or gravel with sand for 150 feet below ground surface (bgs), with isolated zones of silty sand, silt, and peat within the uppermost eight feet bgs. The floodplain generally slopes to the west or northwest by approximately five feet per mile (Nelson, 1978).

The aquifer underlying the Lowlands is unconfined. Based on our experience and knowledge of hydrogeology in the Fairbanks area, the horizontal regional gradient in this area is relatively flat, typically averaging two to four feet per mile. Depth to groundwater ranges from 5 feet to 12 feet below ground surface, depending on local topography. Seasonal fluctuation in groundwater levels can range from 0.2 to 9 feet (Glass et. al., 1996).

A 1996 United States Geologic Survey (USGS) study measured groundwater elevations in 120 wells in the alluvial plain between the Tanana and Chena Rivers periodically between 1986 and 1988. The authors used this information to produce two-foot water table elevation contours for March to April, July, and October. They found groundwater is generally highest following springtime river ice breakup and lowest in the late summer and fall. Although groundwater and surface water are controlled by the same regional factors, water levels and flow directions vary independently of one another.

The USGS found groundwater-flow direction fluctuates seasonally. For much of the year groundwater between the Chena and Tanana Rivers flows to the northwest. Depending on snow melt in the upper Tanana River watershed and other seasonal factors, groundwater often flows to the west in the late summer and fall (Glass et. al., 1996). Our *May to December 2018 FAI Private Well Sampling Summary Report* includes a figure showing the USGS study groundwater contours.

The FTP is near the southern edge of FAI property, less than a half-mile from the Tanana River (Figure 1). A different USGS study compared groundwater elevation at over 60 locations on and near the FAI to Chena and Tanana River levels between 1990 and 1996. The study found that groundwater elevation in the FTP vicinity was often similar to the height of the Tanana River, but exhibited smaller seasonal swings than river-elevation measurements (Claar & Lilly, 1997). A more detailed description of this relationship can be found in our February 2020 *FTP ICs Addendum*. Groundwater and surface water elevation measurements are included in Exhibits 5-1 to 5-3 and described in Section 5.2.

1.3 Contaminants of Concern and Action Levels

The primary contaminants of concern inside the FTP are PFAS compounds, DRO, RRO, VOCs benzene and naphthalene, and arsenic. Outside of the FTP, there are no reported cleanup level exceedances of DRO, RRO, or VOCs. Arsenic concentrations are likely attributable to natural conditions typical of the area and are not considered a site contaminant. PFAS are therefore the primary contaminants of concern outside the now-capped FTP. Exhibit 1-2 includes applicable soil and groundwater cleanup levels.

Exhibit 1-2: Applicable Cleanup Levels

Media	Compound	Level
Soil	PFOS	3.0 ug/kg ¹
Groundwater		400 ng/L ²
Soil	PFOA	1.7 ug/kg ¹
Groundwater		400 ng/L ²
Soil	Benzene	0.022 mg/kg ¹
Groundwater		4.6 ug/L ²
Soil	Ethylbenzene	0.13 mg/kg ¹
Groundwater		15 ug/L ²
Soil	Xylenes (total)	1.5 mg/kg ¹
Groundwater		190 ug/L ²
Soil	Toluene	6.7 mg/kg ¹
Groundwater		1,100 ug/L ²
Soil	Naphthalene	0.038 mg/kg ¹
Groundwater		1.7 ug/L ²
Soil or Groundwater	Other VOCs	(analyte dependent)
Soil	DRO	250 mg/kg ³
Groundwater		1.5 mg/L ²
Soil	RRO	11,000 mg/kg ³
Groundwater		1.1 mg/L ²

Notes:

¹ DEC migration-to-groundwater soil-cleanup levels are reported in 18 AAC 75, Table B1.

² DEC groundwater-cleanup levels are reported in 18 AAC 75, Table C.

³ DEC under 40-inch zone migration-to-groundwater soil-cleanup levels are reported in 18 AAC 75, Table B2.

ug/kg = micrograms per kilogram; ng/L = nanograms per liter; mg/kg = milligrams per kilogram; ug/L = micrograms per liter; mg/L = milligrams per liter

1.4 Scope of Services

The scope of services summarized in this report includes:

- dewatering the FTP;
- treating the FTP liquid contents in compliance with applicable DEC regulations;
- removing the AST and associated piping used for fire training;
- collecting saturated soil samples from solids remaining after dewatering of the FTP;

- excavating approximately 30 cubic yards (cy) of soil with an elevated PFOS concentration, from a previously-identified area adjacent to the FTP, and placing it within the FTP to be capped;
- capping the dewatered FTP, including backfilling it with gravel and silt fill, with a 40-mil geomembrane liner, and extending the sump (Exhibit 1-3);
- installing two clusters of four groundwater monitoring wells (MWs), one upgradient and downgradient of the FTP; and
- sampling the newly installed MWs quarterly for one calendar year.

Figure 2 shows the extent of the FTP and cap. Figure 3 is an annotated cross-section view of the FTP.

This report was prepared for the exclusive use of the FAI and its representatives. This work presents Shannon & Wilson's professional judgment as to the conditions of the site. Information presented here is based on the sampling and analyses field staff performed. This report should not be used for other purposes without Shannon & Wilson's approval or if any of the following occurs:



Exhibit 1-3: FTP sump extension (May 12, 2020)

- Project details change, or new information becomes available, such as revised regulatory levels or the discovery of additional source areas.
- Conditions change due to natural forces or human activity at, under, or adjacent to the project site.
- Assumptions stated in this report have changed.
- If the site ownership or land use has changed.
- Regulations, laws, cleanup levels, or applicable action levels change.
- If the site's regulatory status has changed.

If any of these occur, Shannon & Wilson should be retained to review the applicability of our recommendations. This report should not be used for other purposes without Shannon & Wilson's review. If a service is not specifically indicated in this report, do not assume it was performed.

2 FIELD ACTIVITIES

This section summarizes field activities performed in September and November 2019, June and October 2020, and January and April 2021 in accordance with the Work Plan and Addenda. Permits and DEC approval letters are included in Appendix A. Cap design and construction documents are included in Appendix B. Waste disposal documents are included in Appendix C. Boring Logs are included in Appendix D, and field notes are included in Appendix E.

The following Shannon & Wilson staff members completed field tasks described in this report. These individuals are State of Alaska Qualified Environmental Professionals as defined in 18 AAC 75.333[b].

- Adam Wyborny, Environmental Engineer
- Amber Masters, Environmental Scientist
- Andrew Frick, Senior Environmental Scientist
- Ashley Jaramillo, Senior Chemist
- Audrey Freeman, Engineer in Training
- Brittany Blood, Geologist
- Cherissa Dukelow, Environmental Scientist
- Craig Beebe, Geologist
- Fawn Glassburn, Geologist
- Justin Risley, Engineer in Training
- Marcy Nadel, Geologist
- Michael Jaramillo, Senior Chemist
- Philip Warwick, Materials Testing Technician
- Rachel Willis, Biologist
- Veselina Yakimova, Geologist

Water samples collected for this project include pre- and post-treatment water from the FTP (Section 2.2.3) and groundwater samples (Section 2.3) from MWs. Soil samples included subsurface soil collected from borings (Section 2.3.2), an excavation near the FTP (Section 2.4.1), and saturated soil samples from within the FTP (Section 2.4.2). The capped FTP is shown in Figures 2 and 3. Analytical sample locations are shown in Figure 4.

2.1 Access and Permits

Shannon & Wilson submitted Federal Aviation Administration (FAA) 7460 airspace permits to use a drill rig and other tall equipment near the FAI's active runways. Determination letter AAL-115-NRA for heavy equipment to assemble the onsite treatment system was received on June 11, 2019. The determination letters for MW installation were received on August 15, 2019 (AAL-186-NRA) and August 26, 2019 (AAL-185-NRA). The FAA required closure of Runway 2R-20L during drilling of the MW-1902 cluster (Figure 4). These MWs

were installed at nighttime; field staff met with FAI Operations each morning and evening to coordinate runway closures. FAI Operations issued the required Notices to Airmen. Copies of the FAA determination letters are included in Appendix A.

The MWs were placed to avoid conflicts with buried electrical, communications, and other utilities. The FAI engineering and maintenance departments provided utility information prior to excavation and drilling. Bright Electric was hired to locate underground power lines leading to the AST fuel meter, allowing removal of the fuel dispenser control post.

Access to the FTP area was arranged with the FAI Badging Office. After attending the FAI's operations briefing, Shannon & Wilson, Great Northwest, Inc. (GNI), and NRC Alaska LLC US Ecology (NRC) were given key-way devices to open Gate 51 located off Airport Perimeter Road. GNI and NRC returned their devices after the 2019 field season. NRC checked out another access device for dewatering and purge water disposal in 2020 and spring 2021. Shannon & Wilson has retained gate access for the purposes of MW sampling and datalogger download.

On behalf of the FAI, Shannon & Wilson submitted a Notice of Intent to discharge stormwater under the Alaska Pollution Discharge Elimination System Construction General Permit and prepared a Stormwater Pollution Prevention Plan (SWPPP) for FTP cap construction. We received authorization from the DEC Division of Water on August 26, 2019 under permit number AKR10GD19. The authorization letter is included in Appendix A.

The SWPPP was included as an Appendix to the Work Plan and is considered a living document. The control copy of the SWPPP was kept with Valerie Webb, Ashley Jaramillo, or Christopher Darrah of Shannon & Wilson through the 2019 construction season. Ms. Webb and Ms. Jaramillo are Certified Erosion & Sediment Control (CESCL) inspectors; Mr. Darrah is a Certified Professional in Erosion and Sediment Control (CPESC). These staff conducted weekly SWPPP inspections from September 6 to November 1, 2019 and modified the control copy as construction progressed. The FAI Environmental Manager began updating the SWPPP in May 2020 for the 2020 construction season. The SWPPP text and Notification of Intent were modified to reflect this change (Appendix A). The FAI submitted a Notice of Termination on July 17, 2020.

As part of the SWPPP, Shannon & Wilson applied for an excavation dewatering permit for point-source discharge of treated FTP water to the nearby Shooting Range Slough (Figure 1). The Notice of Intent was submitted to the DEC Division of Water under excavation dewatering general permit number AKG002000. We received authorization on July 26, 2019 under permit number AKG002158. The Work Plan was revised to include surface water monitoring, additional post-treatment analytical sampling, and other stipulations of DEC's

authorization. However, following changes in the water-treatment plan, NRC did not discharge water to the slough as part of the corrective action effort. Shannon & Wilson submitted a Notice of Termination effective October 6, 2019. The dewatering authorization and Notice of Termination reply letters are included in Appendix A.

2.2 Fire Training Pit Corrective Action

The FTP was decommissioned and capped in 2019 and 2020. FTP corrective action included locating the original liner, designing the FTP cap, dewatering the FTP, removing fuel piping and training props, excavating PFOS-contaminated soil from one area outside the FTP, backfilling the FTP with and compacting fill, placing a 40-mil geomembrane liner, extending the existing sump, and surveying services. Shannon & Wilson prepared daily field activity reports (FARs) for the corrective action field effort between August 30, 2019, and July 1, 2020 (Appendix E). Please note, DEC granted conditional approval to proceed with portions of Work Plan implementation before the plan was finalized.

Appendix B includes FTP cap design drawings, field and laboratory materials test results, chronological photographs of cap dewatering and construction, and survey data. Most of the construction occurred in fall 2019, ending with placement of the 40-mil geomembrane liner in November 2019. The cap was completed in summer 2020.



Exhibit 2-1: Locating the existing FTP liner (September 19, 2019)

2.2.1 Cap Design

Design Alaska, Inc. was subcontracted to design the FTP cap. They began by surveying the ground surface and reviewing the original FTP design plans (Appendix E of the Work Plan). Their 95 percent FTP design plans were submitted to DEC as a Work Plan Addendum on August 16, 2019. The design was revised in response to comments from the DEC contaminated sites and solid waste programs. The final cap design plans are included in Appendix B.

The FTP cap design includes a geotextile placed directly on top of the FTP contents followed by gravel fill, a 40-mil fortified polyolefin alloy geomembrane liner, two feet of silty soil,

four inches of topsoil, and application of hydroseed. The size of the liner was selected to cover more than the existing FTP footprint to prevent surface water infiltration (Appendix B, Sheet C200; Figure 3). Figure 2 shows the extent of the FTP basin (red line), existing FTP liner (black dotted line), cap liner (green dotted line), and cap toe (yellow dotted line). On September 19, 2019 GNI probed the original FTP berms to determine the actual location of the existing, 80-mil geomembrane liner (Exhibit 2-1). They uncovered the liner in seven places using a less than one-quarter-cy mini excavator, loader, and hand tools. The liner was not damaged. It was generally buried less than two feet below the top of the FTP berm, showing the berms have compacted over time. GNI was unable to locate the western corner of the liner. GNI's efforts confirmed Design Alaska, Inc.'s assumptions.

Shannon & Wilson performed grain size distribution analyses (American Society for Testing and Materials [ASTM] C136) and Modified Proctor laboratory compaction tests (D1557) on material the FAI planned to use within the FTP. The laboratory materials tests were completed per ASTM International standards. Results for the FAI's pit run gravel and GNI's sandy silt are included in Appendix B. We also tested silty material from the FAI's borrow pit, but it did not meet design specifications.

The surface of the cap is slightly mounded to shed water away from the FTP (Appendix B, Sheet C600). The final cap design includes extending the existing FTP sump to the new ground surface for dewatering and monitoring purposes (labeled permanent sump in Figure 3). A gasket and pipe boot were used to seal the liner where the sump passes through it (Appendix B, C601). The cap has been designed to accommodate occasional traffic of up to 12,000 pounds for mowing and/or snow plowing. Figure 3 shows the elevations of the cap liner, cap surface, extended sump, and other FTP features.

The 40-mil geomembrane liner included in the final cap design has an equivalent effective hydraulic conductivity to that of the 80-mil primary FTP barrier installed in 1993, or on the order of 10^{-13} centimeters per second (Giroud and Bonaparte, 1989). The liner was selected for its chemical and temperature resistance, longevity, effective hydraulic conductivity, and availability. Although the FTP cap is not considered a regulated industrial solid waste monofill per 18 AAC 60.485, the design meets the requirements of 60.485(c) and includes infiltration and erosion layers similar to those described in 60.485(d) and (e), and 60.395(a).

2.2.2 AST, Infrastructure, and Training Props

Prior to cap construction, the FAI and Everts Air Cargo moved the D6 training plane that had been staged west of the FTP. The FTP was supplied with fuel for training purposes from an AST north-northeast of the FTP. A buried fuel pipe ran from the AST to a flow meter and control post at the FTP berm, then within the FTP to a valve at the center of the concrete basin. The concrete basin was originally designed to contain the fuel; however, fuel was

floated in the larger FTP basin during training exercises. Additional information on FTP use and construction can be found in the Work Plan. NRC disconnected the AST and removed the buried fuel lines, fuel dispenser, and control post in September 2019. They removed approximately 175 gallons of diesel fuel from the AST and associated piping using a vacuum truck.

While excavating a section of pipe on September 10, 2019, less than two gallons of diesel fuel were released to the ground surface. The fuel appeared to be trapped in a low spot where the piping passed through a concrete block. Shannon & Wilson and NRC personnel immediately deployed sorbent pads and drained the remaining fuel into a duck pond with additional sorbents. Shannon & Wilson used a photoionization detector to field-screen the unstained soil. Visibly stained material and soil with field-screening readings above 20 parts per million were containerized in 55-gallon drums and 1-cy supersacks, totaling 5.3 cy.



Exhibit 2-2: FTP piping and training prop removal (September 10, 2019)

The FAI reported the diesel fuel release to DEC the following day. The DEC Project Manager indicated additional excavation and soil sampling were not required and approved the project team's plan for disposing of the excavated material. NRC placed the excavated soil inside the lined FTP before it was capped (FAR no. 12, Appendix F). The potentially petroleum-contaminated soil excavation is shown in Figure 5.

NRC removed training props and debris using an excavator, flat truck, side dump, and other heavy equipment in September and October 2019. These items included vehicles, piping, a partial Beechcraft plane, and other debris. They plugged the existing FTP liner monitoring port with concrete to decommission it (photograph in FAR no. 3, Appendix E). The training props within the FTP were decontaminated inside the FTP berms before disposal.

2.2.3 Dewatering

NRC constructed a water treatment system meeting the specifications described in our Work Plan and transported it to Fairbanks. They planned to treat the PFAS- and petroleum-impacted water within the FTP by alternating between two, parallel treatment trains at a flow rate of 60 to 65 gallons per minute.

NRC's water treatment system included:

- 18,000-gallon weir tank for particulate settling;
- 5-micron and 1-micron filtration banks to reduce suspended solids;
- 5,000-pound organoclay vessel to remove mechanically-emulsified product and reduce hydrocarbons and arsenic concentrations;
- three 5,000-pound acid-washed granular activated carbon (GAC) vessels to reduce PFOS and PFOA concentrations; and
- 1-micron filtration bank of six bags to remove fine particulates.

The onsite water treatment system was assembled, pressurized, and tested on September 9, 2019. Appendix D of the Work Plan includes a design schematic and other information related to NRC's design. Treatment effluent water samples *FTP-post001* and *FTP-post002* were collected from each treatment train following the first batches of treated water. The treatment confirmation samples were submitted for determination of PFOS, PFOA, and other analytes per DEC dewatering permit AKG002000 for point-source discharge of treated FTP water to the Shooting Range Slough (Figure 1). Exhibit 3-1 of the Work Plan includes effluent limits for the discharge of treated water.



Exhibit 2-3: Onsite water treatment system (September 9, 2019)

Field staff noted the FTP water foamed upon agitation and was light green with floating algae particles (Exhibit 2-4). The pre-treatment water was alkaline, with a pH between 8.0 and 10.1. Additional water quality parameters and observations are included in Exhibit 2-5. Post-treatment water was returned to the FTP pending receipt of sample results from the confirmation batch. *Treatment System Monitoring Forms* are included in Appendix E.

The post-treatment sample results did not meet effluent standards (see Section 3.1.1). NRC attributed this discrepancy to the September 2019 FTP water chemistry being different from the assumptions used to design the treatment system. In fall 2018 the FAI added an estimated 212,000 gallons of water from the north deicing basin to the FTP. This water had up to 75 milligrams per liter (mg/L) ethylene glycol, 160 mg/L propylene glycol, and 62 ng/L PFOS, making it unsuitable for discharge to the municipal utility wastewater treatment plant without pre-treatment.

Over summer 2019 naturally occurring algae consumed the glycol in the FTP, causing a major algae bloom that depleted the water of oxygen and increased the pH. Ethylene and propylene glycol were not detected in FTP water samples collected in September 2019. NRC designed the water-treatment system using analytical results from 2018 and early 2019 before the summertime algae bloom.



Exhibit 2-4: Pre-treatment FTP water
Left: algae (September 10, 2019). Middle and right: foaming water (September 30, 2019).

Following receipt of the initial post-treatment results, Shannon & Wilson, NRC, and FAI personnel met to discuss the best course of action. The FAI elected to transport the FTP

water offsite to NRC's Anchorage water treatment facility. Shannon & Wilson prepared two Work Plan Addendums pertaining to offsite FTP water treatment by NRC, both submitted to DEC on September 25, 2019. DEC approved offsite transportation in an email dated September 25, and offsite treatment in a letter dated September 26, 2019 (Appendix A).

NRC transported approximately 136,000 gallons of FTP water to Anchorage in tanker trucks between September 25 and October 6, 2019. Each dual tanker truck has a weight capacity equivalent to approximately 11,000 gallons of water. Non-hazardous waste manifests and certificates of disposal for the FTP water are included in Appendix C. NRC built a water storage area with secondary containment and added pre-treatment to remove the algae particles and balance the pH (see photographs in FAR nos. 15 and 31, Appendix F). The FTP water was then filtered using a similar process to the system designed for use onsite, using the same GAC vessels.

Exhibit 2-5: Fire Training Pit Water Samples

Description	Date	Sample Name	Observations and Parameters
Ponded water ¹	9/9/19	FTP-pre001 / 002	Green, foaming. Elevated pH (8.7) and ORP (218 mV).
Treatment effluent at system startup	9/9 - 9/10/19	FTP-post001, FTP-post002	Slightly lighter green. Neutral pH (7.0 to 7.1). Elevated conductivity (1,320 to 1,440 $\mu\text{S}/\text{cm}$). Elevated ORP (240 mV).
Ponded water ¹	9/13/19	-	Green, foaming. Dissolved oxygen near saturation (12 mg/L). Elevated pH (10.1).
Interstitial water at the former ground surface ²	9/30/19	FTP-pre003	Grey-green with sheen, heavy foaming. Lower pH (6.1), elevated conductivity (370 $\mu\text{S}/\text{cm}$). Contains sediment.
Interstitial water from the beginning of 2020 dewatering ²	9/17/20	FTP-pre004 / 005	Strong hydrocarbon odor. Neutral pH (6.9), elevated conductivity (640 $\mu\text{S}/\text{cm}$). Contains sediment.
Interstitial water from the end of 2020 dewatering ²	10/29/20	FTP-pre006	Strong hydrocarbon odor with sheen. Neutral pH (6.8), elevated conductivity (680 $\mu\text{S}/\text{cm}$). Contains sediment.

Notes:

1 Liquid accumulated in the FTP (Figure 3).

2 Water pumped from within the soil or sediment pore space (Figure 3).

ORP = oxidation reduction potential; mV = millivolts; $\mu\text{S}/\text{cm}$ = microsiemens per centimeter; mg/L = milligrams per liter

After draining the onsite treatment system and weir tank, NRC pumped directly from the FTP into the tanker trucks. On September 28, 2019, after dewatering approximately 77,000 gallons the pumping rate slowed significantly. They drained the last of the ponded water into an onsite storage tank by digging small trenches in the saturated FTP soil, pumping from the concrete basin and existing FTP sump, and using multiple lower flow rate pumps. Chronological photographs of dewatering and cap construction are included in Appendix B.

NRC and GNI built a temporary sump to access water from within the FTP soil pore space (labeled interstitial water in Figure 3). They carefully dug to the FTP liner using hand tools and a small excavator. The liner appeared to be in good condition. A section of perforated 12-inch-diameter polyethylene pipe was placed vertically in the hole, immediately above the FTP liner. They backfilled the hole with approximately 10 cy of pea gravel (FAR nos. 23 and 25, Appendix F). A corrugated metal pipe was later added to extend the temporary sump. Field staff observed heavy foaming on the water's surface during sump installation (Exhibit 2-5).

After the temporary sump was placed, dewatering occurred concurrently with FTP cap construction (see Section 2.2.4). Drawing water from the temporary sump was much faster than from the permanent sump, but the flow rate decreased steadily over time. NRC believes this is due to the condition of the sump and intake pipes, which are partially clogged with fine-grained sediment. NRC pumped continuously for six days after installing the temporary sump. Staff drained the sump, allowed it to recharge, and repeated the process at lengthening intervals. The interstitial recharge rate dropped from over 6,000 gallons to several hundred gallons per hour. At the end of pumping Shannon & Wilson measured 1.2 feet of water in the permanent sump, equivalent to 1.9 feet of water within the FTP. This measurement was taken during FTP cap compaction.

The FTP liner was placed several weeks later (see Section 2.2.4). According to measurements collected by the National Weather Service, nearly one inch of accumulated precipitation fell between the end of dewatering and FTP capping (National Oceanic and Atmospheric Administration). In late October we measured 3.3 feet of water in the permanent sump, equivalent to 4.0 feet of water within the FTP. The water level increase could be due to a combination of precipitation, the effects of compaction, slow release of water from fine-grained sediment and ash within the FTP, and other factors.

In 2020, NRC dewatered approximately 29,000 gallons from the FTP between September 18 and October 29, 2020. They used an 80-barrel vacuum truck equipped with a rigid extension hose to access water via the permanent sump (Exhibit 2-10). The 2,200-gallon capacity vacuum truck made one or two trips per day, depending on the sump recharge rate. The FTP water was brought to NRC's Fairbanks shop for consolidation before being transported to their Anchorage water-treatment facility. The recharge rate decreased from over 700 gallons to 350 gallons per hour. At the end of 2020 dewatering we measured 1.7 feet of water in the permanent sump, equivalent to 2.4 feet of water above the bottom FTP liner.

A completed *DEC Contaminated Media Transport and Treatment or Disposal Approval Form*, non-hazardous waste manifests, and certificates of disposal are included in Appendix C. To

date, approximately 165,000 gallons of FTP water have been removed and treated by this corrective action effort.

2.2.3.1 FTP Water Samples

Shannon & Wilson collected pre-treatment FTP water samples to characterize the liquid for disposal. The post-treatment water samples were collected to evaluate if effluent treatment goals were met. The first set of FTP pre- and post-treatment water samples collected at treatment system startup were submitted for PFOS, PFOA, total aromatic hydrocarbon (TAH), total aromatic hydrocarbon (TAqH), arsenic, glycols, DRO, and RRO per the Work Plan. The TAH analyte list includes benzene, toluene, ethylbenzene, and xylenes (BTEX). The TAqH analyte list includes 16 PAHs.

The second pre-treatment water sample was collected during installation of the temporary dewatering sump in late September 2019. This sample was submitted for 18 PFAS, TAH, TAqH, arsenic, DRO, RRO, and VOCs for waste characterization purposes. Pre-treatment samples were also collected at the beginning and end of dewatering in 2020. These samples were submitted for 18 PFAS, TAH, TAqH, arsenic, glycols, DRO, and RRO per the Work Plan and updated DEC guidance.

NRC collected additional pre-, mid-, and post-treatment water samples beginning in 2019, as indicated in the second September 25, 2019 offsite water treatment Addendum. Analytical results from 2019 were provided to the FAI and DEC by email. Treatment-related analytical results from 2020 and 2021 are being provided directly to DEC by NRC. Following treatment, the water was transferred to Anchorage Water and Wastewater Utility's Pollution Control Facility. Copies of NRC's 2019 permits are included in the first offsite water treatment Addendum. The 2020 water was treated to the effluent discharge limits indicated in NRC's updated Temporary Industrial Discharge Permit No. 2020-001.

2.2.4 Cap Construction

FAI Maintenance & Operations, GNI, and Layfield USA Corporation (Layfield), constructed the FTP cap between September 2019 and June 2020. To begin, a geotextile separation fabric was placed over the FTP contents, concrete basin, and excavated soil from area outside the FTP. Structural fill was sourced from a nearby FAI borrow pit and temporarily stockpiled next to the FTP. FAI operators placed and compacted the gravel in 1-foot lifts between October 1 and 8, 2019. GNI placed fill stakes and periodically checked grade during compaction. Shannon & Wilson performed in-place density testing consistent with ASTM D6938. Appendix B includes the results of grain size distribution analyses (ASTM C136), Modified Proctor laboratory compaction (D1557) testing, and chronological photographs of cap construction. SWPPP inspection information is included in Section 2.1.

GNI subcontracted Layfield to supply, install, and seam the 40-mil geomembrane liner. Layfield was onsite from October 31 to November 3, 2019. They placed geotextile separation fabric immediately above and below the liner to protect it from physical damage during construction. GNI provided a heated tent to warm the liner and maintain pliability during the low-temperature installation. Layfield used portable heaters to dry the liner and a Demtech hot split wedge welder to seal the seams. The final geomembrane liner dimensions were 250 feet by 246 feet. Layfield also fabricated a custom pipe boot to seal the liner around the FTP sump extension (Exhibit 1-4). Layfield conducted tension, air, and probe tests on each seam weld (Exhibit 2-6). The tests met product specifications. Finally, they added sandbags to hold the geotextile and liner in place until construction could resume in the springtime.



Exhibit 2-6: FTP geomembrane liner installation

Left: newly welded geomembrane liner. Right: seam testing strips. Photographs taken November 2, 2019.

Cap construction resumed on May 26, 2020. FAI operators placed and compacted silty fill delivered by GNI (Appendix C). The FAI indicated compaction testing during silt placement was not required. GNI placed the topsoil and hydroseeded the cap for stability and erosion control. DOT&PF staff watered the newly placed hydroseed. By mid-July the grass was at least six inches tall.

2.2.4.1 Deviations from Design

The FTP sump was extended using three precast concrete sections. Design Alaska's design plans include a final sump extension piece that necks down to a smaller diameter and rebar within the sump grade ring (Appendix B, Sheet C601). The final concrete section was

replaced with a shorter, less than one foot flat-top section and the rebar omitted at DOT&PF's request (FAR no. 53, Appendix E; Exhibit 1-4). With these minor exceptions, the FTP cap was built according to design plans.

2.2.5 Cap Institutional Controls

FTP access, inspections, ongoing groundwater sampling, water level elevation monitoring, and the FAI's flooding response plan are described in the FTP cap ICs Addendum dated July 9, 2020. This report replaces the first annual FTP ICs report. The FAI has noted the former FTP on the internal FAI Information Map to prohibit excavation, drilling, or other soil-disturbing activities within the cap boundaries. The FTP vicinity is not open to the general public. FAI Maintenance & Operations installed a semi-permanent fence immediately around the FTP cap in May 2021 to prevent unintentional vehicle traffic.

In January 2021 DOT&PF Maintenance & Operations installed a float sensor (aka bilge level switch) and strobe warning light at the permanent sump. The sensor was set above the ice to avoid damaging it. The Addendum describes setting the water level sensor one foot from the bottom of the sump. However, less water was removed from the FTP in 2020 than originally planned due to limited funding. The level switch will be adjusted downward to the current water height after the FTP is fully thawed in June or July 2021. The monitoring system will be inspected monthly by Maintenance & Operations after it's fully operational.

The FAI has prepared a checklist to document regular FTP cap inspections, included in Appendix E. Quarterly FTP cap inspections were delayed due to COVID-19 and staffing changes. The first FTP cap inspection will be in late May 2021.

Groundwater monitoring near the FTP is described in Section 2.3.5. The 2020 to 2021 quarterly sampling schedule was slightly different from the anticipated schedule described in the Addendum. Ongoing groundwater level monitoring, sump inspections, and other ICs will be reported in 2022, 2024, and other subsequent FTP monitoring reports.

Groundwater and surface water elevation measurements are described in Sections 2.3.3 and 5.2. There was no flooding in the FTP vicinity during the time period summarized in this report.

2.3 Monitoring Wells

Shannon & Wilson retained the services of drilling contractor GeoTek Alaska, Inc. (GeoTek) to install two clusters of four groundwater MWs each (Figure 4). The MW-1901 cluster is downgradient of the FTP to the northwest. The MW-1902 cluster is located between the FTP and Tanana River, upgradient of the FTP.

2.3.1 Existing Monitoring Wells

Field staff sampled two previously-installed groundwater MWs near the FTP in September 2019, MW-9701-12 and MW-9702-12. The existing MWs were installed in 1997 by a previous consultant. These wells are immediately northwest of the FTP as shown in Figure 4. Shannon & Wilson observed sediment in the MWs, therefore we redeveloped them prior to sampling.



Exhibit 2-7: Installing MW-1901 well cluster (September 22, 2019)

Copies of our *Well Development Logs* and *Monitoring Well Sampling Logs* are included in Appendix E. A field-duplicate and field blank sample were collected from MW-9701-12. These samples were initially submitted for determination of PFOS and PFOA only. Following sample receipt, we requested the laboratory re-report the data for a longer list of analytes. Details are discussed in our QA/QC summary in Appendix F.

2.3.2 Installation

GeoTek used a Geoprobe Model 8040DT drill rig to install eight groundwater MWs using DT45 direct-push tooling and tricone rotary wash with a 340-pound auto hammer. At shallow depths, the drill rig advanced a solid barrel (4.5-inch outside diameter) direct-push device for collecting continuous core samples of unconsolidated material.

The direct push drilling method is not able to reach 150 feet bgs. GeoTek used tricone rotary wash to clean out the casing and control sand heave while drilling the deeper MWs. Rotary wash was selected because it produces less investigation-derived waste than traditional MW installation using augers. This drill method injects water into the formation after advancing the casing with an auto hammer. GeoTek obtained the drilling water from Pioneer Wells, Inc., a reportedly PFAS free water source. At depth, subsurface soil samples were collected with split-spoon samplers.

Shannon & Wilson geologists Craig Beebe, Adam Wyborny, and Fawn Glassburn described the recovered soil for the purpose of determining subsurface conditions and lithology, collected analytical soil samples, and prepared a descriptive log of soil conditions encountered during drilling. The rounded depth of the MW is denoted in the well name (i.e.

MW-1901-40 was installed at approximately 40 feet bgs). Boring Logs are included in Appendix D. Permafrost was not encountered.

The MWs in each cluster were screened at the following depths:

- spanning the surface of the water table;
- 35 to 40 feet bgs;
- 75 to 80 feet bgs; and
- 145 to 150 feet bgs.

We collected one PFAS analytical soil sample per boring, from the middle of the screened interval of each MW. The precise sample intervals are shown in the field notes (Appendix E) and analytical data tables. These saturated soil samples were submitted for determination of 18 PFAS. We collected one rinsate or field-blank sample by pouring certified PFAS-free water down the length of the direct push soil core liner. We also collected two field-duplicate soil samples.

Drilling occurred between September 21 and October 3, 2019. The MW-1902 cluster and portions of the MW-1901 cluster were drilled at nighttime per FAI and FAA requirements (see Section 2.1). Shannon & Wilson and GeoTek did not observe a petroleum odor or sheen during drilling. Photographs of subsurface soil are included in our daily FARs (Appendix F). Most soil cuttings, tricone rotary soil-water slurry, and decontamination fluids were containerized and transferred to the FTP before it was capped. Drilling mud or other additives were not used. Drill cuttings from October 1 to 3, 2019, were containerized in two 55-gallon drums for offsite disposal (Section 2.6). Soil sample *MW-1901-Drum* was collected on October 7, 2019 for disposal characterization purposes.

GeoTek completed the wells using stickup monuments. The wells were constructed using two-inch inside-diameter schedule 40 PVC material. The screens are pre-pack 0.010-inch slotted screen with 20/40 sand and threaded end caps. The filter pack within the annular space at and around the screened interval is 10/20 silica sand. A bentonite chip seal followed by pea gravel, bentonite grout, or natural gravel slough fills the remaining annular space, depending on the well. *Monitoring Well Construction Details* field forms can be found in Exhibit E. GeoTek installed bollards around the MWs and painted them yellow for visibility (Exhibit 2-8).

Design Alaska, Inc. surveyed the newly installed MWs on October 8, 2019. Survey information is included in Appendix B.

2.3.3 Groundwater Elevation

On October 15, 2019, Shannon & Wilson installed a Solinst Levellogger model F30 water level logger and Solinst Barologger at the site to collect groundwater elevation data at MW-9701-12, approximately 30 feet from the FTP cap. During winter 2020/2021 the Barologger malfunctioned, causing biased groundwater elevation measurements. We used barometric data from the FAI weather station to compensate for barometric pressure fluctuations during the time period affected by the Barologger malfunction. In February 2021, the data loggers were replaced with a single In-Situ, Inc. Model LT-700 water level logger in MW-1901-15. This MW is approximately 160 feet from the FTP cap.

FARs and *Water Level Datalogger Field Data Forms* are included in Appendix E. Groundwater elevation measurements are shown in Exhibits 5.1 to 5.3 and discussed in Section 5.2.

2.3.4 Development and Sampling

The MWs were developed using a disk to surge the screened internal and diaphragm pump to agitate the water column and remove sediment. Following development, we purged each MW using a submersible pump and new, disposable PFAS-free tubing. Field staff measured water quality parameters using a multiprobe water quality meter (YSI) Pro Plus. After water quality parameters had



Exhibit 2-8: Sampling MW-1902 cluster (June 26, 2020)

stabilized or over three well-casing volumes of water was purged, the samplers collected a PFAS groundwater sample from each well. The following values were used to indicate stability for MWs: ± 0.2 °C, ± 0.1 pH; ± 0.1 mg/L dissolved oxygen, ± 3 percent conductivity, ± 10 millivolts redox oxidation reduction potential, and turbidity (visual classification).

During the initial water sampling event we collected one equipment blank rinsate sample per type of submersible pump, one field blank per day of sampling, and field-duplicate samples at a rate of 10 percent. Copies of our *Well Development Logs* and *Monitoring Well Sampling Logs* are included in Appendix E.

2.3.5 Groundwater Monitoring

Shannon & Wilson sampled the MW-1901 and MW-1902 well clusters quarterly beginning in summer 2020. The quarterly sampling events occurred in June and October 2020, and January and April 2021. We collected DRO and VOC samples from the 15-foot MWs and PFAS samples from all eight MWs, in accordance with the FTP Cap ICs Addendum. The samplers collected one equipment blank sample per type of submersible pump and sampling event, one field blank per day of sampling at the MW-1901 cluster, and one field-duplicate sample per day. Field staff observed the MWs to be in good condition; well maintenance was not required.

MW purge water was containerized in 55-gallon drums for offsite disposal. Shannon & Wilson prepared and submitted *DEC Contaminated Media Transport, Treatment, and Disposal Approval Forms* for offsite treatment of the MW purge water. Non-Hazardous Waste Manifests, Certificates of Treatment, and signed copies of the DEC approval forms are included in Appendix C.

2.4 Soil Sampling

Soil samples were collected from the PFOS soil excavation outside the FTP, monitoring well boreholes, and saturated soil from within the FTP. Subsurface soil samples collected during MW installation are summarized in Section 2.3.2.

2.4.1 PFOS Soil Excavation

GNI excavated an estimated 31 cy of PFOS-contaminated soil from a 10-foot-square surrounding 2019 soil boring *FAI18-TH102*, approximately 100 feet west of the lined FTP area (see Figures 4 and 5). Groundwater was encountered at 8.4 feet bgs, as shown in Exhibit 2-9. The excavation passed through gravel fill and geotextile separation fabric before encountering natural soil. Shannon & Wilson collected analytical soil samples from each sidewall, the excavation base, and one field-duplicate. The samples were submitted for PFAS analysis.

Field staff did not observe soil staining, odors, or other indications of hydrocarbon contamination. The excavated soil was placed within the lined FTP. GNI backfilled the excavation with offsite structural fill.

2.4.2 Fire Training Pit Soil

Field staff collected four surface soil samples and one field-duplicate from approximately six inches below the local ground surface within the FTP. The soil was dark grey, oily, moist to wet, and had a strong petroleum odor. These samples were collected shortly after the removal of ponded water (see Section 2.2.3). They were submitted for analysis of PFAS, toxicity characteristic leaching



Exhibit 2-9: PFOS soil excavation outside FTP (September 19, 2019)

procedure (TCLP) metals, DRO, RRO and VOCs. After sample collection NRC spread near-dry, excavated PFOS-contaminated and potentially petroleum-contaminated soil into the FTP to soak up residual liquid. They decontaminated their equipment inside the FTP berms.

2.5 Sample Custody, Storage, and Shipping

Immediately after collection, the PFAS soil and water samples were placed in individual Ziploc bags and stored in a designated sample cooler maintained between 0 °C and 6 °C with ice substitute. Shannon & Wilson maintained custody of the samples until submitting them to the laboratory for analysis.

Samples submitted to SGS North America, Inc. (SGS) were hand-delivered to their Fairbanks receiving office. We submitted samples to Eurofins TestAmerica Laboratories, Sacramento (TestAmerica) and Vista Analytical Laboratory in multiple shipments using Alaska Airlines Cargo's Goldstreak service. For shipping we packaged analytical samples and chain-of-custody forms in a hard-sided cooler with an adequate quantity of frozen ice substitute. The samples were packaged as necessary to prevent bottle breakage, in a liner bag, and sealed with custody seals on the outside of the cooler.

2.6 Investigation-Derived Waste

Liquid investigation-derived waste (IDW) for this project included rotary wash water, MW development and sampling purge water, decontamination fluids, and AST fuel. Offsite filtration and disposal of FTP water is discussed in Section 2.2.3. Solid waste included

excavated soil, soil drill cuttings, former training props, suspended solids filtered from the FTP water, filtration bags, sorbent pads, and disposable sampling equipment (nitrile gloves, submersible pump tubing, soil core liners, etc.).

Most IDW was combined with the FTP contents. Liquids generated during 2019 MW drilling, developing, and sampling were combined with the FTP water treated at NRC's Anchorage water treatment facility. They also disposed of the AST fuel at their Anchorage facility. MW sampling purge water from the 2020 and 2021 sampling events was containerized in 55-gallon drums and transported to NRC's Anchorage facility in November and December 2020, and April 2021 (Appendix C). Excavated soil (see Sections 2.2.2 and 2.4.1) and drill cuttings (see Section 2.3.2) generated before October 1, 2019 were placed within the lined FTP.

Two drums of saturated soil drill cuttings were generated after the FTP was capped. FTP water filtration generated three, 275-gallon totes of algae and sediment. These materials were disposed of at NRC's Moose Creek Thermal Treatment Facility (Appendix C). Decontaminated former training props and Shannon & Wilson's disposable sampling equipment were disposed of at the Fairbanks North Star Borough landfill.



Exhibit 2-10: Dewatering for offsite water treatment
Left: September 29, 2019. Right: September 18, 2020

2.7 Deviations

In general, the corrective action effort was conducted in accordance with the DEC-approved Work Plan and Addenda. The following are deviations from our agreed-upon scope of services. These modifications do not impact the overall data quality or project aims.

- The FTP water was treated offsite per the September 25, 2019 offsite water treatment Addenda (see Section 2.2.3). The mid- and post-treatment water samples described in the original Work Plan were not collected.
- Minor modifications to Design Alaska's FTP cap design plans were made during construction (see Section 2.2.4.1).
- Most PFAS samples for this project were submitted for determination of 18 PFAS by a modified U.S. Environmental Protection Agency (EPA) Method 537.1 (see Section 3.0 and Appendix F). This change was based on updated DEC guidance.
- The Work Plan states the FTP would be dewatered before cap construction and anticipates the final water level would be no more than one foot above the base of the permanent sump. Dewatering continued after cap construction and may be ongoing. As of fall 2020, there was 1.7 feet of water in the sump.

3 ANALYTICAL RESULTS

Most of the surface water, groundwater, and soil samples submitted for this project were analyzed for the 18 PFAS compounds listed in EPA Method 537.1. Samples collected before September 17, 2019 and one waste-characterization sample were analyzed for PFOS and PFOA only. The PFAS samples were analyzed by TestAmerica in West Sacramento, California and Vista Analytical Laboratory in El Dorado Hills, California.

In addition to PFAS, the pre- and post-treatment FTP water samples were submitted for determination of TAH analytes (also known as BTEX) by EPA Method 624, TAqH analytes (also known as PAHs) by EPA 625M-SIM, arsenic by EPA 200.8, glycols by SW 8015M, DRO by AK 102, RRO by AK 103, and/or VOCs by SW 8260 (Section 2.2.3). The groundwater samples collected in 2020 and 2021 were submitted for determination of PFAS, DRO, and VOCs by the same analytical methods (Section 2.3.5). The saturated soil samples collected from within the FTP were submitted for PFAS, TCLP metals by Method SW 1311 or SW 6020A, DRO, RRO, and VOCs (Section 2.4.2). The petroleum and metals samples were analyzed by SGS in Anchorage, Alaska. The glycol samples were analyzed by Bio-Chem Laboratories, Inc. in Grand Rapids, Michigan, a subcontractor to SGS.

Analytical results are summarized in Tables 1 through 10 and Figures 5 through 9. Appendix F includes a Quality Assurance (QA)/Quality Control (QC) summary, laboratory reports, and DEC Laboratory Data Review Checklists for each work order.

3.1 Fire Training Pit

Analytical water samples were collected from the FTP four times in 2019 and 2020. These results are summarized in Table 1 and Figure 6.

PFOS, PFOA, benzene, TAH, naphthalene, TAqH, arsenic, DRO, and RRO were detected at concentrations above regulatory standards in at least one untreated water sample from the FTP. Analytical concentrations varied over time. PFOS was detected at higher levels in the interstitial water than in ponded water. Ponded water refers to liquid accumulated in the FTP. Interstitial water refers to water pumped from within the soil or sediment pore space.

The highest PFOS concentration was from interstitial water collected at the beginning of dewatering in September 2020 (sample *FTP-pre-004/005*). This detection of 2,000,000 ng/L PFOS (Table 1) considerably greater than the 2019 concentration. PFOA concentrations were comparable between the interstitial and ponded water, and between 2019 and 2020 sample results.

TAH or BTEX concentrations were considerably higher in the interstitial water sample collected at the end of 2019 dewatering (sample *FTP-pre-003*) than in other samples. The highest summed TAH concentration was nearly 140 micrograms per liter ($\mu\text{g/L}$), an order of magnitude greater than the next-highest concentration of 96 $\mu\text{g/L}$ collected at the end of 2020 dewatering. The highest arsenic and DRO concentrations were also from the water sample collected at the end of 2019 dewatering. Ethylene and propylene glycols were not detected in any of the 2019 or 2020 FTP samples.

3.1.1 Water Treatment

Two post-treatment water samples were collected in September 2019 from NRC's onsite water treatment system effluent. These samples were collected at system startup with the intent of confirming treatment goals were met. The results are compared to applicable effluent limits for treated water in Table 2.

PFOS and arsenic were detected above effluent limits in one or both of the treatment trains. PFOA, benzene, ethylbenzene, TAqH analytes, glycols, and RRO were not detected in effluent water samples from either treatment train. Xylenes, toluene, and DRO were detected below effluent standards. Treatment train 2 of the onsite system removed over 98 percent of the PFOS found in pre-treatment



Exhibit 3-1: FTP dewatering (October 1, 2019)

water, but water from the effluent exceeded regulatory standards. The water was not discharged to the nearby slough as originally intended. Additional detail can be found in Section 2.2.3.

3.2 Monitoring Wells

Table 3 summarizes groundwater MW sample results from fall 2019. PFAS water samples were collected from ten MWs near the FTP. Two of these wells were drilled adjacent to the FTP before the corrective action effort, *MW-9701-12* and *MW-9702-12*. The *MW-1901* and *MW-1902* clusters were installed in 2019. The *MW-1901* cluster is downgradient of the FTP to the northwest. The *MW-1902* cluster is upgradient of the FTP and near the south end of the small aircraft runway (2R-20L).

PFOS and PFOA were found above DEC groundwater-cleanup levels in *MW-9701-12* and *MW-9702-12*, the two MWs nearest the FTP. The highest concentration was 1,600 J ng/L PFOS in *MW-9701-12*, four times the DEC groundwater cleanup level.

PFOS, PFOA, perfluorohexanesulfonic acid (PFHxS), perfluorohexanoic acid (PFHxA), and other PFAS compounds were detected in the 15- and 40-foot MWs both upgradient and downgradient of the FTP. Sample results were higher in the *MW-1901* cluster (downgradient) than in corresponding wells of the same depth in *MW-1902* (upgradient; Figure 4). One or more PFAS were detected above the laboratory LOQ in the 80-foot MWs. PFAS were not detected above the LOQ in the 150-foot MWs. Table 4 summarizes subsurface soil results for samples collected during MW installation. These results are discussed in Section 3.3.1.

Tables 5 through 8 summarize the results of quarterly monitoring in the *MW-1901* and *MW-1902* clusters. DRO and VOCs were not detected about their respective laboratory LOQs in any of the 15-foot MW samples. PFOS was detected at 450 ng/L in the April 2021 sample from *MW-1901-40*, the only result to exceed the DEC groundwater-cleanup level. The combined PFOS and PFOA concentrations in *MW-1901-15* and *MW-1901-40* continue to exceed the LHA, and the PFAS concentrations in the 80-foot and 150-foot MWs remain low. In *MW-1901-15* and *MW-1901-40* the PFHxS, PFHxA, and perfluorobutanesulfonic acid (PFBS) concentrations are higher than the PFOS and PFOA concentrations for the same sampling event. In *MW-1902-15* the PFHxS concentrations are higher than the PFOS and PFOA concentrations for the same sampling event.

Figure 6 includes the highest PFAS results for each analyte, regardless of sample date. Figures 7 through 9, Quarterly Line Graphs, display the PFOS, PFOA, PFHxS, PFHxA, and PFBS results for the MWs with the highest PFAS detections. Analytical results for *MW-1901-15*, *MW-1901-40*, and *MW-1902-15* are graphed. The PFAS concentrations in the

MWs vary over time. However, there does not appear to be a consistent trend across the different MWs. For example, PFAS results in *MW-1901-15* are generally highest in the June 2020 sample, levels in *MW-1901-40* are highest in the January or April 2021 samples, and levels in *MW-1902-15* are highest in the first sample from October 2019. Trends in quarterly sample results for these three wells are discussed in Section 5.1.2.

3.3 Soil Samples

Soil samples were collected for this project during MW installation, from the base and sidewalls of the PFOS soil excavation near the FTP, and from within the FTP before it was backfilled.

3.3.1 Soil Borings

Table 4 summarizes the results of saturated soil samples collected from depths corresponding with the screened intervals of each MW-1901 and MW-1902 well. PFOS and PFOA were not detected above DEC migration-to-groundwater soil-cleanup levels in these subsurface soil samples. PFOA was detected at an estimated concentration of 0.10 J ng/L below the laboratory LOQ in sample *SB-1901-15*. This soil boring is associated with the screened interval for MW-1901-15. PFHxS and PFHxA were the only PFAS detected above the LOQ. The highest concentrations were 1.3 ng/L PFHxS and 0.43 ng/L PFHxA in sample *SB-1901-15*.

3.3.2 PFOS Excavation

PFAS soil samples were collected from the limits of the PFOS soil excavation northwest of the FTP. These results are summarized in Table 9 and Figure 5. PFOS was detected above the DEC migration-to-groundwater soil cleanup level of 3.0 micrograms per kilogram ($\mu\text{g}/\text{kg}$) in samples from the base and three of the four sidewalls. Two of these samples had PFOS concentrations more than 10 times the cleanup level. PFOA was detected above the DEC migration-to-groundwater soil cleanup level of 1.7 $\mu\text{g}/\text{kg}$ in samples two of the sidewalls. The highest subsurface sample concentrations were 42 J $\mu\text{g}/\text{kg}$ PFOS and 1.5 $\mu\text{g}/\text{kg}$ PFHxA in the southern sidewall, 2.5 $\mu\text{g}/\text{kg}$ PFOA in the western sidewall, and 6.6 $\mu\text{g}/\text{kg}$ PFHxS in the excavation base.

3.3.3 Fire Training Pit

Four soil samples were collected from the FTP contents before it was capped (Exhibit 3-2). These results are summarized in Table 10 and Figure 5. PFOS, PFOA, DRO, and naphthalene were found above DEC soil-cleanup levels in these samples. PFOS was detected between 1,800 $\mu\text{g}/\text{kg}$ and 8,400 J $\mu\text{g}/\text{kg}$, or three orders of magnitude larger than the DEC migration-to-groundwater cleanup level. PFOA was detected at up to 36 $\mu\text{g}/\text{kg}$,

one order of magnitude larger than the cleanup level. DRO was detected between 1,170 milligrams per kilogram (mg/kg) and 8,220 mg/kg, also an order of magnitude larger than the cleanup level of 250 mg/kg. Naphthalene exceeded the soil cleanup level in two of the four soil samples. Naphthalene was detected at up to 0.106 mg/kg, over 2.5 times the cleanup level of 0.038 mg/kg. The concentrations range widely for each of the detected analytes. The relative percent difference between the minimum and maximum detected concentration in FTP soil was up to 150 percent for DRO.

TCLP measures the concentration of each analyte that could leach from the soil sample over time. TCLP arsenic, barium, and lead were detected at estimated concentrations below the laboratory LOQ for each analyte. TCLP cadmium, chromium, mercury, and selenium were not detected in the FTP soil samples.

In addition to naphthalene, VOCs 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, ethylbenzene, and xylenes were detected above the laboratory LOQ in at least one sample. Six additional VOCs were detected at estimated concentrations below the LOQ. The majority of VOC analytes were not detected.



Exhibit 3-2: FTP soil sampling (October 1, 2019)

4 CONCEPTUAL SITE MODEL

A conceptual site model (CSM) describes potential pathways between a contaminant source and receptors (i.e., people, animals, and plants) and is used to determine who may be at risk of exposure to contaminants. This section describes the suspected contaminant sources, migration and exposure pathways, and potential receptors on the DEC Human Health Conceptual Site Model Scoping and Graphic Forms included in Appendix G. The CSM is completed for contaminants of concern are PFOS and PFOA. The CSM was completed for the FTP area and associated offsite plume.

4.1 Description of Potential Receptors

Shannon & Wilson considers residents, commercial/industrial workers, site visitors or trespassers, recreational users, construction workers, subsistence harvesters, and subsistence consumers to be current or future potential receptors for one or more exposure pathway.

Characterization efforts to date have focused primarily on groundwater and surface water ingestion exposure pathways. Additional information is needed to evaluate exposure to PFOS- and PFOA-contaminated soil, sediment, and biota. This CSM should be reevaluated as additional source areas are investigated, or if regulatory standards change.

4.2 Potential Exposure Pathways

Potential exposure pathways include:

- ingestion of soil, groundwater, or wild and farmed foods;
- dermal absorption of contaminants from soil, groundwater, or surface water;
- direct contact with sediment; and
- inhalation of fugitive dust.

4.2.1 Groundwater Exposure

Historically, groundwater ingestion has been the primary PFOS and PFOA exposure pathway at the FAI. Shannon & Wilson conducted a water supply well search from 2017 to 2019 to evaluate the potential for human exposure to PFAS-containing water near and downgradient of the FAI. We identified and sampled nearly 200 water supply wells, over half of which had concentrations exceeding the EPA's lifetime health advisory level or former DEC action level for drinking water. Between 2018 and 2020 the FAI connected most properties with impacted drinking water supply wells to the College Utilities water system.

Two known properties with water supply wells leading to indoor plumbing have concentrations above the lifetime health advisory level. These property owners are in discussions with the FAI and Alaska Department of Administration's Division of Risk Management. However, to the FAI's knowledge these residents are not actively using their well water for drinking or cooking. Groundwater ingestion is therefore not considered a current exposure pathway.

Many properties within the PFAS groundwater plume have secondary water supply wells in addition to utility connections. Residents and commercial or industrial workers with PFOS- and PFOA-impacted wells may use their water for outdoor uses resulting in dermal contact. Such uses include vehicle or industrial equipment washing, irrigation, gardening,

and summertime bathing. Additionally, onsite construction workers, DOT&PF staff members, and site visitors could be exposed to shallow contaminated groundwater during future excavation and construction projects.

4.2.2 Surface Water Exposure

Dermal contact with surface water is not a major contaminant exposure pathway. DOT&PF staff could be exposed to impacted surface water during airport operations. Construction workers, residents, site visitors, and trespassers could be exposed to surface water during future excavation and construction projects.

4.2.3 Soil and Sediment Exposure

Direct contact with PFOS- and PFOA-contaminated soil or sediment on FAI property is unlikely during normal operations. No additional soil disturbing activities are planned for the immediate FTP vicinity. However, future construction projects in other portions of the airport could expose DOT&PF employees, construction workers, and other visitors to surface or subsurface soil contamination.

DOT&PF staff, tenants, contractors, and site visitors could inhale wind-blown dust potentially containing PFOS and PFOA during outdoor, summertime work. Surface soil near the FTP and gravel fill in other areas of the FAI have a moderate to high silt content, allowing for small respirable particles to be entrained by the wind.

Offsite residents and site visitors could potentially be exposed to impacted soil or sediment during gardening or construction activities. Direct contact with contaminated sediment is unlikely but possible during future construction projects. To our knowledge, the only offsite PFAS soil or sediment samples collected for this project are from soil borings advanced in August 2018 east of the FAI, and sediment collected in January 2019 from the bottom of the gravel pit pond at 5880 Industrial Road.

4.2.4 Other Media

Ingestions of wild and farmed foods is considered a potential exposure pathway because it has not been evaluated. Contaminated well water could be used for vegetable gardening. Fairbanks residents may fish and harvest wild foods in gravel pit lakes south and east of the FAI, and along the Chena and Tanana Rivers.

5 DISCUSSION AND RECOMMENDATIONS

The FTP corrective action effort accomplished the FAI's goal of preventing future direct human contact with the FTP contents and reducing environmental exposure to PFAS-contaminated material in the FTP vicinity. This section presents our FTP characterization findings and recommendations. PFAS groundwater monitoring, water supply well sampling, and groundwater characterization outside the FTP vicinity will be discussed separately.

5.1 Comparison to Regulatory Levels

PFOS, PFOA, DRO, RRO, benzene, naphthalene, and arsenic concentrations for the FTP contents exceed soil and groundwater cleanup levels for these compounds (Tables 1 and 10). Contaminant concentrations in the FTP contents are multiple orders of magnitude higher than those found in nearby soil and groundwater samples outside the lined FTP. Following construction of the FTP cap, its contents are no longer considered an active exposure pathway (Sections 2.2.1 and 2.2.4).

5.1.1 Soil

Outside the FTP, PFOS and PFOA were found above DEC cleanup levels in subsurface soil samples collected near the toe of the cap (Figure 4). Soil samples collected by a previous FAI consultant also identified surface and subsurface soil exceeding the PFOS and PFOA cleanup levels outside the now-capped area. The 30 cy soil excavation described in Section 2.4.1 was located to target the highest known PFOS soil concentration outside the FTP. In 2018 PFOS was detected at 3,000 µg/kg in *FAI18-TH102*, from 4 to 5 feet bgs. Samples from the excavation limits exceeded DEC migration-to-groundwater cleanup levels for PFOS and/or PFOA (Table 9, Section 3.3.2). The highest PFOS concentration was 42 µg/kg, considerably lower than the pre-excavation maximum. The presence of PFAS soil contamination outside the capped FTP is attributed to AFFF overspray and training exercises conducted outside the lined FTP.

5.1.2 Groundwater

The FTP is a known source area for the offsite PFAS groundwater plume. Analytical data from the corrective action effort confirms this assumption. The combined PFOS and PFOA concentrations in four downgradient MWs near the FTP exceed the LHA drinking water action level. These wells range from 12 to 40 feet deep (samples *MW-1901-15*, *MW-1901-40*, *MW-9702-12*, and *MW-9701-12*). In the upgradient 15-foot well, PFOS was detected at approximately one-quarter of the downgradient 15-foot well concentration. A localized

groundwater flow direction could not be calculated using the two well clusters given their relative positions.

PFAS detections in the upgradient wells are presumably from a different PFAS-contaminated soil source area. As shown in Figure 1, other areas near what is now the southwestern end of the small aircraft runway (2R-20L) were used for fire training before the FTP was built. Additionally, it is possible AFFF contaminated soil was transported locally during construction of the small aircraft runway. Shannon & Wilson recommends additional soil and groundwater sampling in this area, as part of site characterization for the broader PFAS groundwater plume.

Analytical results for the 15-foot and 40-foot downgradient wells (MW-1901-15 and -40) and 15-foot upgradient well (MW-1902-15) are shown in Figures 6 through 8. The two 15-foot wells exhibit possible seasonal variation between sampling events. Shannon & Wilson assessed temporal trends in PFAS concentrations for these three MWs. The Mann-Kendall nonparametric trend analysis was conducted at a 95 percent confidence level using the EPA's Statistical Software ProUCL, version 5.1. We also evaluated trends using a Monitoring and Remediation Optimization System classification (Gilbert, 1987; Aziz, et. al., 2016). This evaluation was developed by the Air Force Center for Engineering and the Environment to assess concentration trends with confidence levels below 95 percent, and further discriminates between "no trend" and "stable" contaminant concentrations.

These statistical tests found stable concentration trends in most detected PFAS analytes. Our nonparametric trend analysis identified decreasing PFOS and stable PFOA, PFHxS, PFHxA, and PFBS in downgradient MW-1901-15 (Figure 7). Our analysis identified increasing PFOS and stable PFHxS, PFHxA, and PFBS in downgradient MW-1901-40 (Figure 8). Our analysis identified stable PFOS, PFOA, PFHxS, PFHxA, and PFBS in upgradient MW-1902-15 (Figure 9). We will continue to evaluate concentration trends as monitoring continues. The PFHxS concentrations in these three MWs are generally higher and more variable over time than the other detected PFAS.

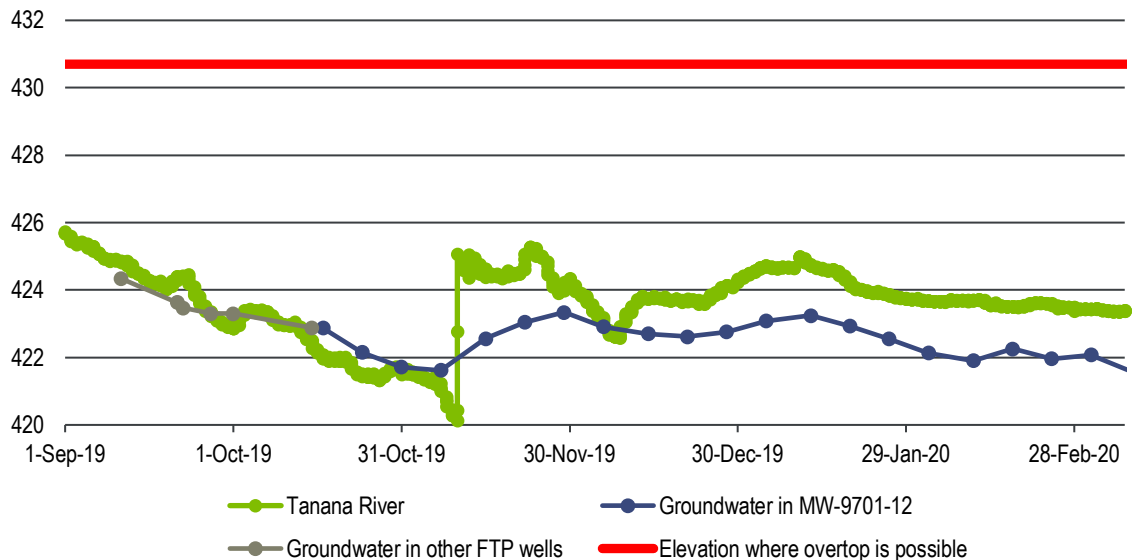
5.2 Groundwater and Surface Water Elevation

Exhibits 5-1 to 5-3, below, are updated versions of the water level elevation comparison graph in the Cap ICs Addendum. These exhibits compare the elevations of the Tanana River and groundwater near the FTP with a conservative estimate of the elevation where groundwater could potentially overtop the bottom FTP liner. This elevation, shown as a red line below and in Figure 3, is 430.7 feet above sea level.

Groundwater elevations at the FTP were measured using pressure transducers and data loggers (see Section 2.3.3) and manual measurements during MW sampling. The ground surface and MWs were surveyed with a vertical accuracy of 0.01 feet.

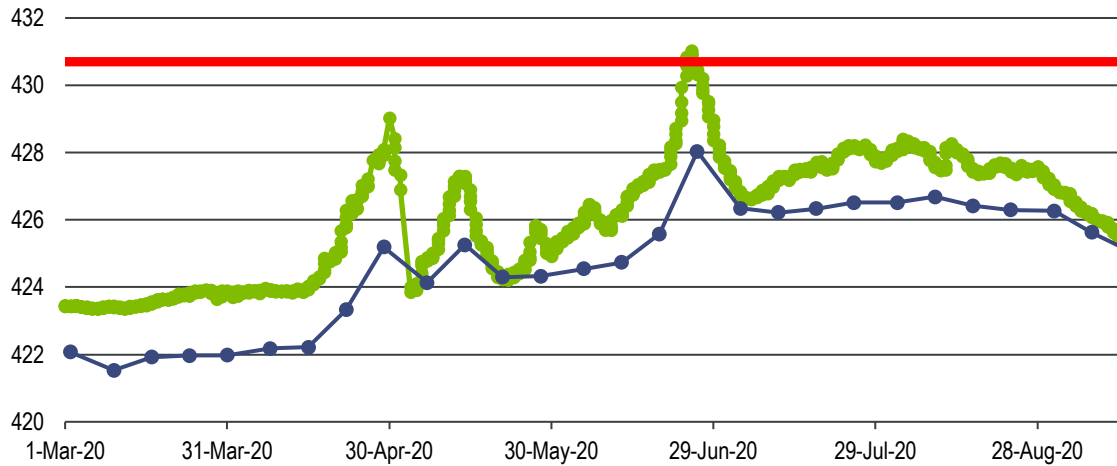
Surface water elevations were collected by the USGS Tanana River gauge station south of the FAI, 1.2 miles from the FTP (No. 15485500). The USGS river gauges record to a vertical accuracy of 0.01 feet (USGS National Water Information System). The USGS found groundwater elevations at the FAI were often similar to the height of the Tanana River, but exhibited smaller seasonal swings than river-elevation measurements. The USGS recorded peak Tanana River heights that were often two feet or more above peak groundwater elevation (Claar & Lilly, 1997). Chena River elevations are not plotted because the USGS did not identify a connection with groundwater elevations in the project area.

Exhibit 5-1: Elevation Comparison in Feet Above Sea Level, September 2019 to February 2020



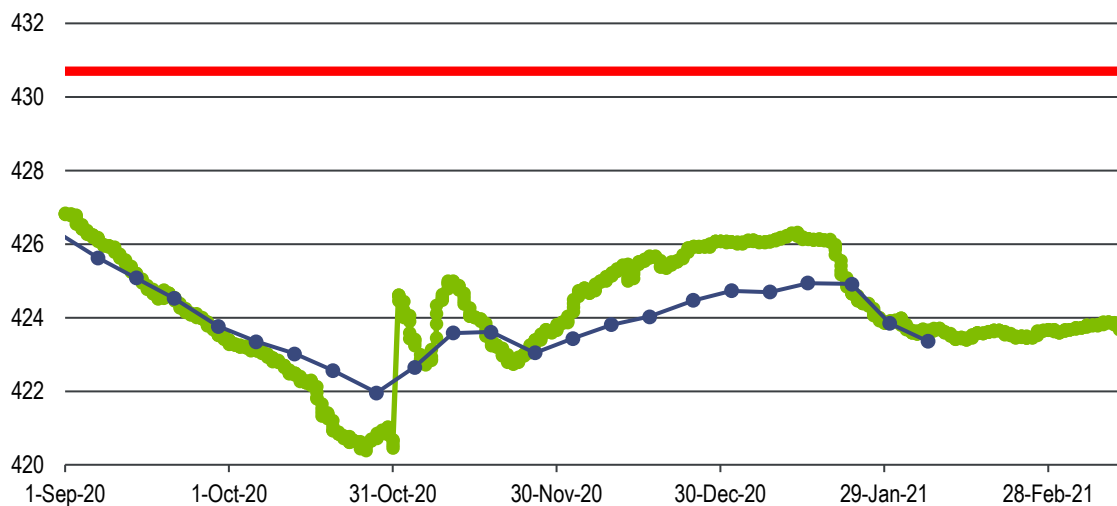
The height of the Tanana River spiked by 4.5 feet on November 10, 2019 (Exhibit 5-1) and by 4.2 feet on November 1, 2020 (Exhibit 5-3). According to the USGS, this large change over a short period of time is common during fall freeze-up and is related to backpressure from slush and ice following the formation of a continuous ice sheet on the river. The Tanana River height dropped 5.2 feet between April 30 and May 4, 2020 (Exhibit 5-2). This change is attributed to the breakup of river ice.

Exhibit 5-2: Elevation Comparison in Feet Above Sea Level, March 2020 to August 2020



The Tanana River's elevation also spiked in mid-May and late June 2020 (Exhibit 5-2). On June 25, 2020, the river reached a recorded elevation of 431.03 feet, or 4 inches above the red line. The river height was just above 26 feet, which the National Weather Service considers to be moderate flood stage. Previously, the highest recorded elevation in recent history (2014 to present) was 429.6 feet in late August 2019. Groundwater elevation measurements at the FTP reached a seasonal maximum of 428.04 feet the following day. The river did not flood the FTP vicinity. This peak is attributed to a combination of rainfall in the lowlands and snowmelt in the mountains within the Tanana River watershed. In four of the last five years the Tanana River's annual maximum height was in the late summer.

Exhibit 5-3: Elevation Comparison in Feet Above Sea Level, September 2020 to February 2021



Note: USGS Tanana River elevation measurements from October 12, 2020 to March 19, 2021 are considered provisional.

Tanana River and groundwater elevation data from September 2019 to February 2021 are consistent with USGS's findings that groundwater elevations at the FAI are often similar to the height of the Tanana River, but with smaller seasonal swings. The river elevation is considerably more variable than the groundwater elevation, particularly during fall freeze-up and spring thaw. Groundwater elevation measurements in spring and summer 2020 were more variable than those in fall 2019 or winter 2020 to 2021 (Exhibit 5-2). Shannon & Wilson last downloaded the data loggers in early February 2021. We will continue to monitor groundwater and surface water elevations through fall 2022, or for three years.

5.3 Dewatering and Cap Institutional Controls

To date, approximately 165,000 gallons of FTP water have been removed and treated by this corrective action effort. We estimate there are approximately 20,000 to 40,000 gallons of interstitial water remaining in the FTP above the level of the permanent sump. Some of this water may not be practical to remove because of the slow interstitial recharge rate. The precise volume of remaining, extractable water in the FTP is unknown. Shannon & Wilson recommends the FAI continue dewatering in 2021 or 2022 to reduce the water level in the sump to one foot or less.

Cap ICs include restricting access, inspections, groundwater elevation monitoring, sampling nearby MWs for PFAS and petroleum compounds, and flooding control measures as needed. Shannon & Wilson recommends the FAI continue to monitor PFAS concentrations in the MW-1901 and MW-1902 clusters quarterly for one year to investigate the potential for cyclical seasonal variation. We recommend the DRO and VOC sampling frequency in *MW-1901-15* and *MW-1902-15* be reduced to once per year, as noted in the ICs Addendum. The petroleum water samples would be collected in spring 2022. We further recommend the FAI continue to measure groundwater elevation near the FTP until fall 2022.

5.4 Closure

This report was prepared for the exclusive use of the FAI and its representatives. The FTP corrective action and characterization data should be re-evaluated if cleanup levels are developed for PFHxS, PFHxA, and other PFAS compounds, or if the current cleanup levels for PFOS and PFOA change. This work presents Shannon & Wilson's professional judgment as to the conditions of the site. Information presented here is based on the sampling and analyses field staff performed.

This report should not be used for other purposes without Shannon & Wilson's approval or if any of the following occurs:

- Project details change, or new information becomes available, such as revised regulatory levels or the discovery of additional source areas.
- Conditions change due to natural forces or human activity at, under, or adjacent to the project site.
- Assumptions stated in this report have changed.
- If the site ownership or land use has changed.
- Regulations, laws, cleanup levels, or applicable action levels change.
- If the site's regulatory status has changed.

If any of these occur, Shannon & Wilson should be retained to review the applicability of our recommendations. This report should not be used for other purposes without Shannon & Wilson's review. If a service is not specifically indicated in this report, do not assume it was performed. Shannon & Wilson's recommendations are based on:

- Site conditions observed at and near the FTP from 2019 to present.
- The results of testing performed on soil samples collected from borings, excavations, and within the FTP at the FAI.
- The results of testing performed on water samples collected from MWs, with the FTP, surface water bodies, and water supply wells at and downgradient of the FAI.
- Shannon & Wilson's previous experience at the FAI.
- Publicly available literature and data reviewed for this project.
- Shannon & Wilson's understanding of the project and information provided by DOT&PF and other members of the project team.
- The limitations of our approved scope and schedule described in our approved proposals, amendments, and NTPs listed in Section 1.0.

The information included in this report is based on limited sampling and should be considered representative of the times and locations at which the sampling occurred. Regulatory agencies may reach different conclusions than Shannon & Wilson. We have prepared and included the attachment "Important Information about your Geotechnical/Environmental Report" to assist you and others in understanding the use and limitations of this report.

6 REFERENCES

- Alaska Department of Environmental Conservation (DEC), 2013, Monitoring well guidance: Juneau, Alaska, DEC Division of Spill Prevention and Response, Contaminated Sites Program, August, available: <http://dec.alaska.gov/spar/csp/guidance-forms>.
- Alaska Department of Environmental Conservation (DEC), 2017, 18 AAC 75: Oil and other hazardous substances pollution control: Juneau, Alaska, July, available: <http://dec.alaska.gov/commish/regulations/>.
- Alaska Department of Environmental Conservation (DEC), 2017, Data quality objectives, checklists, quality assurance requirements for laboratory data, and sample handling: Juneau, Alaska, March.
- Alaska Department of Environmental Conservation (DEC), 2017, Guidance on developing conceptual site models.
- Alaska Department of Environmental Conservation (DEC), 2017, Site characterization work plan and reporting guidance for investigation of contaminated sites: Juneau, Alaska, DEC Division of Spill Prevention and Response, Contaminated Sites Program, March, available: http://dec.alaska.gov/spar/csp/guidance_forms/csguidance.htm.
- Alaska Department of Environmental Conservation (DEC), 2019, Field sampling guidance: Juneau, Alaska, DEC Division of Spill Prevention and Response, Contaminated Sites Program, August, available: http://dec.alaska.gov/spar/csp/guidance_forms/csguidance.htm.
- American Society for Testing and Materials (ASTM) Standard practice for description and identification of soils (ASTM D 2488-06)
- Aziz, J.J.; Gonzales, J.; Ling, M.; Newell, C.J.; Rifai, H.S.; and Vanderford, M., 2006, Monitoring and remediation optimization system (MAROS) software version 2.2 user guide, Air Force Center for Environmental Excellence, March.
- Claar D.V. and Lilly M. R., 1997, Ground-water and surface-water elevations in the Fairbanks International Airport area, Alaska, 1990-96: Anchorage, Alaska, U.S. Geological Survey Open-File Report 97-597.
- Gilbert, R.O., 1987, Statistical methods for environmental pollution monitoring: New York, New York, John Wiley & Sons.
- Giroud, J.P. and Bonaparte, R., 1989, Leakage through Liners Constructed with Geomembranes-Part I. Geomembrane Liners: Geotextiles and Geomembranes, v. 8, p. 27-67.

- Glass, R.L.; Lilly, M.R.; and Meyer, D.F., 1996, Ground-water levels in the alluvial plain between the Tanana and Chena Rivers near Fairbanks, Alaska 1986-93: Anchorage, Alaska, U.S. Geological Survey Water-Resources Investigations Report 96-4060.
- National Oceanic and Atmospheric Administration (NOAA), 2014. National weather service forecast office, Fairbanks, Alaska: Web Interface. Available: <https://w2.weather.gov/climate/index.php?wfo=pafg>, accessed 2019 to 2020.
- Nelson, G.L., 1978, Hydrologic information for land-use planning; Fairbanks vicinity, Alaska: Anchorage, Alaska, U.S. Geological Survey Open-File Report 78-959.
- U.S. Environmental Protection Agency (EPA), 2016, Drinking water health advisory for perfluorooctanoic acid (PFOA), Document Number 822-R-16-005: Washington, DC, U.S. EPA Office of Water, Health and Ecological Criteria Division, May, available: https://www.epa.gov/sites/production/files/2016-05/documents/pfoa_health_advisory_final_508.pdf
- U.S. Environmental Protection Agency (EPA), 2016, On-line tools for site assessment calculation, hydraulic gradient magnitude and direction, February, available at: <https://www3.epa.gov/ceampubl/learn2model/part-two/onsite/gradient4plus-ns.html>
- U.S. Environmental Protection Agency (EPA), 2019, Office of Recourse Conservation and Recovery, Program Implementation and Information Division., Statistical analysis of groundwater monitoring data at RCRA facilities, Unified Guidance, March.
- U.S. Geological Survey (USGS), 1986, Ground-water levels in an alluvial plain between the Tanana and Chena rivers near Fairbanks, Water-Resources Investigations Report 96-4060.
- U.S. Geological Survey (USGS), 2018. National water information system: Web Interface. Site number 15514000. Available: <https://waterdata.usgs.gov/nwis/sw>, accessed 2019 to 2021.

Table 1 - Fire Training Pit Water Sample Results

Sample Name				FTP-pre-001		FTP-pre-003	FTP-pre-004		FTP-pre-006	
Description				Ponded water and duplicate		Interstitial water at former ground surface	Interstitial water approx. 0.5-ft below former ground surface and duplicate		Interstitial water approx. 2 ft below former ground surface	
Analytical Method	Analyte	Action Level	Units	9/9/19		9/30/19	9/17/20		10/29/20	
EPA 537M or 537.1M	Perfluorohexanesulfonic acid (PFHxS)	—	ng/L	—	—	100,000	55,000 J*	55,000 J*	250,000	
	Perfluorohexanoic acid (PFHxA)	—	ng/L	—	—	34,000	30,000	32,000	110,000	
	Perfluoroheptanoic acid (PFHpA)	—	ng/L	—	—	5,000	4,300	4,300	<100,000	
	Perfluorononanoic acid (PFNA)	—	ng/L	—	—	430	770	880	<100,000	
	Perfluorobutanesulfonic acid (PFBS)	—	ng/L	—	—	13,000	14,000	13,000	56,000 J	
	Perfluorodecanoic acid (PFDA)	—	ng/L	—	—	160 J	280	290	<100,000	
	Perfluoroundecanoic acid (PFUnA)	—	ng/L	—	—	<190	<180	<180	<100,000	
	Perfluorododecanoic acid (PFDoA)	—	ng/L	—	—	<190	<180	<180	<100,000	
	Perfluorotridecanoic acid (PFTTrDA)	—	ng/L	—	—	<190	<180	<180	<100,000	
	Perfluorotetradecanoic acid (PFTeA)	—	ng/L	—	—	<190	<180	<180	<100,000	
	N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	ng/L	—	—	<1,900	<460	<460	<250,000	
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	ng/L	—	—	<1,900	<460	<460	<250,000	
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	—	ng/L	—	—	<190	<180	<180	<100,000	
	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	—	ng/L	—	—	<190	<180	<180	<100,000	
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	—	ng/L	—	—	<190	<180	<180	<100,000	
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	ng/L	—	—	<380	<370	<370	<200,000	
	Perfluorooctanesulfonic acid (PFOS)	400	ng/L		240,000 J*	52,200 J*	900,000	1,900,000 J*	2,000,000 J*	1,300,000
	Perfluorooctanoic acid (PFOA)	400	ng/L		8,140	6,090	8,800	7,100	6,400	<100,000
EPA 602 / 624	Benzene	4.6	µg/L	<0.200	<0.200	5.40	0.284 J	<0.200	4.33	
	Ethylbenzene	15	µg/L	0.500 J	<0.500	12.1	<0.500	<0.500	7.98	
	o-Xylene	190	µg/L	1.31 J*	0.770 J*	40.4	2.78 J*	0.616 J*	42.0	
	P & M -Xylene			2.53 J*	1.52 J*	62.8	1.20 J	<1.00	38.6	
	Toluene	1,100	µg/L	0.470 J	0.380 J	15.6	<0.500	<0.500	2.90	
	Total aromatic hydrocarbons (TAH) †	10 †	µg/L	5.01 J*	3.37 J*	136.3	5.504 J*	3.34 J*	95.8	
EPA 625M SIM	Acenaphthene	530	µg/L	<0.0240 J*	<0.0240 J*	<0.130	<0.024 J*	<0.024 J*	<0.023 J*	
	Acenaphthylene	260	µg/L	<0.0240 J*	<0.0240 J*	<0.130	<0.024 J*	<0.024 J*	<0.023 J*	
	Anthracene	43	µg/L	<0.0240 J*	<0.0240 J*	<0.130	<0.024 J*	<0.024 J*	<0.023 J*	
	Benzo(a)anthracene	0.30	µg/L	<0.0240 J*	<0.0240	<0.130	<0.024	<0.024	<0.023	
	Benzo(a)pyrene	0.25	µg/L	<0.0096 J*	<0.0096	<0.0520	<0.0096	<0.0096	<0.0093	
	Benzo(b)fluoranthene	2.5	µg/L	<0.0240 J*	<0.0240	<0.130	<0.024	<0.024	<0.023	
	Benzo(g,h,i)perylene	0.26	µg/L	<0.0240 J*	<0.0240	<0.130	<0.024	<0.024	<0.023	
	Benzo(k)fluoranthene	0.80	µg/L	<0.0240 J*	<0.0240	<0.130	<0.024	<0.024	<0.023	
	Chrysene	2.0	µg/L	<0.0240 J*	<0.0240	<0.130	<0.024	<0.024	<0.023	
	Dibenzo(a,h)anthracene	0.25	µg/L	<0.0096 J*	<0.0096	<0.0520	<0.0096	<0.0096	<0.0093	
	Fluoranthene	260	µg/L	<0.0240 J*	<0.0240	0.481	<0.024	<0.024	<0.023	
	Fluorene	290	µg/L	<0.0240 J*	<0.0240 J*	1.45	<0.024 J*	<0.024 J*	0.76 JL*	
	Indeno[1,2,3-c,d] pyrene	0.19	µg/L	<0.0240 J*	<0.0240	<0.130	<0.024	<0.024	<0.023	
	Naphthalene	1.7	µg/L	0.263 JL*	0.245 JL*	5.06	0.070 JL*	<0.048 J*	0.80 JL*	
	Phenanthrene	170	µg/L	0.180 JL*	0.143 JL*	1.37	<0.024 J*	<0.024 J*	<0.023 J*	
Pyrene	120	µg/L	<0.0240 J*	<0.0240	0.522	<0.024	<0.024	<0.023		
Total aqueous hydrocarbons (TAQH) ‡	15 ‡	µg/L	5.76 J*	4.07 J*	10.16	0.468 J*	0.458 J*	1.93 J*		
EPA 200.8	Arsenic	10 §	µg/L	12.1	12.0	37.0	7.92	7.75	35.7	
SW 8015B	Ethylene Glycol	40	mg/L	<10	<10	—	<10	<10	<10	
	Propylene Glycol	—	mg/L	<10	<10	—	<10	<10	<10	
AK102	Diesel Range Organics (DRO)	1.5	mg/L	7.25	7.41	33.1	19.3	17.1	22.3	
AK103	Residual Range Organics (RRO)	1.1	mg/L	3.79	3.75	6.92	8.57	7.04	10.6	
SW8260C	1,1,1,2-Tetrachloroethane	5.7	µg/L	—	—	<0.250	—	—	—	
	1,1,1-Trichloroethane	8,000	µg/L	—	—	<0.500	—	—	—	
	1,1,2,2-Tetrachloroethane	0.76	µg/L	—	—	<0.250	—	—	—	
	1,1,2-Trichloroethane	0.41	µg/L	—	—	<0.200	—	—	—	
	1,1-Dichloroethane	28	µg/L	—	—	<0.500	—	—	—	
	1,1-Dichloroethene	280	µg/L	—	—	<0.500	—	—	—	
	1,1-Dichloropropene	—	µg/L	—	—	<0.500	—	—	—	
	1,2,3-Trichlorobenzene	7.0	µg/L	—	—	<0.500	—	—	—	
	1,2,3-Trichloropropane	0.0075	µg/L	—	—	<0.500	—	—	—	
	1,2,4-Trichlorobenzene	4.0	µg/L	—	—	<0.500	—	—	—	
	1,2,4-Trimethylbenzene	56	µg/L	—	—	25.1	—	—	—	
	1,2-Dibromo-3-chloropropane	—	µg/L	—	—	<5.00	—	—	—	
	1,2-Dibromoethane	0.075	µg/L	—	—	<0.0375	—	—	—	
	1,2-Dichlorobenzene	300	µg/L	—	—	<0.500	—	—	—	
	1,2-Dichloroethane	1.7	µg/L	—	—	<0.250	—	—	—	
	1,2-Dichloropropane	8.2	µg/L	—	—	<0.500	—	—	—	
	1,3,5-Trimethylbenzene	60	µg/L	—	—	11.2	—	—	—	
	1,3-Dichlorobenzene	300	µg/L	—	—	<0.500	—	—	—	
1,3-Dichloropropane	—	µg/L	—	—	<0.250	—	—	—		
1,4-Dichlorobenzene	5	µg/L	—	—	<0.250	—	—	—		

Table 1 - Fire Training Pit Water Sample Results

Sample Name				FTP-pre001		FTP-pre003	FTP-pre-004		FTP-pre-006
Description				Ponded water and duplicate		Interstitial water at former ground surface	Interstitial water approx. 0.5-ft below former ground surface and duplicate		Interstitial water approx. 2 ft below former ground surface
Analytical Method	Analyte	Action Level	Units	9/9/19		9/30/19	9/17/20		10/29/20
SW8260C	2,2-Dichloropropane	—	µg/L	—	—	<0.500	—	—	—
	2-Butanone (MEK)	5600	µg/L	—	—	7.52 J	—	—	—
	2-Chlorotoluene	—	µg/L	—	—	<0.500	—	—	—
	2-Hexanone	38	µg/L	—	—	<5.00	—	—	—
	4-Chlorotoluene	—	µg/L	—	—	<0.500	—	—	—
	4-Methyl-2-pentanone (MIBK)	6,300	µg/L	—	—	<5.00	—	—	—
	Bromobenzene	62	µg/L	—	—	<0.500	—	—	—
	Bromochloromethane	—	µg/L	—	—	<0.500	—	—	—
	Bromodichloromethane	1.3	µg/L	—	—	<0.250	—	—	—
	Bromoform	33	µg/L	—	—	<0.500	—	—	—
	Bromomethane	7.5	µg/L	—	—	<2.50	—	—	—
	Carbon disulfide	810	µg/L	—	—	<5.00	—	—	—
	Carbon tetrachloride	4.6	µg/L	—	—	<0.500	—	—	—
	Chlorobenzene	78	µg/L	—	—	<0.250	—	—	—
	Chloroethane	21,000	µg/L	—	—	<0.500	—	—	—
	Chloroform	2.2	µg/L	—	—	<0.500	—	—	—
	Chloromethane	190	µg/L	—	—	<0.500	—	—	—
	cis-1,2-Dichloroethene	36	µg/L	—	—	<0.500	—	—	—
	cis-1,3-Dichloropropene	4.7	µg/L	—	—	<0.250	—	—	—
	Dibromochloromethane	8.7	µg/L	—	—	<0.250	—	—	—
	Dibromomethane	8.3	µg/L	—	—	<0.500	—	—	—
	Dichlorodifluoromethane	200	µg/L	—	—	<0.500	—	—	—
	Hexachlorobutadiene	1.4	µg/L	—	—	<0.500	—	—	—
	Isopropylbenzene	450	µg/L	—	—	2.92	—	—	—
	Methylene chloride	110	µg/L	—	—	<2.50	—	—	—
	Methyl-t-butyl ether	140	µg/L	—	—	<5.00	—	—	—
	Naphthalene	1.7	µg/L	—	—	14.1	—	—	—
	n-Butylbenzene	1,000	µg/L	—	—	<0.500	—	—	—
	n-Propylbenzene	660	µg/L	—	—	3.64	—	—	—
	p-Isopropyltoluene	—	µg/L	—	—	4.05	—	—	—
	sec-Butylbenzene	2,000	µg/L	—	—	0.824 J	—	—	—
	Styrene	1,200	µg/L	—	—	<0.500	—	—	—
tert-Butylbenzene	690	µg/L	—	—	<0.500	—	—	—	
Tetrachloroethene	41	µg/L	—	—	<0.500	—	—	—	
trans-1,2-Dichloroethene	360	µg/L	—	—	<0.500	—	—	—	
trans-1,3-Dichloropropene	4.7	µg/L	—	—	<0.500	—	—	—	
Trichloroethene	2.8	µg/L	—	—	<0.500	—	—	—	
Trichlorofluoromethane	5,200	µg/L	—	—	<0.500	—	—	—	
Trichlorotrifluoroethane	10,000	µg/L	—	—	<5.00	—	—	—	
Vinyl acetate	410	µg/L	—	—	<5.00	—	—	—	
Vinyl chloride	0.19	µg/L	—	—	<0.075	—	—	—	

ng/L nanograms per liter, equivalent to parts per trillion

µg/L micrograms per liter

mg/L milligrams per liter

Field duplicates: samples FTP-pre-001 and FTP-pre002, FTP-pre004 and FTP-pre005.

† TAH is sum of EPA 602/624 analyte concentrations. Department of Environmental Conservation (DEC) effluent limit under excavation dewatering general permit No. AKG002158.

‡ TAqH is the sum of EPA 625M SIM (PAH) LV and EPA 602/624 analyte concentrations. DEC effluent limit under excavation dewatering general permit No. AKG002158. TAH and TAqH sums are calculated in accordance with DEC's April 2017 Technical Memorandum - *Guidelines for Treatment of Non-Detect Values, Data Reduction for Multiple Detections and Comparison of Quantitation Limits to Cleanup Values*.

§ DEC water quality criteria for toxics and other deleterious substances, criteria for surface water used as drinking water. Value for inorganic arsenic.

< Analyte not detected; listed as less than the limit of detection (LOD) or reporting limit (RL) unless otherwise flagged due to quality-control failures.

— Cleanup level not established or sample not submitted.

Bold Concentration exceeds effluent limit or DEC groundwater-cleanup levels are reported in 18 AAC 75, Table C.

Bold Concentration exceeds effluent limit or DEC groundwater-cleanup levels at a concentration less than the LOD or RL.

J Estimated concentration, detected greater than the detection limit (DL) and less than the limit of quantitation (LOQ). Flag applied by the laboratory.

J* Result considered estimated due to a QC failure. Flag applied by Shannon & Wilson, Inc.

JL* Estimated concentration, biased low due to quality control failures. Flag applied by Shannon & Wilson, Inc.

Table 2 - Post-Treatment Fire Training Pit Water Results

Sample Name				FTP-Post001	FTP-Post002
Description				Post-treatment train 1	Post-treatment train 2
Analytical Method	Analyte	Action Level	Units	9/9/19	9/10/19
EPA 537M	Perfluorooctanesulfonic acid (PFOS)	400	ng/L	201	985
	Perfluorooctanoic acid (PFOA)	400	ng/L	<2.16	<2.18
EPA 602 / 624	Benzene	4.6	µg/L	<0.200	< 0.400 B*
	Ethylbenzene	15	µg/L	<0.500	<0.500
	o-Xylene	190	µg/L	<0.500	0.380 J
	P & M -Xylene			<1.00	0.790 J
	Toluene	1,100	µg/L	<0.500	1.69
	Total aromatic hydrocarbons (TAH) †	10 †	µg/L	2.70	3.76
EPA 625M SIM	Acenaphthene	530	µg/L	<0.0236 J*	<0.0245 J*
	Acenaphthylene	260	µg/L	<0.0236 J*	<0.0245 J*
	Anthracene	43	µg/L	<0.0236 J*	<0.0245 J*
	Benzo(a)anthracene	0.30	µg/L	<0.0236	<0.0245
	Benzo[a]pyrene	0.25	µg/L	<0.00945	<0.00980
	Benzo[b]fluoranthene	2.5	µg/L	<0.0236	<0.0245
	Benzo[g,h,i]perylene	0.26	µg/L	<0.0236	<0.0245
	Benzo[k]fluoranthene	0.80	µg/L	<0.0236	<0.0245
	Chrysene	2.0	µg/L	<0.0236	<0.0245
	Dibenzo[a,h]anthracene	0.25	µg/L	<0.00945	<0.00980
	Fluoranthene	260	µg/L	<0.0236	<0.0245
	Fluorene	290	µg/L	<0.0236 J*	<0.0245 J*
	Indeno[1,2,3-c,d] pyrene	0.19	µg/L	<0.0236	<0.0245
	Naphthalene	1.7	µg/L	<0.0471 J*	<0.0490 J*
	Phenanthrene	170	µg/L	<0.0236 J*	<0.0245 J*
	Pyrene	120	µg/L	<0.0236	<0.0245
Total aqueous hydrocarbons (TAqH) ‡	15 ‡	µg/L	3.07	4.15	
EPA 200.8	Arsenic	10 §	µg/L	17.9	21.0
SW 8015B	Ethylene Glycol	40	mg/L	<10	<10
	Propylene Glycol	—	mg/L	<10	<10
AK102	Diesel Range Organics (DRO)	1.5	mg/L	0.306 J	0.272 J
AK103	Residual Range Organics (RRO)	1.1	mg/L	<0.245	<0.245

ng/L nanograms per liter, equivalent to parts per trillion

µg/L micrograms per liter

mg/L milligrams per liter

† TAH is sum of EPA 602/624 analyte concentrations. Department of Environmental Conservation (DEC) effluent limit under excavation dewatering general permit No. AKG002158.

‡ TAqH is the sum of EPA 625M SIM (PAH) LV and EPA 602/624 analyte concentrations. DEC effluent limit under excavation dewatering general permit No. AKG002158. TAH and TAqH sums are calculated in accordance with DEC's April 2017 Technical Memorandum - Guidelines for Treatment of Non-Detect Values, Data Reduction for Multiple Detections and Comparison of Quantitation Limits to Cleanup Values.

§ DEC water quality criteria for toxics and other deleterious substances, criteria for surface water used as drinking water. Value for inorganic arsenic.

< Analyte not detected; listed as less than the limit of detection (LOD) or reporting limit (RL) unless otherwise flagged due to quality-control failures.

— Cleanup level not established or sample not submitted.

Bold Concentration exceeds effluent limit or DEC groundwater-cleanup levels are reported in 18 AAC 75, Table C.

J Estimated concentration, detected greater than the detection limit (DL) and less than the limit of quantitation (LOQ). Flag applied by the laboratory.

J* Result considered estimated due to a QC failure. Flag applied by Shannon & Wilson, Inc.

B* Result is considered not detected due to quality control failures; see checklist for details. Flag applied by Shannon & Wilson, Inc.

Table 3 - September and October 2019 Monitoring Well Results

Sample Name			MW-9701-12	MW-9702-12	MW-1901-15	MW-1901-40	MW-1901-80	MW-1901-150	MW-1902-15	MW-1902-40	MW-1902-80	MW-1902-150		
Description			Existing monitoring wells		Downgradient monitoring well cluster				Upgradient monitoring well cluster					
Analyte	Cleanup Level	Units	9/11/19	9/11/19	9/27/19	9/27/19	10/16/19	10/18/19	10/14/19	10/15/19	10/15/19	10/2/19		
Perfluorohexane sulfonic acid (PFHxS)	—	ng/L	14,000 J*	20,000 J*	8,000 J*	1,700 J*	1,700 J*	1,000 J*	2.7 JH*	<1.7 B*	110	2.3 JH*	<1.9 B*	<1.9 B*
Perfluorohexanoic acid (PFHxA)	—	ng/L	2,000 J*	3,000 J*	1,700 J*	750 J*	740 J*	570 J*	1.2 J	<1.7	60	1.4 J	<1.9	<1.9
Perfluoroheptanoic acid (PFHpA)	—	ng/L	320 J*	510 J*	190 J*	84	86	59	<1.8	0.27 J	8.0	0.50 J	<1.9	<1.9
Perfluorononanoic acid (PFNA)	—	ng/L	R*	R*	R*	12 J*	12 J*	<2.0	<1.8	<1.7	<1.8	<1.9	<1.9	<1.9
Perfluorobutane sulfonic acid (PFBS)	—	ng/L	1,900 J*	2,600 J*	690 J*	410 J*	410 J*	340	0.55 J	<1.7	22	0.65 J	<1.9	<1.9
Perfluorodecanoic acid (PFDA)	—	ng/L	R*	R*	R*	<1.9	<1.9	<2.0	<1.8	<1.7	<1.8	<1.9	<1.9	<1.9
Perfluoroundecanoic acid (PFUnA)	—	ng/L	R*	R*	R*	<1.9	<1.9	<2.0	<1.8	<1.7	<1.8	<1.9	<1.9	<1.9
Perfluorododecanoic acid (PFDoA)	—	ng/L	R*	R*	R*	<1.9	<1.9	<2.0	<1.8	<1.7	<1.8	<1.9	<1.9	<1.9
Perfluorotridecanoic acid (PFTTrDA)	—	ng/L	R*	R*	R*	<1.9	<1.9	<2.0	<1.8	<1.7	<1.8	<1.9	<1.9	<1.9
Perfluorotetradecanoic acid (PFTeA)	—	ng/L	R*	R*	R*	<1.9	<1.9	<2.0	<1.8	<1.7	<1.8	<1.9	<1.9	<1.9
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	ng/L	R*	R*	R*	<19	<19	<20	<18	<17	<18	<19	<19	<19
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	ng/L	R*	R*	R*	<19	<19	<20	<18	<17	<18	<19	<19	<19
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	—	ng/L	R*	R*	R*	<1.9	<1.9	<2.0	<1.8	<1.7	<1.8	<1.9	<1.9	<1.9
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	—	ng/L	R*	R*	R*	<1.9	<1.9	<2.0	<1.8	<1.7	<1.8	<1.9	<1.9	<1.9
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	—	ng/L	R*	R*	R*	<1.9	<1.9	<2.0	<1.8	<1.7	<1.8	<1.9	<1.9	<1.9
Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	ng/L	R*	R*	R*	<3.9	<3.9	<4.0	<3.6	<3.4	<3.6	<3.7	<3.7	<3.8
Perfluoro-octane sulfonate (PFOS)	400	ng/L	850 J*	1,600 J*	290 J*	95 J*	87 J*	180	1.6 J	<1.7	25	3.2	2.2	0.57 J
Perfluoro-octanoic acid (PFOA)	400	ng/L	290 J*	430 J*	950 J*	120	120	72	<1.8	<1.7	14	0.91 J	<1.9	<1.9

- ng/L nanograms per liter
- Field duplicates: samples MW-9701-12 and MW-9701-112, MW-1901-15 and MW-1901-115 (Work Orders 320-54558 and 320-54947).
- Action level not established.
- < Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.
- Bold** Concentration exceeds DEC groundwater-cleanup levels reported in 18 AAC 75, Table C.
- J Estimated concentration, detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.
- J* Result considered estimated due to a QC failure. Flag applied by Shannon & Wilson, Inc.
- JH* Estimated concentration, biased high due to quality control failures. Flag applied by Shannon & Wilson, Inc.
- B* Result is included in the same preparatory batch as a blank detection for the associated analyte. Flag applied by Shannon & Wilson, Inc.
- R* Rejected result due to severe quality control failures; see checklist for details. Flag applied by Shannon & Wilson, Inc.

Table 4 - Soil Boring PFAS Results

Sample Name			SB-1901-15	SB-1901-40	SB-1901-80	SB-1901-150	MW-1901-Drum	SB-1902-15	SB-1902-40	SB-1902-80	SB-1902-150		
Description			MW-1901 Soil Borings				Drill Cuttings	MW-1902 Soil Borings					
			9.4-10.8 ft bgs	37.4-37.6 ft bgs	75-77 ft bgs	149-150 ft bgs		10-15 ft bgs	35-40 ft bgs	75-80 ft bgs	146-147 ft bgs		
Analyte	Cleanup Level	Units	9/21/19	9/21/19	9/22/19	10/3/19	10/2/19	10/7/19	9/30/19	9/30/19	9/30/19	9/29/19	9/28/19
Perfluorohexane sulfonic acid (PFHxS)	—	µg/kg	1.3	1.2	0.092 J	<0.21	<0.22	—	0.053 J	0.057 J	<0.26	0.034 J*	<0.23
Perfluorohexanoic acid (PFHxA)	—	µg/kg	0.43	0.39	0.055 J	<0.21	<0.22	—	<0.24	<0.24	<0.26	<0.21	<0.23
Perfluoroheptanoic acid (PFHpA)	—	µg/kg	0.062 J	0.051 J	<0.22	<0.21	<0.22	—	<0.24	<0.24	<0.26	<0.21	<0.23
Perfluorononanoic acid (PFNA)	—	µg/kg	<0.23	<0.24	<0.22	<0.21	<0.22	—	<0.24	<0.24	<0.26	<0.21	<0.23
Perfluorobutane sulfonic acid (PFBS)	—	µg/kg	0.14 J	0.12 J	0.034 J	<0.21	<0.22	—	<0.24	<0.24	<0.26	<0.21	<0.23
Perfluorodecanoic acid (PFDA)	—	µg/kg	<0.23	<0.24	<0.22	<0.21	<0.22	—	<0.24	<0.24	<0.26	<0.21	<0.23
Perfluoroundecanoic acid (PFUnA)	—	µg/kg	<0.23	<0.24	<0.22	<0.21	<0.22	—	<0.24	<0.24	<0.26	<0.21	<0.23
Perfluorododecanoic acid (PFDoA)	—	µg/kg	<0.23	<0.24	<0.22	<0.21	<0.22	—	<0.24	<0.24	<0.26	<0.21	<0.23
Perfluorotridecanoic acid (PFTTrDA)	—	µg/kg	<0.23	<0.24	<0.22	<0.21	<0.22	—	<0.24	<0.24	<0.26	<0.21	<0.23
Perfluorotetradecanoic acid (PFTTeA)	—	µg/kg	<0.23	<0.24	<0.22	<0.21	<0.22	—	<0.24	<0.24	<0.26	<0.21	<0.23
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	µg/kg	<2.3	<2.4	<2.2	<2.1	<2.2	—	<2.4	<2.4	<2.6	<2.1	<2.3
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	µg/kg	<2.3	<2.4	<2.2	<2.1	<2.2	—	<2.4	<2.4	<2.6	<2.1	<2.3
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-)	—	µg/kg	<0.23	<0.24	<0.22	<0.21	<0.22	—	<0.24	<0.24	<0.26	<0.21	<0.23
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-)	—	µg/kg	<0.23	<0.24	<0.22	<0.21	<0.22	—	<0.24	<0.24	<0.26	<0.21	<0.23
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	—	µg/kg	<0.23	<0.24	<0.22	<0.21	<0.22	—	<0.24	<0.24	<0.26	<0.21	<0.23
Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	µg/kg	<0.29	<0.29	<0.27	<0.27	<0.28	—	<0.30	<0.30	<0.32	<0.26	<0.28
Perfluoro-octane sulfonate (PFOS)	3.0	µg/kg	<0.57	<0.59	<0.55	<0.53	<0.56 B*	0.40 J	<0.60	<0.59	<0.64	<0.53	<0.57
Perfluoro-octanoic acid (PFOA)	1.7	µg/kg	0.10 J	<0.24	<0.22	<0.21	<0.22	<0.26	<0.24	<0.24	<0.26	<0.21	<0.23

µg/kg micrograms per kilogram

Field duplicates: samples SB-1901-15 and SB-2001-15, SB-1902-15 and SB-2902-15 (Work Order 320-54940).

— Cleanup level not established or sample not submitted.

< Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.

J Estimated concentration, detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.

J* Result considered estimated due to a QC failure. Flag applied by Shannon & Wilson, Inc.

B* Result is included in the same preparatory batch as a blank detection for the associated analyte. Flag applied by Shannon & Wilson, Inc.

Table 5 - June 2020 Monitoring Well Results

Sample Name				MW-1901-15	MW-1901-40	MW-1901-80	MW-1901-150	MW-1902-15		MW-1902-40	MW-1902-80	MW-1902-150
Description				Downgradient monitoring well cluster				Upgradient monitoring well cluster				
Analytical Method	Analyte	Cleanup Level	Units	6/25/20	6/25/20	6/25/20	6/25/20	6/26/20		6/26/20	6/26/20	6/25/20
EPA 537.1M	Perfluorohexanesulfonic acid (PFHxS)	—	ng/L	3,400	1,000	<1.8 B*	<1.9 B*	22	22	<1.8 B*	<1.8 B*	<1.8 B*
	Perfluorohexanoic acid (PFHxA)	—	ng/L	1,000	760	<1.8	<1.9	8.4	8.2	0.71 J	<1.8	<1.8
	Perfluoroheptanoic acid (PFHpA)	—	ng/L	89 J	57 J	<1.8	<1.9	1.5 J	1.4 J	0.26 J	<1.8	<1.8
	Perfluorononanoic acid (PFNA)	—	ng/L	<170	<180	<1.8	<1.9	<1.9	<1.8	<1.8	<1.8	<1.8
	Perfluorobutanesulfonic acid (PFBS)	—	ng/L	520	470	0.28 J	<1.9	3.6	3.5	0.38 J	0.23 J	0.20 J
	Perfluorodecanoic acid (PFDA)	—	ng/L	<170	<180	<1.8	<1.9	<1.9	<1.8	<1.8	<1.8	<1.8
	Perfluoroundecanoic acid (PFUnA)	—	ng/L	<170	<180	<1.8	<1.9	<1.9	<1.8	<1.8	<1.8	<1.8
	Perfluorododecanoic acid (PFDoA)	—	ng/L	<170	<180	<1.8	<1.9	<1.9	<1.8	<1.8	<1.8	<1.8
	Perfluorotridecanoic acid (PFTTrDA)	—	ng/L	<170	<180	<1.8	<1.9	<1.9	<1.8	<1.8	<1.8	<1.8
	Perfluorotetradecanoic acid (PFTTeA)	—	ng/L	<170	<180	0.30 J	<1.9	<1.9	0.40 J	<1.8	<1.8	<1.8
	N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	ng/L	<1,700	<1,800	<18	<19	<19	<18	<18	<18	<18
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	ng/L	<1,700	<1,800	<18	<19	<19	<18	<18	<18	<18
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	—	ng/L	<170	<180	<1.8	<1.9	<1.9	<1.8	<1.8	<1.8	<1.8
	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	—	ng/L	<170	<180	<1.8	<1.9	<1.9	<1.8	<1.8	<1.8	<1.8
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	—	ng/L	<170	<180	<1.8	<1.9	<1.9	<1.8	<1.8	<1.8	<1.8
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	ng/L	<340	<370	<3.6	<3.8	<3.7	<3.6	<3.7	<3.5	<3.6
	Perfluorooctanesulfonic acid (PFOS)	400	ng/L	64 J	170 J	0.98 J	0.58 J	12	12	1.8	0.73 J	0.49 J
Perfluorooctanoic acid (PFOA)	400	ng/L	150 J	<180	<1.8	<1.9	2.6	2.7	<1.8	<1.8	<1.8	
AK 102	Diesel Range Organics (DRO)	1.5	mg/L	<0.556 B*	—	—	—	<0.577 B*	<0.577 B*	—	—	—
SW8260	1,1,1,2-Tetrachloroethane	5.7	µg/L	<0.25	—	—	—	<0.25	<0.25	—	—	—
	1,1,1-Trichloroethane	8,000	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—
	1,1,2,2-Tetrachloroethane	0.76	µg/L	<0.25	—	—	—	<0.25	<0.25	—	—	—
	1,1,2-Trichloroethane	0.41	µg/L	<0.20	—	—	—	<0.20	<0.20	—	—	—
	1,1-Dichloroethane	28	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—
	1,1-Dichloroethene	280	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—
	1,1-Dichloropropene	—	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—
	1,2,3-Trichlorobenzene	7	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—
	1,2,3-Trichloropropane	0.0075	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—
	1,2,4-Trichlorobenzene	4	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—
	1,2,4-Trimethylbenzene	56	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—
	1,2-Dibromo-3-chloropropane	—	µg/L	<5.0	—	—	—	<5.0	<5.0	—	—	—
	1,2-Dibromoethane	0.075	µg/L	<0.0375	—	—	—	<0.0375	<0.0375	—	—	—
	1,2-Dichlorobenzene	300	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—
	1,2-Dichloroethane	1.7	µg/L	<0.25	—	—	—	<0.25	<0.25	—	—	—
	1,2-Dichloropropane	8.2	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—
	1,3,5-Trimethylbenzene	60	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—
1,3-Dichlorobenzene	300	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—	
1,3-Dichloropropane	—	µg/L	<0.25	—	—	—	<0.25	<0.25	—	—	—	
1,4-Dichlorobenzene	4.8	µg/L	<0.25	—	—	—	<0.25	<0.25	—	—	—	
2,2-Dichloropropane	—	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—	

Table 5 - June 2020 Monitoring Well Results

Sample Name				MW-1901-15	MW-1901-40	MW-1901-80	MW-1901-150	MW-1902-15		MW-1902-40	MW-1902-80	MW-1902-150
Description				Downgradient monitoring well cluster				Upgradient monitoring well cluster				
Analytical Method	Analyte	Cleanup Level	Units	6/25/20	6/25/20	6/25/20	6/25/20	6/26/20		6/26/20	6/26/20	6/25/20
SW8260	2-Butanone (MEK)	5,600	µg/L	<5.0	—	—	—	<5.0	<5.0	—	—	—
	2-Chlorotoluene	—	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—
	2-Hexanone	38	µg/L	<5.0	—	—	—	<5.0	<5.0	—	—	—
	4-Chlorotoluene	—	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—
	4-Methyl-2-pentanone (MIBK)	6,300	µg/L	<5.0	—	—	—	<5.0	<5.0	—	—	—
	Benzene	4.6	µg/L	<0.20	—	—	—	<0.20	<0.20	—	—	—
	Bromobenzene	62	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—
	Bromochloromethane	—	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—
	Bromodichloromethane	1.3	µg/L	<0.25	—	—	—	<0.25	<0.25	—	—	—
	Bromoform	33	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—
	Bromomethane	7.5	µg/L	<2.5	—	—	—	<2.5	<2.5	—	—	—
	Carbon disulfide	810	µg/L	<5.0	—	—	—	<5.0	<5.0	—	—	—
	Carbon tetrachloride	4.6	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—
	Chlorobenzene	78	µg/L	<0.25	—	—	—	<0.25	<0.25	—	—	—
	Chloroethane	21,000	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—
	Chloroform	2.2	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—
	Chloromethane	190	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—
	cis-1,2-Dichloroethene	36	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—
	cis-1,3-Dichloropropene	4.7	µg/L	<0.25	—	—	—	<0.25	<0.25	—	—	—
	Dibromochloromethane	8.7	µg/L	<0.25	—	—	—	<0.25	<0.25	—	—	—
	Dibromomethane	8.3	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—
	Dichlorodifluoromethane	200	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—
	Ethylbenzene	15	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—
	Hexachlorobutadiene	1.4	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—
	Isopropylbenzene	450	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—
	Methylene chloride	110	µg/L	<5.0	—	—	—	<5.0	<5.0	—	—	—
	Methyl-t-butyl ether	140	µg/L	<5.0	—	—	—	<5.0	<5.0	—	—	—
	Naphthalene	1.7	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—
	n-Butylbenzene	1,000	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—
	n-Propylbenzene	660	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—
	o-Xylene	190	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—
	P & M -Xylene		µg/L	<1.0	—	—	—	<1.0	<1.0	—	—	—
p-Isopropyltoluene	—	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—	
sec-Butylbenzene	2,000	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—	
Styrene	1,200	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—	
tert-Butylbenzene	690	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—	
Tetrachloroethene	41	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—	
Toluene	1,100	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—	
Total Xylenes	190	µg/L	<1.50	—	—	—	<1.50	<1.50	—	—	—	
trans-1,2-Dichloroethene	360	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—	

Table 5 - June 2020 Monitoring Well Results

Sample Name				MW-1901-15	MW-1901-40	MW-1901-80	MW-1901-150	MW-1902-15		MW-1902-40	MW-1902-80	MW-1902-150
Description				Downgradient monitoring well cluster				Upgradient monitoring well cluster				
Analytical Method	Analyte	Cleanup Level	Units	6/25/20	6/25/20	6/25/20	6/25/20	6/26/20		6/26/20	6/26/20	6/25/20
SW8260	trans-1,3-Dichloropropene	4.7	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—
	Trichloroethene	2.8	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—
	Trichlorofluoromethane	5,200	µg/L	<0.50	—	—	—	<0.50	<0.50	—	—	—
	Trichlorotrifluoroethane	10,000	µg/L	<5.0	—	—	—	<5.0	<5.0	—	—	—
	Vinyl acetate	410	µg/L	<5.0	—	—	—	<5.0	<5.0	—	—	—
	Vinyl chloride	0.19	µg/L	<0.075	—	—	—	<0.075	<0.075	—	—	—

ng/L nanograms per liter, equivalent to parts per trillion

mg/L milligrams per liter

µg/L micrograms per liter

Field duplicates: samples MW-1902-15 and MW-2002-15 (Work Orders 320-62395 and 1209409 Rev1).

— Cleanup level not established or sample not submitted.

< Analyte not detected; listed as less than the reporting limit (RL) or limit of quantitation (LOQ) unless otherwise flagged due to quality-control (QC) failures.

Bold Concentration exceeds DEC groundwater-cleanup levels reported in 18 AAC 75, Table C.

J Estimated concentration, detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.

B* Result considered non-detect due to method blank detection; presented as less than the LOQ. Flag applied by Shannon & Wilson, Inc.

Table 6 - October 2020 Monitoring Well Results

Sample Name				MW-1901-15		MW-1901-40	MW-1901-80	MW-1901-150	MW-1902-15		MW-1902-40	MW-1902-80	MW-1902-150
Description				Downgradient monitoring well cluster					Upgradient monitoring well cluster				
Analytical Method	Analyte	Cleanup Level	Units	10/27/20		10/27/20	10/27/20	10/27/20	10/28/20		10/28/20	10/28/20	10/28/20
EPA 537.1M	Perfluorohexanesulfonic acid (PFHxS)	—	ng/L	1,400	1,500	2,600	3.4	0.99 J*	99	100	2.0	1.1 J*	1.1 J
	Perfluorohexanoic acid (PFHxA)	—	ng/L	630	590	1,500	1.2 J	<1.9 J*	30	32	0.88 J	<2.0	<2.0
	Perfluoroheptanoic acid (PFHpA)	—	ng/L	39	43	120	<1.9	<1.9 J*	4.5	4.7	0.26 J	<2.0	<2.0
	Perfluorononanoic acid (PFNA)	—	ng/L	<1.9	<1.9	0.35 J	<1.9	<1.9 J*	<1.9	<2.0	<1.9	<2.0	<2.0
	Perfluorobutanesulfonic acid (PFBS)	—	ng/L	340	330	890	0.60 J	<1.9 J*	12	13	0.62 J	0.24 J	<2.0
	Perfluorodecanoic acid (PFDA)	—	ng/L	<1.9	<1.9	<1.9	<1.9	<1.9 J*	<1.9	<2.0	<1.9	<2.0	<2.0
	Perfluoroundecanoic acid (PFUnA)	—	ng/L	<1.9	<1.9	<1.9	<1.9	<1.9 J*	<1.9	<2.0	<1.9	<2.0	<2.0
	Perfluorododecanoic acid (PFDoA)	—	ng/L	<3.7	<3.9	<3.8	<3.8	<1.9 J*	<3.9	<4.0	<3.9	<3.9	<3.9
	Perfluorotridecanoic acid (PFTTrDA)	—	ng/L	<1.9	<1.9	<1.9	<1.9	<1.9 J*	<1.9	<2.0	<1.9	<2.0	<2.0
	Perfluorotetradecanoic acid (PFTTeA)	—	ng/L	<1.9	<1.9	<1.9	<1.9	<1.9 J*	<1.9	<2.0	<1.90	<2.0	<2.0
	N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	ng/L	<4.7	<4.9	<4.7	<4.8	<4.8 J*	<4.8	<5.0	<4.8	<4.9	<4.9
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	ng/L	<4.7	<4.9	<4.7	<4.8	<4.8 J*	<4.8	<5.0	<4.8	<4.9	<4.9
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	—	ng/L	<1.9	<1.9	<1.9	<1.9	<1.9 J*	<1.9	<2.0	<1.9	<2.0	<2.0
	11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	—	ng/L	<1.9	<1.9	<1.9	<1.9	<1.9 J*	<1.9	<2.0	<1.9	<2.0	<2.0
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	—	ng/L	<1.9	<1.9	<1.9	<1.9	<1.9 J*	<1.9	<2.0	<1.9	<2.0	<2.0
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	ng/L	<1.9	<3.9	<3.8	<3.8	<3.8 J*	<3.9	<4.0	<3.9	<3.9	<3.9
	Perfluorooctanesulfonic acid (PFOS)	400	ng/L	74	76	280	1.2 J	<1.9 J*	17	18	3.3	0.89 J*	0.56 J
Perfluorooctanoic acid (PFOA)	400	ng/L	74	76	150	<1.9	<1.9 J*	8.3	9.1	<1.9	<2.0	<2.0	
AK102	Diesel Range Organics	1.5	mg/L	<0.577 B*	<0.556 B*	—	—	—	<0.557 B*	—	—	—	—
SW8260C	1,1,1,2-Tetrachloroethane	5.7	µg/L	<0.25	<0.25	—	—	—	<0.25	—	—	—	—
	1,1,1-Trichloroethane	8,000	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—	—	—
	1,1,2,2-Tetrachloroethane	0.76	µg/L	<0.25	<0.25	—	—	—	<0.25	—	—	—	—
	1,1,2-Trichloroethane	0.41	µg/L	<0.20	<0.20	—	—	—	<0.20	—	—	—	—
	1,1-Dichloroethane	28	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—	—	—
	1,1-Dichloroethene	280	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—	—	—
	1,1-Dichloropropene	—	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—	—	—
	1,2,3-Trichlorobenzene	7.0	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—	—	—
	1,2,3-Trichloropropane	0.0075	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—	—	—
	1,2,4-Trichlorobenzene	4.0	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—	—	—
	1,2,4-Trimethylbenzene	56	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—	—	—
	1,2-Dibromo-3-chloropropane	—	µg/L	<5.0	<5.0	—	—	—	<5.0	—	—	—	—
	1,2-Dibromoethane	0.075	µg/L	<0.038	<0.038	—	—	—	<0.038	—	—	—	—
	1,2-Dichlorobenzene	300	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—	—	—
	1,2-Dichloroethane	1.7	µg/L	<0.25	<0.25	—	—	—	<0.25	—	—	—	—
	1,2-Dichloropropane	8.2	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—	—	—
	1,3,5-Trimethylbenzene	60	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—	—	—
	1,3-Dichlorobenzene	300	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—	—	—
1,3-Dichloropropane	—	µg/L	<0.25	<0.25	—	—	—	<0.25	—	—	—	—	
1,4-Dichlorobenzene	4.8	µg/L	<0.25	<0.25	—	—	—	<0.25	—	—	—	—	
2,2-Dichloropropane	—	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—	—	—	

Table 6 - October 2020 Monitoring Well Results

Sample Name				MW-1901-15	MW-1901-40	MW-1901-80	MW-1901-150	MW-1902-15	MW-1902-40	MW-1902-80	MW-1902-150
Description				Downgradient monitoring well cluster				Upgradient monitoring well cluster			
Analytical Method	Analyte	Cleanup Level	Units	10/27/20	10/27/20	10/27/20	10/27/20	10/28/20	10/28/20	10/28/20	10/28/20
SW8260C	2-Butanone (MEK)	5,600	µg/L	<5.0	<5.0	—	—	<5.0	—	—	—
	2-Chlorotoluene	—	µg/L	<0.50	<0.50	—	—	<0.50	—	—	—
	2-Hexanone	38	µg/L	<5.0	<5.0	—	—	<5.0	—	—	—
	4-Chlorotoluene	—	µg/L	<0.50	<0.50	—	—	<0.50	—	—	—
	Benzene	4.6	µg/L	<0.20	<0.20	—	—	<0.20	—	—	—
	Bromobenzene	62	µg/L	<0.50	<0.50	—	—	<0.50	—	—	—
	Bromochloromethane	—	µg/L	<0.50	<0.50	—	—	<0.50	—	—	—
	Bromodichloromethane	1.3	µg/L	<0.25	<0.25	—	—	<0.25	—	—	—
	Bromoform	33	µg/L	<0.50	<0.50	—	—	<0.50	—	—	—
	Bromomethane	7.5	µg/L	<2.5	<2.5	—	—	<2.5	—	—	—
	Carbon disulfide	810	µg/L	<5.0	<5.0	—	—	<5.0	—	—	—
	Carbon tetrachloride	4.6	µg/L	<0.50	<0.50	—	—	<0.50	—	—	—
	Chlorobenzene	78	µg/L	<0.25	<0.25	—	—	<0.25	—	—	—
	Chloroethane	21,000	µg/L	<0.50	<0.50	—	—	<0.50	—	—	—
	Chloroform	2.2	µg/L	<0.50	<0.50	—	—	<0.50	—	—	—
	Chloromethane	190	µg/L	<0.50	<0.50	—	—	<0.50	—	—	—
	cis-1,2-Dichloroethene	36	µg/L	<0.50	<0.50	—	—	<0.50	—	—	—
	cis-1,3-Dichloropropene	4.7	µg/L	<0.25	<0.25	—	—	<0.25	—	—	—
	Dibromochloromethane	8.7	µg/L	<0.25	<0.25	—	—	<0.25	—	—	—
	Dibromomethane	8.3	µg/L	<0.50	<0.50	—	—	<0.50	—	—	—
	Dichlorodifluoromethane	200	µg/L	<0.50	<0.50	—	—	<0.50	—	—	—
	Ethylbenzene	15	µg/L	<0.50	<0.50	—	—	<0.50	—	—	—
	Hexachlorobutadiene	1.4	µg/L	<0.50	<0.50	—	—	<0.50	—	—	—
	Isopropylbenzene	450	µg/L	<0.50	<0.50	—	—	<0.50	—	—	—
	Methyl isobutyl ketone	6,300	µg/L	<5.0	<5.0	—	—	<5.0	—	—	—
	Methylene chloride	110	µg/L	<5.0	<5.0	—	—	<5.0	—	—	—
	Methyl-t-butyl ether (MTBE)	140	µg/L	<5.0	<5.0	—	—	<5.0	—	—	—
	Naphthalene	1.7	µg/L	<0.50	<0.50	—	—	<0.50	—	—	—
	n-Butylbenzene	1,000	µg/L	<0.50	<0.50	—	—	<0.50	—	—	—
	n-Propylbenzene	660	µg/L	<0.50	<0.50	—	—	<0.50	—	—	—
	o-Xylene	190	µg/L	<0.50	<0.50	—	—	<0.50	—	—	—
	P & M -Xylene	190	µg/L	<1.0	<1.0	—	—	<1.0	—	—	—
p-Isopropyltoluene	—	µg/L	<0.50	<0.50	—	—	<0.50	—	—	—	
sec-Butylbenzene	2,000	µg/L	<0.50	<0.50	—	—	<0.50	—	—	—	
Styrene	1,200	µg/L	<0.50	<0.50	—	—	<0.50	—	—	—	
tert-Butylbenzene	690	µg/L	<0.50	<0.50	—	—	<0.50	—	—	—	
Tetrachloroethene	41	µg/L	<0.50	<0.50	—	—	<0.50	—	—	—	
Toluene	1,100	µg/L	<0.50	<0.50	—	—	<0.50	—	—	—	
Total Xylenes	190	µg/L	<1.5	<1.5	—	—	<1.5	—	—	—	
trans-1,2-Dichloroethene	360	µg/L	<0.50	<0.50	—	—	<0.50	—	—	—	

Table 6 - October 2020 Monitoring Well Results

Sample Name				MW-1901-15	MW-1901-40	MW-1901-80	MW-1901-150	MW-1902-15	MW-1902-40	MW-1902-80	MW-1902-150
Description				Downgradient monitoring well cluster				Upgradient monitoring well cluster			
Analytical Method	Analyte	Cleanup Level	Units	10/27/20	10/27/20	10/27/20	10/27/20	10/28/20	10/28/20	10/28/20	10/28/20
SW8260C	trans-1,3-Dichloropropene	4.7	µg/L	<0.50	<0.50	—	—	<0.50	—	—	—
	Trichloroethene	2.8	µg/L	<0.50	<0.50	—	—	<0.50	—	—	—
	Trichlorofluoromethane	5,200	µg/L	<0.50	<0.50	—	—	<0.50	—	—	—
	Trichlorotrifluoroethane	10,000	µg/L	<5.0	<5.0	—	—	<5.0	—	—	—
	Vinyl acetate	410	µg/L	<5.0	<5.0	—	—	<5.0	—	—	—
	Vinyl chloride	0.190	µg/L	<0.075	<0.075	—	—	<0.075	—	—	—

ng/L nanograms per liter, equivalent to parts per trillion

µg/L micrograms per liter

mg/L milligrams per liter

Field duplicates: samples MW-1901-15 and MW-2901-15, MW-1902-15 and MW-2902-15 (Work Orders 320-66253 and 1209788).

— Cleanup level not established or sample not submitted.

Bold Concentration below the laboratory limit of detection (LOD) exceeds DEC groundwater-cleanup level.

< Analyte not detected; listed as less than the LOD or reporting limit (RL) unless otherwise flagged due to quality-control failures.

J Estimated concentration, detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.

J* Result considered estimated due to a QC failure. Flag applied by Shannon & Wilson, Inc.

B* Sample was included in the same preparatory batch as a method blank sample with a detection for the corresponding analyte. Flag applied by Shannon & Wilson, Inc.

Table 7 - January 2021 Monitoring Well Results

Sample Name				MW-1901-15	MW-1901-40	MW-1901-80		MW-1901-150	MW-1902-15		MW-1902-40	MW-1902-80	MW-1902-150
Description				Downgradient monitoring well cluster					Upgradient monitoring well cluster				
Analytical Method	Analyte	Cleanup Level	Units	1/18/21	1/19/21	1/19/21		1/19/21	1/18/21		1/18/21	1/18/21	1/18/21
EPA 537.1M	Perfluorohexanesulfonic acid (PFHxS)	—	ng/L	2,100	2,700	1.4 J	1.4 J	1.0 J	47	45	1.5 J	1.2 J	1.1 J
	Perfluorohexanoic acid (PFHxA)	—	ng/L	770	1,300	<1.9	<1.8	<1.8	14	14	<1.8	<1.8	<1.9
	Perfluoroheptanoic acid (PFHpA)	—	ng/L	64	140	<1.9	<1.8	<1.8	2.2	2.5	<1.8	<1.8	<1.9
	Perfluorononanoic acid (PFNA)	—	ng/L	<1.8	0.25 J	<1.9	<1.8	<1.8	<1.9	<1.9	<1.8	<1.8	<1.9
	Perfluorobutanesulfonic acid (PFBS)	—	ng/L	380	880	0.28 J*	0.36 J	0.18 J	5.9	6.0	0.30 J	0.21 J	0.19 J
	Perfluorodecanoic acid (PFDA)	—	ng/L	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.9	<1.8	<1.8	<1.9
	Perfluoroundecanoic acid (PFUnA)	—	ng/L	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.9	<1.8	<1.8	<1.9
	Perfluorododecanoic acid (PFDoA)	—	ng/L	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.9	<1.8	<1.8	<1.9
	Perfluorotridecanoic acid (PFTTrDA)	—	ng/L	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.9	<1.8	<1.8	<1.9
	Perfluorotetradecanoic acid (PFTTeA)	—	ng/L	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.9	<1.8	<1.8	<1.9
	N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	ng/L	<4.6	<4.6	<4.8	<4.6	<4.6	<4.7	<4.7	<4.6	<4.6	<4.7
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	ng/L	<4.6	<4.6	<4.8	<4.6	<4.6	<4.7	<4.7	<4.6	<4.6	<4.7
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	—	ng/L	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.9	<1.8	<1.8	<1.9
	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	—	ng/L	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.9	<1.8	<1.8	<1.9
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	—	ng/L	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.9	<1.8	<1.8	<1.9
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	ng/L	<3.6	<3.7	<3.8	<3.7	<3.7	<3.8	<3.8	<3.7	<3.6	<3.7
	Perfluorooctanesulfonic acid (PFOS)	400	ng/L	50	300	0.90 J	0.86 J	<1.8	12	13	1.6 J	0.67 J	0.68 J
Perfluorooctanoic acid (PFOA)	400	ng/L	80	140	<1.9	<1.8	<1.8	4.2	5.0	<1.8	<1.8	<1.9	
AK102	Diesel Range Organics	1.5	mg/L	<0.577B*	—	—	—	—	<0.577 B*	<0.577 B*	—	—	—
SW8260C	1,1,1,2-Tetrachloroethane	5.7	µg/L	<0.25	—	—	—	—	<0.25	<0.25	—	—	—
	1,1,1-Trichloroethane	8,000	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	1,1,1,2-Tetrachloroethane	0.76	µg/L	<0.25	—	—	—	—	<0.25	<0.25	—	—	—
	1,1,2-Trichloroethane	0.41	µg/L	<0.20	—	—	—	—	<0.20	<0.20	—	—	—
	1,1-Dichloroethane	28	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	1,1-Dichloroethene	280	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	1,1-Dichloropropene	—	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	1,2,3-Trichlorobenzene	7.0	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	1,2,3-Trichloropropane	0.0075	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	1,2,4-Trichlorobenzene	4.0	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	1,2,4-Trimethylbenzene	56	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	1,2-Dibromo-3-chloropropane	—	µg/L	<5.0	—	—	—	—	<5.0	<5.0	—	—	—
	1,2-Dibromoethane	0.075	µg/L	<0.038	—	—	—	—	<0.038	<0.038	—	—	—
	1,2-Dichlorobenzene	300	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	1,2-Dichloroethane	1.7	µg/L	<0.25	—	—	—	—	<0.25	<0.25	—	—	—
	1,2-Dichloropropane	8.2	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	1,3,5-Trimethylbenzene	60	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	1,3-Dichlorobenzene	300	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	1,3-Dichloropropane	—	µg/L	<0.25	—	—	—	—	<0.25	<0.25	—	—	—
1,4-Dichlorobenzene	4.8	µg/L	<0.25	—	—	—	—	<0.25	<0.25	—	—	—	
2,2-Dichloropropane	—	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—	

Table 7 - January 2021 Monitoring Well Results

Sample Name				MW-1901-15	MW-1901-40	MW-1901-80		MW-1901-150	MW-1902-15		MW-1902-40	MW-1902-80	MW-1902-150
Description				Downgradient monitoring well cluster					Upgradient monitoring well cluster				
Analytical Method	Analyte	Cleanup Level	Units	1/18/21	1/19/21	1/19/21		1/19/21	1/18/21		1/18/21	1/18/21	1/18/21
SW8260C	2-Butanone (MEK)	5,600	µg/L	<5.0	—	—	—	—	<5.0	<5.0	—	—	—
	2-Chlorotoluene	—	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	2-Hexanone	38	µg/L	<5.0	—	—	—	—	<5.0	<5.0	—	—	—
	4-Chlorotoluene	—	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Benzene	4.6	µg/L	<0.20	—	—	—	—	<0.20	<0.20	—	—	—
	Bromobenzene	62	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Bromochloromethane	—	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Bromodichloromethane	1.3	µg/L	<0.25	—	—	—	—	<0.25	<0.25	—	—	—
	Bromoform	33	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Bromomethane	7.5	µg/L	<2.5	—	—	—	—	<2.5	<2.5	—	—	—
	Carbon disulfide	810	µg/L	<5.0	—	—	—	—	<5.0	<5.0	—	—	—
	Carbon tetrachloride	4.6	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Chlorobenzene	78	µg/L	<0.25	—	—	—	—	<0.25	<0.25	—	—	—
	Chloroethane	21,000	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Chloroform	2.2	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Chloromethane	190	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	cis-1,2-Dichloroethene	36	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	cis-1,3-Dichloropropene	4.7	µg/L	<0.25	—	—	—	—	<0.25	<0.25	—	—	—
	Dibromochloromethane	8.7	µg/L	<0.25	—	—	—	—	<0.25	<0.25	—	—	—
	Dibromomethane	8.3	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Dichlorodifluoromethane	200	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Ethylbenzene	15	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Hexachlorobutadiene	1.4	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Isopropylbenzene	450	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Methyl isobutyl ketone	6,300	µg/L	<5.0	—	—	—	—	<5.0	<5.0	—	—	—
	Methylene chloride	110	µg/L	<5.0	—	—	—	—	<5.0	<5.0	—	—	—
	Methyl-t-butyl ether (MTBE)	140	µg/L	<5.0	—	—	—	—	<5.0	<5.0	—	—	—
	Naphthalene	1.7	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	n-Butylbenzene	1,000	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	n-Propylbenzene	660	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	o-Xylene	190	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	P & M -Xylene	190	µg/L	<1.0	—	—	—	—	<1.0	<1.0	—	—	—
p-Isopropyltoluene	—	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—	
sec-Butylbenzene	2,000	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—	
Styrene	1,200	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—	
tert-Butylbenzene	690	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—	
Tetrachloroethene	41	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—	
Toluene	1,100	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—	
Total Xylenes	190	µg/L	<1.5	—	—	—	—	<1.5	<1.5	—	—	—	
trans-1,2-Dichloroethene	360	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—	

Table 7 - January 2021 Monitoring Well Results

Sample Name				MW-1901-15	MW-1901-40	MW-1901-80		MW-1901-150	MW-1902-15		MW-1902-40	MW-1902-80	MW-1902-150
Description				Downgradient monitoring well cluster					Upgradient monitoring well cluster				
Analytical Method	Analyte	Cleanup Level	Units	1/18/21	1/19/21	1/19/21		1/19/21	1/18/21		1/18/21	1/18/21	1/18/21
SW8260C	trans-1,3-Dichloropropene	4.7	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Trichloroethene	2.8	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Trichlorofluoromethane	5,200	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Trichlorotrifluoroethane	10,000	µg/L	<5.0	—	—	—	—	<5.0	<5.0	—	—	—
	Vinyl acetate	410	µg/L	<5.0	—	—	—	—	<5.0	<5.0	—	—	—
	Vinyl chloride	0.190	µg/L	<0.075	—	—	—	—	<0.075	<0.075	—	—	—

ng/L nanograms per liter, equivalent to parts per trillion

µg/L micrograms per liter

mg/L milligrams per liter

Field duplicates: samples MW-1901-80 and MW-2901-80, MW-1902-15 and MW-2902-15 (Work Orders COC 320-69099 and 1210288).

— Cleanup level not established or sample not submitted.

Limit of detection (LOD) exceeds DEC groundwater-cleanup level.

< Analyte not detected; listed as less than the LOD or reporting limit (RL) unless otherwise flagged due to quality-control failures.

J Estimated concentration, detected greater than the method detection limit (MDL) and less than the limit of quantitation (LOQ) or RL. Flag applied by the laboratory.

J* Result considered estimated due to a QC failure. Flag applied by Shannon & Wilson, Inc.

B* Sample result affected by laboratory contamination, result considered not detected reported as <[RL]B*. Flag applied by Shannon & Wilson, Inc.

Table 8 - April 2021 Monitoring Well Results

Sample Name				MW-1901-15 and DUP	MW-1901-40	MW-1901-80	MW-1901-150	MW-1902-15	MW-1902-40	MW-1902-80	MW-1902-150	
Description				Downgradient monitoring well cluster				Upgradient monitoring well cluster				
Analytical Method	Analyte	Cleanup Level	Units	4/13/21		4/13/21	4/13/21	4/13/21	4/13/21	4/13/21	4/13/21	
EPA 537.1M	Perfluorohexanesulfonic acid (PFHxS)	—	ng/L	1,700	1,900	2,600	<2.6 B*	<1.8 B*	45	<1.8 B*	<1.8 B*	<2.0 B*
	Perfluorohexanoic acid (PFHxA)	—	ng/L	750	740	1,200	<1.8 B*	<1.8	<11 JH*	<1.8 B*	<1.8	<2.0
	Perfluoroheptanoic acid (PFHpA)	—	ng/L	65	64	150	<1.8	<1.8	2.2	<1.8	<1.8	<2.0
	Perfluorononanoic acid (PFNA)	—	ng/L	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.8	<2.0
	Perfluorobutanesulfonic acid (PFBS)	—	ng/L	420	460	940	<1.8 B*	<1.8	<5.1 B*	<1.8	<1.8	<2.0
	Perfluorodecanoic acid (PFDA)	—	ng/L	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.8	<2.0
	Perfluoroundecanoic acid (PFUnA)	—	ng/L	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.8	<2.0
	Perfluorododecanoic acid (PFDoA)	—	ng/L	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.8	<2.0
	Perfluorotridecanoic acid (PFTTrDA)	—	ng/L	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.8	<2.0
	Perfluorotetradecanoic acid (PFTTeA)	—	ng/L	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.8	<2.0
	N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	ng/L	<4.6	<4.6	<4.4	<4.5	<4.5	<4.7	<4.4	<4.6	<4.9
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	ng/L	<4.6	<4.6	<4.4	<4.5	<4.5	<4.7	<4.4	<4.6	<4.9
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	—	ng/L	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.8	<2.0
	11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	—	ng/L	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.8	<2.0
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	—	ng/L	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.8	<2.0
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	ng/L	<3.6	<3.7	<3.5	<3.6	<3.6	<3.7	<3.6	<3.7	<3.9
Perfluorooctanesulfonic acid (PFOS)	400	ng/L	46	47	450	<1.8 B*	<1.8	13	<2.1 B*	<1.8	<2.0 B*	
Perfluorooctanoic acid (PFOA)	400	ng/L	88	91	170	<1.8	<1.8	4.6	<1.8	<1.8	<2.0	
AK102	Diesel Range Organics	1.5	mg/L	<0.556 B*	<0.556 B*	—	—	—	<0.600 B*	—	—	
SW8260C	1,1,1,2-Tetrachloroethane	5.7	µg/L	<0.25	<0.25	—	—	—	<0.25	—	—	
	1,1,1-Trichloroethane	8,000	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—	
	1,1,2,2-Tetrachloroethane	0.76	µg/L	<0.25	<0.25	—	—	—	<0.25	—	—	
	1,1,2-Trichloroethane	0.41	µg/L	<0.20	<0.20	—	—	—	<0.20	—	—	
	1,1-Dichloroethane	28	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—	
	1,1-Dichloroethene	280	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—	
	1,1-Dichloropropene	—	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—	
	1,2,3-Trichlorobenzene	7.0	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—	
	1,2,3-Trichloropropane	0.0075	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—	
	1,2,4-Trichlorobenzene	4.0	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—	
	1,2,4-Trimethylbenzene	56	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—	
	1,2-Dibromo-3-chloropropane	—	µg/L	<5.0	<5.0	—	—	—	<5.0	—	—	
	1,2-Dibromoethane	0.075	µg/L	<0.038	<0.038	—	—	—	<0.038	—	—	
	1,2-Dichlorobenzene	300	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—	
	1,2-Dichloroethane	1.7	µg/L	<0.25	<0.25	—	—	—	<0.25	—	—	
	1,2-Dichloropropane	8.2	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—	
	1,3,5-Trimethylbenzene	60	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—	
	1,3-Dichlorobenzene	300	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—	
	1,3-Dichloropropane	—	µg/L	<0.25	<0.25	—	—	—	<0.25	—	—	
1,4-Dichlorobenzene	4.8	µg/L	<0.25	<0.25	—	—	—	<0.25	—	—		
2,2-Dichloropropane	—	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—		

Table 8 - April 2021 Monitoring Well Analytical Results

Sample Name				MW-1901-15 and DUP	MW-1901-40	MW-1901-80	MW-1901-150	MW-1902-15	MW-1902-40	MW-1902-80	MW-1902-150
Description				Downgradient monitoring well cluster				Upgradient monitoring well cluster			
Analytical Method	Analyte	Cleanup Level	Units	4/13/21	4/13/21	4/13/21	4/13/21	4/13/21	4/13/21	4/13/21	4/13/21
SW8260C	2-Butanone (MEK)	5,600	µg/L	<5.0	<5.0	—	—	—	<5.0	—	—
	2-Chlorotoluene	—	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—
	2-Hexanone	38	µg/L	<5.0	<5.0	—	—	—	<5.0	—	—
	4-Chlorotoluene	—	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—
	Benzene	4.6	µg/L	<0.20	<0.20	—	—	—	<0.20	—	—
	Bromobenzene	62	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—
	Bromochloromethane	—	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—
	Bromodichloromethane	1.3	µg/L	<0.25	<0.25	—	—	—	<0.25	—	—
	Bromoform	33	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—
	Bromomethane	7.5	µg/L	<2.5	<2.5	—	—	—	<2.5	—	—
	Carbon disulfide	810	µg/L	<5.0	<5.0	—	—	—	<5.0	—	—
	Carbon tetrachloride	4.6	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—
	Chlorobenzene	78	µg/L	<0.25	<0.25	—	—	—	<0.25	—	—
	Chloroethane	21,000	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—
	Chloroform	2.2	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—
	Chloromethane	190	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—
	cis-1,2-Dichloroethene	36	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—
	cis-1,3-Dichloropropene	4.7	µg/L	<0.25	<0.25	—	—	—	<0.25	—	—
	Dibromochloromethane	8.7	µg/L	<0.25	<0.25	—	—	—	<0.25	—	—
	Dibromomethane	8.3	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—
	Dichlorodifluoromethane	200	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—
	Ethylbenzene	15	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—
	Hexachlorobutadiene	1.4	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—
	Isopropylbenzene	450	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—
	Methyl isobutyl ketone	6,300	µg/L	<5.0	<5.0	—	—	—	<5.0	—	—
	Methylene chloride	110	µg/L	<5.0	<5.0	—	—	—	<5.0	—	—
	Methyl-t-butyl ether (MTBE)	140	µg/L	<5.0	<5.0	—	—	—	<5.0	—	—
	Naphthalene	1.7	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—
	n-Butylbenzene	1,000	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—
	n-Propylbenzene	660	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—
	o-Xylene	190	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—
	P & M -Xylene	190	µg/L	<1.0	<1.0	—	—	—	<1.0	—	—
p-Isopropyltoluene	—	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—	
sec-Butylbenzene	2,000	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—	
Styrene	1,200	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—	
tert-Butylbenzene	690	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—	
Tetrachloroethene	41	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—	
Toluene	1,100	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—	
Total Xylenes	190	µg/L	<1.5	<1.5	—	—	—	<1.5	—	—	
trans-1,2-Dichloroethene	360	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—	

Table 8 - April 2021 Monitoring Well Analytical Results

Sample Name				MW-1901-15 and DUP	MW-1901-40	MW-1901-80	MW-1901-150	MW-1902-15	MW-1902-40	MW-1902-80	MW-1902-150
Description				Downgradient monitoring well cluster				Upgradient monitoring well cluster			
Analytical Method	Analyte	Cleanup Level	Units	4/13/21	4/13/21	4/13/21	4/13/21	4/13/21	4/13/21	4/13/21	4/13/21
SW8260C	trans-1,3-Dichloropropene	4.7	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—
	Trichloroethene	2.8	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—
	Trichlorofluoromethane	5,200	µg/L	<0.50	<0.50	—	—	—	<0.50	—	—
	Trichlorotrifluoroethane	10,000	µg/L	<5.0	<5.0	—	—	—	<5.0	—	—
	Vinyl acetate	410	µg/L	<5.0	<5.0	—	—	—	<5.0	—	—
	Vinyl chloride	0.190	µg/L	<0.075	<0.075	—	—	—	<0.075	—	—

- DUP Field-duplicate sample
- ng/L nanograms per liter, equivalent to parts per trillion
- µg/L micrograms per liter
- mg/L milligrams per liter
- Cleanup level not established or sample not submitted.
- Field duplicates: samples MW-1901-15 and MW-1901-115 (Work Orders COC 320-72496 and 1211681).
- Bold** Concentration exceeds DEC groundwater-cleanup level reported in 18 AAC 75, Table C.
- Bold** Limit of detection (LOD) exceeds DEC groundwater-cleanup level.
- < Analyte not detected; listed as less than the LOD or reporting limit (RL) unless otherwise flagged due to quality-control failures.
- J Estimated concentration, detected greater than the method detection limit (MDL) and less than the limit of quantitation (LOQ) or RL. Flag applied by the laboratory.
- J* Result considered estimated due to a QC failure. Flag applied by Shannon & Wilson, Inc.
- JH* Estimated concentration, biased high due to quality control failures. Flag applied by Shannon & Wilson, Inc.
- B* Sample result affected by laboratory contamination, result considered not detected reported as <[RL]B*. Flag applied by Shannon & Wilson, Inc.

Table 9 - Soil Excavation PFAS Results

Sample Name				EB-001		EW-001	EW-002	EW-003	EW-004
Description				Excavation Base		Excavation Sidewall			
Analytical Method	Analyte	Cleanup Level	Units	9/19/19	9/19/19	East Side	North Side	South Side	West Side
EPA 537	Perfluoro-hexane sulfonic acid (PFHxS)	—	µg/kg	6.6	5.4	1.6	1.5	4.2	2.5
	Perfluorohexanoic acid (PFHxA)	—	µg/kg	1.1	0.90	0.22	0.46	1.5	0.93
	Perfluoro-heptanoic acid (PFHpA)	—	µg/kg	0.27 J	0.25 J	0.15 J	0.16 J	0.43	0.30
	Perfluoro-nonanoic acid (PFNA)	—	µg/kg	<0.28	0.22 J	0.61	0.41	1.1	<0.24
	Perluoro-butane sulfonic acid (PFBS)	—	µg/kg	0.11 J	0.092 J	0.038 J	0.048 J	0.20 J	0.13 J
	Perfluorodecanoic acid (PFDA)	—	µg/kg	<0.28	<0.26	<0.22	<0.24	<0.27	<0.24
	Perfluoroundecanoic acid (PFUnA)	—	µg/kg	<0.28	<0.26	<0.22	<0.24	<0.27	<0.24
	Perfluorododecanoic acid (PFDoA)	—	µg/kg	<0.28	<0.26	<0.22	<0.24	<0.27	<0.24
	Perfluorotridecanoic acid (PFTTrDA)	—	µg/kg	<0.28	<0.26	<0.22	<0.24	<0.27	<0.24
	Perfluorotetradecanoic acid (PFTeA)	—	µg/kg	<0.28	<0.26	<0.22	<0.24	<0.27	<0.24
	N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	µg/kg	<2.8	<2.6	<2.2	<2.4	<2.7	<2.4
	N-Ehtyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	µg/kg	<2.8	<2.6	<2.2	<2.4	<2.7	<2.4
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	—	µg/kg	<0.28	<0.26	<0.22	<0.24	<0.27	<0.24
	11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	—	µg/kg	<0.28	<0.26	<0.22	<0.24	<0.27	<0.24
	4,8- Dioxo-3H-perfluorononanoic acid (DONA)	—	µg/kg	<0.28	<0.26	<0.22	<0.24	<0.27	<0.24
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	µg/kg	<0.35	<0.33	<0.28	<0.30	<0.34	<0.30
	Perfluoro-octane sulfonate (PFOS)	3.0	µg/kg	3.9 J*	34 J*	25 J*	3.2 J*	42 J*	0.37 J
Perfluoro-octanoic acid (PFOA)	1.7	µg/kg	1.3	1.3	1.1	0.81	1.7	2.5	

µg/kg micrograms per kilogram

Field duplicates: samples EB-001 and EB-101 (Work Order 320-54557).

— Cleanup level not established or sample not submitted.

< Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.

Bold Concentration exceeds Department of Environmental Conservation under-40-inch zone migration-to-groundwater soil cleanup level reported in 18 AAC 75, Table B1.

J Estimated concentration, detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.

J* Result considered estimated due to a QC failure. Flag applied by Shannon & Wilson, Inc.

Table 10 - Fire Training Pit Soil Results

Sample Name				FTP-001	FTP-002		FTP-004	FTP-005
Description				Fire training pit saturated soil				
Analytical Method	Analyte	Cleanup Level	Units	Northwest Side	Northeast Side		Southeast Side	Southwest Side
				10/1/19	10/1/19	10/1/19	10/1/19	10/1/19
EPA 537.1M	Perfluoro-hexane sulfonic acid (PFHxS)	—	µg/kg	110	83	130	24	160
	Perfluorohexanoic acid (PFHxA)	—	µg/kg	47	23	26	17 J	50
	Perfluoroheptanoic acid (PFHpA)	—	µg/kg	3.6 J	<22	<22	<21	5.6 J
	Perfluorononanoic acid (PFNA)	—	µg/kg	<21	<22	<22	<21	<21
	Perfluorobutanesulfonic acid (PFBS)	—	µg/kg	4.6 J	2.7 J	3.9 J	<21	6.2 J
	Perfluorodecanoic acid (PFDA)	—	µg/kg	<21	<22	<22	<21	<21
	Perfluoroundecanoic acid (PFUnA)	—	µg/kg	6.8 J	<22	<22	<21	6.1 J
	Perfluorododecanoic acid (PFDoA)	—	µg/kg	<21	<22	<22	<21	<21
	Perfluorotridecanoic acid (PFTrDA)	—	µg/kg	<21	<22	<22	<21	<21
	Perfluorotetradecanoic acid (PFTeA)	—	µg/kg	<21	<22	<22	<21	<21
	N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	µg/kg	<210	<220	<220	<210	<210
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	µg/kg	<210	<220	<220	<210	<210
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	—	µg/kg	<21	<22	<22	<21	<21
	11-Chloroicosafafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	—	µg/kg	<21	<22	<22	<21	<21
	4,8-Dioxo-3H-perfluorononanoic acid (DONA)	—	µg/kg	<21	<22	<22	<21	<21
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	µg/kg	<26	<27	<27	<26	<26
	Perfluorooctane sulfonate (PFOS)	3.0	µg/kg	6,500 J*	2,100 J*	2,400 J*	1,800	8,400 J*
Perfluorooctanoic acid (PFOA)	1.7	µg/kg	16 J	12 J	14 J	<21	36	
SM21 2540G	Total Solids	—	%	89.4	91.1	91.1	91.1	93.0
SW6020A TCLP	Arsenic	0.2	mg/kg	<0.125	0.0846 J	<0.125	<0.125	<0.125
	Barium	2,100	mg/kg	0.464 JH*	<0.300 B*	<0.300 B*	<0.300 B*	<0.339 B*
	Cadmium	9.1	mg/kg	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500
	Chromium	—	mg/kg	<0.200 B*	<0.200 B*	<0.200 B*	<0.200 B*	<0.200 B*
	Lead	400	mg/kg	0.0396 J	0.0320 J	0.0325 J	<0.0500	0.0371 J
	Mercury	0.36	mg/kg	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
	Selenium	6.9	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
	Silver	11	mg/kg	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500
AK102	Diesel Range Organics (DRO)	250	mg/kg	5,180	5,510	5,500	1,170	8,220
AK103	Residual Range Organics (RRO)	11,000	mg/kg	1,170	3,000	2,850	160	762
SW8260C	1,1,1,2-Tetrachloroethane	0.022	mg/kg	<0.0166	<0.0124	<0.0113	<0.0124	<0.0126
	1,1,1-Trichloroethane	32	mg/kg	<0.0208	<0.0156	<0.0141	<0.0154	<0.0158
	1,1,2,2-Tetrachloroethane	0.003	mg/kg	<0.00166	<0.00124	<0.00112	<0.00124	<0.00126
	1,1,2-Trichloroethane	0.0014	mg/kg	<0.000665	<0.000497	<0.000450	<0.000493	<0.000505
	1,1-Dichloroethane	0.092	mg/kg	<0.0208	<0.0156	<0.0141	<0.0154	<0.0158
	1,1-Dichloroethene	1.2	mg/kg	<0.0208	<0.0156	<0.0141	<0.0154	<0.0158
	1,1-Dichloropropene	—	mg/kg	<0.0208	<0.0156	<0.0141	<0.0154	<0.0158
	1,2,3-Trichlorobenzene	0.15	mg/kg	<0.0415	<0.0311	<0.0282	<0.0308	<0.0316
	1,2,3-Trichloropropane	0.000031	mg/kg	<0.000830	<0.000620	<0.000565	<0.000615	<0.000630
	1,2,4-Trichlorobenzene	0.082	mg/kg	<0.0208	<0.0156	<0.0141	<0.0154	<0.0158
	1,2,4-Trimethylbenzene	0.61	mg/kg	0.142	0.0397 J	0.0399 J	<0.0308	0.0271 J
	1,2-Dibromo-3-chloropropane	—	mg/kg	<0.0830	<0.0620	<0.0565	<0.0615	<0.0630
	1,2-Dibromoethane	0.00024	mg/kg	<0.000830	<0.000620	<0.000565	<0.000615	<0.000630
	1,2-Dichlorobenzene	2.4	mg/kg	<0.0208	<0.0156	<0.0141	<0.0154	<0.0158
	1,2-Dichloroethane	0.0055	mg/kg	<0.00166	<0.00124	<0.00112	<0.00124	<0.00126
	1,2-Dichloropropane	0.03	mg/kg	<0.00830	<0.00620	<0.00565	<0.00615	<0.00630
	1,3,5-Trimethylbenzene	0.66	mg/kg	0.0939	0.0171 J	0.0166 J	<0.0154	0.0145 J
	1,3-Dichlorobenzene	2.3	mg/kg	<0.0208	<0.0156	<0.0141	<0.0154	<0.0158
	1,3-Dichloropropane	—	mg/kg	<0.00830	<0.00620	<0.00565	<0.00615	<0.00630
	1,4-Dichlorobenzene	0.037	mg/kg	<0.0208	<0.0156	<0.0141	<0.0154	<0.0158
	2,2-Dichloropropane	—	mg/kg	<0.0208	<0.0156	<0.0141	<0.0154	<0.0158
	2-Butanone (MEK)	15	mg/kg	0.142 J	<0.156	<0.141	<0.154	<0.158
	2-Chlorotoluene	—	mg/kg	<0.0208	<0.0156	<0.0141	<0.0154	<0.0158
	2-Hexanone	0.11	mg/kg	<0.0830	<0.0620	<0.0565	<0.0615	<0.0630
	4-Chlorotoluene	—	mg/kg	<0.0208	<0.0156	<0.0141	<0.0154	<0.0158
	4-Methyl-2-pentanone (MIBK)	18	mg/kg	<0.207	<0.156	<0.141	<0.154	<0.158
	Acetone	38	mg/kg	<0.207	<0.156	<0.141	<0.154	<0.158
	Benzene	0.022	mg/kg	0.00665 J	<0.00775	<0.00705	0.00586 J	<0.00790
	Bromobenzene	0.36	mg/kg	<0.0208	<0.0156	<0.0141	<0.0154	<0.0158
	Bromochloromethane	—	mg/kg	<0.0208	<0.0156	<0.0141	<0.0154	<0.0158
	Bromodichloromethane	0.0043	mg/kg	<0.00166	<0.00124	<0.00112	<0.00124	<0.00126
	Bromoform	0.1	mg/kg	<0.0208	<0.0156	<0.0141	<0.0154	<0.0158
	Bromomethane	0.024	mg/kg	<0.0166	<0.0124	<0.0113	<0.0124	<0.0126
	Carbon disulfide	2.9	mg/kg	<0.0830	<0.0620	<0.0565	<0.0615	<0.0630
Carbon tetrachloride	0.021	mg/kg	<0.0104	<0.00775	<0.00705	<0.00770	<0.00790	
Chlorobenzene	0.46	mg/kg	<0.0208	<0.0156	<0.0141	<0.0154	<0.0158	
Chloroethane	72	mg/kg	<0.166	<0.124	<0.113	<0.124	<0.126	
Chloroform	0.0071	mg/kg	<0.00166	<0.00124	<0.00112	<0.00124	<0.00126	
Chloromethane	0.61	mg/kg	<0.0208	<0.0156	<0.0141	<0.0154	<0.0158	
cis-1,2-Dichloroethene	0.12	mg/kg	<0.0208	<0.0156	<0.0141	<0.0154	<0.0158	

Table 10 - Fire Training Pit Soil Results

Sample Name				FTP-001	FTP-002	FTP-004	FTP-005	
Description				Fire training pit saturated soil				
Analytical Method	Analyte	Cleanup Level	Units	Northwest Side	Northeast Side		Southeast Side	Southwest Side
				10/1/19	10/1/19	10/1/19	10/1/19	10/1/19
SW8260C	cis-1,3-Dichloropropene	0.018	mg/kg	<0.0104	<0.00775	<0.00705	<0.00770	<0.00790
	Dibromochloromethane	0.0027	mg/kg	<0.00166	<0.00124	<0.00112	<0.00124	<0.00126
	Dibromomethane	0.025	mg/kg	<0.0208	<0.0156	<0.0141	<0.0154	<0.0158
	Dichlorodifluoromethane	3.9	mg/kg	<0.0415	<0.0311	<0.0282	<0.0308	<0.0316
	Ethylbenzene	0.13	mg/kg	0.0494	0.0242 J	0.0250 J	<0.0154	<0.0158
	Hexachlorobutadiene	0.02	mg/kg	<0.0166	<0.0124	<0.0113	<0.0124	<0.0126
	Isopropylbenzene	5.6	mg/kg	0.0199J	<0.0156	<0.0141	<0.0154	<0.0158
	Methylene chloride	0.33	mg/kg	<0.0830	<0.0620	<0.0565	<0.0615	<0.0630
	Methyl-t-butyl ether	0.4	mg/kg	<0.0830	<0.0620	<0.0565	<0.0615	<0.0630
	Naphthalene	0.038	mg/kg	0.106	0.0627	0.0526	<0.0154	0.0215 J
	n-Butylbenzene	23	mg/kg	<0.0208	<0.0156	<0.0141	<0.0154	<0.0158
	n-Propylbenzene	9.1	mg/kg	0.0336 J	<0.0156	<0.0141	<0.0154	<0.0158
	o-Xylene	1.5	mg/kg	0.159	0.0904	0.0973	<0.0154	0.0186 J
	P & M -Xylene	1.5	mg/kg	0.262	0.134	0.143	<0.0308	0.0293 J
	p-Isopropyltoluene	—	mg/kg	<0.0830	<0.0620	<0.0565	<0.0615	<0.0630
	sec-Butylbenzene	42	mg/kg	0.0137J	<0.0156	<0.0141	<0.0154	<0.0158
	Styrene	10	mg/kg	<0.0208	<0.0156	<0.0141	<0.0154	<0.0158
	tert-Butylbenzene	11	mg/kg	<0.0208	<0.0156	<0.0141	<0.0154	<0.0158
	Tetrachloroethene	0.19	mg/kg	<0.0104	<0.00775	<0.00705	<0.00770	<0.00790
	Toluene	6.7	mg/kg	0.0411 J	0.0267 J	0.0273 J	0.0117 J	<0.0158
	Total Xylenes	1.5	mg/kg	0.421	0.224	0.240	<0.0462	0.0480 J
	trans-1,2-Dichloroethene	1.3	mg/kg	<0.0208	<0.0156	<0.0141	<0.0154	<0.0158
	trans-1,3-Dichloropropene	0.018	mg/kg	<0.0104	<0.00775	<0.00705	<0.00770	<0.00790
	Trichloroethene	0.011	mg/kg	<0.00415	<0.00311	<0.00281	<0.00308	<0.00315
Trichlorofluoromethane	41	mg/kg	<0.0415	<0.0311	<0.0282	<0.0308	<0.0316	
Trichlorotrifluoroethane	310	mg/kg	<0.0830	<0.0620	<0.0565	<0.0615	<0.0630	
Vinyl acetate	1.1	mg/kg	<0.0830	<0.0620	<0.0565	<0.0615	<0.0630	
Vinyl chloride	0.0008	mg/kg	<0.000665	<0.000497	<0.000450	<0.000493	<0.000505	

µg/kg micrograms per kilogram

% percent

mg/kg milligrams per kilogram

Field duplicate: samples FTP-002 and FTP-003.

— Cleanup level not established or sample not submitted.

< Analyte not detected; listed as less than the limit of detection (LOD) or reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.

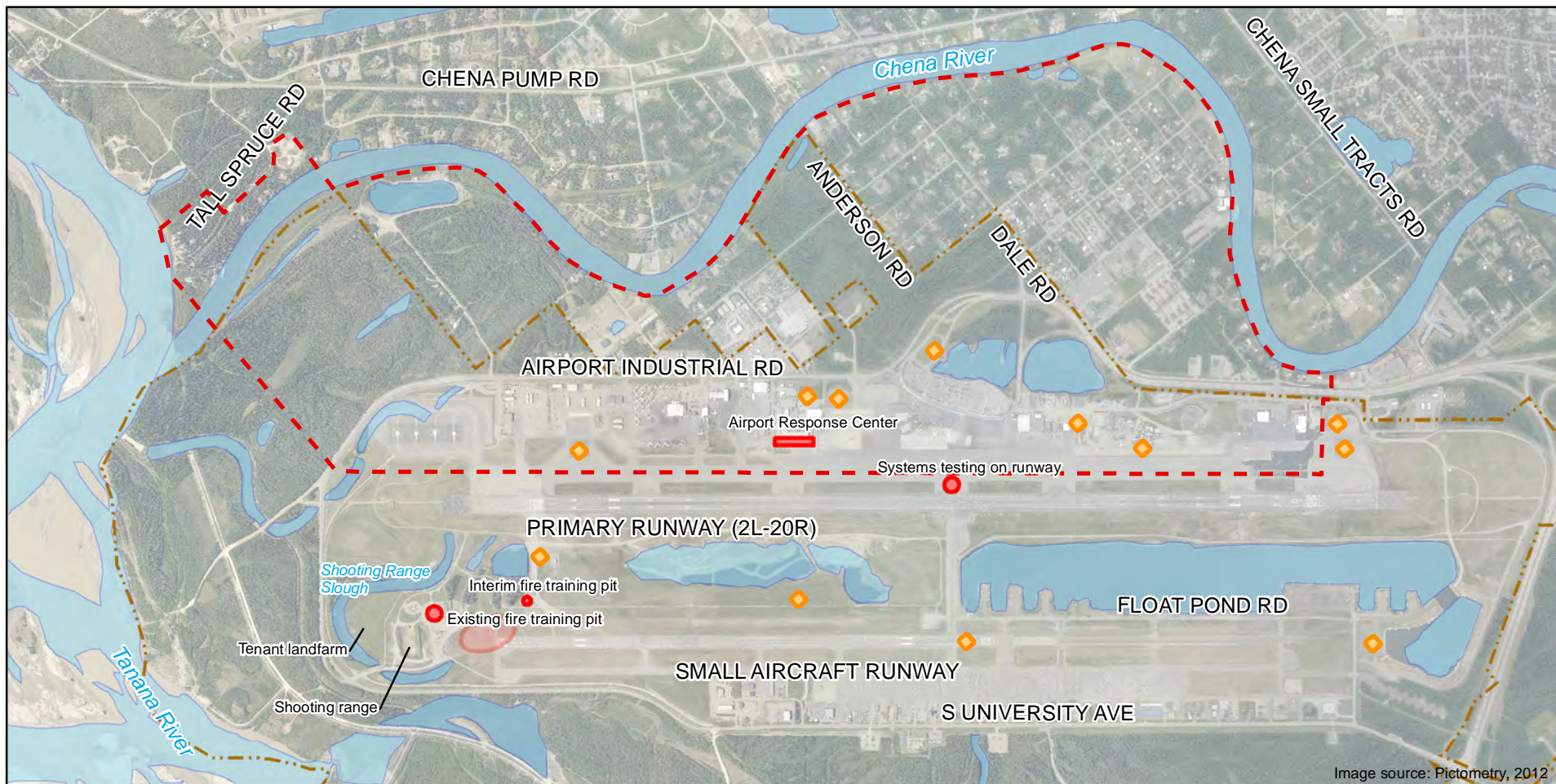
Bold Concentration exceeds Department of Environmental Conservation under-40-inch zone migration-to-groundwater soil cleanup levels reported in 18 AAC 75, Table B1 and B2.

Bold Concentration exceeds soil level at a concentration less than the LOD or RL.






J Estimated concentration, detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.

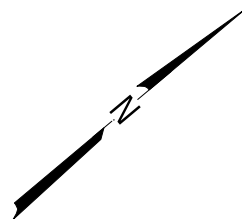
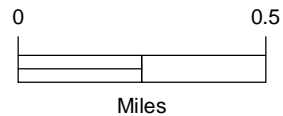
J* Result considered estimated due to a QC failure. Flag applied by Shannon & Wilson, Inc.

B* Result is considered not detected due to quality control failures; see checklist for details. Flag applied by Shannon & Wilson, Inc.



LEGEND

-  PFAS-impacted Area
-  Aircraft Rescue and Firefighting (ARFF) Training Sites
-  Suspected ARFF Site, Approx. Extent
-  FAI Boundary
-  ARFF Emergency Response Sites



Fairbanks International Airport
Fairbanks, Alaska

**FAIRBANKS INTERNATIONAL
AIRPORT VICINITY**

June 2021

102519-010 / 012

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

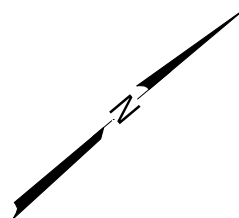
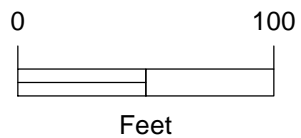
Figure 1



Imagery: FNSB Pictometry, 2020

LEGEND

- Permanent Sump
- Temporary Sump
- Fire Training Pit
- Existing Liner (1990s)
- New Cap Liner
- Fire Training Pit Cap Toe (Edge of Slope)



Fairbanks International Airport
Fairbanks, Alaska

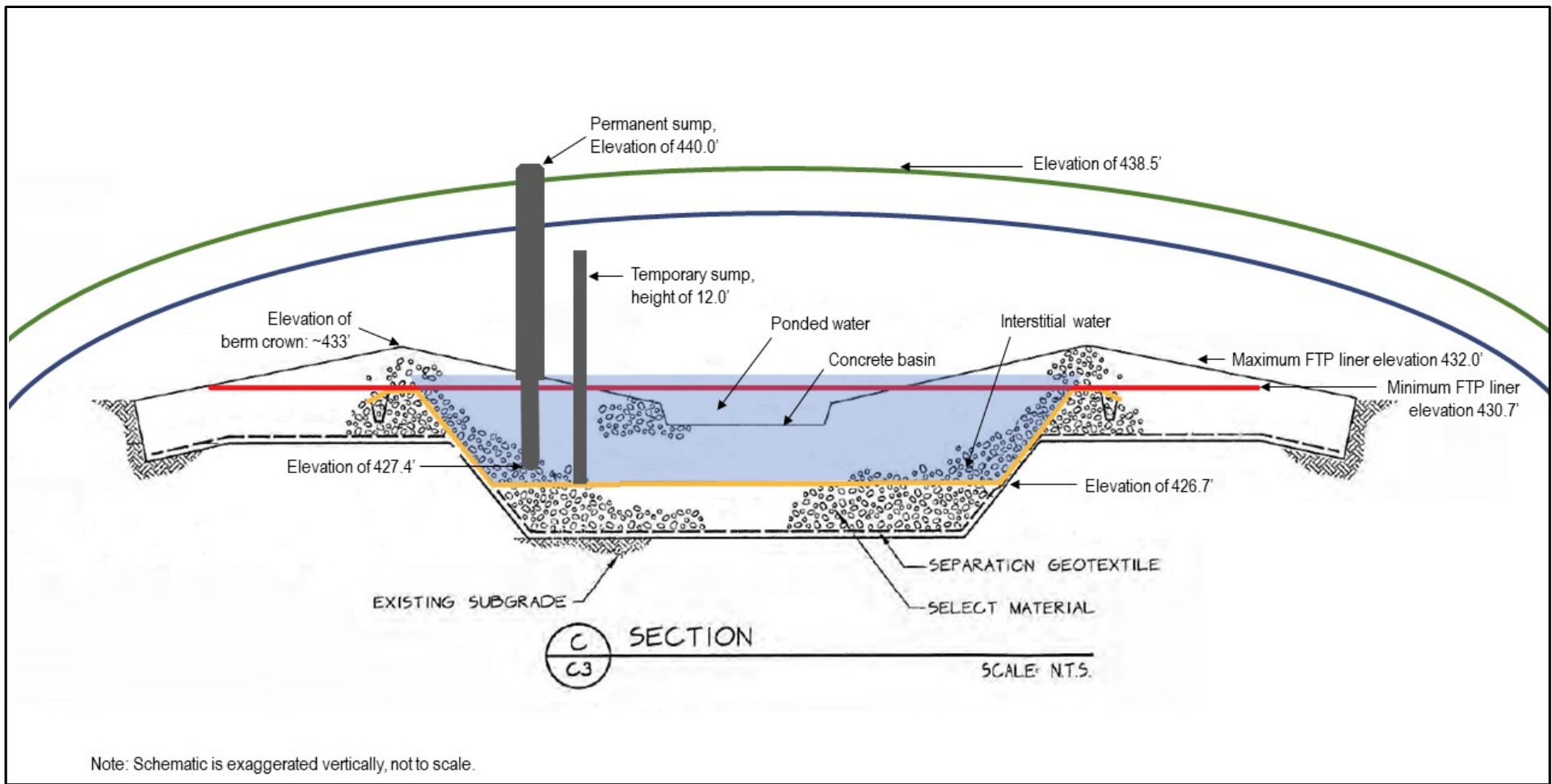
FIRE TRAINING PIT CAP EXTENT

June 2021

102519-010 / 012

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Figure 2



LEGEND

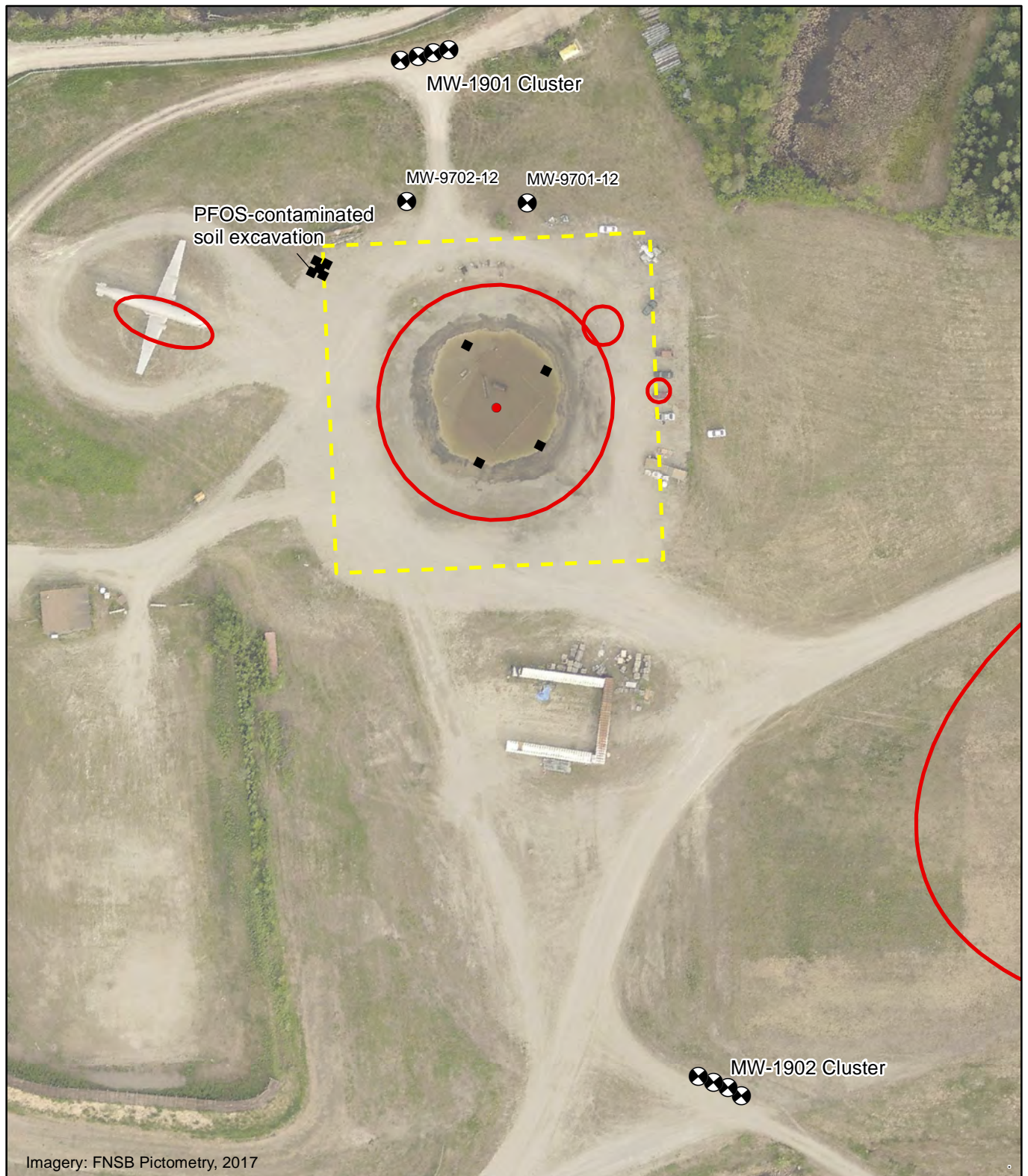
- Final ground surface
- Cap Liner
- FTP Liner
- Elevation where overtop is possible
- Water level, spring 2019

Fairbanks International Airport
Fairbanks, Alaska

**FIRE TRAINING PIT
CROSS SECTION**

June 2021

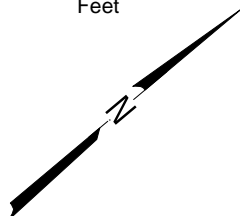
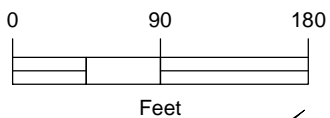
102519-010 / 012



Imagery: FNSB Pictometry, 2017

LEGEND

- Fire Pit Water Sample
- ◆ Soil Sample
- ⊕ Monitoring Well (MW)
- Fire Training Pit Cap Toe
- Aircraft Rescue and Firefighting (ARFF) Training Sites



Fairbanks International Airport
Fairbanks, Alaska

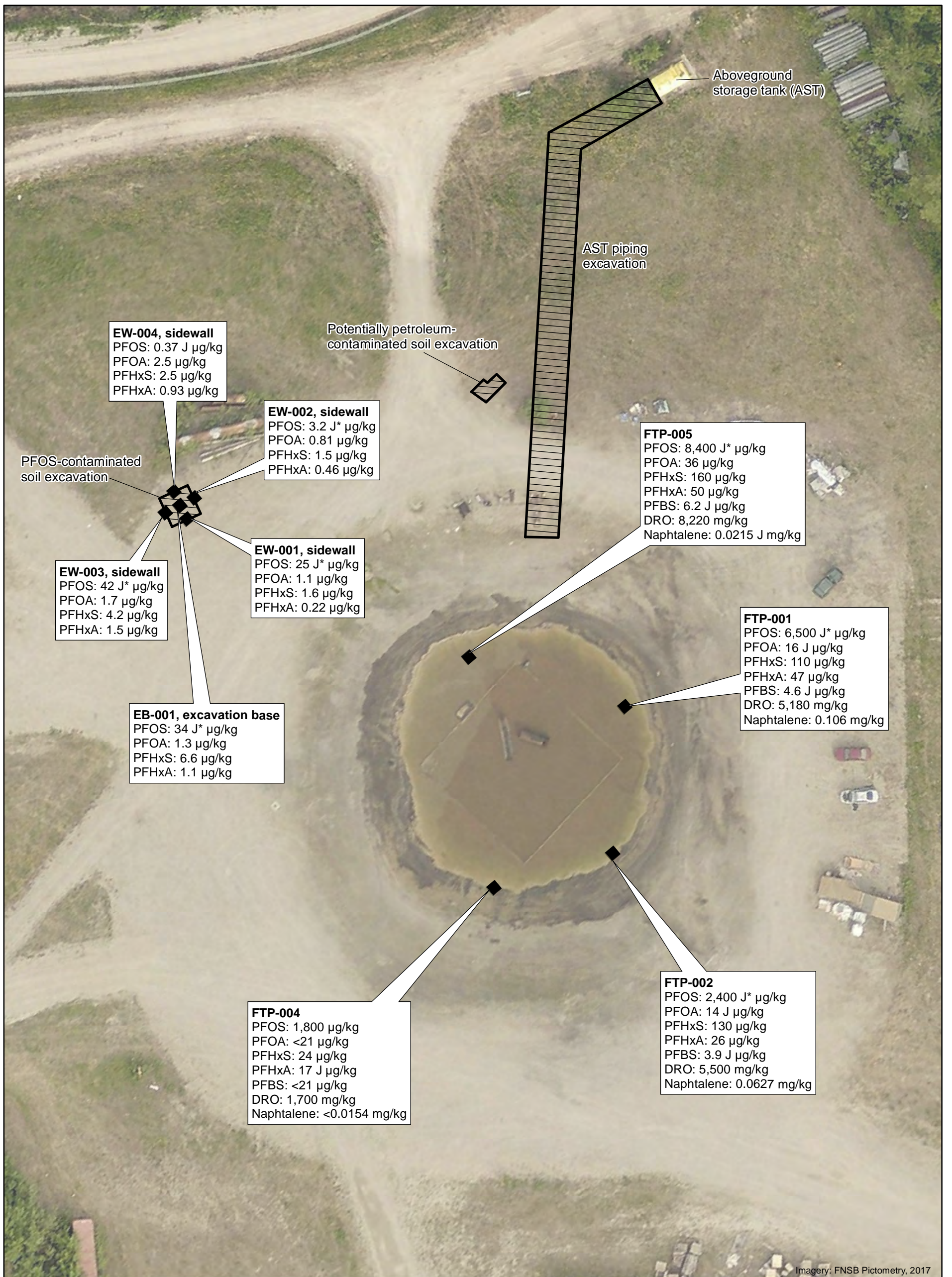
SAMPLE LOCATION OVERVIEW

June 2021

102519-010 / 012

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

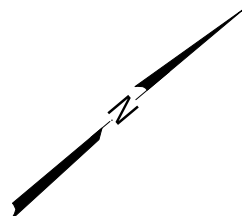
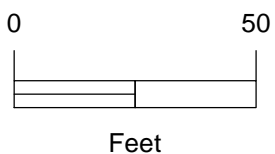
Figure 4



Imagery: FNSB Pictometry, 2017

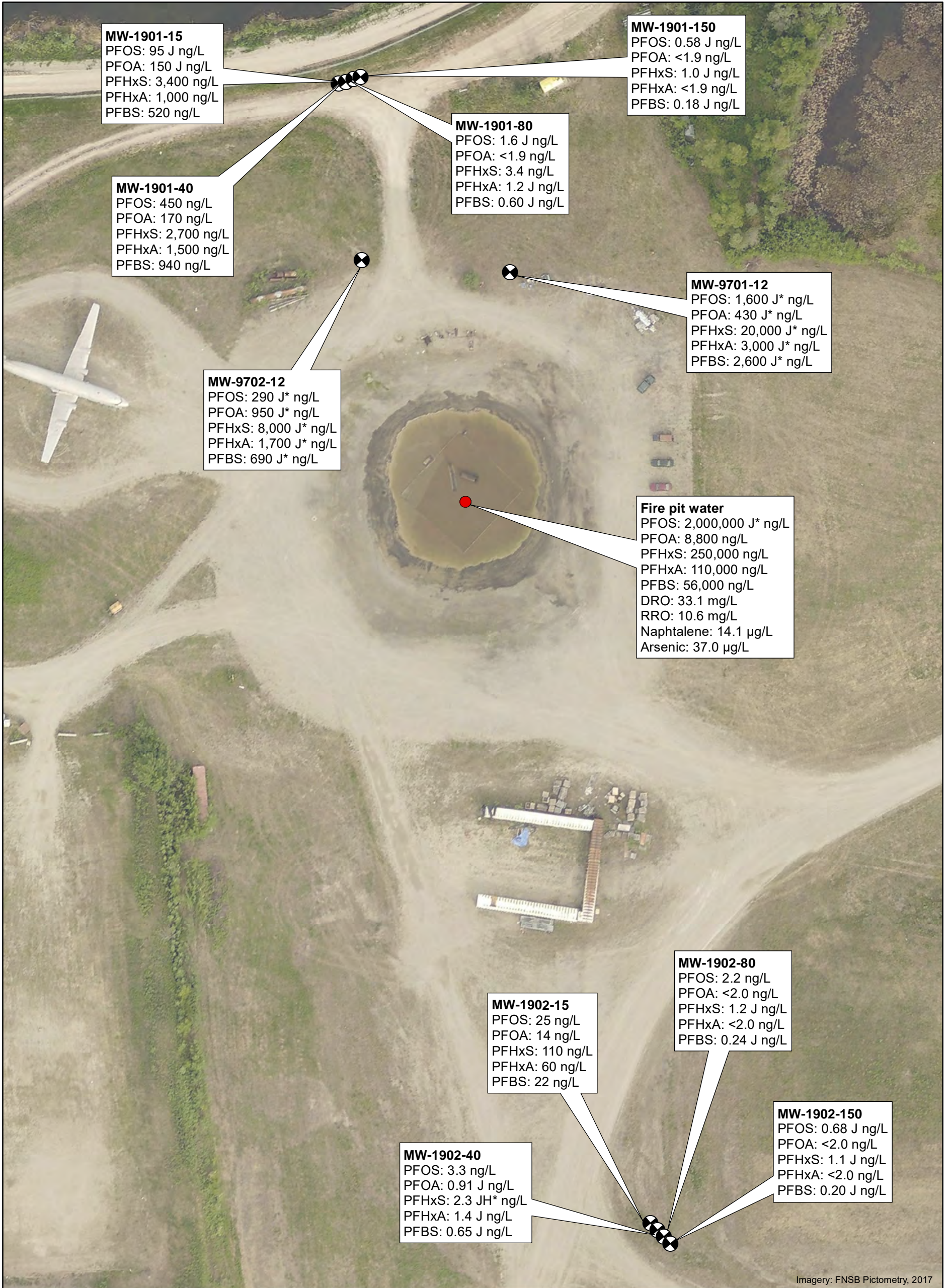
LEGEND

- Soil Sample Location
- ▨ Excavation





NOTES: Displays highest result of field-duplicate pair.
 J Estimated concentration, detected greater than the method detection limit (MDL) and less than the reporting limit (RL). Flag applied by the laboratory.
 J* Result considered estimated due to a quality-control (QC) failure. Flag applied by Shannon & Wilson, Inc.
 < Analyte not detected; listed as less than the limit of detection (LOD) or RL unless otherwise flagged due to QC failures.
 µg/kg micrograms per kilogram
 mg/kg milligrams per kilogram

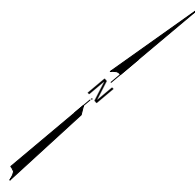
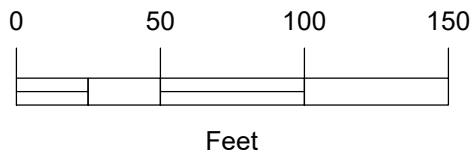
Fairbanks International Airport Fairbanks, Alaska	
SOIL SAMPLE RESULTS	
June 2021	102519-010 / 012
SHANNON & WILSON, INC. <small>GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS</small>	
Figure 5	



Imagery: FNSB Pictometry, 2017

LEGEND

-  Monitoring Well
-  Fire Training Pit Water Sample Location




NOTES: Displays highest result to date for each analyte, highest result of field-duplicate pair.

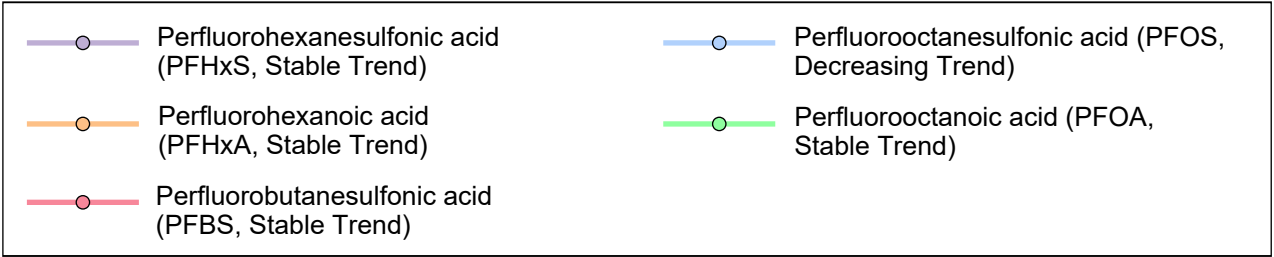
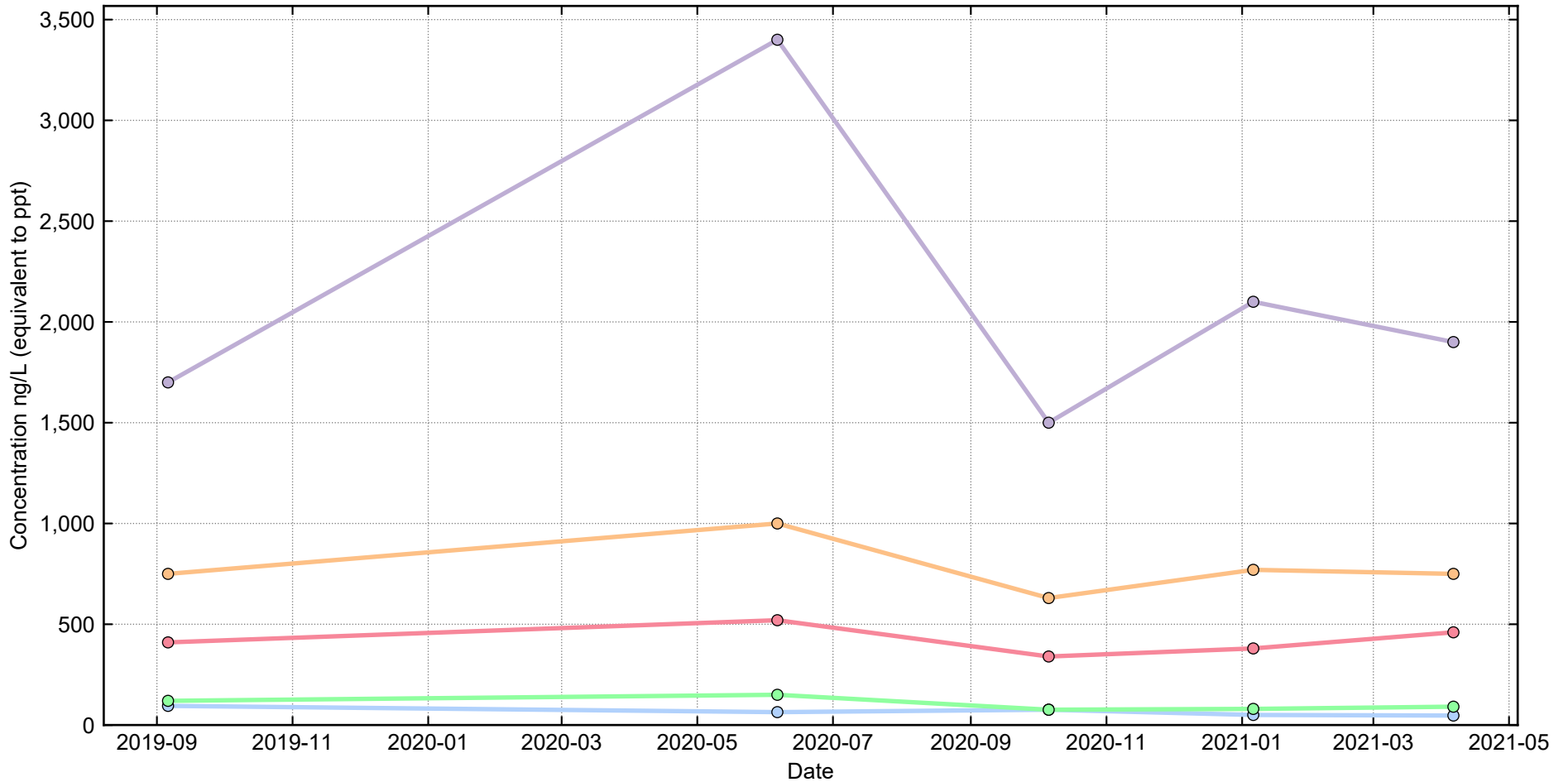
J Estimated concentration, detected greater than the method detection limit (MDL) and less than the reporting limit (RL). Flag applied by the laboratory.

J* Result considered estimated due to a quality-control (QC) failure. Flag applied by Shannon & Wilson, Inc.

< Analyte not detected; listed as less than the limit of detection (LOD) or RL unless otherwise flagged due to QC failures.

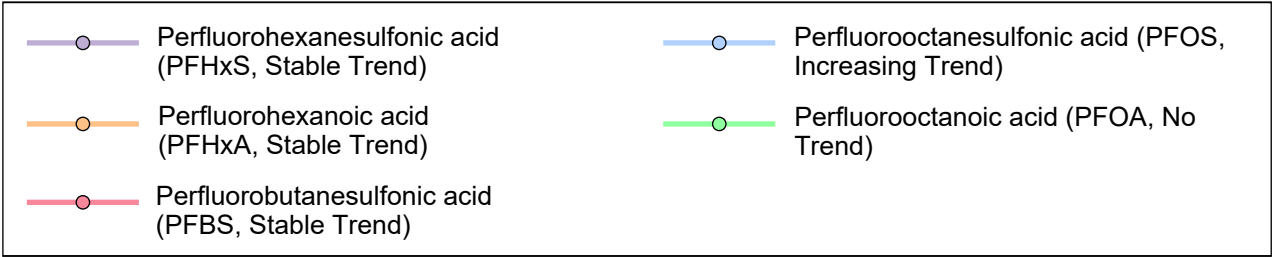
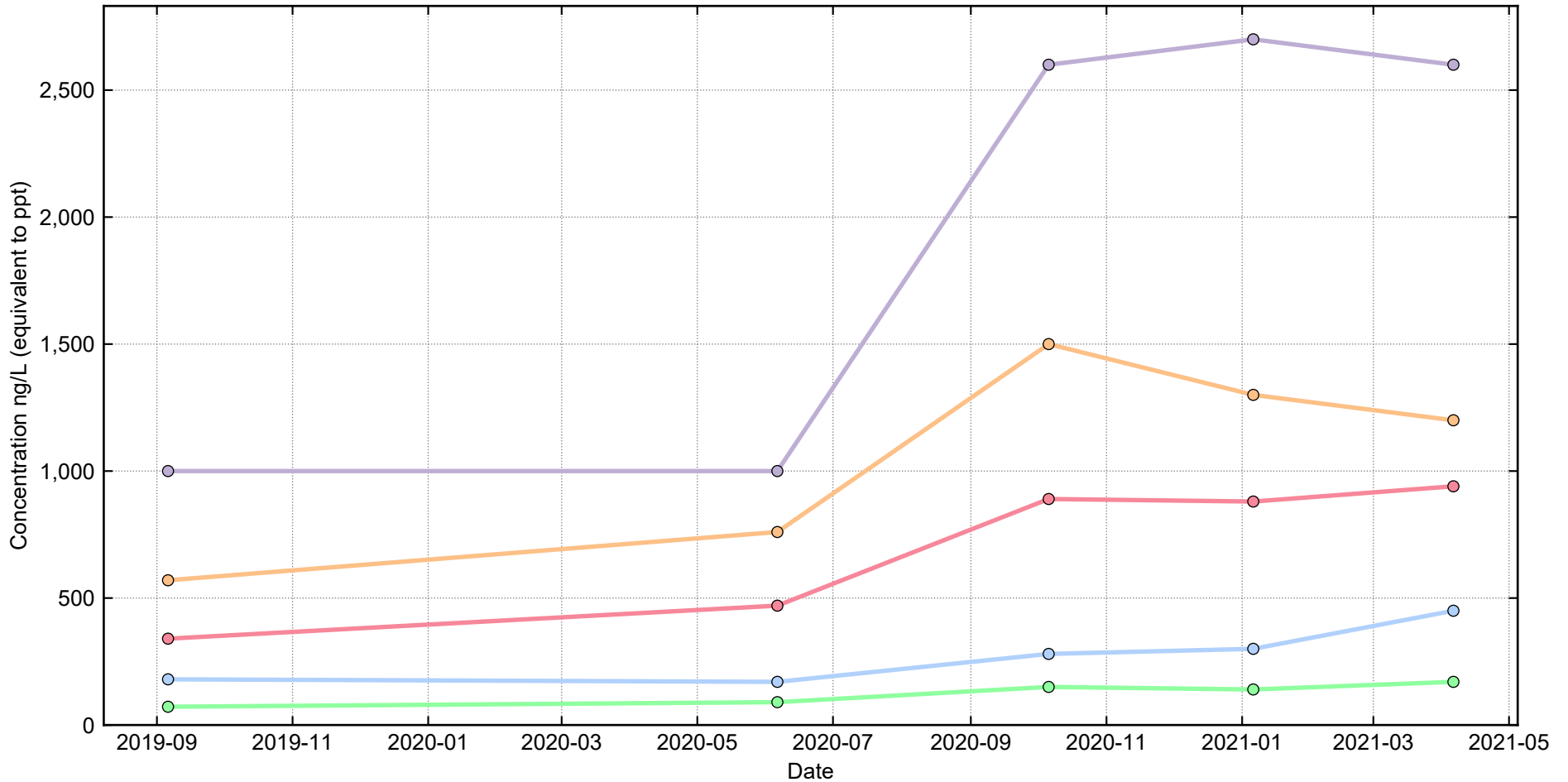
ng/L nanograms per liter
 mg/L milligrams per liter
 µg/L micrograms per liter

Fairbanks International Airport Fairbanks, Alaska	
HIGHEST WATER SAMPLE RESULTS	
June 2021	102519
 SHANNON & WILSON, INC. <small>GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS</small>	
Figure 6	



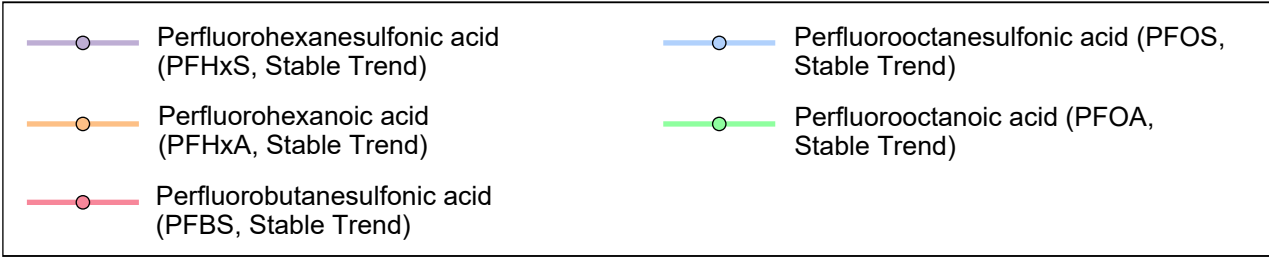
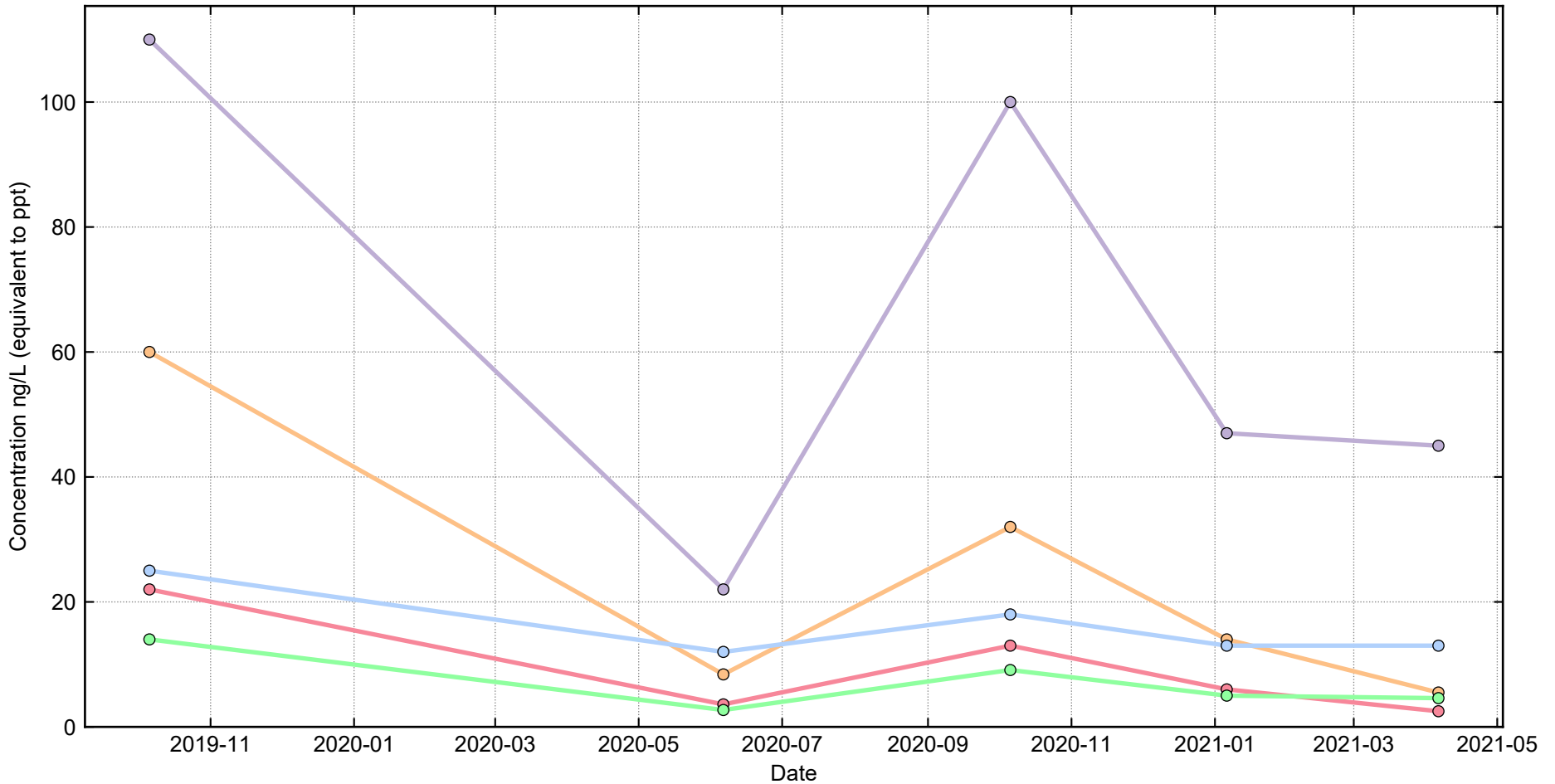
NOTE: If a duplicate sample was collected from the well, the higher of the two values is plotted.
 If a sample had a non-detectable concentration, 1/2 the method detection limit is plotted.

Fairbanks International Airport Fairbanks, Alaska	
QUARTERLY LINE GRAPH MW-1901-15	
June 2021	102519-010 / 012
SHANNON & WILSON, INC. Geotechnical and Environmental Consultants	Figure 7



NOTE: If a duplicate sample was collected from the well, the higher of the two values is plotted.
 If a sample had a non-detectable concentration, 1/2 the method detection limit is plotted.

Fairbanks International Airport Fairbanks, Alaska	
QUARTERLY LINE GRAPH MW-1901-40	
June 2021	102519-010 / 012
SHANNON & WILSON, INC. Geotechnical and Environmental Consultants	Figure 8



NOTE: If a duplicate sample was collected from the well, the higher of the two values is plotted.
 If a sample had a non-detectable concentration, 1/2 the method detection limit is plotted.

Fairbanks International Airport Fairbanks, Alaska	
QUARTERLY LINE GRAPH MW-1902-15	
June 2021	102519-010 / 012
SHANNON & WILSON, INC. Geotechnical and Environmental Consultants	Figure 9

Appendix A

Permits and Approvals

CONTENTS

- Federal Aviation Administration (FAA) 7460 Determination Letters
- Stormwater Pollution Prevention Plan (SWPPP) AKR10GD19 Authorization
- Dewatering Permit AKG002158 Authorization and Notice of Termination
- Alaska Department of Environmental Conservation (DEC) Work Plan and Addendum Approval Letters



Federal Aviation Administration

June 11, 2019

TO:
State of Alaska DOT & PF
Attn: Ashley Jaramillo
6450 Airport Way
Suite 1
Fairbanks, AK 99709
ashley.jaramillo@alaska.gov

CC:
Shannon & Wilson, Inc.
Attn: Adam Wyborny
2355 Hill Road
Fairbanks, AK 99709
apw@shanwil.com

RE: (See attached Table 1 for referenced case(s))
FINAL DETERMINATION

Table 1 - Letter Referenced Case(s)

Table with 7 columns: ASN, Prior ASN, Location, Latitude (NAD83), Longitude (NAD83), AGL (Feet), AMSL (Feet). Row 1: 2019-AAL-115-NRA, FAIRBANKS,AK, 64-47-56.37N, 147-52-48.68W, 20, 459

Description: Heavy equipment to deliver and assemble a temporary onsite water treatment system.

We do not object with conditions to the construction described in this proposal provided:

You comply with the requirements set forth in FAA Advisory Circular 150/5370-2, "Operational Safety on Airports During Construction."

You contact the FAI airport manager, Angie Spear, (907) 474-2529 a minimum of 5 business days prior to conducting operations/construction to allow for processing and issuance of NOTAMS (Departure surface penetration of 5', low close-in obstacle).

This determination does not constitute FAA approval or disapproval of the physical development involved in the proposal. It is a determination with respect to the safe and efficient use of navigable airspace by aircraft and with respect to the safety of persons and property on the ground.

In making this determination, the FAA has considered matters such as the effects the proposal would have on existing or planned traffic patterns of neighboring airports, the effects it would have on the existing airspace structure and projected programs of the FAA, the effects it would have on the safety of persons and property on the ground, and the effects that existing or proposed manmade objects (on file with the FAA), and known natural objects within the affected area would have on the airport proposal.

This determination expires on December 11, 2020 unless:

- (a) extended, revised or terminated by the issuing office.
(b) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of

this determination. In such case, the determination expires on the date prescribed by the FCC for the completion of construction, or the date the FCC denies the application.

NOTE: Request for extension of the effective period of this determination must be obtained at least 15 days prior to expiration date specified in this letter.

If you have any questions concerning this determination contact Patrick Zettler (907) 271-5446 Patrick.Zettler@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2019-AAL-115-NRA.

Patrick Zettler
Specialist
Signature Control No: 405941988-408175567



Federal Aviation Administration

August 15, 2019

TO:
State of Alaska DOT & PF
Attn: Ashley Jaramillo
6450 Airport Way
Suite 1
Fairbanks, AK 99709
ashley.jaramillo@alaska.gov

CC:
Shannon & Wilson, Inc.
Attn: Adam Wyborny
2355 Hill Road
Fairbanks, AK 99709
apw@shanwil.com

RE: (See attached Table 1 for referenced case(s))
FINAL DETERMINATION

Table 1 - Letter Referenced Case(s)

Table with 7 columns: ASN, Prior ASN, Location, Latitude (NAD83), Longitude (NAD83), AGL (Feet), AMSL (Feet). Row 1: 2019-AAL-186-NRA, 2019-AAL-185-NRA, FAIRBANKS,AK, 64-47-58.29N, 147-52-56.31W, 35, 474

Description: Drill rig for installation of monitoring well

We do not object with conditions to the construction described in this proposal provided:

You comply with the requirements set forth in FAA Advisory Circular 150/5370-2, "Operational Safety on Airports During Construction."

This determination does not constitute FAA approval or disapproval of the physical development involved in the proposal. It is a determination with respect to the safe and efficient use of navigable airspace by aircraft and with respect to the safety of persons and property on the ground.

In making this determination, the FAA has considered matters such as the effects the proposal would have on existing or planned traffic patterns of neighboring airports, the effects it would have on the existing airspace structure and projected programs of the FAA, the effects it would have on the safety of persons and property on the ground, and the effects that existing or proposed manmade objects (on file with the FAA), and known natural objects within the affected area would have on the airport proposal.

This determination expires on February 15, 2021 unless:

- (a) extended, revised or terminated by the issuing office.
(b) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for the completion of construction, or the date the FCC denies the application.

NOTE: Request for extension of the effective period of this determination must be obtained at least 15 days prior to expiration date specified in this letter.

If you have any questions concerning this determination contact Patrick Zettler (907) 271-5446 Patrick.Zettler@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2019-AAL-186-NRA.

Patrick Zettler
Specialist
Signature Control No: 412633330-414535544



Federal Aviation Administration

August 26, 2019

TO:
State of Alaska DOT & PF
Attn: Ashley Jaramillo
6450 Airport Way
Suite 1
Fairbanks, AK 99709
ashley.jaramillo@alaska.gov

RE: (See attached Table 1 for referenced case(s))
FINAL DETERMINATION

Table 1 - Letter Referenced Case(s)

Table with 7 columns: ASN, Prior ASN, Location, Latitude (NAD83), Longitude (NAD83), AGL (Feet), AMSL (Feet). Row 1: 2019-AAL-185-NRA, 2019-AAL-115-NRA, FAIRBANKS,AK, 64-47-55.31N, 147-52-38.25W, 35, 474

Description: Drill rig for installation of monitoring well

We do not object with conditions to the construction described in this proposal provided:

You comply with the requirements set forth in FAA Advisory Circular 150/5370-2, "Operational Safety on Airports During Construction."

- RW 2R/20L is closed when the drill rig is raised.
- You contact the FAI airport manager, Angie Spear,(907) 474-2529 at least 3 days prior to raising the drill rig to coordinate closure of RW 2R/20L.
- You contact Jeffrey Moss, Manager, Fairbanks System Support Center (FAI SSC), at 907-474-0816 (office) or 907-854-0068 (cell), and/or Charles Anderson, Coordinator, at 907-474-0456 (office) or 907-888-4586 (cell), at least 5 days prior to raising the drill rig.

This determination does not constitute FAA approval or disapproval of the physical development involved in the proposal. It is a determination with respect to the safe and efficient use of navigable airspace by aircraft and with respect to the safety of persons and property on the ground.

In making this determination, the FAA has considered matters such as the effects the proposal would have on existing or planned traffic patterns of neighboring airports, the effects it would have on the existing airspace structure and projected programs of the FAA, the effects it would have on the safety of persons and property on the ground, and the effects that existing or proposed manmade objects (on file with the FAA), and known natural objects within the affected area would have on the airport proposal.

This determination expires on February 26, 2021 unless:

(a) extended, revised or terminated by the issuing office.

(b) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for the completion of construction, or the date the FCC denies the application.

NOTE: Request for extension of the effective period of this determination must be obtained at least 15 days prior to expiration date specified in this letter.

If you have any questions concerning this determination contact Patrick Zettler (907) 271-5446 Patrick.Zettler@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2019-AAL-185-NRA.

Patrick Zettler

Specialist

Signature Control No: 412632349-415446426



THE STATE
of **ALASKA**
GOVERNOR MICHAEL J. DUNLEAVY

Department of Environmental Conservation

DIVISION OF WATER
Wastewater Discharge Authorization Program

555 Cordova St
Anchorage, Alaska 99501-2617
Main: 907.269.6285
Fax: 907.334.2415

Company:
ATTN:

Facility:

Permit Number:

This email/letter acknowledges that you have submitted a Notice of Intent form to be covered under the APDES General Permit for Stormwater Discharges for Construction General Permit Activity (Construction General Permit). The permittee is authorized to discharge storm water under the terms and conditions of this permit upon the issuance date of this letter. Permit documents can be accessed starting tomorrow on the ADEC's Storm Water Permit Search website:

<http://dec.alaska.gov/Applications/Water/WaterPermitSearch/Search.aspx>.

As stated above, this letter acknowledges receipt of a Notice of Intent. However, it is not an ADEC determination of the validity of the information you provided. Your eligibility for coverage under the Permit is based on the validity of the certification you provided. Your signature on the Notice of Intent certifies that you have read, understood, and are implementing all of the applicable requirements. An important aspect of this certification requires that you correctly determine whether you are eligible for coverage under this permit.

As you know, the Construction General Permit requires you to have developed and begun implementing a Stormwater Pollution Prevention Plan (SWPPP) and outlines important inspection and record keeping requirements. You must also comply with any additional location-specific requirements applicable to Alaska. A copy of the Construction General Permit must be kept with your SWPPP. An electronic copy of the Permit and additional guidance materials can be viewed and downloaded at <https://dec.alaska.gov/water/wastewater/stormwater/construction>.

For tracking purposes, the following number has been assigned to your Notice of Intent Form:

If you have general questions regarding the stormwater program or your responsibilities under the Construction General Permit, please call (907) 269-6285. Thank you for using the ADEC eNOI system.



Notice of Intent (NOI) for Storm Water Discharges Associated with Construction Activity under an APDES Construction General Permit

Submission of this Notice of Intent (NOI) constitutes notice that the party identified in Section II of this form requests authorization to discharge pursuant to the APDES Construction General Permit (CGP, AKR100000). Submission of this NOI also constitutes notice that the party identified in Section II of this form meets the eligibility requirements of the CGP for the project identified in Section IV of this form. Permit authorization is required prior to commencement of construction activity until you are eligible to terminate coverage as detailed in the CGP. To obtain authorization, you must submit a complete and accurate NOI form. Refer to the instructions at the end of this form.

I. Single/Multiple NOI Project					
Is this NOI for a project with a single NOI?					<input type="checkbox"/> Yes <input type="checkbox"/> No
If "No," then your project has multiple NOIs, will the fee be paid with this NOI?					<input type="checkbox"/> Yes <input type="checkbox"/> No
If "No," then enter the name of the operator paying the fee:					
II. Operator Information					
Organization:		Name:		Title:	
Phone:		Fax (optional):		Email:	
Mailing Address:	Street (PO Box):				
	City:		State:		Zip:
III. Billing Contact Information					
Organization:		Name:		Title:	
Phone:		Fax (optional):		Email:	
Mailing Address: <input type="checkbox"/> Check if same as Operator Information	Street (PO Box):				
	City:		State:		Zip:
IV. Project / Site Information					
Project Name:			Estimated Start Date:	Estimated End Date:	
Brief Description of Project:			Estimated Area to be Disturbed (<i>nearest tenth acre</i>):		
Is your project / site less than one-acre, but part of a common plan of development?					<input type="checkbox"/> Yes <input type="checkbox"/> No
If "Yes", provide the Permit Authorization Number and name of the common plan of development:			Number: _____ Name: _____		
Have storm water discharges from your project / site been authorized previously by a DEC permit?					<input type="checkbox"/> Yes <input type="checkbox"/> No
If "Yes," provide the Permit Authorization Number for the previous DEC permit?					
If "Yes," have you updated your SWPPP according to the most recently issued CGP?					<input type="checkbox"/> Yes <input type="checkbox"/> No
Location Address:	Street:			Borough or similar government subdivision:	
	City:		State: Alaska	Zip:	
Latitude (decimal degree, 5 places):		Longitude (decimal degree, 5 places):		Determined By:	
				<input type="checkbox"/> USGS Topographic Map, scale:	
				<input type="checkbox"/> Other:	

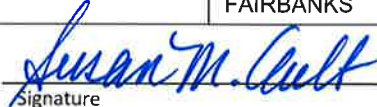
V. SWPPP (Storm Water Pollution Prevention Plan)									
Has the SWPPP been prepared in advance of filing this NOI? <input type="checkbox"/> Yes <input type="checkbox"/> No									
For projects with 5 or more acres of disturbance, has a SWPPP been submitted to DEC? <input type="checkbox"/> Yes <input type="checkbox"/> No, ≤ 5 acres									
Location of SWPPP for Viewing: <input type="checkbox"/> Address in Section II <input type="checkbox"/> Address in Section IV <input type="checkbox"/> Other									
If other:		Street:							
		City:		State:		Zip:			
SWPPP Contact Information (if different than that in Section II):									
Organization:			Name:			Title:			
Phone:		Fax (optional):		Email:					
Mailing Address:		Street (PO Box):							
<input type="checkbox"/> Check if same as Operator Information		City:		State:		Zip:			
VI. Permanent Storm Water Controls									
Will you construct a permanent storm water management control measure at the project site (Part 4.11)? <input type="checkbox"/> Yes <input type="checkbox"/> No									
If "Yes", indicate the type of measure to be installed:									
<input type="checkbox"/> Pond		<input type="checkbox"/> Oil/Water/Grit Separator		<input type="checkbox"/> Proprietary Storm Water Sedimentation Device					
<input type="checkbox"/> Other:									
VII. Discharge Information									
Does your project discharge into a Municipal Separate Storm Sewer System (MS4)? <input type="checkbox"/> Yes <input type="checkbox"/> No									
If yes, name of the MS4 Operator:									
Receiving Water and Wetlands Information: (if additional space is needed for this question, attach separate sheet or annotate in Section XI.)									
Impaired waters/303d Listed waters: (see https://dec.alaska.gov/wqsr/Docs/impairedwaters.pdf or https://dec.alaska.gov/water/water-quality/map and https://dec.alaska.gov/water/water-quality/impaired-waters/)									
a. Identify the name(s) of waterbodies or wetlands to which you discharge.		b. Are any of your discharges directly into any segment of a 303d Listed Water, i.e. "Impaired" Water?		c. If you answered YES to question b, then answer the following three questions:					
				i. What pollutant(s) are causing the impairment?		ii. Are the pollutant(s) causing the impairment present in your discharge?		iii. Is the discharge consistent with the assumptions and requirements of applicable EPA approved or established Total Maximum Daily Load (TMDL(s))?	
						Yes		No	
		<input type="checkbox"/> Yes <input type="checkbox"/> No				<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No	
		<input type="checkbox"/> Yes <input type="checkbox"/> No				<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No	
		<input type="checkbox"/> Yes <input type="checkbox"/> No				<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No	
		<input type="checkbox"/> Yes <input type="checkbox"/> No				<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No	
		<input type="checkbox"/> Yes <input type="checkbox"/> No				<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No	
VIII. Treatment Chemicals									
Will you use control measures such as polymers, flocculants or other treatment chemicals at your construction site? <input type="checkbox"/> Yes <input type="checkbox"/> No									
NOTE: If you are unsure at the filing of the NOI, check "No" and then if you use treatment chemicals file an NOI Modification form indicating "Yes."									
If "Yes", indicate the following polymers, flocculants, or other treatment chemicals that will be used at your construction site:				<input type="checkbox"/> Alum <input type="checkbox"/> Gypsum					
				<input type="checkbox"/> Polyacrylamide (PAM) <input type="checkbox"/> Polyaluminum Chloride					
<input type="checkbox"/> Other:									

IX. Certification Information

An Alaska Pollutant Discharge Elimination System (APDES) permit application or report must be signed by an individual with the appropriate authority per 18 AAC 83.385. For additional information, please refer to 18 AAC 83.385 at the following link: <http://www.legis.state.ak.us/basis/aac.asp#18.83.385>.

Corporate Executive Officer 18 AAC 83.385 (a)(1)(A)	For a corporation, a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation.
Corporate Operations Manager 18 AAC 83.385 (a)(1)(B)	For a corporation, the manager of one or more manufacturing, production, or operating facilities, if (i) the manager is authorized to make management decisions that govern the operation of the regulated facility, including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental statutes and regulations; (ii) the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and (iii) authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.
Sole Proprietor or General Partner 18 AAC 83.385 (a)(2)	For a partnership or sole proprietorship, the general partner or the proprietor respectively.
Public Agency, Chief Executive Officer 18 AAC 83.385 (a)(3)(A)	For a municipality, state, or other public agency, the chief executive officer of the agency.
Public Agency, Senior Executive Officer 18 AAC 83.385 (a)(3)(B)	For a municipality, state, or other public agency, a senior executive officer having responsibility for the overall operations of a principal geographic unit or division of the agency.
<p><i>*For Delegated Authority: the delegation must be made in writing and submitted to the DEC. An Example of written authorization delegating authority can be found on the Division of Water website: https://dec.alaska.gov/media/11172/delegation-authorization-form.pdf</i></p>	
Operations Manager (Delegated Authority)* 18 AAC 83.385 (b)(2)(A)	For a duly authorized representative, an individual or a position having responsibility for the overall operation of the regulated facility or activity, including the position of plant manager, operator of a well or a well field, superintendent or position of equivalent responsibility.
Environmental Manager (Delegated Authority)* 18 AAC 83.385 (b)(2)(B)	For a duly authorized representative, an individual or position having overall responsibility for environmental matters for the company.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Organization: Alaska Department of Transportati	Name: Susan Ault	Title: Business Manager
Phone: (907) 474-2577	Fax (optional):	Email: susan.ault@alaska.gov
Mailing Address: <input type="checkbox"/> Check if same as Operator Information	Street (PO Box): 6450 AIRPORT WAY STE 1	
	City: FAIRBANKS	State: AK
		Zip: 99709-4671
 Signature	8/23/19 Date	

X. NOI Preparer (Complete if NOI was prepared by someone other than the certifier.)

Organization: Shannon and Wilson, Inc.	Name: Valerie Webb	Title: Senior Professional III
Phone: (907) 458-3152	Fax (optional):	Email: vew@shanwil.com
Mailing Address: <input type="checkbox"/> Check if same as Operator Information	Street (PO Box): 2355 HILL RD	
	City: FAIRBANKS	State: AK
		Zip: 99709-5326

XI. Document Attachments and Supplemental Information

--

Attachment 1. (Fill in as necessary if more space is required for Receiving water and Wetlands Information.)

a. What is the name(s) of your receiving water(s) that receive storm water directly and/or through a MS4? If your receiving water is impaired, then identify the name of the impaired segment, if applicable, in parenthesis following the receiving water name.	b. Are any of your discharges directly into any segment of an "impaired" water?		c. If you answered yes to question b, then answer the following three questions: i. What pollutant(s) are causing the impairment?	ii. Are the pollutant(s) causing the impairment present in your discharge?		iii. Has the TMDL been completed for the pollutant(s) causing the impairment?	
	Yes	No		Yes	No	Yes	No
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Notice of Intent (NOI) Modification for Storm Water Discharges Associated with Construction Activity filed under an APDES General Permit

(Please copy content exactly from your NOI. Indicate changes on the next page.)

Current NOI Information

I. Permit Tracking Number:

AKR10GD19 Fairbanks International Airport Fire Training Pit; Alaska Department of Transportation & Public Facilities

Instructions for Completing a Modification to an APDES Notice of Intent (NOI)

Use the form on the subsequent pages to indicate the items for which you are submitting this modification. Only enter the information you wish to change. You may use this form to modify an NOI that you submitted to ADEC for coverage under the Construction General Permit (CGP). If you have any questions about modifying your NOI, call the DEC Storm Water Program at (907) 269-8117.

When Should You Modify Your Notice of Intent (NOI)?

- You can use this form to update or correct information on your NOI, including:
 - Owner/Operator address and contact information
 - Site Information
 - Start or End dates
 - Number of acres to be disturbed
(Note, if the original project disturbance was between 1 and < 5 acres, and now will disturb five acres or more, a SWPPP must also be submitted with the NOI modification. Please note the CGP has different provisions for small and large construction projects.)
 - Storm Water Pollution Prevention Plan (SWPPP) location and contact information
 - Continuation of expired permit in accordance with Part 2.6.

When must you Submit a Notice of Termination (NOT) Instead of a Modification Form?

- The owner/operator has changed: You must submit a NOT when you transfer control of a site to a new owner/operator. The new owner/operator must then file a new NOI to obtain coverage under DEC's CGP. Coverage is not transferable.



Notice of Intent (NOI) for Storm Water Discharges Associated with Construction Activity under an APDES Construction General Permit

Submission of this Notice of Intent (NOI) constitutes notice that the party identified in Section II of this form requests authorization to discharge pursuant to the APDES Construction General Permit (CGP, AKR100000). Submission of this NOI also constitutes notice that the party identified in Section II of this form meets the eligibility requirements of the CGP for the project identified in Section IV of this form. Permit authorization is required prior to commencement of construction activity until you are eligible to terminate coverage as detailed in the CGP. To obtain authorization, you must submit a complete and accurate NOI form. Refer to the instructions at the end of this form.

I. Single/Multiple NOI Project					
Is this NOI for a project with a single NOI?					<input type="checkbox"/> Yes <input type="checkbox"/> No
If "No," then your project has multiple NOIs, will the fee be paid with this NOI?					<input type="checkbox"/> Yes <input type="checkbox"/> No
If "No," then enter the name of the operator paying the fee:					
II. Operator Information					
Organization:		Name:		Title:	
Phone:		Fax (optional):		Email:	
Mailing Address:	Street (PO Box):				
City:			State:		Zip:
III. Billing Contact Information					
Organization:		Name:		Title:	
Phone:		Fax (optional):		Email:	
Mailing Address:	Street (PO Box):				
City:			State:		Zip:
IV. Project / Site Information					
Project Name:			Estimated Start Date:		Estimated End Date:
Brief Description of Project:			Estimated Area to be Disturbed (<i>nearest tenth acre</i>):		
Is your project / site less than one-acre, but part of a common plan of development?					<input type="checkbox"/> Yes <input type="checkbox"/> No
If "Yes", provide the Permit Authorization Number and name of the common plan of development:			Number: Name:		
Have storm water discharges from your project / site been authorized previously by a DEC permit?					<input type="checkbox"/> Yes <input type="checkbox"/> No
If "Yes," provide the Permit Authorization Number for the previous DEC permit?					
If "Yes," have you updated your SWPPP according to the 2016 CGP?					<input type="checkbox"/> Yes <input type="checkbox"/> No
Location Address:	Street:			Borough or similar government subdivision:	
City: Select			State: Alaska	Zip: Select	
Latitude (decimal degree, 5 places):		Longitude (decimal degree, 5 places):		Determined By:	
				<input type="checkbox"/> GPS <input type="checkbox"/> USGS Topographic Map <input type="checkbox"/> Other	
If you used a USGS Topographic map, what was the scale?					

V. SWPPP (Storm Water Pollution Prevention Plan)Has the SWPPP been prepared in advance of filing this NOI? Yes NoFor projects with 5 or more acres of disturbance, has a SWPPP been submitted to DEC? Yes No, ≤ 5 acresLocation of SWPPP for Viewing: Address in Section II Address in Section IV Other

If other: Street:

City:

State:
AK

Zip:

SWPPP Contact Information (if different than that in Section II):

Organization:

Fairbanks International Airport

Name:

Katrina K Lemieux

Title:

Environmental Manager

Phone:

(907) 474-2598

Fax (optional):

Email:

katrina.lemieux@alaska.gov

Mailing Address:

Street (PO Box):

6450 Airport Way Suite 1

City:

Fairbanks

State:

AK

Zip:

99709

VI. Permanent Storm Water ControlsWill you construct a permanent storm water management control measure at the project site (Part 4.11)? Yes No

If "Yes", indicate the type of measure to be installed:

- Pond Oil/Water/Grit Separator Proprietary Storm Water Sedimentation Device
 Other:

VII. Discharge InformationDoes your project discharge into a Municipal Separate Storm Sewer System (MS4)? Yes No

If yes, name of the MS4 Operator:

Receiving Water and Wetlands Information: (if additional space is needed for this question, attach separate sheet or annotate in Section XI.)

a. Identify the name(s) of waterbodies or wetlands to which you discharge.	b. Are any of your discharges directly into any segment of a 303d Listed Water, i.e. "Impaired" Water?		c. If you answered YES to question b, then answer the following three questions:					
	Yes	No	i. What pollutant(s) are causing the impairment?		ii. Are the pollutant(s) causing the impairment present in your discharge?		iii. Is the discharge consistent with the assumptions and requirements of applicable EPA approved or established Total Maximum Daily Load (TMDL(s))?	
	Yes	No			Yes	No	Yes	No
	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

VIII. Treatment ChemicalsWill you use control measures such as polymers, flocculants or other treatment chemicals at your construction site? Yes No*NOTE: If you are unsure at the filing of the NOI, check "No" and then if you use treatment chemicals file an NOI Modification form indicating "Yes."*

If "Yes", indicate the following polymers, flocculants, or other treatment chemicals that will be used at your construction site:

- Alum Gypsum
 Polyacrylamide (PAM) Polyaluminum Chloride
 Other:

IX. Certification Information

An Alaska Pollutant Discharge Elimination System (APDES) permit application or report must be signed by an individual with the appropriate authority per 18 AAC 83.385. For additional information, please refer to 18 AAC 83.385 at the following link:

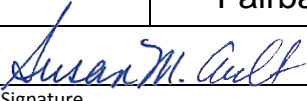
<http://www.legis.state.ak.us/basis/aac.asp#18.83.385>

Signing Authority: Please identify your authority to sign APDES permit applications and reports. (Select only one)

Corporate Executive Officer	18 AAC 83.385 (a)(1)(A)	For a corporation, a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation.
Corporate Operations Manager	18 AAC 83.385 (a)(1)(B)	For a corporation, the manager of one or more manufacturing, production, or operating facilities.
Sole Proprietor or General Partner	18 AAC 83.385 (a)(2)	For a partnership or sole proprietorship, the general partner or the proprietor respectively.
Public Agency, Chief Executive Officer	18 AAC 83.385 (a)(3)(A)	For a municipality, state, or other public agency, the chief executive officer of the agency.
Public Agency, Senior Executive Officer	18 AAC 83.385 (a)(3)(B)	For a municipality, state, or other public agency, a senior executive officer having responsibility for the overall operations of a principal geographic unit or division of the agency.
Operations Manager (Delegated Authority)*	18 AAC 83.385 (b)(2)(A)	For a duly authorized representative, an individual or a position having responsibility for the overall operation of the regulated facility or activity, including the position of plant manager, operator of a well or a well field, superintendent or position of equivalent responsibility.
Environmental Manager (Delegated Authority)*	18 AAC 83.385 (b)(2)(B)	For a duly authorized representative, an individual or position having overall responsibility for environmental matters for the company.

* For Delegated Authority: If you select "Delegated Authority" (Duly Authorized Representative), the delegation must be made in writing and submitted to the DEC. Your signature will not be approved until DEC receives the written delegation. An Example of written authorization delegating authority can be found on the Division of Water website: <https://dec.alaska.gov/media/11172/delegation-authorization-form.pdf>

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Organization: Fairbanks International Airport	Name: SUSAN M AULT	Title: Fairbanks Airport Business Manager
Phone: (907) 474-2577	Fax (optional):	Email: susan.ault@alaska.gov
Mailing Address:	Street (PO Box): 6450 Airport Way Suite 1	
	City: Fairbanks	State: AK
		Zip: 99709
 Signature	04/21/2020 Date	

X. NOI Preparer (Complete if NOI was prepared by someone other than the certifier.)

Organization:	Name:	Title:
Phone:	Fax (optional):	Email:
Mailing Address:	Street (PO Box):	
	City:	State:
		Zip:

XI. Document Attachments and Supplemental Information

Documents attached with this application:

- Copy of SWPPP if ≥ 5 acres of disturbance.
 Delegation of Signatory Authority.

Attachment 1. (Fill in as necessary if more space is required for Receiving water and Wetlands Information.)

a. What is the name(s) of your receiving water(s) that receive storm water directly and/or through a MS4? If your receiving water is impaired, then identify the name of the impaired segment, if applicable, in parenthesis following the receiving water name.	b. Are any of your discharges directly into any segment of an "impaired" water?		c. If you answered yes to question b, then answer the following three questions:				
	Yes	No	i. What pollutant(s) are causing the impairment?	ii. Are the pollutant(s) causing the impairment present in your discharge?		iii. Has the TMDL been completed for the pollutant(s) causing the impairment?	
	Yes	No		Yes	No	Yes	No
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



THE STATE
of **ALASKA**
GOVERNOR MICHAEL J. DUNLEAVY

Department of Environmental
Conservation

DIVISION OF WATER

Wastewater Discharge Authorization Program

555 Cordova Street
Anchorage, Alaska 99501-2617
Main: 907.269.6285
Fax: 907.334.2415
www.dec.alaska.gov/water/wwdp

July 26, 2019

Ms. Angie Spear
ADOT&PF
6450 Airport Way
Fairbanks, AK, 99709

Re: Authorization AKG002158 FAI Fire Training Pit Corrective Action

Dear Ms. Spear:

The Alaska Department of Environmental Conservation (DEC) has completed its review of your AKG002000 Excavation Dewatering Notice of Intent (NOI) for the FAI Fire Training Pit Corrective Action and is issuing authorization number AKG002158 for this project. The discharge from this project is authorized in accordance with the terms of the general permit and any site specific requirements in this authorization.

An electronic copy of the Excavation Dewatering general permit is available at <http://dec.alaska.gov/water/wastewater/stormwater/dewater-hydrostatic/#dewater> and a copy of this authorization letter is posted to the DEC water permit search <http://dec.alaska.gov/Applications/Water/WaterPermitSearch/Search.aspx>.

The authorization effective date is 7/26/2019.

The authorization to discharge expires upon submittal of a Notice of Termination, see Permit Part 7.

The authorized discharge location is to a water as described in the NOI.

The following are site specific conditions:

- Once the final design of the FTP water treatment system is completed, submit design drawings and standard operating procedures for operation and effluent monitoring testing to DEC for review (DEC contact William Ashton, 269-6283, William.Ashton@alaska.gov).
- Include TAH and TAqH effluent monitoring in addition to the parameters identified in Part 4.5.1 Onsite Water Treatment of the site work plan.

The permittee is reminded of the following permit requirements:

- Compliance with Standards and Limits, see Permit Part 3.1 Requirements for all Projects.
- Control Measures, see Permit Parts 4.0 and 4.1 – Erosion and Sediment Control Measures.
- Limitations, Inspections, and Monitoring Requirements, see Permit Part 5.1 Land Disposal Discharges of Excavation Dewatering, see Permit Part 5.2 Surface Water Discharges of Excavation Dewatering.
- Reporting and Recordkeeping, see Permit Part 6.

A copy of the General Permit AKG002000 and this authorization must be kept at the project site. This authorization does not relieve the permittee from other local, state, or federal government permitting requirements.

If discharge is to water: The DMR form can also be found and completed on the following website, <http://dec.alaska.gov/water/compliance/permittee/>. Once the DMR is completed it shall be submitted to the following address:

Department of Environmental Conservation
Division of Water
Compliance and Enforcement Program
555 Cordova Street
Anchorage, Alaska 99501
Telephone Nationwide (877) 569-4114
In Anchorage Area/International (907) 269-4114
Fax (907) 269-4114
Email: dec-wqreporting@alaska.gov

If you have any questions regarding the above, please contact me at 907.334.2288.

Sincerely,



James Rypkema
Program Manager, Storm Water and Wetlands

cc: Jessica Miller, DNR, Water Resources Section
Robert Burgess, DEC, Contaminated Sites
Marcy Nadel, Shannon & Wilson, Inc
Valarie Webb, Shannon & Wilson, Inc



THE STATE
of **ALASKA**
GOVERNOR MICHAEL J. DUNLEAVY

Department of Environmental
Conservation

DIVISION OF WATER

Wastewater Discharge Authorization Program

555 Cordova Street
Anchorage, Alaska 99501-2617
Main: 907.269.6285
Fax: 907.334.2415

www.dec.alaska.gov/water/wwdp

December 17, 2019

ADOT&PF
ATTN: Angie Spear
6540 Airport Way, Suite 1
Fairbanks, AK 99709

Facility: Fairbanks International Airport
Facility name FAI Fire Training Pit
Street: Fairbanks International Airport
Fairbanks, AK 99709

Permit Number: **AKG002158: FAI Fire Training Pit Corrective Action**

Thank you for submitting Notice of Termination (NOT) form, terminating coverage under the ADEC's Excavation Dewatering General Permit. The coverage for the facility listed above has been terminated effective midnight of **October 6, 2019**. By submission of this NOT form, you are certifying that you have reviewed the terms and conditions of the construction general permit and have determined that the facility no longer requires coverage.

If you have any questions regarding this letter or the storm water program, please call (907) 269-6285.



THE STATE
of ALASKA
GOVERNOR MICHAEL J. DUNLEAVY

Department of Environmental Conservation
DIVISION OF SPILL PREVENTION AND RESPONSE
Contaminated Sites Program

610 University Avenue
Fairbanks, AK 99709-3643
Phone: 907-451-2143
Fax: 907-451-2155
www.dec.alaska.gov

File: 100.38.277
100.38.070

September 24, 2019

Angela Spear
Alaska Department of Transportation and Public Facilities
Fairbanks International Airport
6450 Airport Way, Suite 1
Fairbanks, AK, 99709

Re: FIA – Fire Trainig Pit; Fire Training Pit Corrective Action work plan, REV02

Dear Ms. Spear,

The Alaska Department of Environmental Conservation (DEC) has completed a review of the Fairbanks International Airport Fire Training Pit Corrective Action work plan, REV02 (work plan). The work plan describes treating contaminated water that has collected in the pit, followed by placing additional contaminated soils into the pit and capping the structure with an impermeable membrane and soil cap. The DEC appreciates the effort taken to produce this document and associated design drawings, and to revise the plan following comments and discussion. We are optimistic that this interim action will help to prevent further migration of the contaminants being placed in the decommissioned and capped fire training pit.

The DEC would like to continue discussions regarding the proposed institutional controls (ICs) and long term maintenance and monitoring of the cap. While we are in general agreement regarding the institutional controls, we believe there is room for improvement, particularly with regard to the frequency and type of monitoring of the sump system to better ensure that water does not accumulate or move through the capped contamination. However, because winter is coming and the Fairbanks International Airport (FAI) has to meet a tight schedule to complete the project before winter, the DEC approves of the work plan in its current form on the condition that FAI continues to work with the DEC to develop and implement a robust IC plan that will ensure the cap continues to function as intended indefinitely.

If you have any questions or concerns please feel free to contact me at (907)451-2153 or via email at Robert.burgess@alaska.gov.

Sincerely,

A handwritten signature in blue ink that reads "Robert A. Burgess".

Robert Burgess
Environmental Program Specialist III
DEC Contaminated Sites Program

Digitally signed by Robert Burgess
Date: 2019.09.24 16:21:51 -08'00'

cc (via email): Katrina LeMieux, FAI
Marcy Nadel, Shannon & Wilson
Janice Wieggers, DEC



THE STATE
of ALASKA
GOVERNOR MICHAEL J. DUNLEAVY

Department of Environmental Conservation
DIVISION OF SPILL PREVENTION AND RESPONSE
Contaminated Sites Program

610 University Avenue
Fairbanks, AK 99709-3643
Phone: 907-451-2143
Fax: 907-451-2155
www.dec.alaska.gov

File: 100.38.277
100.38.070

September 26, 2019

Katrina LeMieux
Alaska Department of Transportation and Public Facilities
Fairbanks International Airport
6450 Airport Way, Suite 1
Fairbanks, Alaska 99709

Re: FIA – Fire Trainig Pit; FTP Corrective Action work plan; addendum for offsite water treatment

Dear Ms. LeMieux,

The Alaska Department of Environmental Conservation (DEC) has completed a review of the Offsite Fire Training Pit Water Treatment addendum (addendum) to the Fairbanks International Airport Fire Training Pit Corrective Action Work Plan (work plan). The addendum describes a modification of the portion of the work plan discussing water treatment following analytical results from the first treatment batch that showed that treatment was ineffective. The DEC understands that your water treatment subcontractors, NRC Alaska, LLC (NRC), have indicated the lack of success was due to an algal bloom in the fire training pit (FTP) that altered the pH of the water. Therefore, the new plan describes shipping up to 200,000 gallons of water containing per- and polyfluoroalkyl substances (PFAS), petroleum related compounds, and arsenic to NRC's Viking facility in Anchorage, where pre-treatment via flocculation and chemical buffering will be employed prior to using a treatment train similar to the originally described system in order to remove PFAS. The DEC understands that the first 20,000 gallons of water will be held pending receipt of analytical results showing that treatment was successful, and that this water and the remaining 180,000 gallons will not be discharged until analytical results are received that show successful treatment to the levels defined in the addendum.

Following discussion and additional information being provided to the DEC, the addendum is approved with the following conditions:

1. All sample results (whether at the outfall, between vessels, or elsewhere in the process) will be reported to the CSP following treatment.
2. The disposal of used filter media (organoclay and GAC) will be documented and provided to DEC.

If you have any questions or concerns please feel free to contact me at (907)451-2153 or via email at Robert.burgess@alaska.gov.

Sincerely,

A handwritten signature in blue ink that reads "Robert A. Burgess".

Digitally signed by Robert
Burgess
Date: 2019.09.26 17:16:26 -08'00'

Robert Burgess
Environmental Program Specialist IV
DEC Contaminated Sites Program

Ms. Katrina LeMieux

September 26, 2019

cc (via email): Angela Spear, FAI
Sam Loud Cummings, ADOT
Marcy Nadel, Shannon & Wilson
Blake Hillis, NRC
Janice Wiegers, DEC
Bill O'Connell, DEC
John Halverson, DEC

Appendix B

Fire Training Pit Cap Documents

CONTENTS

- Fire Training Pit Cap Design
- Grain Size Distribution and Moisture-Density Test Results
- Compaction Test Worksheets
- Chronological Fire Training Pit Photographs
- Monitoring Well Survey
- Fire Training Pit As-Built Survey



LEGEND

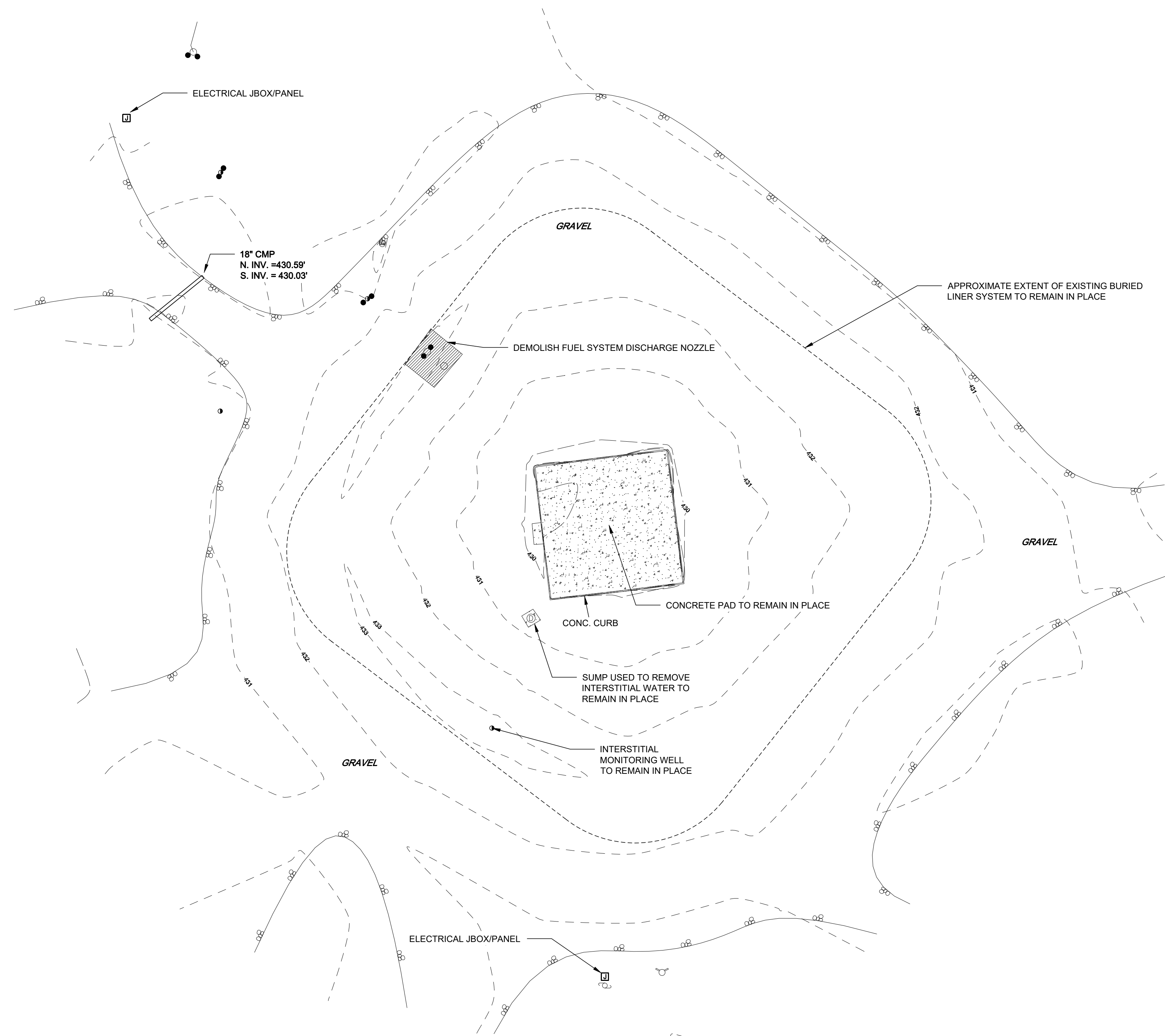
	MONITORING WELL
	EXISTING CONTOURS
	NEW CONTOURS
	DEMOLITION
	GRAVEL
	SIGN
	BOLLARD
	DIRECTION OF WATER FLOW
	SUMP
	HYDRANT
	UTILITY POLE
	JUNCTION BOX
	LIGHTPOLE
	ELECTRICAL MANHOLE

SURVEY NOTES

1. A SURVEY WAS PERFORMED WITH THE PURPOSE OF LOCATING TOPOGRAPHY AND IMPROVEMENTS AROUND THE FAI FIRE TRAINING PIT FOR ENGINEERING DESIGN.
2. COORDINATES ARE ALASKA STATE PLANE ZONE 3, NAD83 US FEET; ELEVATIONS ARE NAVD88 VERTICAL DATUM, FEET.
3. BURIED UTILITIES MAY EXIST THAT ARE NOT SHOWN. CONTACT ALASKA DIG LINE OR FAI PERSONNEL PRIOR TO EXCAVATION.

GENERAL AND DEMOLITION NOTES

1. NO BURIED UTILITY LOCATES WERE PERFORMED. CONTRACTOR SHALL CONFIRM UTILITY LOCATIONS PRIOR TO WORK.
2. CONTRACTOR SHALL PROTECT EXISTING FEATURES TO REMAIN SUCH AS UTILITIES, ENVIRONMENTAL MONITORING WELLS, ETC., AND ADJACENT AREAS OF THE PROPERTY.
3. DEMOLISH ALL COMPONENTS OF THE FUEL DELIVERY SYSTEM FROM THE DISCHARGE NOZZLE BACK TO THE TANK. TANK TO REMAIN IN PLACE
4. REMOVE AND PROPERLY DISPOSE OF ALL MATERIALS AND DEBRIS WITHIN THE WORK AREA, OR RELOCATE ON THE PROJECT SITE OUTSIDE OF THE WORK AREA, AS DIRECTED BY THE ENGINEER. ALL REMOVED ITEMS SHALL BE DISPOSED OF IN A LEGAL MANNER, COMPLYING WITH ALL LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS.
5. THESE DRAWINGS DO NOT ADDRESS THE EXCAVATION, HANDLING OR MANAGEMENT OF ANY CONTAMINATED SOIL OR WATER.
6. INTERSTITIAL MONITORING WELL TO BE FILLED WITH SEALING GROUT AND ABANDONED IN PLACE.



1 EXISTING CONDITIONS AND DEMOLITION PLAN
C100 1' = 30'

FAI FIRE TRAINING PIT CAP SURVEY AND DESIGN

ISSUE DATE 06 SEPT 2019
COMM. NUMBER 281901
DESIGNED BY MJS
DRAWN BY IAL
SCALE 0" = 1"

EXISTING CONDITIONS AND DEMOLITION PLAN

C100

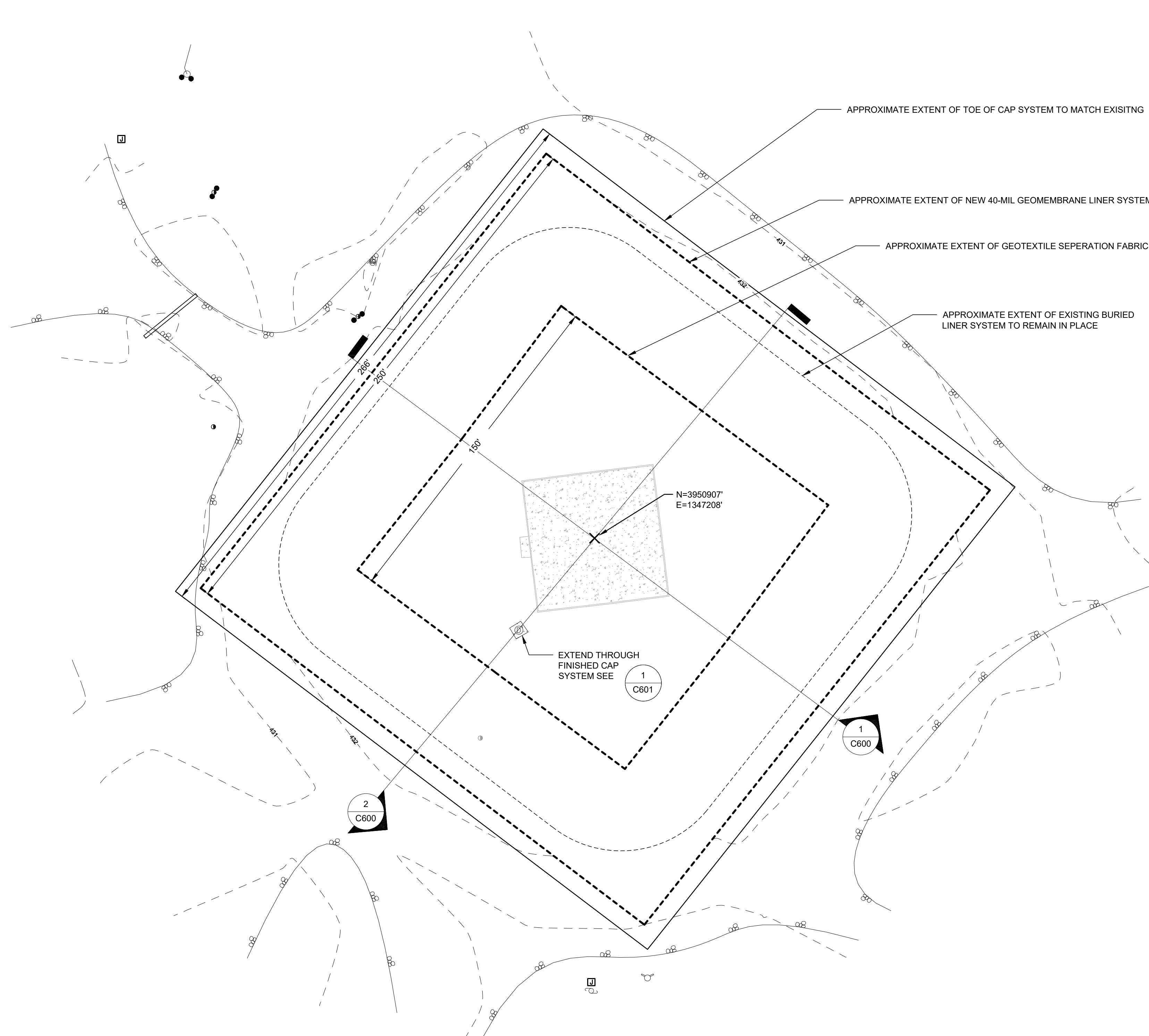


LEGEND

	MONITORING WELL
	EXISTING CONTOURS
	NEW CONTOURS
	DEMOLITION
	GRAVEL
	SIGN
	BOLLARD
	DIRECTION OF WATER FLOW
	SUMP
	HYDRANT
	UTILITY POLE
	JUNCTION BOX
	LIGHTPOLE
	ELECTRICAL MANHOLE

GENERAL NOTES

- CONSTRUCTION MUST OCCUR WHEN THE MINIMUM LOW TEMPERATURES ARE ABOVE 35°F TO ACHIEVE THE REQUIRED COMPACTION FOR STRUCTURAL FILL AND CAP MATERIALS AND THUS PROTECT THE INTEGRITY OF THE IMPERMEABLE LINER PER THE MANUFACTURER'S REQUIREMENTS. NO SNOW OR ICE MAY BE PRESENT OR ALLOWED TO ACCUMULATE AT THE SITE DURING CONSTRUCTION, AND ALL FILL MUST BE THAWED DURING PLACEMENT, COMPACTION, AND CONSTRUCTION OF SUCCESSIVE LIFTS. THIS ENGINEERED CAP SYSTEM DESIGN IS BASED UPON A CONSTRUCTION SEASON COMMENCING NO EARLIER THAN MAY 1ST AND EXTENDING NO LATER THAN OCTOBER 1ST AND MUST BE COMPLETED IN ONE SEASON.
- THE GEOMEMBRANE LINER SYSTEM AND SEPERATION FABRIC LAYER ARE LOCATED BASED ON THE CENTER OF EXISTING CONCRETE PAD. SEE SHEET C600.



1 SITE IMPROVEMENTS
C200 1' = 30'

FAI FIRE TRAINING PIT CAP SURVEY AND DESIGN

ISSUE DATE 06 SEPT 2019
COMM. NUMBER 281901
DESIGNED BY MJS
DRAWN BY IAL
SCALE 0" = 1"

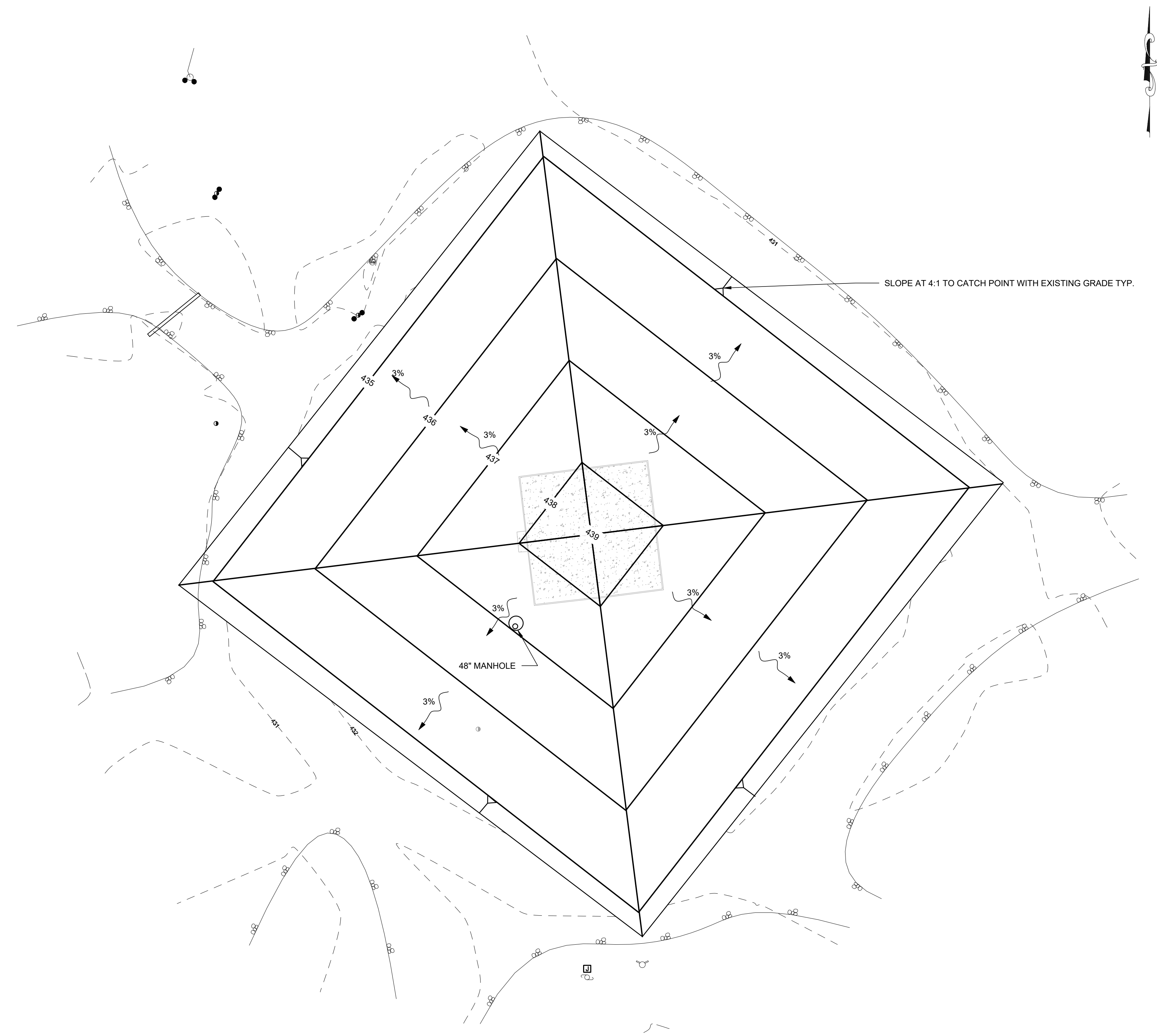
SITE IMPROVMENTS

C200



LEGEND

- MONITORING WELL
- EXISTING CONTOURS
- NEW CONTOURS
- DEMOLITION
- GRAVEL
- SIGN
- BOLLARD
- DIRECTION OF WATER FLOW
- SUMP
- HYDRANT
- UTILITY POLE
- JUNCTION BOX
- LIGHTPOLE
- ELECTRICAL MANHOLE



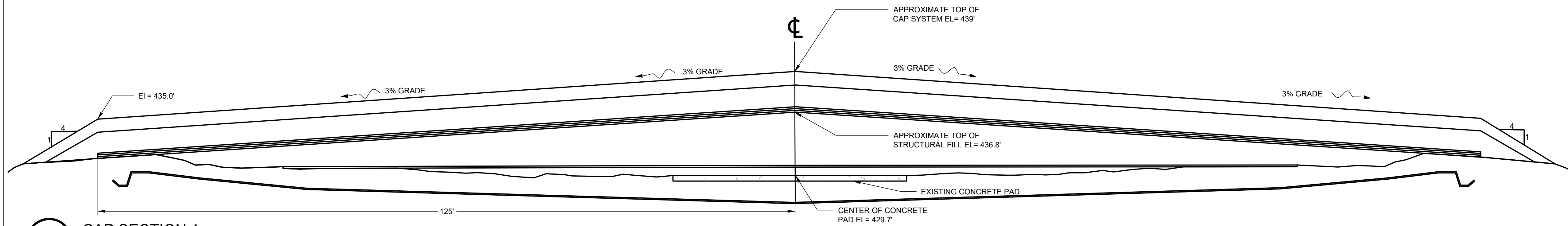
1 GRADING PLAN
C300 1' = 30'

FAI FIRE TRAINING PIT CAP SURVEY AND DESIGN

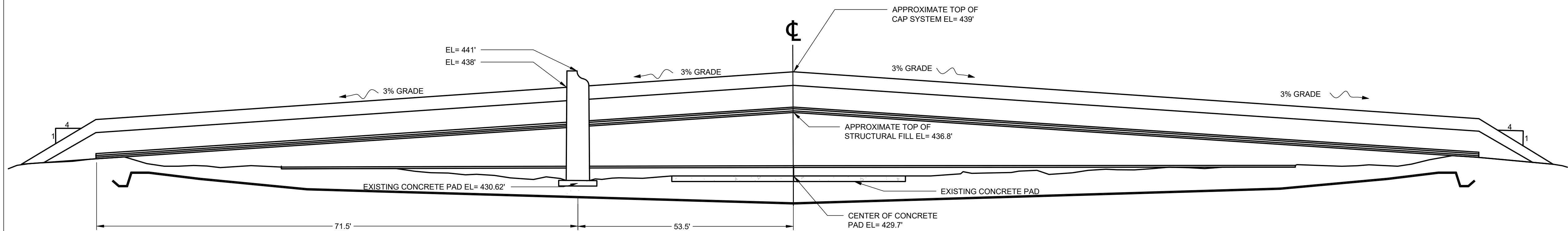
ISSUE DATE 06 SEPT 2019
COMM. NUMBER 281901
DESIGNED BY MJS
DRAWN BY IAL
SCALE 0" = 1"

GRADING PLAN

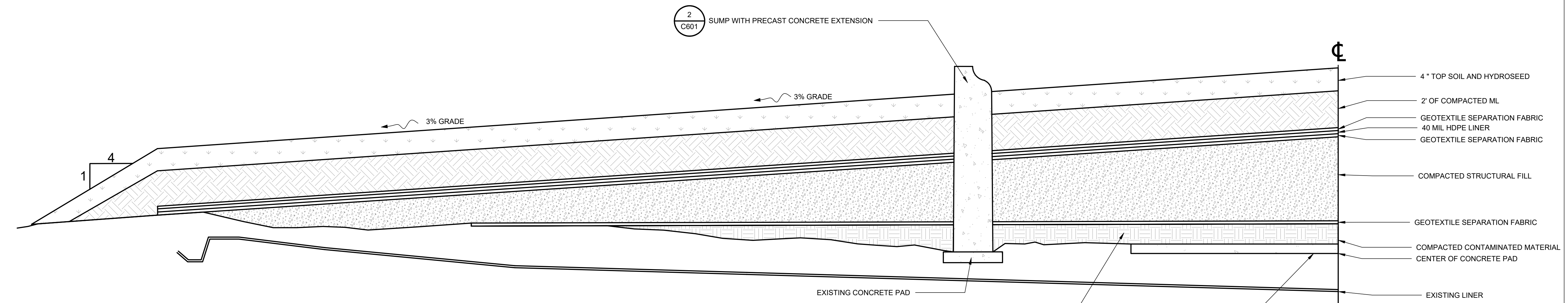
C300



1 CAP SECTION 1
C600 NO SCALE



2 CAP SECTION 2
C600 NO SCALE



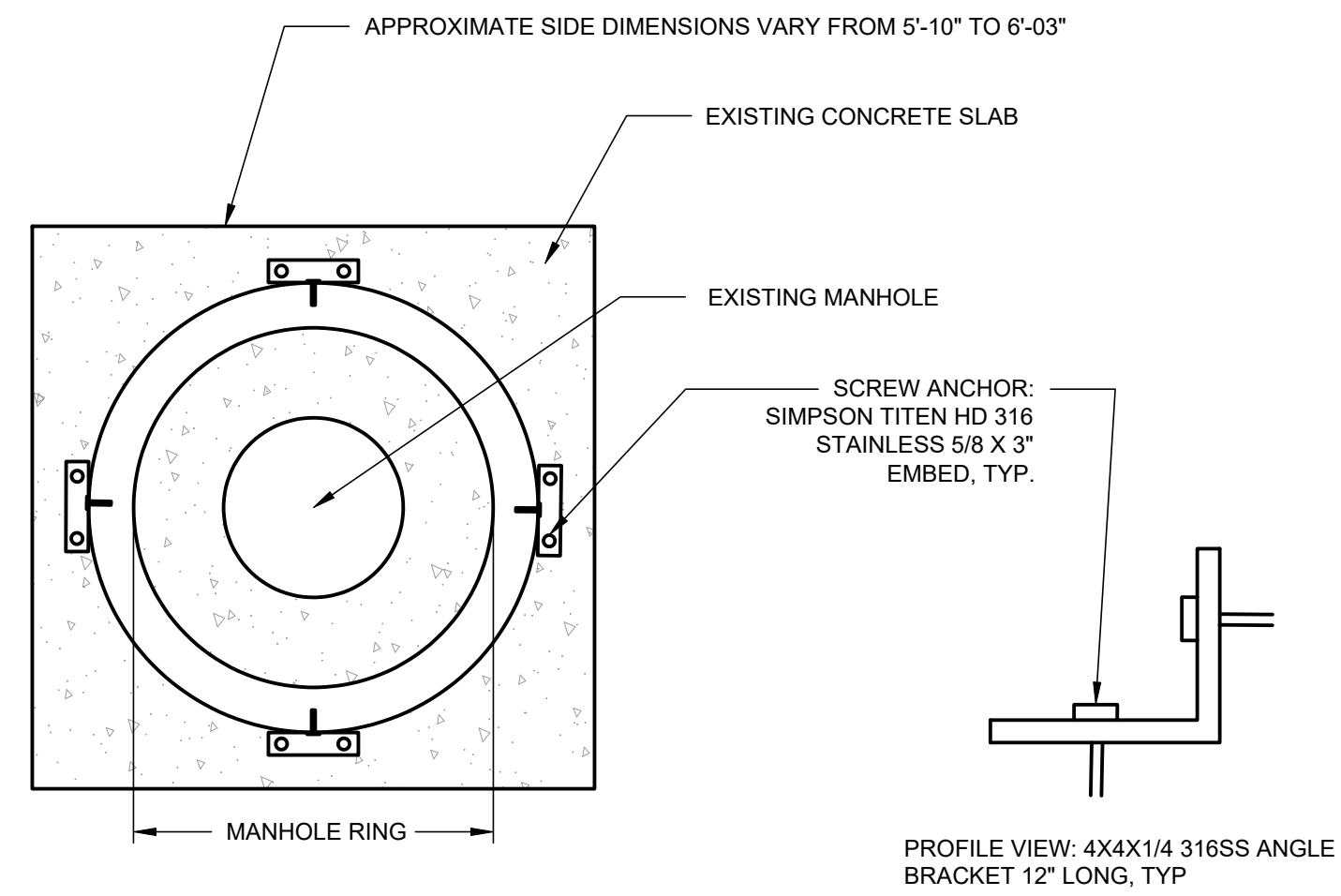
3 CUT OF CAP SECTION 2
C600 NO SCALE

FAI FIRE TRAINING PIT CAP SURVEY AND DESIGN

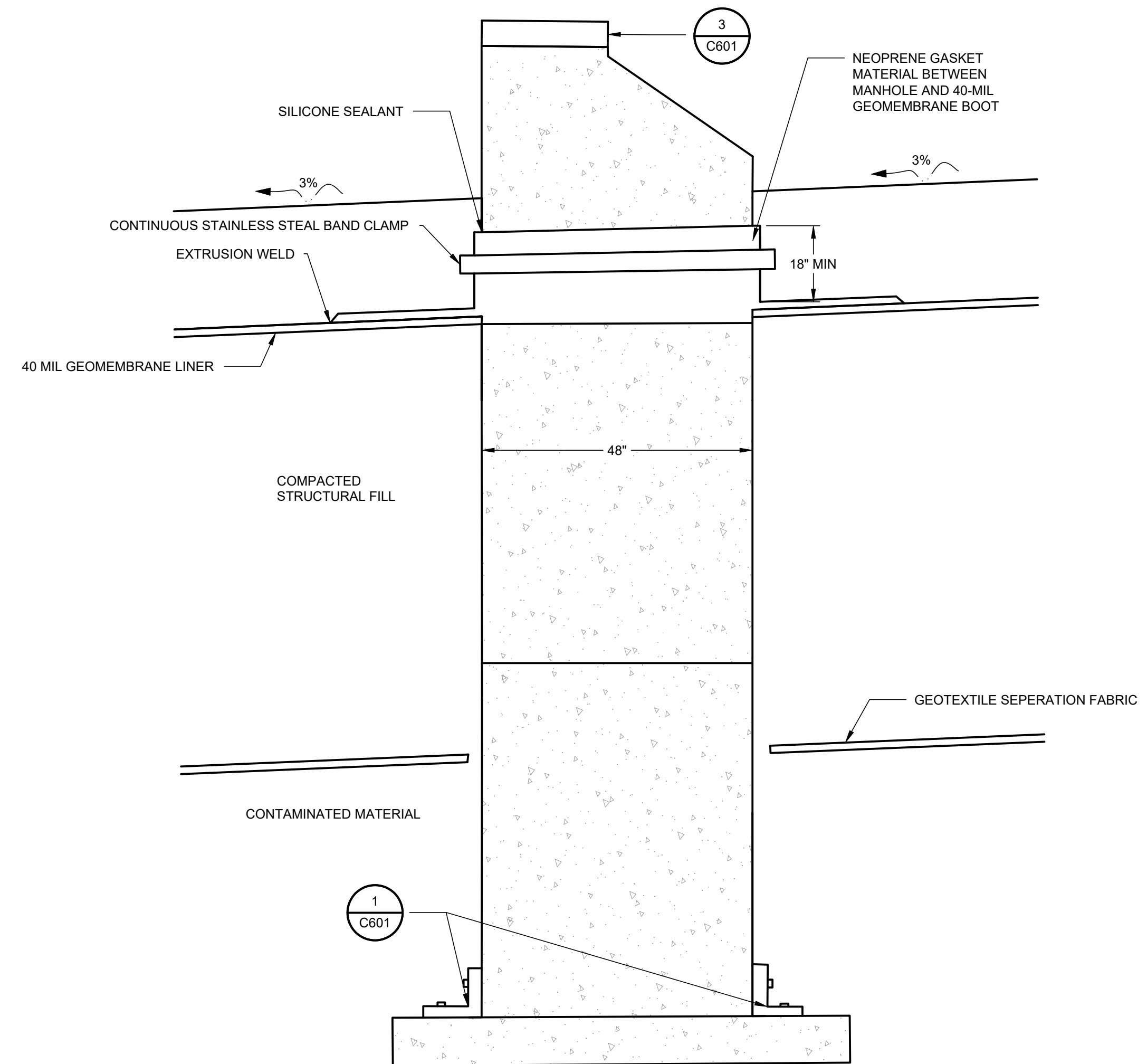
ISSUE DATE 06 SEPT 2019
COMM. NUMBER 281901
DESIGNED BY MJS
DRAWN BY IAL
SCALE 0" = 1"

SECTIONS

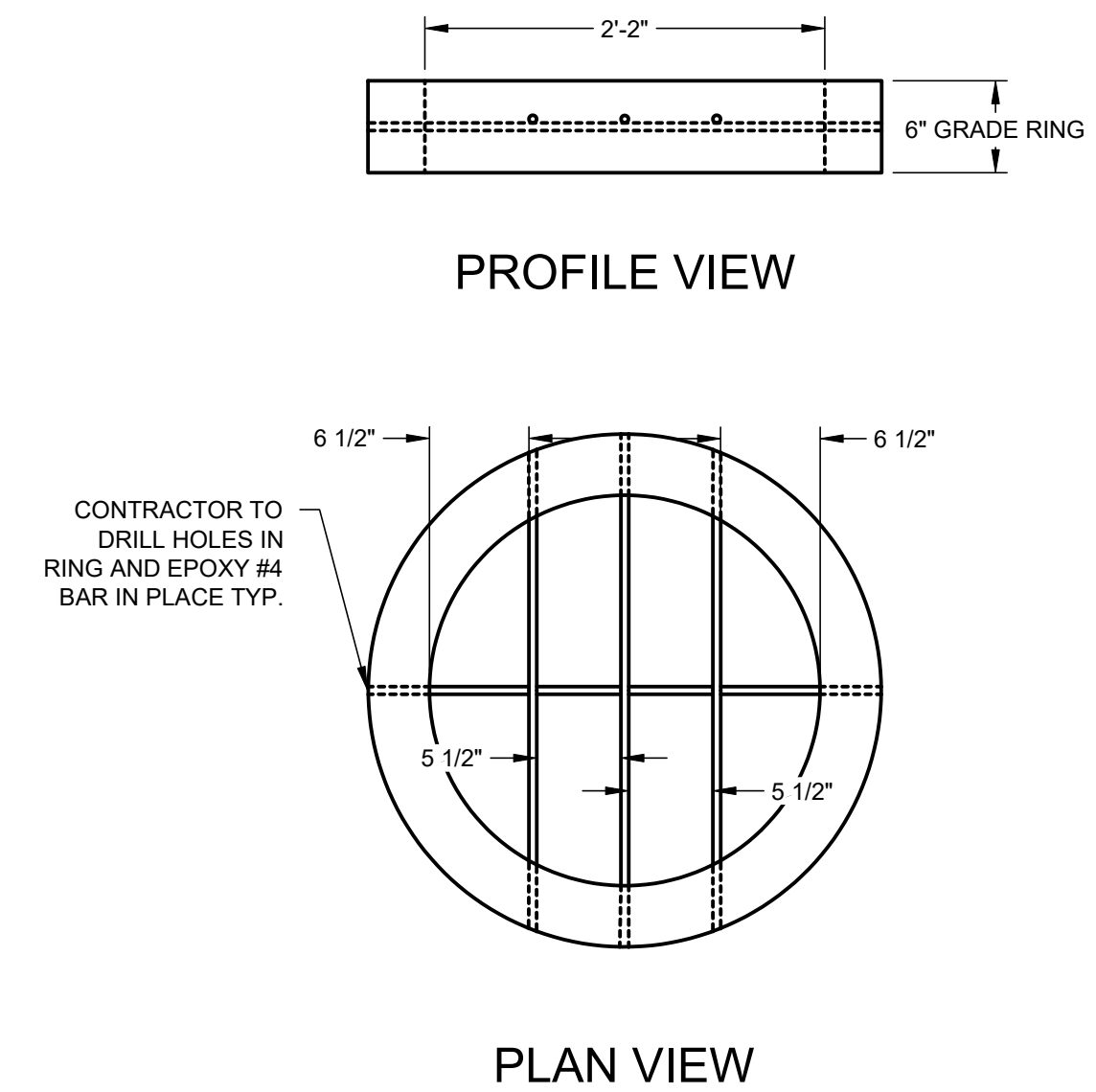
C600



1 MOUNT FOR EXISTING SLAB
C601 N.T.S.



2 FIELD FABRICATED 40-MIL GEOMEMBRANE BOOT ON MANHOLE EXTENSION
C601 N.T.S.



3 GRADE RING WITH REBAR
C601 N.T.S.

FAI FIRE TRAINING
PIT CAP SURVEY
AND DESIGN

ISSUE DATE 06 SEPT 2019
COMM. NUMBER 281901
DESIGNED BY MJS
DRAWN BY IAL
SCALE 0" = 1"

DETAILS

C601

CONCRETE MANHOLE

1. CONCRETE MANHOLES SHALL MEET ASTM C478 SPECIFICATIONS, 5,000 PSI MIX, WITH REINFORCEMENT 4X8-w4/s2.1
2. CONCRETE MANHOLE PROVIDING ACCESS TO THE EXISTING MONITORING SUMP SHALL BE 48-INCH DIAMETER PRECAST CONCRETE MANHOLE RISERS; TWO 4-FT TALL RISER SECTIONS, ONE 3-FOOT ECCENTRIC CONE RISER AND ONE 6-INCH GRADE RING WITH SOLID MANHOLE LID. THE BOTTOM RISER SECTION CONNECTING TO THE EXISTING MONITORING SUMP PAD SHALL BE FABRICATED WITHOUT A BOTTOM KEYWAY TO PROVIDE A FLAT MATING SURFACE AND TO FACILITATE THE ANCHORING OF THE RISER TO THE EXISTING MONITORING SUMP PAD AS SHOWN ON THE DRAWINGS.
3. ALL MANHOLE RISER SECTION JOINTS, INCLUDING RISER CONNECTION AT THE EXISTING MONITORING SUMP PAD, SHALL BE SEALED WITH CS102 BY CONCRETE SEALANTS INC., OR ENGINEER APPROVED EQUAL.
4. PROVIDE D&L A-2300 MANHOLE FRAME WITH GASKET LID

GEOMEMBRANE LINER AND GEOTEXTILE FABRIC NOTES:

1. ALL MATERIALS SHALL BE TRANSPORTED, STORED, HANDLED, PLACED, CONSTRUCTED AND BACKFILLED ACCORDING TO THE MANUFACTURER'S REQUIREMENTS AND IN COMPLIANCE WITH THE INTERNATIONAL ASSOCIATION OF GEOSYNTHETIC INSTALLERS, FROM [HTTP://WWW.IAQI.ORG](http://www.iaqi.org).
2. 40-MIL GEOMEMBRANE LINER: A 40-MIL GEOMEMBRANE LINER SHALL BE INCORPORATED INTO THE CAP SYSTEM PER THE DRAWINGS. THE LINER MATERIAL SHALL BE LAYFIELD 6040X ENVIRO LINER OR ENGINEER-APPROVED EQUAL MEETING ALL OF THE INDEX, PERFORMANCE AND ENDURANCE PROPERTIES OF THE 6040X.
3. NON-WOVEN GEOTEXTILE FABRIC: A 12-OUNCE NOMINAL WEIGHT NON-WOVEN GEOTEXTILE FABRIC SHALL BE PLACED AS A SEPARATION FABRIC AND FOR LINER PROTECTION PER THE DRAWINGS. THE FABRIC SHALL BE MIRAFI S800 OR ENGINEER-APPROVED EQUAL.

STRUCTURAL FILL

THE STRUCTURAL FILL SHALL CONSIST OF PIT RUN MEETING THE GRADATION REQUIREMENTS AS FOLLOWS:

SIZE	% PASSING
3"	100
NO. 4 MESH	30-60
NO. 200 MESH	0-5

THE USE OF ANY CRUSHED STRUCTURAL FILL MATERIAL IS PROHIBITED. STRUCTURAL FILL SHALL BE PLACED IN LOOSE LIFTS WITH A THICKNESS NO GREATER THAN 8-INCHES, AND COMPACTED TO A MINIMUM 95% OF MAXIMUM DRY DENSITY ACCORDING TO STANDARD PROTECTOR TEST ASTM D698. A DENSITY TEST SHALL BE CONDUCTED FOR EVERY 6,000 SQUARE FEET OF LIFT AREA. ADDITIONAL COMPACTION TESTS MAY BE REQUIRED AS DIRECTED BY THE ENGINEER.

THE STRUCTURAL FILL SURFACE FINISHED FOR PLACEMENT OF THE GEOTEXTILE FABRIC AND 40-MIL LINER SYSTEM SHALL BE FREE OF SHARP ROCK FRAGMENTS OR STONES, AND OTHER DELETERIOUS MATTER SUCH AS TREE ROOTS, ORGANICS, CONSTRUCTION DEBRIS, METALLIC OBJECTS, ETC. THE SURFACE SHALL NOT HAVE ANY NATURAL OR FOREIGN OBJECTS THAT PROTRUDES ABOVE THE SURFACE OF THE SUBGRADE WITH THE EXCEPTION OF THE CONCRETE MANHOLE PROVIDING FUTURE ACCESS TO THE MONITORING SUMP.

40-MIL GEOMEMBRANE LINER SYSTEM COVER MATERIAL

LINER COVER MATERIAL SHALL BE A CLEAN SILT CLASSIFIED AS (ML) WITH NO ROCKS OR OTHER DELETERIOUS MATTER SUCH AS TREE ROOTS, ORGANICS, CONSTRUCTION DEBRIS, METALLIC OBJECTS, ETC.

THE LINER COVER MATERIAL SHALL BE CONSTRUCTED AS PER THE DRAWINGS, PLACED IN LOOSE LIFTS WITH A THICKNESS NO GREATER THAN 8-INCHES, AND COMPACTED TO A MINIMUM 95% OF MAXIMUM DRY DENSITY ACCORDING TO STANDARD PROTECTOR TEST ASTM D698. A DENSITY TEST SHALL BE CONDUCTED FOR EVERY 6,000 SQUARE FEET OF LIFT AREA. ADDITIONAL COMPACTION TESTING MINIMUM OF ONE COMPACTION TEST PER LIFT SHALL BE PERFORMED. COMPACTION TESTING ON FILL WITHIN 24 INCHES OF THE 40-MIL GEOMEMBRANE LINER SHALL BE OBSERVED BY THE ENGINEER AND CONDUCTED IN SUCH A MANNER AS TO ENSURE THAT THE INTEGRITY OF THE FABRIC/LINER SYSTEM IS NOT COMPROMISED. ADDITIONAL COMPACTIONS TESTS MAY BE REQUIRED PER THE DISCRETION OF THE ENGINEER.

CONTRACTOR SHALL VERIFY MINIMUM LIFT THICKNESSES AND EQUIPMENT TYPE ALLOWED TO OPERATE ON THAT LIFT BASED ON THE GEOMEMBRANE LINER MANUFACTURER'S REQUIREMENTS AND THE INTERNATIONAL ASSOCIATION OF GEOSYNTHETIC INSTALLERS SPECIFICATIONS.

TOPSOIL

SHALL BE FRIABLE LOAM FREE OF SUBSOIL, LARGE ROOTS, GRASS, STONES, NOXIOUS WEEDS, DEBRIS, AND OTHER FOREIGN MATERIALS. SANDY-SILT OR SILTY SAND IS NOT ACCEPTABLE. SOIL MIXTURE MUST CONTAIN 25-45 PERCENT SAND, 35-55 PERCENT SILT, 10-20 PERCENT BY VOLUME OF FINELY CHOPPED, WELL MIXED ORGANIC MATERIALS, BE FREE OF STONES 1/2 INCH OR LARGER IN ANY DIMENSION AND OTHER EXTRANEIOUS MATERIALS HARMFUL TO PLANT GROWTH, AND HAVE A MAXIMUM MOISTURE CONTENT OF 50 PERCENT WITH AN ACIDITY (PH) RANGE BETWEEN 5.5 TO 7.0.

A TEST REPORT ON THE TOPSOIL PROPOSED FOR USE SHALL INCLUDE PH, NITROGEN, PHOSPHOROUS, POTASSIUM, PARTICLE SIZE AND ORGANIC CONTENT BY VOLUME.

TOPSOIL SHALL BE PLACED TO A 4-INCH LIGHTLY COMPACTED DEPTH. TOPSOIL SHALL NOT BE SPREAD OVER FROZEN OR EXCESSIVELY WET GROUND. RAKE THE SEEDBED LIGHTLY AND REMOVE DEBRIS, PLANT GROWTH AND IRREGULARITIES.

SEEDING

SEED MIX SHALL CONFORM TO THE FOLLOWING OR APPROVED EQUIVALENT:

NAME	PROPORTION BY WEIGHT	PURITY	GERMINATION
SEEDING -5 LBS/1,000 SF			
"KENAI" KENTUCKY (POA PRETENSIS "KENAI")	50%	90%	85%
CREEPING RED FESCUE (FESTUCA RUBRA "ARCTARED")	25%	90%	85%
PERENNIAL RYEGRASS (LOLIUM MULTIFLORUM)	25%	90%	85%

FERTILIZER: APPLY 12 POUNDS OF 17-17-17 FERTILIZER PER 1,000 SF AT THE TIME OF SEEDING.

HYDROSEEDED AREAS TO BE MULCHED USING NATURAL WOOD CELLULOSE FIBER SPECIFICALLY MANUFACTURED FOR THE PURPOSE SUCH AS WEYERHAEUSER COMPANY (SILVAFIBER), THE CONWED CORPORATION (CONWEB), OR APPROVED EQUAL. PAPER MULCH IS UNACCEPTABLE. DYE GREEN SHALL BE USED TO FACILITATE METERING MATERIALS APPLICATION.

APPLY GRASS SEED MIXTURE SPECIFIED AT THE RATE OF 5 POUNDS PER 1,000 SQUARE FEET. SEED, FERTILIZER, AND MULCH MATERIAL MAY BE PLACED BY THE FOLLOWING METHODS:

- PLACE A SLURRY MADE OF SEED, FERTILIZER, SEEDING MULCH, AND WATER. MULCH SHALL BE ADDED TO THE WATER SLURRY IN THE HYDRAULIC SEEDER AFTER THE PROPORTIONATE AMOUNTS OF SEED AND FERTILIZER HAVE BEEN ADDED. SLURRY MIXTURE SHALL BE COMBINED AND APPLIED TO RESULT IN AN EVEN DISTRIBUTION OF ALL MATERIALS. HYDRAULIC SEEDING EQUIPMENT SHALL BE CAPABLE OF MAINTAINING A CONTINUOUS AGITATION SO THAT A HOMOGENEOUS MIXTURE CAN BE APPLIED THROUGH A SPRAY NOZZLE. THE PUMP SHALL BE CAPABLE OF PRODUCING SUFFICIENT PRESSURE TO MAINTAIN A CONTINUOUS, NON-FLUCTUATING SPRAY CAPABLE OF REACHING THE EXTREMITIES OF THE SEEDING AREA WITH THE PUMP UNIT LOCATED ON THE ROADBED. SUFFICIENT HOSE SHALL BE PROVIDED TO REACH AREAS NOT PRACTICAL TO SEED FROM THE NOZZLE UNIT SITUATED ON THE ROADBED.
- MECHANICAL SPREADER, SEED DRILLS, LANDSCAPE SEEDER, CULTI-PACKER SEEDER, FERTILIZER SPREADER, OR OTHER APPROVED MECHANICAL SPREADING EQUIPMENT MAY BE USED. FERTILIZER SHALL BE SPREAD SEPARATELY AT THE SPECIFIED RATES AND THEN INCORPORATED IN ONE OPERATION TO A MINIMUM DEPTH OF 2 INCHES. SEEDED AREAS SHALL BE COMPACTED WITHIN 24 HOURS FROM THE TIME THE SEEDING IS COMPLETED, WEATHER AND SOIL CONDITIONS PERMITTING, BY CULTI-PACKER, ROLLER OR OTHER EQUIPMENT SATISFACTORY TO THE LANDSCAPE ARCHITECT.
- SEEDING BY HAND IS NOT ACCEPTABLE.

GROWING SEASON IS DEFINED AS THE PERIOD BETWEEN MAY 1 AND SEPTEMBER 30. SEEDING AFTER SEPTEMBER 30 WILL BE DORMANT SEEDING.

ESTIMATED QUANTITIES SUMMARY

STRUCTURAL FILL ABOVE EXISTING GROUND	5,250	CU YD
SILT ML COVER OVER 40 MIL LINER SYSTEM	5,000	CU YD
TOPSOIL	900	CU YD
HYDROSEED	7,500	SQ YD
12 OZ GEOTEXTILE FABRIC	147,500	SQ FT
40 MIL GEOMEMBRANE LINER	62,500	SQ FT

GENERAL NOTES

1. CONSTRUCTION MUST OCCUR WHEN THE MINIMUM LOW TEMPERATURES ARE ABOVE 35°F TO ACHIEVE THE REQUIRED COMPACTION FOR STRUCTURAL FILL AND CAP MATERIALS AND THUS PROTECT THE INTEGRITY OF THE IMPERMEABLE LINER PER THE MANUFACTURER'S REQUIREMENTS. NO SNOW OR ICE MAY BE PRESENT OR ALLOWED TO ACCUMULATE AT THE SITE DURING CONSTRUCTION, AND ALL FILL MUST BE THAWED DURING PLACEMENT, COMPACTION, AND CONSTRUCTION OF SUCCESSIVE LIFTS. THIS ENGINEERED CAP SYSTEM DESIGN IS BASED UPON A CONSTRUCTION SEASON COMMENCING NO EARLIER THAN MAY 1ST AND EXTENDING NO LATER THAN OCTOBER 1ST AND MUST BE COMPLETED IN ONE SEASON.



ISSUE DATE	06 SEPT 2019
COMM. NUMBER	281901
DESIGNED BY	MJS
DRAWN BY	IAL
SCALE	0" = 1"

NOTES

GRAIN SIZE DISTRIBUTION



Sample Description/Classification:
Poorly Graded Gravel with Sand (GP)

Sample Location:
Stockpile

Client Data:
 Address: **Fairbanks International Airport**

Client Sample ID: **FAI-01**
 P.O. Number:

Date Sampled: **8/20/2019**

Date Received: **8/20/2019**

Reviewed by: Wendy Presler
Digitally signed by Wendy Presler
 Date: 2019.08.27 08:39:23 -0800

Sieve Size	Percent Passing by Weight	Specification Limits	
		Minimum	Maximum
>6"			
4"			
3"			
2.5"			
2"			
1.5"			
1"	100		
3/4"	94		
1/2"	76		
3/8"	65		
#4	47		
#10	40		
#20	37		
#40	32		
#60	17		
#100	4		
#200	1.1		

GRAIN SIZE DISTRIBUTION

C136/C117

Project: **Material Source - Pit Run**

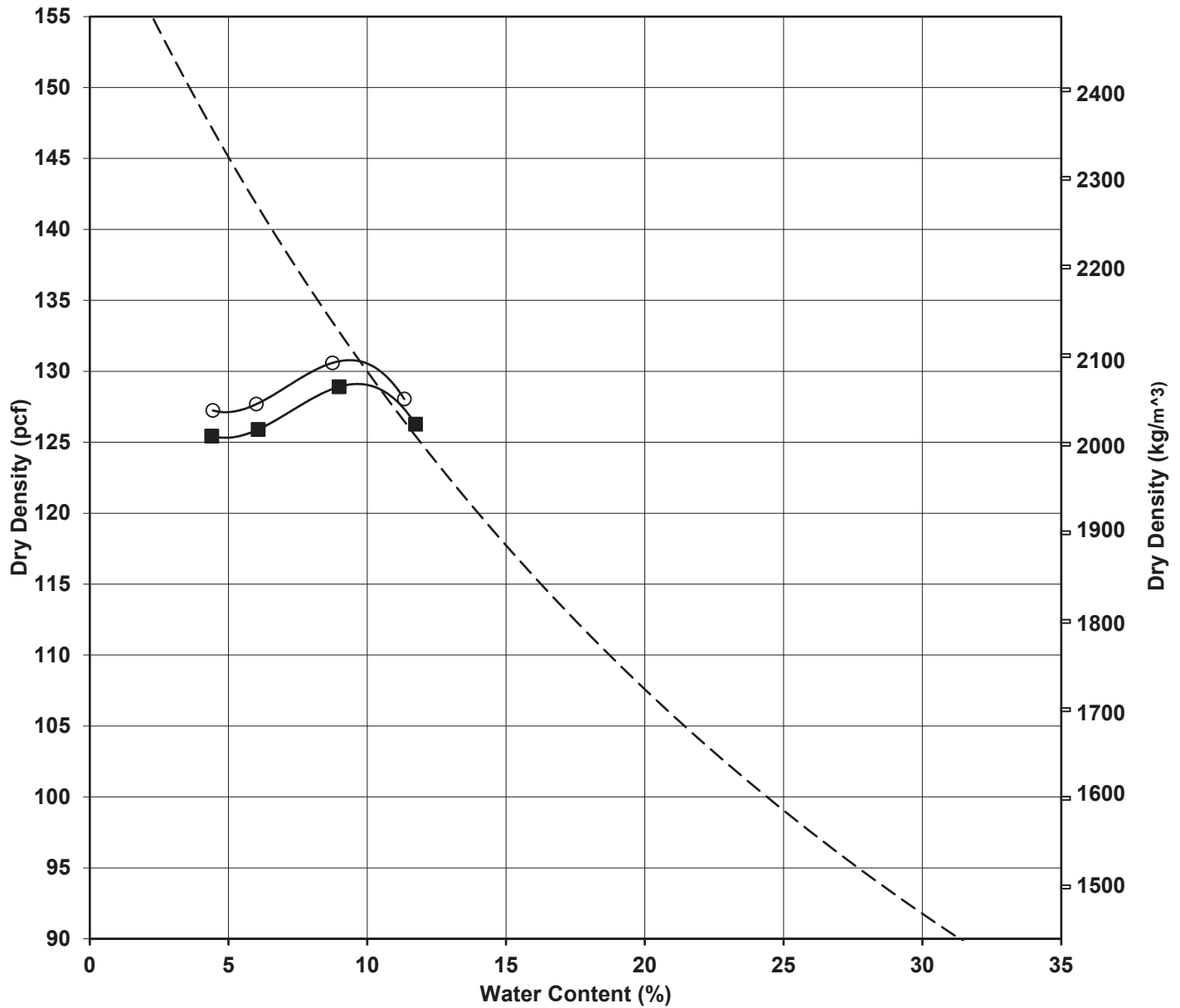
S&W Sample Identification: **4158-1**

SHANNON & WILSON, INC.
 GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

2355 Hill Road, Fairbanks, Alaska 99709-5244
 Phone: (907) 479-0600 Fax: (907) 479-5691

August 22, 2019

102519-010



Sample Description: Poorly Graded Gravel with Sand (GP)

Sample Location: Stockpile

Symbol	Max. Dry Density		Moisture (%)	Percent +3/4 (19 mm)
	(pcf)	(kg/m ³)		
○	130.8	2095.2	9.4	6
■	129.1	2068.0	9.7	6

CORRECTED

Specific Gravity for +3/4-inch (19 mm) Material **2.63**

Specific Gravity for Zero Air Voids Curve **2.63**

Client: Fairbanks International Airport

Fairbanks, Alaska

Reviewed By

Digitally signed by Wendy Presler
Date: 2019.08.27 08:59:39 -08'00'

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

2355 Hill Road, Fairbanks, Alaska 99709-5244
Phone: (907) 479-0600 Fax: (907) 479-5691

MOISTURE-DENSITY TEST RESULTS

ASTM D1557

Project: **Material Source - Pit Run**

S&W Sample Identification: **FAI-01**

August 23, 2019

102519-010

GRAIN SIZE DISTRIBUTION



Sample Description/Classification:
Sandy Silt with Gravel (ML)

Sample Location:
Stockpile

Client Data:
 Address: **State of Alaska**

Client Sample ID:
 P.O. Number:

Date Sampled: **9/20/2019**

Date Received: **9/20/2019**

Reviewed by: *[Signature]* **9-25-2019**

Sieve Size	Percent Passing by Weight	Specification Limits	
		Minimum	Maximum
>6"			
4"			
3"			
2.5"			
2"			
1.5"	100		
1"	92		
3/4"	88		
1/2"	84		
3/8"	81		
#4	75		
#10	72		
#20	70		
#40	68		
#60	62		
#100	56		
#200	42		

GRAIN SIZE DISTRIBUTION

C136/C117

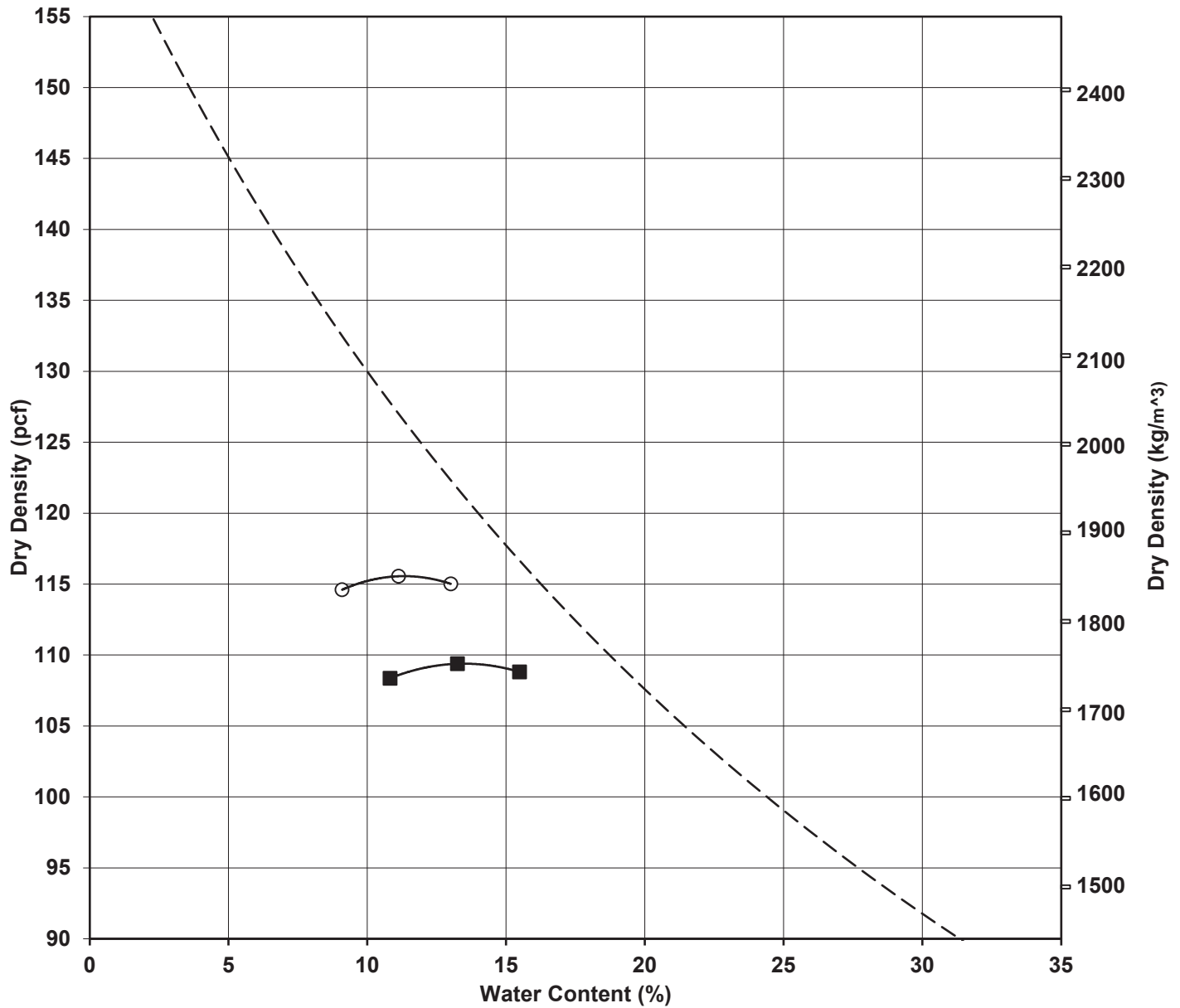
Project: **FIA FTP Cap**

S&W Sample Identification: **4174**

SHANNON & WILSON, INC.
 GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
 2355 Hill Road, Fairbanks, Alaska 99709-5244
 Phone: (907) 479-0600 Fax: (907) 479-5691

September 25, 2019

102519-010



Sample Description: Sandy Silt with Gravel (ML)

Sample Location: Stockpile

Symbol	Max. Dry Density		Moisture (%)	Percent + 3/8" (9.5mm)
	(pcf)	(kg/m ³)		
○	115.6	1851.1	11.5	16
■	109.4	1752.3	13.7	16

CORRECTED

Specific Gravity for +3/4-inch (19 mm) Material **2.63**

Specific Gravity for Zero Air Voids Curve **2.63**

Client: **State of Alaska**

Reviewed By

9-25-2019

SHANNON & WILSON, INC.
 GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
 2355 Hill Road, Fairbanks, Alaska 99709-5244
 Phone: (907) 479-0600 Fax: (907) 479-5691

MOISTURE-DENSITY TEST RESULTS

ASTM D1557

Project: **Fairbanks International Airport FTP Cap**

S&W Sample Identification: **4174**

September 25, 2019

102519-010

PROJECT NO.	102519-010
DATE	10-2-2019
REPORT NO.	1
S&W FIELD REP.	Philip Warwick

COMPACTION TEST WORKSHEET

PROJECT NAME/LOCATION	Fairbanks International Airport FTP Cap
-----------------------	---

WORKSHEET SUBMITTED TO		CONTRACTOR NAME AND CONTACT	
Client	Fairbanks International Airport	General	AKDOT
CC		Subcontractors	


MAKE/MODEL OF NUCLEAR GAUGE	3430
GAUGE SERIAL NUMBER	32586

	MOISTURE STANDARD	DENSITY STANDARD	DATE OF TEST
CURRENT STANDARD VALUES	643	2095	
MAXIMUM ACCEPTABLE STANDARDS			
MINIMUM ACCEPTABLE STANDARDS			
AVERAGE OF PREVIOUS FOUR			
PREVIOUS FOUR STANDARD VALUES			

COMPACTION TEST RESULTS

INDEX NO.	TIME	LOCATION	LIFT NO.	TEST NO.	MAT'L CODE	RETEST	TEST DEPTH (in)	PROCTOR DENSITY (pcf)	WET DENSITY (pcf)	DRY DENSITY (pcf)	M.C. (%)	% COMP.
1	1:02	FTP Cap	1	1	NFS	---	6	130.8	131.4	125.3	4.8	95.8
2	1:04	FTP Cap	1	2	NFS	---	6	130.8	132.4	124.9	6.0	95.5
3	1:06	FTP Cap	1	3	NFS	---	6	130.8	133.0	125.4	6.0	95.9
4	1:25	FTP Cap	1	4	NFS	---	6	130.8	134.8	128.1	5.2	98.0
5	1:29	FTP Cap	1	5	NFS	---	6	130.8	131.6	125.8	4.6	96.2
6	1:31	FTP Cap	1	6	NFS	---	6	130.8	134.0	126.8	5.7	96.9
7	1:40	FTP Cap	1	7	NFS	---	6	130.8	132.0	126.5	4.4	96.7
8	1:44	FTP Cap	1	8	NFS	---	6	130.8	136.9	128.6	6.4	98.3

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to provide compaction testing services and keep our client informed of the preliminary test results. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field technician is intended solely to advise the contractor of the preliminary test results. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (initial/date)
 10-2-2019

PROJECT NO.	102519-010
DATE	10-2-2019
REPORT NO.	1
S&W FIELD REP.	Philip Warwick

COMPACTION TEST WORKSHEET

PROJECT NAME/LOCATION	Fairbanks International Airport FTP Cap
-----------------------	---

COMPACTION TEST RESULTS (continued)

INDEX NO.	TIME	LOCATION	LIFT NO.	TEST NO.	MAT'L CODE	RETEST	TEST DEPTH (in)	PROCTOR DENSITY (pcf)	WET DENSITY (pcf)	DRY DENSITY (pcf)	M.C. (%)	% COMP.
9	4:42	FTP Cap	2	1	NFS	---	6	130.8	132.6	128.3	3.3	98.1
10	4:45	FTP Cap	2	2	NFS	---	6	130.8	128.4	124.7	3.0	95.3
11	4:54	FTP Cap	2	3	NFS	---	6	130.8	130.3	126.7	2.9	96.8
12	4:56	FTP Cap	2	4	NFS	---	6	130.8	129.8	125.3	3.6	95.8
13	5:05	FTP Cap	2	5	NFS	---	6	130.8	128.7	125.1	2.9	95.6
14	5:07	FTP Cap	2	6	NFS	---	6	130.8	131.7	127.8	3.1	97.7
15	5:12	FTP Cap	2	7	NFS	---	6	130.8	131.1	127.6	2.7	97.6
16	5:14	FTP Cap	2	8	NFS	---	6	130.8	129.1	125.0	3.3	95.6

SAND CONE TEST RESULTS

METHOD USED FOR TEST	D1556	INDEX NUMBER		VISUAL DESCRIPTION	CLEAN GRAVEL
DIFFICULTIES?	NO	EXPLAIN IF YES: --			
SAND DENSITY (pcf)	1.51	VOLUME OF CONE (cf)	.0419	SOIL DENSITY (pcf)	MOISTURE (%)

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to provide compaction testing services and keep our client informed of the preliminary test results. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field technician is intended solely to advise the contractor of the preliminary test results. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (initial/date)
 10-2-2019

PROJECT NO.	102519-010
DATE	10-3-2019
REPORT NO.	2
S&W FIELD REP.	Philip Warwick

COMPACTION TEST WORKSHEET

PROJECT NAME/LOCATION	Fairbanks International Airport FTP Cap
-----------------------	---


WORKSHEET SUBMITTED TO		CONTRACTOR NAME AND CONTACT	
Client	Fairbanks International Airport	General	AKDOT
CC		Subcontractors	

MAKE/MODEL OF NUCLEAR GAUGE	3430
GAUGE SERIAL NUMBER	32586

	MOISTURE STANDARD	DENSITY STANDARD	DATE OF TEST
CURRENT STANDARD VALUES	650	2089	
MAXIMUM ACCEPTABLE STANDARDS			
MINIMUM ACCEPTABLE STANDARDS			
AVERAGE OF PREVIOUS FOUR			
PREVIOUS FOUR STANDARD VALUES			

COMPACTION TEST RESULTS

INDEX NO.	TIME	LOCATION	LIFT NO.	TEST NO.	MAT'L CODE	RETEST	TEST DEPTH (in)	PROCTOR DENSITY (pcf)	WET DENSITY (pcf)	DRY DENSITY (pcf)	M.C. (%)	% COMP.
1	8:17	FTP Cap	3	1	NFS	---	6	130.8	134.6	130.8	3.0	100.0
2	8:19	FTP Cap	3	2	NFS	---	6	130.8	130.2	126.5	2.9	96.7
3	8:21	FTP Cap	3	3	NFS	---	6	130.8	129.5	126.3	2.5	96.6
4	8:22	FTP Cap	3	4	NFS	---	6	130.8	128.9	125.5	2.7	96.0
5	8:24	FTP Cap	3	5	NFS	---	6	130.8	128.1	124.7	2.7	95.3
6	8:26	FTP Cap	3	6	NFS	---	6	130.8	128.2	124.4	3.0	95.1
7	8:29	FTP Cap	3	7	NFS	---	6	130.8	133.0	129.3	2.8	98.9
8	8:35	FTP Cap	3	8	NFS	---	6	130.8	129.8	126.3	2.8	96.6

<p><i>LIMITATIONS: The Shannon & Wilson field representative is present on site solely to provide compaction testing services and keep our client informed of the preliminary test results. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field technician is intended solely to advise the contractor of the preliminary test results. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.</i></p>	REVIEW BY (initial/date)
	 10-3-2019

PROJECT NO.	102519-010
DATE	10-3-2019
REPORT NO.	2
S&W FIELD REP.	Philip Warwick

COMPACTION TEST WORKSHEET

PROJECT NAME/LOCATION	Fairbanks International Airport FTP Cap
-----------------------	---


COMPACTION TEST RESULTS (continued)

INDEX NO.	TIME	LOCATION	LIFT NO.	TEST NO.	MAT'L CODE	RETEST	TEST DEPTH (in)	PROCTOR DENSITY (pcf)	WET DENSITY (pcf)	DRY DENSITY (pcf)	M.C. (%)	% COMP.
9	11:23	FTP Cap	4	1	NFS	---	6	130.8	128.4	124.8	2.9	95.4
10	11:26	FTP Cap	4	2	NFS	---	6	130.8	129.2	125.2	3.2	95.7
11	11:29	FTP Cap	4	3	NFS	---	6	130.8	128.7	124.8	3.1	95.4
12	11:34	FTP Cap	4	4	NFS	---	6	130.8	130.3	127.1	2.5	97.2
13	12:11	FTP Cap	4	5	NFS	---	6	130.8	129.6	126.7	2.3	96.9
14	12:14	FTP Cap	4	6	NFS	---	6	130.8	130.3	126.5	3.1	96.7
15	12:20	FTP Cap	4	7	NFS	---	6	130.8	129.1	124.9	3.4	95.5
16	12:22	FTP Cap	4	8	NFS	---	6	130.8	130.9	127.0	3.0	97.1

SAND CONE TEST RESULTS

METHOD USED FOR TEST	D1556	INDEX NUMBER		VISUAL DESCRIPTION	CLEAN GRAVEL
DIFFICULTIES?	NO	EXPLAIN IF YES: --			
SAND DENSITY (pcf)	1.51	VOLUME OF CONE (cf)	.0419	SOIL DENSITY (pcf)	MOISTURE (%)

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to provide compaction testing services and keep our client informed of the preliminary test results. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field technician is intended solely to advise the contractor of the preliminary test results. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (initial/date)
 10-3-2019

PROJECT NO.	102519-010
DATE	10-4-2019
REPORT NO.	3
S&W FIELD REP.	Philip Warwick

COMPACTION TEST WORKSHEET

PROJECT NAME/LOCATION	Fairbanks International Airport FTP Cap
-----------------------	---

WORKSHEET SUBMITTED TO		CONTRACTOR NAME AND CONTACT	
Client	Fairbanks International Airport	General	AKDOT
CC		Subcontractors	

MAKE/MODEL OF NUCLEAR GAUGE	3430
GAUGE SERIAL NUMBER	32586

	MOISTURE STANDARD	DENSITY STANDARD	DATE OF TEST
CURRENT STANDARD VALUES	641	2081	
MAXIMUM ACCEPTABLE STANDARDS			
MINIMUM ACCEPTABLE STANDARDS			
AVERAGE OF PREVIOUS FOUR			
PREVIOUS FOUR STANDARD VALUES			

COMPACTION TEST RESULTS

INDEX NO.	TIME	LOCATION	LIFT NO.	TEST NO.	MAT'L CODE	RETEST	TEST DEPTH (in)	PROCTOR DENSITY (pcf)	WET DENSITY (pcf)	DRY DENSITY (pcf)	M.C. (%)	% COMP.
1	12:27	FTP Cap	5	1	NFS	---	6	130.8	131.5	128.3	2.5	98.1
2	12:29	FTP Cap	5	2	NFS	---	6	130.8	130.0	125.6	3.5	96.0
3	12:31	FTP Cap	5	3	NFS	---	6	130.8	132.2	127.3	3.8	97.3
4	12:33	FTP Cap	5	4	NFS	---	6	130.8	131.7	128.4	2.6	98.2
5	12:34	FTP Cap	5	5	NFS	---	6	130.8	131.9	128.7	2.5	98.4
6	12:36	FTP Cap	5	6	NFS	---	6	130.8	131.4	127.2	3.2	97.3
7	12:38	FTP Cap	5	7	NFS	---	6	130.8	131.5	127.4	3.2	97.4
8	12:40	FTP Cap	5	8	NFS	---	6	130.8	131.3	127.7	2.9	97.6

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to provide compaction testing services and keep our client informed of the preliminary test results. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field technician is intended solely to advise the contractor of the preliminary test results. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (initial/date)
<i>Philip Warwick</i> 10-4-2019

PROJECT NO.	102519-010
DATE	10-4-2019
REPORT NO.	3
S&W FIELD REP.	Philip Warwick

COMPACTION TEST WORKSHEET

PROJECT NAME/LOCATION	Fairbank International Airport FTP Cap
-----------------------	--


COMPACTION TEST RESULTS (continued)

INDEX NO.	TIME	LOCATION	LIFT NO.	TEST NO.	MAT'L CODE	RETEST	TEST DEPTH (in)	PROCTOR DENSITY (pcf)	WET DENSITY (pcf)	DRY DENSITY (pcf)	M.C. (%)	% COMP.
9	12:42	FTP Cap	5	9	NFS	---	6	130.8	131.8	127.7	3.2	97.6
10	12:45	FTP Cap	5	10	NFS	---	6	130.8	129.7	125.9	3.1	96.2

SAND CONE TEST RESULTS

METHOD USED FOR TEST	D1556	INDEX NUMBER		VISUAL DESCRIPTION	CLEAN GRAVEL
DIFFICULTIES?	NO	EXPLAIN IF YES: --			
SAND DENSITY (pcf)	1.51	VOLUME OF CONE (cf)	.0419	SOIL DENSITY (pcf)	MOISTURE (%)

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to provide compaction testing services and keep our client informed of the preliminary test results. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field technician is intended solely to advise the contractor of the preliminary test results. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (initial/date)
 10-4-2019

PROJECT NO.	102519-010
DATE	10-7-2019
REPORT NO.	4
S&W FIELD REP.	Philip Warwick

COMPACTION TEST WORKSHEET

PROJECT NAME/LOCATION	Fairbanks International Airport FTP Cap
-----------------------	---

WORKSHEET SUBMITTED TO		CONTRACTOR NAME AND CONTACT	
Client	Fairbanks International Airport	General	AKDOT
CC		Subcontractors	

MAKE/MODEL OF NUCLEAR GAUGE	3430
GAUGE SERIAL NUMBER	32586

	MOISTURE STANDARD	DENSITY STANDARD	DATE OF TEST
CURRENT STANDARD VALUES	648	2065	
MAXIMUM ACCEPTABLE STANDARDS			
MINIMUM ACCEPTABLE STANDARDS			
AVERAGE OF PREVIOUS FOUR			
PREVIOUS FOUR STANDARD VALUES			

COMPACTION TEST RESULTS

INDEX NO.	TIME	LOCATION	LIFT NO.	TEST NO.	MAT'L CODE	RETEST	TEST DEPTH (in)	PROCTOR DENSITY (pcf)	WET DENSITY (pcf)	DRY DENSITY (pcf)	M.C. (%)	% COMP.
1	11:04	FTP Cap	6	1	NFS	---	6	130.8	131.4	125.4	4.8	95.9
2	11:06	FTP Cap	6	2	NFS	---	6	130.8	129.3	125.3	3.2	95.8
3	11:08	FTP Cap	6	3	NFS	---	6	130.8	131.8	126.6	4.2	96.8
4	11:10	FTP Cap	6	4	NFS	---	6	130.8	131.0	126.1	3.9	96.4
5	11:12	FTP Cap	6	5	NFS	---	6	130.8	131.6	127.8	3.0	97.7
6	11:14	FTP Cap	6	6	NFS	---	6	130.8	134.0	127.9	4.8	97.8
7	11:16	FTP Cap	6	7	NFS	---	6	130.8	131.4	126.5	3.9	96.7
8	11:18	FTP Cap	6	8	NFS	---	6	130.8	132.5	127.2	4.2	97.2

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to provide compaction testing services and keep our client informed of the preliminary test results. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field technician is intended solely to advise the contractor of the preliminary test results. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (initial/date)
<i>Philip Warwick</i> 10-11-2019

PROJECT NO.	102519-010
DATE	10-7-2019
REPORT NO.	4
S&W FIELD REP.	Philip Warwick

COMPACTION TEST WORKSHEET

PROJECT NAME/LOCATION	Fairbanks International Airport FTP Cap
-----------------------	---

COMPACTION TEST RESULTS (continued)

INDEX NO.	TIME	LOCATION	LIFT NO.	TEST NO.	MAT'L CODE	RETEST	TEST DEPTH (in)	PROCTOR DENSITY (pcf)	WET DENSITY (pcf)	DRY DENSITY (pcf)	M.C. (%)	% COMP.
9	11:20	FTP Cap	6	9	NFS	---	6	130.8	129.1	124.7	3.5	95.4
10	11:22	FTP Cap	6	10	NFS	---	6	130.8	130.4	125.4	4.0	95.9

SAND CONE TEST RESULTS

METHOD USED FOR TEST	D1556	INDEX NUMBER		VISUAL DESCRIPTION	CLEAN GRAVEL
DIFFICULTIES?	NO	EXPLAIN IF YES: --			
SAND DENSITY (pcf)	1.51	VOLUME OF CONE (cf)	.0419	SOIL DENSITY (pcf)	MOISTURE (%)

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to provide compaction testing services and keep our client informed of the preliminary test results. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field technician is intended solely to advise the contractor of the preliminary test results. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

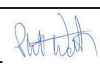
REVIEW BY (initial/date)
 10-11-2019



Photo 1: Frozen Fire Training Pit (April 8, 2019)



Photo 2: Fire Training Pit with Exposed Sump (July 19, 2019)



Photo 3: Fire Training Pit with Green, Algae-Rich Water (September 19, 2019)



Photo 4: Partially Dewatered Fire Training Pit (September 27, 2019)



Photo 5: First Section of Sump Extension Placed (September 28, 2019)



Photo 6: Partially Dewatered Fire Training Pit (September 29, 2019)



Photo 7: Fire Training Pit without Ponded Water (September 30, 2019)

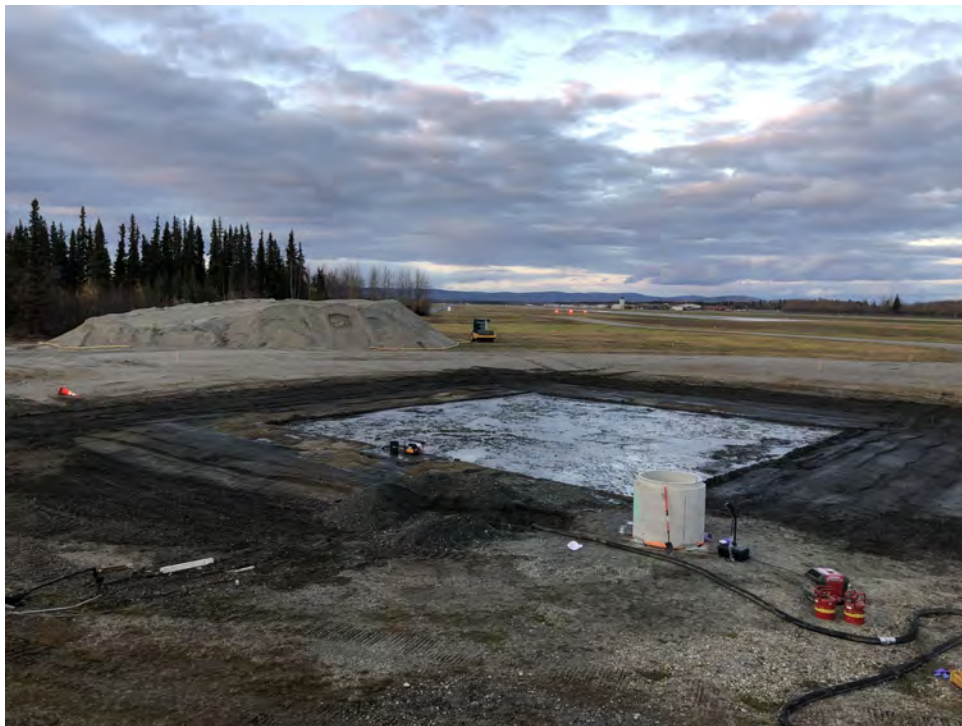


Photo 8: Beginning to Backfill the Fire Training Pit during Dewatering (September 30, 2019)



Photo 9: Geotextile Separation Fabric Placed (October 1, 2019)



Photo 10: Placing Structural Fill (October 4, 2019)



Photo 11: Compacting Gravel Fill (October 7, 2019)



Photo 12: Structural Fill Placed, Ready for HDPE Geomembrane Liner (October 8, 2019)



Photo 13: Heating the HDPE Geomembrane Liner in Preparation for Placement (October 22, 2019)



Photo 14: Placing Geotextile Separation Fabric and HDPE Geomembrane Liner (October 31, 2019)



Photo 15: Geotextile and HDPE Geomembrane Liner Placed End of 2019 Construction (November 1, 2019)



Photo 16: Silt and Topsoil Placed (June 5, 2020)



Photo 17: Hydroseed Placed, Cap Construction Complete (June 18, 2020)



Photo 18: Hydroseed Growing (June 24, 2020)



Photo 19: Watering the Cap Hydroseed (June 30, 2020)

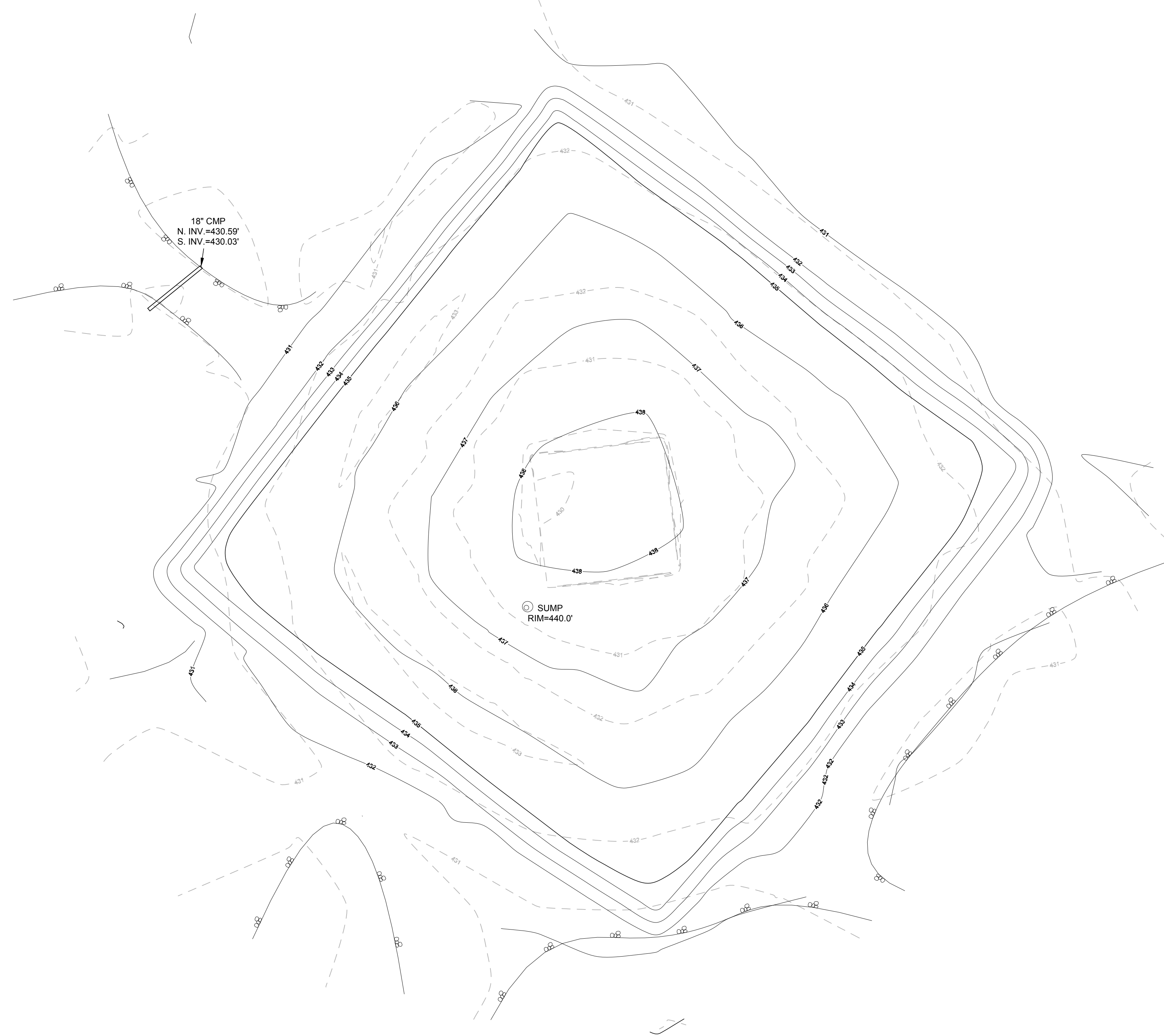


Photo 20: Final Fire Training Pit Cap (July 16, 2020)

MONITOR WELL SURVEY
FAIRBANKS INTERNATIONAL AIRPORT
FIRE TRAINING PIT
Fairbanks, AK

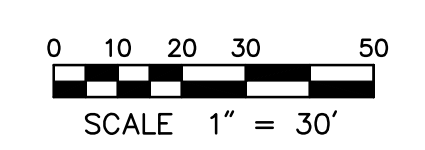
<u>WELL ID</u>	<u>ALASKA STATE PLANE</u> <u>ZONE 3, NAD83, USft.</u>		<u>NAVD88 ELEVATION</u>	
	<u>NORTHING</u>	<u>EASTING</u>	<u>PVC PIPE</u>	<u>GROUND</u>
MW-97-A	3950957.23	1347036.08	430.30	430.6
MW-97-B	3951031.14	1347108.12	430.95	431.1
MW-1901-15	3951024.00	1346932.81	434.34	431.4
MW-1901-40	3951028.65	1346934.72	434.30	431.4
MW-1901-80	3951033.82	1346936.57	434.28	431.5
MW-1901-150	3951038.40	1346938.75	434.38	431.9
MW-1902-15	3950683.05	1347673.73	433.32	430.2
MW-1902-40	3950683.73	1347680.26	433.08	430.1
MW-1902-80	3950684.50	1347686.79	432.98	430.0
MW-1902-150	3950684.89	1347693.17	432.78	429.9
Sump	3950875.73	1347168.95	438.37	435.4

Surveyed October 8, 2019
Prepared For Shannon & Wilson



LEGEND
 - - - - ORIGINAL TOPO CONTOUR
 ——— AS-BUILT CONTOUR

- NOTES:
 1. THE PURPOSE OF THIS SURVEY IS TO LOCATE POST-CONSTRUCTION TOPOGRAPHY AROUND THE FAI FIRE TRAINING PIT.
 2. COORDINATES ARE ALASKA STATE PLANE ZONE 3, NAD83 US FEET; ELEVATIONS ARE NAVD88 VERTICAL DATUM, FEET.



FAIRBANKS INTERNATIONAL AIRPORT
 FIRE TRAINING PIT

ISSUE DATE	29 JUNE 2020
COMM. NUMBER	281901
DESIGNED BY	----
DRAWN BY	WSK
SCALE	0" = 1"

AS-BUILT

Appendix C

Non-Hazardous Waste Manifests

CONTENTS

- Manifests and Certificates of Disposal for 2019 Fire Training Pit Water
- Manifests, Certificates of Disposal, and DEC Transport, Treatment, & Disposal Approval Forms for 2020 Fire Training Pit Water
- Manifests, Certificates of Disposal, and DEC Approval Forms for June 2020, October 2020, and January to April 2021 Monitoring Well Purge Water

NON-HAZARDOUS WASTE MANIFEST

1021-3003-346

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677		Manifest Document No. 142651A		2. Page 1 of 1	
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709				FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709			
4. Generator's Phone ((907) 474-2582							
5. Transporter 1 Company Name NRC ALASKA LLC		6. US EPA ID Number AKR000004184		A. State Transporter's ID		B. Transporter 1 Phone 907-258-1558	
7. Transporter 2 Company Name		8. US EPA ID Number		C. State Transporter's ID		D. Transporter 2 Phone	
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501				10. US EPA ID Number AKR000004184		E. State Facility's ID	
				F. Facility's Phone 907-258-1558			
11. WASTE DESCRIPTION				Containers		13. Total Quantity	14. Unit Wt./Vol.
a. <input checked="" type="checkbox"/> Material Not Regulated by DOT				No.	Type	11000	G
b.							
c.							
d.							
G. Additional Descriptions for Materials Listed Above 1) EA0325 PFOS/PFOA CONTAMINATED WASTEWATER				H. Handling Codes for Wastes Listed Above D26073			
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation							
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.							
Printed/Typed Name Katrina Lemieux				Signature <i>Katrina Lemieux</i>		Date 9 | 25 | 19	
17. Transporter 1 Acknowledgement of Receipt of Materials				Printed/Typed Name Keith Anderson		Signature <i>Keith Anderson</i>	
						Date 9 | 25 | 19	
18. Transporter 2 Acknowledgement of Receipt of Materials				Printed/Typed Name		Signature	
						Date	
19. Discrepancy Indication Space							
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.				Printed/Typed Name Patricia Beasley		Signature <i>Patricia Beasley</i>	
						Date 09 | 26 | 19	

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 142651A
DATE OF DISPOSAL/RECYCLE: SEP-26-2019

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER	1	TT	11000	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: PLB

SIGNATURE: Patricia Beasley DATE: SEP 26 2019

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677		Manifest Document No. 142651B	2. Page 1 of 1
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709			
4. Generator's Phone (907) 474-2582					
5. Transporter 1 Company Name NRC Alaska LLC		6. US EPA ID Number AKR00004184		A. State Transporter's ID	
7. Transporter 2 Company Name		8. US EPA ID Number		B. Transporter 1 Phone 907-258-1558	
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501		10. US EPA ID Number AKR000004184		C. State Transporter's ID	
				D. Transporter 2 Phone	
				E. State Facility's ID	
				F. Facility's Phone 907-258-1558	
11. WASTE DESCRIPTION			Containers	13. Total Quantity	14. Unit Wt./Vol.
			No.	Type	
<input type="checkbox"/> HM <input checked="" type="checkbox"/> Material Not Regulated by DOT			1	TT	11000 G
b.					
c.					
d.					
G. Additional Descriptions for Materials Listed Above			H. Handling Codes for Wastes Listed Above		
1) EA0325 PFOS/PFOA CONTAMINATED WASTEWATER			D26075		
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation					
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.					
Printed/Typed Name Katrina Lemieux				Signature <i>Katrina Lemieux</i>	
				Date Month Day Year 9 | 25 | 19	
17. Transporter 1 Acknowledgement of Receipt of Materials					
Printed/Typed Name Caleb Hamilton				Signature <i>Caleb Hamilton</i>	
				Date Month Day Year 9 | 25 | 19	
18. Transporter 2 Acknowledgement of Receipt of Materials					
Printed/Typed Name				Signature	
				Date Month Day Year	
19. Discrepancy Indication Space					
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.					
Printed/Typed Name Patricia L Beasley				Signature <i>Patricia L Beasley</i>	
				Date Month Day Year 09 | 26 | 19	

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 142651B
DATE OF DISPOSAL/RECYCLE: SEP-26-2019

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER	1	TT	11000	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: ^{PLB} _____

SIGNATURE: Patricia L Beasley DATE: SEP 26 2019

NON-HAZARDOUS WASTE MANIFEST

142651-KC

3002, 347

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677		Manifest Document No. 142651C		2. Page 1 of 1																															
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709 4. Generator's Phone (907) 474-2582				FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709																																	
5. Transporter 1 Company Name <i>NRC Alaska LLC</i>		6. US EPA ID Number <i>AKR00004184</i>		A. State Transporter's ID		B. Transporter 1 Phone <i>907-258-558</i>																															
7. Transporter 2 Company Name		8. US EPA ID Number		C. State Transporter's ID		D. Transporter 2 Phone																															
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501				10. US EPA ID Number AKR000004184		E. State Facility's ID																															
				F. Facility's Phone <i>907-258-1558</i>																																	
11. WASTE DESCRIPTION						Containers		13. Total Quantity	14. Unit Wt./Vol.																												
<table border="1"> <tr> <td>a</td> <td><input checked="" type="checkbox"/></td> <td>Material Not Regulated by DOT</td> <td>1</td> <td>TT</td> <td>11000</td> <td>G</td> </tr> <tr> <td>b</td> <td><input type="checkbox"/></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>c</td> <td><input type="checkbox"/></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>d</td> <td><input type="checkbox"/></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>						a	<input checked="" type="checkbox"/>	Material Not Regulated by DOT	1	TT	11000	G	b	<input type="checkbox"/>						c	<input type="checkbox"/>						d	<input type="checkbox"/>									
a	<input checked="" type="checkbox"/>	Material Not Regulated by DOT	1	TT	11000	G																															
b	<input type="checkbox"/>																																				
c	<input type="checkbox"/>																																				
d	<input type="checkbox"/>																																				
G. Additional Descriptions for Materials Listed Above 1) EA0325 PFOS/PFOA CONTAMINATED WASTEWATER						H. Handling Codes for Wastes Listed Above D26076																															
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation																																					
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.																																					
Printed/Typed Name <i>Katrina Lemieux</i>								Signature <i>Katrina Lemieux</i>		Date <i>9/25/19</i>																											
17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name <i>Bret Lang</i>								Signature <i>Bret Lang</i>		Date <i>9/25/19</i>																											
18. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name								Signature		Date																											
19. Discrepancy Indication Space																																					
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.								Printed/Typed Name <i>Patrick L Beasley</i>		Signature <i>Patrick L Beasley</i>		Date <i>09/26/19</i>																									

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 142651C
DATE OF DISPOSAL/RECYCLE: SEP-26-2019

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER	1	TT	11000	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: PLB

SIGNATURE: *Daniel L Beasley* DATE: SEP 26 2019

NON-HAZARDOUS WASTE MANIFEST

1021-3003-346

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677	Manifest Document No. 142651D	2. Page 1 of 1
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		
4. Generator's Phone (907) 474-2582				
5. Transporter 1 Company Name NRC ALASKA LLC	6. US EPA ID Number AKR000004184	A. State Transporter's ID		
7. Transporter 2 Company Name		B. Transporter 1 Phone 907-258-1558		
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501		C. State Transporter's ID		
10. US EPA ID Number AKR000004184		D. Transporter 2 Phone		
		E. State Facility's ID		
		F. Facility's Phone 907-258-1558		

11. WASTE DESCRIPTION	Containers		13. Total Quantity	14. Unit Wt./Vol.
	No.	Type		
<input checked="" type="checkbox"/> Material Not Regulated by DOT	1	TT	11000	G
<input type="checkbox"/>				
<input type="checkbox"/>				
<input type="checkbox"/>				

G. Additional Descriptions for Materials Listed Above 1) EA0325 PFOS/PFOA CONTAMINATED WASTEWATER	H. Handling Codes for Wastes Listed Above D26077
--	---

15. Special Handling Instructions and Additional Information
 Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation

16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name <i>Katrina LeMeux</i>	Signature <i>Katrina LeMeux</i>	Date Month Day Year 9 | 25 | 19
17. Transporter 1 Acknowledgement of Receipt of Materials	Printed/Typed Name <i>Keith Chmura</i>	Signature <i>Keith Chmura</i>
18. Transporter 2 Acknowledgement of Receipt of Materials	Printed/Typed Name	Signature

19. Discrepancy Indication Space		
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.		
Printed/Typed Name <i>Fatimool Beasley</i>	Signature <i>Fatimool Beasley</i>	Date Month Day Year 09 | 27 | 19

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 142651D
DATE OF DISPOSAL/RECYCLE: SEP-27-2019

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER	1	TT	11000	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: PLB

SIGNATURE: Patricia L Beasley DATE: SEP 27 2019

NON-HAZARDOUS WASTE MANIFEST

142651-KC

3004/344

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677		Manifest Document No. 142651E	2. Page 1 of 1
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709			
4. Generator's Phone ((907) 474-2582					
5. Transporter 1 Company Name NRC ALASKA LLC		6. US EPA ID Number AKR000004184		A. State Transporter's ID	
				B. Transporter 1 Phone 907-258-1558	
7. Transporter 2 Company Name		8. US EPA ID Number		C. State Transporter's ID	
				D. Transporter 2 Phone	
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501		10. US EPA ID Number AKR000004184		E. State Facility's ID	
				F. Facility's Phone 907-258-1558	
11. WASTE DESCRIPTION			Containers		13. Total Quantity
			No.	Type	14. Unit Wt./Vol.
<input checked="" type="checkbox"/> Material Not Regulated by DOT b. c. d.			1	TT	11000 G
G. Additional Descriptions for Materials Listed Above			H. Handling Codes for Wastes Listed Above		
1) EA0325 PFOS/PFOA CONTAMINATED WASTEWATER			D26078		
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation					
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.					
Printed/Typed Name <i>Katrina Lemieux</i>				Signature <i>Katrina Lemieux</i>	
				Date 9 | 25 | 19	
17. Transporter 1 Acknowledgement of Receipt of Materials					
Printed/Typed Name <i>Caleb Hamilton</i>				Signature <i>Caleb Hamilton</i>	
				Date 9 | 27 | 19	
18. Transporter 2 Acknowledgement of Receipt of Materials					
Printed/Typed Name				Signature	
				Date	
19. Discrepancy Indication Space					
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.					
Printed/Typed Name <i>Patricia L Beasley</i>				Signature <i>Patricia L Beasley</i>	
				Date 09 | 27 | 19	

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 142651E
DATE OF DISPOSAL/RECYCLE: SEP-27-2019

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER	1	TT	11000	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: PLB

SIGNATURE: Patricia A. Beasley DATE: SEP 27 2019

NON-HAZARDOUS WASTE MANIFEST

142651-KC

3002, 347

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677		Manifest Document No. 142651F		2. Page 1 of 1													
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709 4. Generator's Phone (907) 474-2582				FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709															
5. Transporter 1 Company Name NRC ALASKA LLC		6. US EPA ID Number AKR000004184		A. State Transporter's ID		B. Transporter 1 Phone 907-258-1558													
7. Transporter 2 Company Name		8. US EPA ID Number		C. State Transporter's ID		D. Transporter 2 Phone													
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501				10. US EPA ID Number AKR000004184		E. State Facility's ID													
				F. Facility's Phone 907-258-1558															
11. WASTE DESCRIPTION			Containers		13. Total Quantity		14. Unit Wt./Vol.												
<table border="1"> <tr> <td>HM</td> <td></td> </tr> <tr> <td>a</td> <td></td> </tr> <tr> <td>X</td> <td>Material Not Regulated by DOT</td> </tr> <tr> <td>b</td> <td></td> </tr> <tr> <td>c</td> <td></td> </tr> <tr> <td>d</td> <td></td> </tr> </table>			HM		a		X	Material Not Regulated by DOT	b		c		d		No. Type				
HM																			
a																			
X	Material Not Regulated by DOT																		
b																			
c																			
d																			
			1		TT		11000												
G. Additional Descriptions for Materials Listed Above			H. Handling Codes for Wastes Listed Above																
1) EA0325 PFOS/PFOA CONTAMINATED WASTEWATER			D26080																
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation																			
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.																			
Printed/Typed Name Katrina Lemieux						Signature Katrina Lemieux		Date Month Day Year 9 25 19											
17. Transporter 1 Acknowledgement of Receipt of Materials						Date													
Printed/Typed Name Bret Lang						Signature Bret Lang		Date Month Day Year 9 27 19											
18. Transporter 2 Acknowledgement of Receipt of Materials						Date													
Printed/Typed Name						Signature		Date Month Day Year											
19. Discrepancy Indication Space																			
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.						Date													
Printed/Typed Name Patrick L Beasley						Signature Patrick L Beasley		Date Month Day Year 09 27 19											

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 142651F
DATE OF DISPOSAL/RECYCLE: SEP-27-2019

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER	1	TT	11000	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: PLB

SIGNATURE: Patricia A. Beasley DATE: SEP 27 2019

NON-HAZARDOUS WASTE MANIFEST

142651-KC

1021-3003-346

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677		Manifest Document No. 142651G	2. Page 1 of 1
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709			
4. Generator's Phone ((907) 474-2582					
5. Transporter 1 Company Name NRC ALASKA LLC		6. US EPA ID Number AKR000004184		A. State Transporter's ID	
				B. Transporter 1 Phone 907-258-1558	
7. Transporter 2 Company Name		8. US EPA ID Number		C. State Transporter's ID	
				D. Transporter 2 Phone	
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501		10. US EPA ID Number AKR000004184		E. State Facility's ID	
				F. Facility's Phone 907-258-1558	
11. WASTE DESCRIPTION			Containers		13. Total Quantity
			No.	Type	14. Unit Wt./Vol.
<input checked="" type="checkbox"/> Material Not Regulated by DOT			1	TT	8,619 ⁴¹⁰⁰⁰ G
b.					
c.					
d.					
G. Additional Descriptions for Materials Listed Above			H. Handling Codes for Wastes Listed Above		
f) EA0325 PFOS/PFOA CONTAMINATED WASTEWATER			D26082		
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation					
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.					
Printed/Typed Name				Date	
Katrina Lemieux				9/25/19	
Signature				Date	
[Signature]				9/29/19	
17. Transporter 1 Acknowledgement of Receipt of Materials				Date	
Printed/Typed Name				Date	
Keith Chadwell				9/29/19	
Signature				Date	
[Signature]					
18. Transporter 2 Acknowledgement of Receipt of Materials					
Printed/Typed Name				Date	
19. Discrepancy Indication Space					
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.					
Printed/Typed Name				Date	
Patricia L Beasley				09/29/19	
Signature				Date	
[Signature]					

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 142651G
DATE OF DISPOSAL/RECYCLE: SEP-29-2019

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER	1	TT	8619	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: **PLB** _____

SIGNATURE: Patricia L Beasley

DATE: SEP 29 2019

NON-HAZARDOUS WASTE MANIFEST

142651-KC

3002, 347

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677		Manifest Document No. 142651H	2. Page 1 of 1
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709			
4. Generator's Phone ((907) 474-2582					
5. Transporter 1 Company Name NRC ALASKA LLC		6. US EPA ID Number AKR000004184		A. State Transporter's ID	
7. Transporter 2 Company Name		8. US EPA ID Number		B. Transporter 1 Phone 907-258-1558	
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501		10. US EPA ID Number AKR000004184		C. State Transporter's ID	
				D. Transporter 2 Phone	
				E. State Facility's ID	
				F. Facility's Phone 907-258-1558	
11. WASTE DESCRIPTION			Containers	13. Total Quantity	14. Unit
			No.	Type	WT./Vol.
a. <input checked="" type="checkbox"/> Material Not Regulated by DOT b. c. d.			1	TT	11000 G
G. Additional Descriptions for Materials Listed Above			H. Handling Codes for Wastes Listed Above		
1) EA0325 PFOS/PFOA CONTAMINATED WASTEWATER			D26083		
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation					
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.					
Printed/Typed Name Katrina LeMieux				Signature <i>Katrina LeMieux</i>	
				Date Month Day Year 9 | 25 | 19	
17. Transporter 1 Acknowledgement of Receipt of Materials				Date	
Printed/Typed Name Bret Lang				Signature <i>Bret Lang</i>	
				Date Month Day Year 9 | 30 | 19	
18. Transporter 2 Acknowledgement of Receipt of Materials				Date	
Printed/Typed Name				Signature	
				Date Month Day Year	
19. Discrepancy Indication Space					
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.					
Printed/Typed Name Patricia L Beasley				Signature <i>Patricia L Beasley</i>	
				Date Month Day Year 10 | 01 | 19	

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 142651H
DATE OF DISPOSAL/RECYCLE: OCT-01-2019

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER	1	TT	11000	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: PLB

SIGNATURE: Patricia L Beasley

DATE: OCT 01 2019

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677		Manifest Document No. 142651I	2. Page 1 of 1
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 4 FAIRBANKS, AK 99709		3003T-346T	
4. Generator's Phone ((907) 474-2582					
5. Transporter 1 Company Name NRC ALASKA LLC		6. US EPA ID Number AKR000004184		A. State Transporter's ID	
7. Transporter 2 Company Name		8. US EPA ID Number		B. Transporter 1 Phone 907-258-1558	
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501		10. US EPA ID Number AKR000004184		C. State Transporter's ID	
				D. Transporter 2 Phone	
				E. State Facility's ID	
				F. Facility's Phone 907-258-1558	
11. WASTE DESCRIPTION		Containers		13. Total Quantity	
		No. Type		14. Unit Wt./Vol.	
<input checked="" type="checkbox"/> a. Material Not Regulated by DOT <input type="checkbox"/> b. <input type="checkbox"/> c. <input type="checkbox"/> d.		1 TT		11000 G	
G. Additional Descriptions for Materials Listed Above		H. Handling Codes for Wastes Listed Above			
1) EA0325 PFOS/PFOA CONTAMINATED WASTEWATER		D26084			
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation					
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.					
Printed/Typed Name Katrina LeMieux		Signature <i>Katrina LeMieux</i>		Date 9/25/19	
17. Transporter 1 Acknowledgement of Receipt of Materials		Printed/Typed Name Butch Koyar		Signature <i>Butch Koyar</i>	
18. Transporter 2 Acknowledgement of Receipt of Materials		Printed/Typed Name		Signature	
19. Discrepancy Indication Space		Printed/Typed Name Patricia L Beasley		Signature <i>Patricia L Beasley</i>	
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.		Printed/Typed Name H135		Signature	
		Printed/Typed Name		Signature	

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 1426511
DATE OF DISPOSAL/RECYCLE: OCT-02-2019

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER	1	TT	11000	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: PLB

SIGNATURE: Danniel D Beasley DATE: OCT 02 2019

NON-HAZARDOUS WASTE MANIFEST

142851-KC

3002/347

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677		Manifest Document No. 142851J	2. Page 1 of 1																													
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709																																
4. Generator's Phone (907) 474-2582																																		
5. Transporter 1 Company Name NRC ALASKA LLC		6. US EPA ID Number AKR000004184		A. State Transporter's ID																														
7. Transporter 2 Company Name		8. US EPA ID Number		B. Transporter 1 Phone 907-258-1558																														
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501		10. US EPA ID Number AKR000004184		C. State Transporter's ID																														
				D. Transporter 2 Phone																														
				E. State Facility's ID																														
				F. Facility's Phone 907-258-1558																														
11. WASTE DESCRIPTION			Containers		13. Total Quantity																													
			No.	Type	14. Unit Wt./Vol.																													
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:5%; text-align: center;">HM</td> <td style="width:5%; text-align: center;">a</td> <td style="width:90%;">Material Not Regulated by DOT</td> <td style="width:10%; text-align: center;">1</td> <td style="width:10%; text-align: center;">TT</td> <td style="width:10%; text-align: center;">11000</td> <td style="width:10%; text-align: center;">G</td> </tr> <tr> <td></td> <td>b.</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>c.</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>d.</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>			HM	a	Material Not Regulated by DOT	1	TT	11000	G		b.							c.							d.									
HM	a	Material Not Regulated by DOT	1	TT	11000	G																												
	b.																																	
	c.																																	
	d.																																	
G. Additional Descriptions for Materials Listed Above			H. Handling Codes for Wastes Listed Above																															
1) EA0325 PFOS/PFOA CONTAMINATED WASTEWATER			D26085																															
R4R # 255570																																		
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation																																		
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.																																		
Printed/Typed Name Katrina LeMieux				Signature <i>Katrina LeMieux</i>																														
				Date 9 25 19																														
17. Transporter 1 Acknowledgement of Receipt of Materials				Date																														
Printed/Typed Name Caleb Hamilton				Signature <i>Caleb Hamilton</i>																														
				Date 10 3 19																														
18. Transporter 2 Acknowledgement of Receipt of Materials				Date																														
Printed/Typed Name				Signature																														
				Date																														
19. Discrepancy Indication Space																																		
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.																																		
Printed/Typed Name Patricia L Beasley				Signature <i>Patricia L Beasley</i>																														
				Date 10 03 19																														

NON-HAZARDOUS WASTE GENERATOR

TRANSPORTER

FACILITY



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 142651J
DATE OF DISPOSAL/RECYCLE: OCT-03-2019

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER	1	TT	11000	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: PLB

SIGNATURE: Patricia L Beasley DATE: OCT 03 2019

NON-HAZARDOUS WASTE MANIFEST

142651-KC

3003T/346T

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677		Manifest Document No. 142651K	2. Page 1 of 1
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709			
4. Generator's Phone (907) 474-2582					
5. Transporter 1 Company Name NRC ALASKA LLC		6. US EPA ID Number AKR000004184		A. State Transporter's ID	
				B. Transporter 1 Phone 907-258-1558	
7. Transporter 2 Company Name		8. US EPA ID Number		C. State Transporter's ID	
				D. Transporter 2 Phone	
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501		10. US EPA ID Number AKR000004184		E. State Facility's ID	
				F. Facility's Phone 907-258-1558	
11. WASTE DESCRIPTION			Containers		13. Total Quantity
			No.	Type	14. Unit Wt./Vol.
a. <input checked="" type="checkbox"/> Material Not Regulated by DOT			1	TT	11000 G
b.					
c.					
d.					
G. Additional Descriptions for Materials Listed Above			H. Handling Codes for Wastes Listed Above		
i) EA0325 PFOS/PFOA CONTAMINATED WASTEWATER			D26086		
R4R 255570 / R4R 254468					
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation					
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.					
Printed/Typed Name Katrina LeMieux				Signature <i>Katrina LeMieux</i>	
				Date 9 | 25 | 19	
17. Transporter 1 Acknowledgement of Receipt of Materials					
Printed/Typed Name Dennis Lopez				Signature <i>Dennis Lopez</i>	
				Date 10 | 3 | 19	
18. Transporter 2 Acknowledgement of Receipt of Materials					
Printed/Typed Name				Signature	
				Date	
19. Discrepancy Indication Space					
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.					
Printed/Typed Name Patricia L. Beasley				Signature <i>Patricia L. Beasley</i>	
				Date 10 | 03 | 19	

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 142651K
DATE OF DISPOSAL/RECYCLE: OCT-03-2019

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER	1	TT	11000	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: **PLB**

SIGNATURE: Patricia L. Basley

DATE: OCT 03 2019

NON-HAZARDOUS WASTE MANIFEST

102013002T/346T
142651-KC

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677		Manifest Document No. 142651L	2. Page 1 of 1																
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		DWR																	
4. Generator's Phone (907) 474-2582																					
5. Transporter 1 Company Name NRC ALASKA LLC		6. US EPA ID Number AKR000004184		A. State Transporter's ID																	
7. Transporter 2 Company Name		8. US EPA ID Number		B. Transporter 1 Phone 907-258-1558																	
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501		10. US EPA ID Number AKR000004184		C. State Transporter's ID																	
				D. Transporter 2 Phone																	
				E. State Facility's ID																	
				F. Facility's Phone 907-258-1558																	
11. WASTE DESCRIPTION			Containers	13. Total Quantity	14. Unit Wt./Vol.																
			No.	Type																	
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:5%; text-align: center;">11M</td> <td style="width:5%; text-align: center;">a</td> <td style="width:90%;"></td> </tr> <tr> <td style="text-align: center;">X</td> <td></td> <td>Material Not Regulated by DOT</td> </tr> <tr> <td style="text-align: center;">b</td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">c</td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">d</td> <td></td> <td></td> </tr> </table>			11M	a		X		Material Not Regulated by DOT	b			c			d			1	TT	11000	G
11M	a																				
X		Material Not Regulated by DOT																			
b																					
c																					
d																					
G. Additional Descriptions for Materials Listed Above			H. Handling Codes for Wastes Listed Above																		
1) EA0325 PFOS/PFOA CONTAMINATED WASTEWATER			D28087																		
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation																					
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.																					
Printed/Typed Name Katrina LeMieux				Signature <i>Katrina LeMieux</i>																	
				Date 9 25 19																	
17. Transporter 1 Acknowledgement of Receipt of Materials																					
Printed/Typed Name Dennis Loyer				Signature <i>Dennis Loyer</i>																	
				Date 10 5 19																	
18. Transporter 2 Acknowledgement of Receipt of Materials																					
Printed/Typed Name				Signature																	
				Date																	
19. Discrepancy Indication Space																					
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.																					
Printed/Typed Name Patricia L Beasley				Signature <i>Patricia L Beasley</i>																	
				Date 10 07 19																	

NON-HAZARDOUS WASTE



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 142651L
DATE OF DISPOSAL/RECYCLE: OCT-07-2019

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER	1	TT	11000	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: PLB

SIGNATURE: Patricia S Beasley

DATE: OCT 07 2019

NON-HAZARDOUS WASTE MANIFEST

1021-3002

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677		Manifest Document No. 142651M		2. Page 1 of 1																																																					
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709				FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 4 FAIRBANKS, AK 99709																																																							
4. Generator's Phone ((907) 474-2582																																																											
5. Transporter 1 Company Name NRC ALASKA LLC		6. US EPA ID Number AKR000004184		A. State Transporter's ID		B. Transporter 1 Phone 907-258-1558																																																					
7. Transporter 2 Company Name		8. US EPA ID Number		C. State Transporter's ID		D. Transporter 2 Phone																																																					
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501				10. US EPA ID Number AKR000004184		E. State Facility's ID																																																					
				F. Facility's Phone 907-258-1558																																																							
11. WASTE DESCRIPTION						Containers		13. Total Quantity	14. Unit Wt./Vol.																																																		
<table border="1"> <tr> <td>HM</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>X</td> <td>Material Not Regulated by DOT</td> <td>1</td> <td>TT</td> <td>6,400</td> <td>41600</td> <td></td> <td>G</td> <td></td> <td></td> </tr> <tr> <td>b.</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>c.</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>d.</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>						HM										X	Material Not Regulated by DOT	1	TT	6,400	41600		G			b.										c.										d.													
HM																																																											
X	Material Not Regulated by DOT	1	TT	6,400	41600		G																																																				
b.																																																											
c.																																																											
d.																																																											
G. Additional Descriptions for Materials Listed Above						H. Handling Codes for Wastes Listed Above																																																					
1) EA0325 PFOS/PFOA CONTAMINATED WASTEWATER						D26088																																																					
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation																																																											
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.																																																											
Printed/Typed Name <i>Katrina Lemieux</i>								Signature <i>Katrina Lemieux</i>		Date 9 25 19																																																	
17. Transporter 1 Acknowledgement of Receipt of Materials								Signature <i>Keith Chmura</i>		Date 10 9 19																																																	
Printed/Typed Name <i>Keith Chmura</i>								Signature <i>Keith Chmura</i>		Date 10 9 19																																																	
18. Transporter 2 Acknowledgement of Receipt of Materials								Signature		Date																																																	
Printed/Typed Name								Signature		Date																																																	
19. Discrepancy Indication Space																																																											
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.								Signature <i>Patricia Beasley</i>		Date 10 09 19																																																	
Printed/Typed Name <i>Patricia Beasley</i>								Signature <i>Patricia Beasley</i>		Date 10 09 19																																																	

NON-HAZARDOUS WASTE GENERATOR



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 142651M
DATE OF DISPOSAL/RECYCLE: OCT-09-2019

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER	1	TT	6400	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: PLB

SIGNATURE: Patricia Beasley DATE: OCT 09 2019

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677		Manifest Document No. 142651N	2. Page 1 of 1	
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		4018		
4. Generator's Phone ((907) 474-2582						
5. Transporter 1 Company Name NRC ALASKA LLC		6. US EPA ID Number AKR000004184		A. State Transporter's ID		
				B. Transporter 1 Phone 907-258-1558		
7. Transporter 2 Company Name		8. US EPA ID Number		C. State Transporter's ID		
				D. Transporter 2 Phone		
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501		10. US EPA ID Number AKR000004184		E. State Facility's ID		
				F. Facility's Phone 907-258-1558		
11. WASTE DESCRIPTION			Containers		13. Total Quantity	14. Unit Wt./Vol.
			No.	Type		
a. MATERIAL NOT REGULATED BY D.O.T. (RESIDUE - LAST CONTAINED PFOA/PFOS)			1	TP	150	P
b. MATERIAL NOT REGULATED BY D.O.T.			3	DM	600	P
c. MATERIAL NOT REGULATED BY D.O.T. (EMPTY DRUMS LAST CONTAINED PETROLEUM OIL AND LUBRICANTS)			1	DM	100	P
d. Material Not Regulated by DOT			1	DM	400	P
G. Additional Descriptions for Materials Listed Above				H. Handling Codes for Wastes Listed Above		
1) EA0704 EMPTY TOTE/TANK(S)				D26378		
2) EA0710 POL CONTAMINATED AND NON-CONTAMINATED DEBRIS						
3) EA0701 EMPTY DRUM(S) LAST CONTAINED POL SOIL						
4) EA0505 ABSORBENT DISPOSAL WITH NO FREE LIQUIDS						
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation						
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.						
Printed/Typed Name Katrina Lemieux				Signature <i>Katrina Lemieux</i>		Date 10 | 9 | 19
17. Transporter 1 Acknowledgement of Receipt of Materials				Signature <i>Eric Gray</i>		Date 10 | 9 | 19
Printed/Typed Name Eric Gray				Signature		Date
18. Transporter 2 Acknowledgement of Receipt of Materials				Signature		Date
Printed/Typed Name				Signature		Date
19. Discrepancy Indication Space						
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.						
Printed/Typed Name DARYL GIRARD				Signature <i>Daryl Girard</i>		Date 12 | 04 | 19

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 142651N
DATE OF DISPOSAL/RECYCLE: DEC-04-2019

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	EMPTY TOTE/TANK(S)	1	TP	150	P
2	POL CONTAMAINATED AND NON-CONTAMINATED DEBRIS	3	DM	600	P
3	EMPTY DRUM(S) LAST CONTAINED POL SOIL	1	DM	100	P
4	ABSORBENT DISPOSAL WITH NO FREE LIQUIDS	1	DM	400	P

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: Daryl Girard

SIGNATURE: [Signature]

DATE: DEC 04 2019

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983088677		Manifest Document No. 142851AA	2. Page 1 of 1	
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		4020		
4. Generator's Phone (907) 474-2582						
5. Transporter 1 Company Name NRC ALASKA LLC		6. US EPA ID Number AKR000004184		A. State Transporter's ID		
				B. Transporter 1 Phone 907-258-1558		
7. Transporter 2 Company Name		8. US EPA ID Number		C. State Transporter's ID		
				D. Transporter 2 Phone		
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 98501		10. US EPA ID Number AKR000004184		E. State Facility's ID		
				F. Facility's Phone 907-258-1558		
11. WASTE DESCRIPTION			Containers		13. Total Quantity	14. Unit Wt./Vol.
			No.	Type		
<input checked="" type="checkbox"/> Material Not Regulated by DOT			12	DM	4500	P
b.						
c.						
d.						
G. Additional Descriptions for Materials Listed Above 1) EA0325 PFOS/PFOA CONTAMINATED WASTEWATER			H. Handling Codes for Wastes Listed Above D27590			
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation						
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.						
Printed/Typed Name <i>Katrina Lemieux</i>			Signature <i>Katrina Lemieux</i>		Date Month Day Year 12 | 16 | 19	
17. Transporter 1 Acknowledgement of Receipt of Materials			Signature <i>Kimberly Curtiss</i>		Date Month Day Year 12 | 16 | 19	
Printed/Typed Name <i>Kimberly Curtiss</i>			Signature <i>Kimberly Curtiss</i>		Date Month Day Year 12 | 16 | 19	
18. Transporter 2 Acknowledgement of Receipt of Materials			Signature		Date Month Day Year	
Printed/Typed Name			Signature		Date Month Day Year	
19. Discrepancy Indication Space						
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in Item 19.						
Printed/Typed Name <i>Edward L Beasley</i>			Signature <i>Edward L Beasley</i>		Date Month Day Year 02 | 11 | 20	

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY



**ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SPILL PREVENTION AND RESPONSE
Contaminated Sites and Prevention and Emergency Response Programs
Transport, Treatment, & Disposal Approval Form for Contaminated Media**

DEC HAZARD/SPILL ID #		NAME OF SPILL OR CONTAMINATED SITE	
1071		FIA - Fire Training Pit	
SITE OR SPILL LOCATION			
Southwest portion of Fairbanks International Airport: 64.799169 degrees, -147.880750 degrees			
CURRENT LOCATION AND TYPE OF CONTAMINATED MEDIA		SOURCE OF THE CONTAMINATION	
Monitoring well purge water		Fire training activities	
COMPOUNDS OF CONCERN	ESTIMATED VOLUME	DATE(S) GENERATED	
PFOS, PFOA	450 gallons	10/14 to 10/18/19	
POST TREATMENT ANALYSIS REQUIRED (such as GRO, DRO, RRO, BTEX, and/or Chlorinated Solvents)			
18 PFAS by EPA 537.1 modified. List includes PFOS and PFOA per NRC Alaska, LLC industrial wastewater discharge permit.			
COMMENTS			
Analytical water sample results are pending			

Facility Accepting the Contaminated Media

NAME OF THE FACILITY	PHYSICAL ADDRESS/PHONE NUMBER
NRC Alaska, LLC	2020 Viking Drive, Anchorage AK

Responsible Party and Contractor Information

BUSINESS/NAME	ADDRESS/PHONE NUMBER
Dan Strucher, Senior Project Manager	(907) 646-5050
NRC Alaska, LLC	619 East Ship Creek Avenue, Suite No. 309, Anchorage, Alaska 99501

Marcy Nadel

Name of the Person Requesting Approval (printed)

Signature

Project Manager, Shannon & Wilson, Inc.

Title/Association

10/21/19

Date

(907) 458-3150

Phone Number

-----DEC USE ONLY-----

Based on the information provided, ADEC approves transport of the above-described media for treatment in accordance with the approved facility operations plan. The Responsible Party or their consultant must submit to the DEC Project Manager a copy of weight/volume receipts of the loads transported to the facility and a post treatment analytical report. If the media is contaminated soil, it shall be transported as a covered load in compliance with 18 AAC 60.015.

Robert A. Burgess

DEC Project Manager Name (printed)

Signature

Digitally signed by Robert Burgess
Date: 2019.10.21 16:56:46 -08'00'

EPS IV

Project Manager Title

10/21/19

Date

451-2153

Phone Number

Drum Tracking Log for Manifest Number 142651AA

Manifest 142651AA		Arrived 11-FEB-20				Gen FAIRBANKS INT'L AIRPORT				TsdF NRC ALASKA LLC	
Document	Item	Line	Profile	Type	Size	Oil Fuel	Water	Antifreeze	Sludge	Solids	Location
D27590	1	1	EA0325	DM	55	0	55	0	0	0	PFOS WATER: 375.00 P, 55.00 G
D27590	2	1	EA0325	DM	55	0	55	0	0	0	PFOS WATER: 375.00 P, 55.00 G
D27590	3	1	EA0325	DM	55	0	55	0	0	0	PFOS WATER: 375.00 P, 55.00 G
D27590	4	1	EA0325	DM	55	0	55	0	0	0	PFOS WATER: 375.00 P, 55.00 G
D27590	5	1	EA0325	DM	55	0	55	0	0	0	PFOS WATER: 375.00 P, 55.00 G
D27590	6	1	EA0325	DM	55	0	55	0	0	0	PFOS WATER: 375.00 P, 55.00 G
D27590	7	1	EA0325	DM	55	0	55	0	0	0	PFOS WATER: 375.00 P, 55.00 G
D27590	8	1	EA0325	DM	55	0	55	0	0	0	PFOS WATER: 375.00 P, 55.00 G
D27590	9	1	EA0325	DM	55	0	55	0	0	0	PFOS WATER: 375.00 P, 55.00 G
D27590	10	1	EA0325	DM	55	0	55	0	0	0	PFOS WATER: 375.00 P, 55.00 G
D27590	11	1	EA0325	DM	55	0	55	0	0	0	PFOS WATER: 375.00 P, 55.00 G
D27590	12	1	EA0325	DM	55	0	55	0	0	0	PFOS WATER: 375.00 P, 55.00 G
Totals:						0	660	0	0	0	



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 142651AA
DATE OF DISPOSAL/RECYCLE: FEB-11-2020

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER	12	DM	4500	P

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: **PLB**

SIGNATURE: Patricia L. Beasley

DATE: FEB 11 2020

*** IN CASE OF EMERGENCY CALL 800-899-4672 ***

142851-KC

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677	Manifest Document No. 142851BB	2. Page 1 of 1
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		
4. Generator's Phone (907) 474-2582				
5. Transporter 1 Company Name NRC ALASKA LLC	6. US EPA ID Number AKR000004184	A. State Transporter's ID		
		B. Transporter 1 Phone 907-258-1558		
7. Transporter 2 Company Name	8. US EPA ID Number	C. State Transporter's ID		
		D. Transporter 2 Phone		
9. Designated Facility Name and Site Address NRC ALASKA (Moose Creek) 3520 OLD RICHARDSON HWY NORTH POLE, AK 99705	10. US EPA ID Number AKR000207936	E. State Facility's ID		
		F. Facility's Phone		
11. WASTE DESCRIPTION		Containers	13. Total Quantity	14. Unit Wt./Vol.
		No.	Type	
Material Not Regulated by DOT		2	DM	800 P
G. Additional Descriptions for Materials Listed Above		H. Handling Codes for Wastes Listed Above		
1) MCF0008 PFOS CONTAMINATED SOIL FOR THERMAL TREATMENT		D27582		
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation				
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.				
Printed/Typed Name <i>Katrina LeMieux</i>		Signature <i>Katrina LeMieux</i>	Date Month Day Year 12 | 16 | 19	
17. Transporter 1 Acknowledgement of Receipt of Materials		Date		
Printed/Typed Name <i>Kimberly Curtiss</i>		Signature <i>Kimberly Curtiss</i>	Month Day Year 12 | 16 | 19	
18. Transporter 2 Acknowledgement of Receipt of Materials		Date		
Printed/Typed Name		Signature	Month Day Year	
19. Discrepancy Indication Space				
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.				
Printed/Typed Name <i>Matt Sanford</i>		Signature <i>Matt Sanford</i>	Date Month Day Year 12 | 23 | 19	

NON-HAZARDOUS WASTE GENERATOR



**ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SPILL PREVENTION AND RESPONSE
Contaminated Sites and Prevention and Emergency Response Programs
Transport, Treatment, & Disposal Approval Form for Contaminated Media**

DEC HAZARD/SPILL ID #	NAME OF SPILL OR CONTAMINATED SITE		
1071	FIA - Fire Training Pit		
SITE OR SPILL LOCATION			
Southwest portion of Fairbanks International Airport: 64.799169 degrees, -147.880750 degrees			
CURRENT LOCATION AND TYPE OF CONTAMINATED MEDIA		SOURCE OF THE CONTAMINATION	
Soil cuttings from groundwater monitoring well installation		Fire training activities	
COMPOUNDS OF CONCERN	ESTIMATED VOLUME	DATE(S) GENERATED	
PFOS, PFOA	55 gallons	10/1 to 10/3/19	
POST TREATMENT ANALYSIS REQUIRED (such as GRO, DRO, RRO, BTEX, and/or Chlorinated Solvents)			
18 PFAS by EPA 537.1 modified. List includes PFOS and PFOA for comparison to ADEC soil-cleanup levels.			
COMMENTS			
Waste characterization soil sample results are pending			

Facility Accepting the Contaminated Media

NAME OF THE FACILITY	PHYSICAL ADDRESS/PHONE NUMBER
NRC Thermal Treatment Facility (formerly OIT)	2355 Richardson Highway, North Pole, Alaska 99705

Responsible Party and Contractor Information

BUSINESS/NAME	ADDRESS/PHONE NUMBER
Dan Strucher, Senior Project Manager	(907) 646-5050
NRC Alaska, LLC	619 East Ship Creek Avenue, Suite No. 309, Anchorage, Alaska 99501

Marcy Nadel

Name of the Person Requesting Approval (printed)

Signature

Project Manager, Shannon & Wilson, Inc.

Title/Association

10/21/19

Date

(907) 458-3150

Phone Number

-----DEC USE ONLY-----

Based on the information provided, ADEC approves transport of the above-described media for treatment in accordance with the approved facility operations plan. The Responsible Party or their consultant must submit to the DEC Project Manager a copy of weight/volume receipts of the loads transported to the facility and a post treatment analytical report. If the media is contaminated soil, it shall be transported as a covered load in compliance with 18 AAC 60.015.

Robert A. Burgess

DEC Project Manager Name (printed)

Signature

Digitally signed by Robert Burgess
Date: 2019.10.21 16:55:25 -08'00'

EPS IV

Project Manager Title

10/21/19

Date

451-2153

Phone Number



CERTIFICATE OF TREATMENT

Client:	PROJECT SITE:
Fairbanks International Airport Fire Training Pit Fairbanks, Alaska 99709	Fire Training Pit

WASTE DESCRIPTION:
NRC Project # 142651 Moose Creek File # 19-043-D-P-NRC
(2) Drums of PFOS contaminated soil from Fire Training Pit for Fairbanks International Airport.
See attached Weight Summary Report for individual load details.
In accordance with NRC Alaska's State approved facility operation plan and bonding requirements of 18 ACC 75.365, these soils are to be co-mingled with other solids and thermally treated unless otherwise specified.

I certify, on behalf of NRC Alaska LLC, the above described waste was managed in compliance with all applicable state and federal laws, regulations, permits and licenses.

Mark W. Sanford, Operations Manager
Name & Title


Signature

12-24-2019
Date

EXCELLENCE IN ENVIRONMENTAL & EMERGENCY SOLUTIONS

NRC Alaska Thermal Treatment Facility • 4822 Give-A-Way Street • North Pole, Alaska 99707 • +1907 488 4899
www.nrcc.com

CERTIFICATE OF WEIGHT

Contracting Capabilities for Organic Incineration Technologies

NRC ALASKA	NRC/OIT, Inc.	00596
	P.O. Box 55878	
	North Pole, Alaska 99705	
	(907)488-4899 Fax(907)488-4823	

Shipper NRC Contract 19-043-D-P-NRC
Carrier NRC Commodity PFOS Drums
W/B No. _____ Truck No. _____
Origin _____ Destination OIT
Driver ON OFF

2 Drums

10:28 12 23 19
000 10
38894 OH
28740 LB

10:51 12 23 19
000 10
38894 OH
25540 LB

Driver's Signature: *Wayne McDeBrie*
Public Scale Certified and Inspected by _____ Alaska Depart- _____

NON-HAZARDOUS WASTE MANIFEST

142651-KC

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677		Manifest Document No. 142651A	2. Page 1 of 1																													
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		4020 142651-KC																														
4. Generator's Phone (907) 474-2582																																		
5. Transporter 1 Company Name NRC ALASKA LLC	6. US EPA ID Number AKR000004184	A. State Transporter's ID		B. Transporter 1 Phone 907-258-1558																														
7. Transporter 2 Company Name	8. US EPA ID Number	C. State Transporter's ID		D. Transporter 2 Phone																														
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501		10. US EPA ID Number AKR000004184		E. State Facility's ID																														
				F. Facility's Phone 907-258-1558																														
11. WASTE DESCRIPTION			Containers		13. Total Quantity																													
			No.	Type																														
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 5%;">HM</td> <td style="width: 5%;">X</td> <td style="width: 65%;">NA1993, Diesel Fuel, 3, PGIII ERG#128</td> <td style="width: 10%;">1</td> <td style="width: 10%;">TT</td> <td style="width: 5%;">175</td> <td style="width: 5%;">G</td> </tr> <tr> <td>b.</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>c.</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>d.</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>			HM	X	NA1993, Diesel Fuel, 3, PGIII ERG#128	1	TT	175	G	b.							c.							d.										
HM	X	NA1993, Diesel Fuel, 3, PGIII ERG#128	1	TT	175	G																												
b.																																		
c.																																		
d.																																		
G. Additional Descriptions for Materials Listed Above 1) EA0202 DIESEL FUEL			H. Handling Codes for Wastes Listed Above D26707																															
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation																																		
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.																																		
Printed/Typed Name x Dillon Hillis				Signature <i>[Signature]</i>																														
17. Transporter 1 Acknowledgement of Receipt of Materials				Date 9/10/19																														
Printed/Typed Name Brady Steeschler				Signature <i>[Signature]</i>																														
18. Transporter 2 Acknowledgement of Receipt of Materials				Date 9/10/19																														
Printed/Typed Name				Signature																														
19. Discrepancy Indication Space																																		
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19. H050																																		
Printed/Typed Name DARYL GIRARD				Signature <i>[Signature]</i>																														
				Date 09/18/19																														

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 142651A
DATE OF DISPOSAL/RECYCLE: SEP-18-2019

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	DIESEL FUEL	1	TP	175	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: Daryl L. Shepard

SIGNATURE: [Signature]

DATE: 09-18-2019

NON-HAZARDOUS WASTE MANIFEST

PO#91064-6-3401-SV

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKR000004184	Manifest Document No. V20008	2. Page 1 of 1
3. Generator's Name and Mailing Address NRC ALASKA LLC 425 OUTER SPRINGER LOOP RD PALMER, AK 99645		NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501		
4. Generator's Phone (907-258-1558)				
5. Transporter 1 Company Name NRC ALASKA LLC	6. US EPA ID Number AKR000004184	A. State Transporter's ID 907-258-1558		
7. Transporter 2 Company Name		B. Transporter 1 Phone		
8. US EPA ID Number		C. State Transporter's ID		
9. Designated Facility Name and Site Address NRC ALASKA (Moose Creek) 3520 OLD RICHARDSON HWY NORTH POLE, AK 99705		D. Transporter 2 Phone		
10. US EPA ID Number AKR000207936		E. State Facility's ID		
		F. Facility's Phone		

11. WASTE DESCRIPTION	Containers		13. Total Quantity	14. Unit Wt./Vol.
	No.	Type		
a. HM Material Not Regulated by DOT	3	TP	6000	P
b.				
c.				
d.				

12. Additional Descriptions for Materials Listed Above
10 MCF 0007 PECS CONTAMINATED SOLD WASTE S01362

H. Handling Codes for Wastes Listed Above

15. Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation

16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name STEVE VIOTTO	Signature 	Date Month | Day | Year 1 | 30 | 20
---	---------------	--

17. Transporter 1 Acknowledgement of Receipt of Materials		
Printed/Typed Name Eric Coan	Signature 	Date Month | Day | Year 2 | 6 | 20

18. Transporter 2 Acknowledgement of Receipt of Materials		
Printed/Typed Name	Signature	Date Month | Day | Year

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.		
Printed/Typed Name Matt Sanford	Signature 	Date Month | Day | Year 02 | 06 | 2020

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY



NRC PROJECT NUMBER:



CERTIFICATION OF RCRA EXEMPT STATUS

GENERATOR'S NAME: USE/NRC Alaska

SITE NAME: NRC Viking Facility

SITE ADDRESS: 2020 Viking Drive

CITY: Anchorage STATE AK ZIP 99501

Generator, or legally authorized representative (Consultant/Advisor), hereby certifies that material presented to NRC Alaska for treatment from the above referenced site is RCRA (Resource Conservation and Recovery Act) exempt waste and does not meet the definition of hazardous waste under the applicable code of Federal and State Regulations.

Generator, or legally authorized representative (Consultant/Advisor), further agree to indemnify NRC Alaska LLC. for any liability that may be incurred as a result of the material presented for treatment being classified as a RCRA hazardous waste, including but not limited to Indemnification for cost of proper disposal and any fines or penalties imposed by any local, State, or Federal agencies.

Signature of generator or legally authorized representative is required.

Steve Vlotto

Generator Representative Name

Generator Representative Signature

Consultant/Advisor Name

Consultant Advisor Signature

Transportation Coordinator

Title

Title

2020 Viking Drive

Mailing Address

Mailing Address

Anchorage, AK 99501

City/State/Zip Code

City/State/Zip Code

907-250-5161

Phone Number

Phone Number

1/24/2019

Date

Date

EXCELLENCE IN ENVIRONMENTAL & EMERGENCY SOLUTIONS

NRC Alaska Thermal Treatment Facility • 1315 Queens Way • Fairbanks, Alaska 99701 • +1907 488 4899
www.nrcc.com



WASTE INFORMATION

VOLUME OF MATERIAL & CONTAINMENT

				3(275 Gal Totes)
TONS	CY BAGS	DRUMS	GALLONS	OTHER (describe)

GENERAL DESCRIPTION OF WASTE

Date Generated: 01/24/2020 Date of Spill (if applicable) _____

Location of material: Viking Facility

Source of contamination: Centrifuge Operations
(U.S.T., Surface Spill, Routine Maintenance, etc.)

Description of material: Solidified Algae containing PFOS/PFOA
(gravel, soil, sand, silt, shop rags, floor dry, sludge, etc.)

Physical Composition:

- Dry soil, less than 5% organics Dry soil, greater than 5% organics % Fines _____ % Debris _____
 Moist soil, no free liquids Wet soil, with free liquids Soft loose mud/sludge

Test results provided? If yes, check test performed and attach laboratory results.

- DRO RRO GRO BTEX VOCs SVOCs RCRA Metals Other PFOS 6

Is ADEC approval for removal and transportation of soils related to an ADEC approved cleanup plan, or a site overseen by ADEC spill response program required? YES NO

Does the material contain or is it mixed with a listed hazardous waste as described in 40 CFR 261 Subpart D (40 CFR 261.31-33)? YES NO

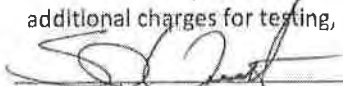
If claiming a specific RCRA exemption, please cite exemption. _____

Provide a brief description of the site history related to contaminated materials. _____

Generated from centrifuging algae contaminated water containing PFOS

Comments: See attached ALS analysis K1911395

I hereby certify that all information provided, and all attached documents are complete, accurate, and disclose all known or suspected hazards. I acknowledge that if the material varies from the information provided herein, additional charges for testing, handling, treatment, surcharges or other fees may be imposed.


Authorized Signature

Transportation Coordinator 01/24/2020
Title Date

EXCELLENCE IN ENVIRONMENTAL & EMERGENCY SOLUTIONS



APPROVED MATERIAL DROP-OFF RELEASE

NRC Project No.: _____ Facility ID: Moose Creek Facility Date: 01/24/2020

Customer Name: USE/NRC Alaska

Generator Name: NRC Alaska - Viking Facility

Type of Material: PFOS Algae Floc

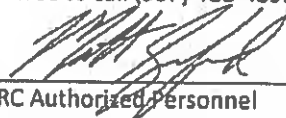
Transporter: NRC Alaska

Expected Amount: 3 totes Amount Delivered: _____

Expected Delivery Date: _____ Date Delivered: _____

Comments:
Will come in 3 (275 Gal Totes)



Feel free to call (907) 488-4899 if you have any questions.



 NRC Authorized Personnel

01/24/2020

 Date

FACILITY PERSONNEL ONLY	
<i>Complete if material was received in drums.</i>	
How many drums were received?	_____
Any overpacks? <input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, how many? _____
Were any drums dented? <input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, how many? _____
Were any drums sealed? <input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, how many? _____
How many empty drums were received?	_____
 Customer/Transporter Signature	<u>2/6/20</u> Date
 Signature of NRC Employee Accepting Material	<u>02/06/2020</u> Date





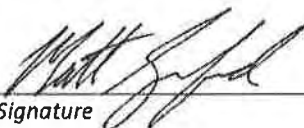
CERTIFICATE OF TREATMENT

Client: USE/NRC Alaska 2020 Viking Drive Anchorage, AK 99501	PROJECT SITE: Viking Facility
--	---

WASTE DESCRIPTION: Job Number: 91062-SW20-009 Manifest Number: V20008 Material: 3 totes of PFOS/PFOA Algae Floc for USE/NRC Alaska from the Viking Facility See attached Weight Summary Report for individual load details. In accordance with NRC Alaska's State approved facility operation plan and bonding requirements of 18 ACC 75.365, these soils are to be co-mingled with other solids and thermally treated unless otherwise specified.
--

I certify, on behalf of NRC Alaska LLC, the above described waste was managed in compliance with all applicable state and federal laws, regulations, permits and licenses.

Matt Q. Sanford, *Project Manager*
Name & Title


Signature

02/07/2020
Date

EXCELLENCE IN ENVIRONMENTAL & EMERGENCY SOLUTIONS

NRC Alaska Thermal Treatment Facility • 4822 GIVE-A-WAY STREET • NORTH POLE, ALASKA 99707 • +1907 488 4899
www.nrcc.com

CERTIFICATE OF WEIGHT

Contracting Capabilities for Organic Incineration Technologies

NRC
ALASKA

NRC/OIT, Inc.
P.O. Box 55878
North Pole, Alaska 99705
(907)488-4899 Fax(907)488-4823

00813

Shipper NRC Contract 91062-SW20-009
Carrier NRC Commodity PFOS Totes
WB No. _____ Truck No. 176
Origin _____ Destination MCF
Driver ON OFF

3 Totes

10:57A 2-06-20

000 10

34030 GN

17360 LB

Driver's Signature: _____

Public Scale Certified and Inspected by

Alaska Depart-

NON-HAZARDOUS WASTE MANIFEST

156409-KC

7004

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677		Manifest Document No. 156409A	2. Page 1 of 1
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709			
4. Generator's Phone (907) 474-2582					
5. Transporter 1 Company Name NRC ALASKA LLC		6. US EPA ID Number AKR000004184		A. State Transporter's ID	
				B. Transporter 1 Phone 907-258-1558	
7. Transporter 2 Company Name		8. US EPA ID Number		C. State Transporter's ID	
				D. Transporter 2 Phone	
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501		10. US EPA ID Number AKR000004184		E. State Facility's ID	
				F. Facility's Phone 907-258-1558	
11. WASTE DESCRIPTION			Containers		13. Total Quantity
			No.	Type	14. Unit Wt./Vol.
a. <input checked="" type="checkbox"/> Material Not Regulated by DOT			1	TT	2.231 G
b.					
c.					
d.					
G. Additional Descriptions for Materials Listed Above			H. Handling Codes for Wastes Listed Above		
1) EA0325 PFOS/PFOA CONTAMINATED WASTEWATER			D02174		
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation					
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.					
Printed/Typed Name		Signature		Date	
Theresa L. Harvey		Theresa L. Harvey		9 | 17 | 2020	
17. Transporter 1 Acknowledgement of Receipt of Materials		Signature		Date	
DONALD HICKS		[Signature]		09 | 18 | 2020	
18. Transporter 2 Acknowledgement of Receipt of Materials		Signature		Date	
19. Discrepancy Indication Space					
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.					
Printed/Typed Name		Signature		Date	
Patricia L. Beasley		Patricia L. Beasley		09 | 23 | 2020	

NON-HAZARDOUS WASTE GENERATOR



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 156409A
DATE OF DISPOSAL/RECYCLE: SEP-23-2020

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER	1	TT	2231	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: **PLB**

SIGNATURE: Patricia L Beasley

DATE: SEP 23 2020

NON-HAZARDOUS WASTE MANIFEST

156409-KC

7004

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677		Manifest Document No. 156409B	2. Page 1 of 1																																					
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709																																								
4. Generator's Phone (907) 474-2582																																										
5. Transporter 1 Company Name NRC ALASKA LLC		6. US EPA ID Number AKR000004184		A. State Transporter's ID																																						
				B. Transporter 1 Phone 907-258-1558																																						
7. Transporter 2 Company Name		8. US EPA ID Number		C. State Transporter's ID																																						
				D. Transporter 2 Phone																																						
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501		10. US EPA ID Number AKR000004184		E. State Facility's ID																																						
				F. Facility's Phone 907-258-1558																																						
11. WASTE DESCRIPTION			Containers		13. Total Quantity	14. Unit Wt./Vol.																																				
			No.	Type																																						
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:5%; text-align: center;">HM</td> <td style="width:5%; text-align: center;">a</td> <td style="width:5%; text-align: center;">X</td> <td colspan="2">Material Not Regulated by DOT</td> <td style="width:5%; text-align: center;">1</td> <td style="width:5%; text-align: center;">TT</td> <td style="width:10%; text-align: center;">1,312</td> <td style="width:5%; text-align: center;">G</td> </tr> <tr> <td></td> <td>b</td> <td></td> <td colspan="2"></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>c</td> <td></td> <td colspan="2"></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>d</td> <td></td> <td colspan="2"></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>			HM	a	X	Material Not Regulated by DOT		1	TT	1,312	G		b									c									d											
HM	a	X	Material Not Regulated by DOT		1	TT	1,312	G																																		
	b																																									
	c																																									
	d																																									
G. Additional Descriptions for Materials Listed Above 1) EA0325 PFOS/PFOA CONTAMINATED WASTEWATER				H. Handling Codes for Wastes Listed Above D02188																																						
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation																																										
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.																																										
Printed/Typed Name <i>Theresa L. Harvey</i>				Signature <i>Theresa L. Harvey</i>		Date Month Day Year 9 17 2020																																				
17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name <i>Dennis Adams</i>				Signature <i>Dennis Adams</i>		Date Month Day Year 09 18 2020																																				
18. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name				Signature		Date Month Day Year																																				
19. Discrepancy Indication Space																																										
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.				Signature <i>Patricia L. Beasley</i>		Date Month Day Year 09 23 20																																				
Printed/Typed Name <i>Patricia L. Beasley</i>				Signature <i>Patricia L. Beasley</i>		Date Month Day Year 09 23 20																																				

NON-HAZARDOUS WASTE GENERATOR

TRANSPORTER FACILITY



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 156409B
DATE OF DISPOSAL/RECYCLE: SEP-23-2020

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER	1	TT	1312	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: **PLB** _____

SIGNATURE: Daniel J Beasley DATE: SEP 23 2020

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677	Manifest Document No. 156409C	2. Page 1 of 1
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		
4. Generator's Phone (907) 474-2582		#3003T		
5. Transporter 1 Company Name NRC ALASKA LLC	6. US EPA ID Number AKR000004184	A. State Transporter's ID		
7. Transporter 2 Company Name	8. US EPA ID Number	B. Transporter 1 Phone 907-258-1558		
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501	10. US EPA ID Number AKR000004184	C. State Transporter's ID		
		D. Transporter 2 Phone		
		E. State Facility's ID		
		F. Facility's Phone 907-258-1558		
11. WASTE DESCRIPTION		Containers	13. Total Quantity	14. Unit WL/Vol.
		No.	Type	
a. X Material Not Regulated by DOT		1	TT	1801
b.				G
c.				
d.				
---G. Additional Descriptions for Materials Listed Above		H. Handling Codes for Wastes Listed Above		
1) EA0325 PFOS/PFOA CONTAMINATED WASTEWATER		D02189		
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation				
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.				
Printed/Typed Name		Signature	Date	
Theresa H Harvey		<i>Theresa H Harvey</i>	Month Day Year 9/17/2020	
17. Transporter 1 Acknowledgement of Receipt of Materials		Date		
Printed/Typed Name		Signature	Month Day Year	
Bret Lang		<i>Bret Lang</i>	9/22/20	
18. Transporter 2 Acknowledgement of Receipt of Materials		Date		
Printed/Typed Name		Signature	Month Day Year	
19. Discrepancy Indication Space				
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.				
Printed/Typed Name		Signature	Date	
Noises Aragana		<i>Noises Aragana</i>	09/28/20	

NON-HAZARDOUS WASTE GENERATOR



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 156409C
DATE OF DISPOSAL/RECYCLE: SEP-28-2020

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER	1	TT	1801	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: Morisee Aragona

SIGNATURE: _____ DATE: SEP 28 2020

NON-HAZARDOUS WASTE MANIFEST

156409-KC

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677	Manifest Document No. 156409D	2. Page 1 of 1
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709 #3005T		
4. Generator's Phone (907) 474-2582				
5. Transporter 1 Company Name NRC ALASKA LLC	6. US EPA ID Number AKR000004184	A. State Transporter's ID		
7. Transporter 2 Company Name		B. Transporter 1 Phone 907-258-1558		
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501		8. US EPA ID Number AKR000004184	C. State Transporter's ID	
		D. Transporter 2 Phone		
		E. State Facility's ID		
		F. Facility's Phone 907-258-1558		
11. WASTE DESCRIPTION		Containers	13. Total Quantity	14. Unit Wt./Vol.
		No.	Type	
a. X Material Not Regulated by DOT		1	TT	1427 G
b.				
c.				
d.				
G. Additional Descriptions for Materials Listed Above		H. Handling Codes for Wastes Listed Above		
1) EA0325 PFOS/PFOA CONTAMINATED WASTEWATER		D32190		
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation				
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.				
Printed/Typed Name Theresa H. Harvey		Signature <i>Theresa H. Harvey</i>	Date Month Day Year 9/17/2020	
17. Transporter 1 Acknowledgement of Receipt of Materials		Date		
Printed/Typed Name Bret Lang		Signature <i>Bret Lang</i>	Month Day Year 9/22/20	
18. Transporter 2 Acknowledgement of Receipt of Materials		Date		
Printed/Typed Name		Signature	Month Day Year	
19. Discrepancy Indication Space				
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.				
Printed/Typed Name Noises Anagana		Signature <i>Noises Anagana</i>	Date Month Day Year 09/28/20	

NON-HAZARDOUS WASTE GENERATOR



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 156409D
DATE OF DISPOSAL/RECYCLE: SEP-28-2020

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER	1	TT	1427	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: Moises Aragona

SIGNATURE: _____ DATE: SEP 28 2020

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677		Manifest Document No. 156409E	2. Page 1 of 1																																	
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		#3005T																																		
4. Generator's Phone (907) 474-2582																																						
5. Transporter 1 Company Name NRC ALASKA LLC		6. US EPA ID Number AKR000004184		A. State Transporter's ID																																		
				B. Transporter 1 Phone 907-258-1558																																		
7. Transporter 2 Company Name		8. US EPA ID Number		C. State Transporter's ID																																		
				D. Transporter 2 Phone																																		
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501		10. US EPA ID Number AKR000004184		E. State Facility's ID																																		
				F. Facility's Phone 907-258-1558																																		
11. WASTE DESCRIPTION			Containers		13. Total Quantity	14. Unit Wt./Vol.																																
			No.	Type																																		
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 5%; text-align: center;">HM</td> <td style="width: 5%; text-align: center;">a</td> <td style="width: 5%; text-align: center;">X</td> <td style="width: 85%;">Material Not Regulated by DOT</td> <td style="width: 5%; text-align: center;">1</td> <td style="width: 5%; text-align: center;">TT</td> <td style="width: 10%; text-align: center;">1252</td> <td style="width: 5%; text-align: center;">G</td> </tr> <tr> <td></td> <td>b</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>c</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>d</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>			HM	a	X	Material Not Regulated by DOT	1	TT	1252	G		b								c								d										
HM	a	X	Material Not Regulated by DOT	1	TT	1252	G																															
	b																																					
	c																																					
	d																																					
--G. Additional Descriptions for Materials Listed Above 1) EA0325 PFOS/PFOA CONTAMINATED WASTEWATER			H. Handling Codes for Wastes Listed Above D02192																																			
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation																																						
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.																																						
Printed/Typed Name				Date																																		
Theresa W. Harvey				9 17 2020																																		
Signature																																						
<i>Theresa W. Harvey</i>																																						
17. Transporter 1 Acknowledgement of Receipt of Materials				Date																																		
Printed/Typed Name				Month Day Year																																		
Bret Lang				9 23 20																																		
Signature																																						
<i>Bret Lang</i>																																						
18. Transporter 2 Acknowledgement of Receipt of Materials				Date																																		
Printed/Typed Name				Month Day Year																																		
Signature																																						
19. Discrepancy Indication Space																																						
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.				Date																																		
Printed/Typed Name				Month Day Year																																		
Moises Arregana				09 28 20																																		
Signature																																						
<i>Moises Arregana</i>																																						

NON-HAZARDOUS WASTE GENERATOR



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 156409E
DATE OF DISPOSAL/RECYCLE: SEP-28-2020

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER	1	TT	1252	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: Moises Aragon

SIGNATURE: _____ DATE: SEP 28 2020

NON-HAZARDOUS WASTE MANIFEST

156409-KC

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677	Manifest Document No. 156409F	2. Page 1 of 1
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		#3003T
4. Generator's Phone (907) 474-2582				
5. Transporter 1 Company Name NRC ALASKA LLC	6. US EPA ID Number AKR000004184	A. State Transporter's ID		
7. Transporter 2 Company Name		B. Transporter 1 Phone 907-258-1558		
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501		8. US EPA ID Number AKR000004184	C. State Transporter's ID	
		D. Transporter 2 Phone		
		E. State Facility's ID		
		F. Facility's Phone 907-258-1558		
11. WASTE DESCRIPTION		Containers No. | Type	13. Total Quantity	14. Unit Wt./Vol.
a. <input checked="" type="checkbox"/> Material Not Regulated by DOT		1 | TT	1076	G
b.				
c.				
d.				
G. Additional Descriptions for Materials Listed Above 1) EA0325 PFOS/PFOA CONTAMINATED WASTEWATER		H. Handling Codes for Wastes Listed Above D02193		
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation				
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.				
Printed/Typed Name Theresa H. Harvey		Signature <i>Theresa Harvey</i>	Date Month Day Year 9 | 17 | 2020	
17. Transporter 1 Acknowledgement of Receipt of Materials		Date		
Printed/Typed Name Bret Lang		Signature <i>Bret Lang</i>	Date Month Day Year 9 | 23 | 20	
18. Transporter 2 Acknowledgement of Receipt of Materials		Date		
Printed/Typed Name		Signature	Date Month Day Year	
19. Discrepancy Indication Space				
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.				
Printed/Typed Name Noel Aragona		Signature <i>Noel Aragona</i>	Date Month Day Year 09 | 28 | 20	

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 156409F
DATE OF DISPOSAL/RECYCLE: SEP-28-2020

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER	1	TT	1076	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: Noises Aragona

SIGNATURE: _____ DATE: SEP 28 2020

NON-HAZARDOUS WASTE MANIFEST

156409-KC

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677		Manifest Document No. 156409G	2. Page 1 of 1					
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		#3003T						
4. Generator's Phone ((907) 474-2582										
5. Transporter 1 Company Name NRC ALASKA LLC		6. US EPA ID Number AKR000004184		A. State Transporter's ID						
7. Transporter 2 Company Name		8. US EPA ID Number		B. Transporter 1 Phone 907-258-1558						
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501		10. US EPA ID Number AKR000004184		C. State Transporter's ID						
				D. Transporter 2 Phone						
				E. State Facility's ID						
				F. Facility's Phone 907-258-1558						
11. WASTE DESCRIPTION			Containers		13. Total Quantity					
			No.	Type	14. Unit Wt./Vol.					
a. <input checked="" type="checkbox"/> Material Not Regulated by DOT b. c. d. e. f. g. h. i. j. k. l. m. n. o. p. q. r. s. t. u. v. w. x. y. z. aa. ab. ac. ad. ae. af. ag. ah. ai. aj. ak. al. am. an. ao. ap. aq. ar. as. at. au. av. aw. ax. ay. az. ba. bb. bc. bd. be. bf. bg. bh. bi. bj. bk. bl. bm. bn. bo. bp. bq. br. bs. bt. bu. bv. bw. bx. by. bz. ca. cb. cc. cd. ce. cf. cg. ch. ci. cj. ck. cl. cm. cn. co. cp. cq. cr. cs. ct. cu. cv. cw. cx. cy. cz. da. db. dc. dd. de. df. dg. dh. di. dj. dk. dl. dm. dn. do. dp. dq. dr. ds. dt. du. dv. dw. dx. dy. dz. ea. eb. ec. ed. ee. ef. eg. eh. ei. ej. ek. el. em. en. eo. ep. eq. er. es. et. eu. ev. ew. ex. ey. ez. fa. fb. fc. fd. fe. ff. fg. fh. fi. fj. fk. fl. fm. fn. fo. fp. fq. fr. fs. ft. fu. fv. fw. fx. fy. fz. ga. gb. gc. gd. ge. gf. gg. gh. gi. gj. gk. gl. gm. gn. go. gp. gq. gr. gs. gt. gu. gv. gw. gx. gy. gz. ha. hb. hc. hd. he. hf. hg. hi. hj. hk. hl. hm. hn. ho. hp. hq. hr. hs. ht. hu. hv. hw. hx. hy. hz. ia. ib. ic. id. ie. if. ig. ih. ii. ij. ik. il. im. in. io. ip. iq. ir. is. it. iu. iv. iw. ix. iy. iz. ja. jb. jc. jd. je. jf. jg. jh. ji. jj. jk. jl. jm. jn. jo. jp. jq. jr. js. jt. ju. jv. jw. jx. jy. jz. ka. kb. kc. kd. ke. kf. kg. kh. ki. kj. kl. km. kn. ko. kp. kq. kr. ks. kt. ku. kv. kw. kx. ky. kz. la. lb. lc. ld. le. lf. lg. lh. li. lj. lk. ll. lm. ln. lo. lp. lq. lr. ls. lt. lu. lv. lw. lx. ly. lz. ma. mb. mc. md. me. mf. mg. mh. mi. mj. mk. ml. mm. mn. mo. mp. mq. mr. ms. mt. mu. mv. mw. mx. my. mz. na. nb. nc. nd. ne. nf. ng. nh. ni. nj. nk. nl. nm. nn. no. np. nq. nr. ns. nt. nu. nv. nw. nx. ny. nz. oa. ob. oc. od. oe. of. og. oh. oi. oj. ok. ol. om. on. oo. op. oq. or. os. ot. ou. ov. ow. ox. oy. oz. pa. pb. pc. pd. pe. pf. pg. ph. pi. pj. pk. pl. pm. pn. po. pp. pq. pr. ps. pt. pu. pv. pw. px. py. pz. qa. qb. qc. qd. qe. qf. qg. qh. qi. qj. qk. ql. qm. qn. qo. qp. qq. qr. qs. qt. qu. qv. qw. qx. qy. qz. ra. rb. rc. rd. re. rf. rg. rh. ri. rj. rk. rl. rm. rn. ro. rp. rq. rr. rs. rt. ru. rv. rw. rx. ry. rz. sa. sb. sc. sd. se. sf. sg. sh. si. sj. sk. sl. sm. sn. so. sp. sq. sr. ss. st. su. sv. sw. sx. sy. sz. ta. tb. tc. td. te. tf. tg. th. ti. tj. tk. tl. tm. tn. to. tp. tq. tr. ts. tu. tv. tw. tx. ty. tz. ua. ub. uc. ud. ue. uf. ug. uh. ui. uj. uk. ul. um. un. uo. up. uq. ur. us. ut. uu. uv. uw. ux. uy. uz. va. vb. vc. vd. ve. vf. vg. vh. vi. vj. vk. vl. vm. vn. vo. vp. vq. vr. vs. vt. vu. vv. vw. vx. vy. vz. wa. wb. wc. wd. we. wf. wg. wh. wi. wj. wk. wl. wm. wn. wo. wp. wq. wr. ws. wt. wu. wv. ww. wx. wy. wz. xa. xb. xc. xd. xe. xf. xg. xh. xi. xj. xk. xl. xm. xn. xo. xp. xq. xr. xs. xt. xu. xv. xw. xx. xy. xz. ya. yb. yc. yd. ye. yf. yg. yh. yi. yj. yk. yl. ym. yn. yo. yp. yq. yr. ys. yt. yu. yv. yw. yx. yy. yz. za. zb. zc. zd. ze. zf. zg. zh. zi. zj. zk. zl. zm. zn. zo. zp. zq. zr. zs. zt. zu. zv. zw. zx. zy. zz.			1		TT		1372		G	
G. Additional Descriptions for Materials Listed Above			H. Handling Codes for Wastes Listed Above							
1) EA0325 PFOS/PFOA CONTAMINATED WASTEWATER			D02194							
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation										
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.										
Printed/Typed Name Theresa H. Harvey				Signature <i>Theresa H. Harvey</i>						
17. Transporter 1 Acknowledgement of Receipt of Materials				Date 9/17/2020						
Printed/Typed Name Bret Lang				Signature <i>Bret Lang</i>						
18. Transporter 2 Acknowledgement of Receipt of Materials				Date 9/23/20						
Printed/Typed Name				Signature						
19. Discrepancy Indication Space				Date						
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19. H135				Date 09/28/20						
Printed/Typed Name Moises Aragona				Signature <i>Moises Aragona</i>						

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 156409G
DATE OF DISPOSAL/RECYCLE: SEP-28-2020

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER	1	TT	1372	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: Noises Aragona

SIGNATURE: _____ DATE: SEP 28 2020

NON-HAZARDOUS WASTE MANIFEST

156409-KC

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677		Manifest Document No. 156409H	2. Page 1 of 1																																	
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		3003																																		
4. Generator's Phone (907) 474-2582																																						
5. Transporter 1 Company Name NRC ALASKA LLC		6. US EPA ID Number AKR000004184		A. State Transporter's ID																																		
				B. Transporter 1 Phone 907-258-1558																																		
7. Transporter 2 Company Name <i>NRC Alaska Llc</i>		8. US EPA ID Number <i>AKR000004184</i>		C. State Transporter's ID																																		
				D. Transporter 2 Phone <i>907-258-1558</i>																																		
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501		10. US EPA ID Number AKR000004184		E. State Facility's ID																																		
				F. Facility's Phone 907-258-1558																																		
11. WASTE DESCRIPTION			Containers		13. Total Quantity	14. Unit Wt./Vol.																																
			No.	Type																																		
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 5%; text-align: center;">11M</td> <td style="width: 5%; text-align: center;">a</td> <td style="width: 5%; text-align: center;">X</td> <td style="width: 75%;">Material Not Regulated by DOT</td> <td style="width: 5%; text-align: center;">1</td> <td style="width: 5%; text-align: center;">TT</td> <td style="width: 10%; text-align: center; font-size: 1.5em;">1312</td> <td style="width: 5%; text-align: center;">G</td> </tr> <tr> <td></td> <td>b</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>c</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>d</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>			11M	a	X	Material Not Regulated by DOT	1	TT	1312	G		b								c								d										
11M	a	X	Material Not Regulated by DOT	1	TT	1312	G																															
	b																																					
	c																																					
	d																																					
G. Additional Descriptions for Materials Listed Above 1) EA0325 PFOS/PFOA CONTAMINATED WASTEWATER			H. Handling Codes for Wastes Listed Above D32195																																			
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation																																						
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.																																						
				Date																																		
Printed/Typed Name <i>Theresa H Harvey</i>				Signature <i>Theresa H Harvey</i>		Month Day Year 9 17 2009																																
				Date																																		
Printed/Typed Name Bret Lang				Signature <i>Bret Lang</i>		Month Day Year 9 28 20																																
				Date																																		
Printed/Typed Name <i>Patricia L Beasley</i>				Signature <i>Patricia L Beasley</i>		Month Day Year 10 09 20																																
19. Discrepancy Indication Space																																						
				Date																																		
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.																																						
Printed/Typed Name <i>Patricia L Beasley</i>				Signature <i>Patricia L Beasley</i>		Month Day Year 10 12 20																																

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 156409H
DATE OF DISPOSAL/RECYCLE: OCT-12-2020

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER	1	TT	1312	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: **PLB**

SIGNATURE: *Patricia Beasley*

DATE: **OCT 12 2020**

NON-HAZARDOUS WASTE MANIFEST

156409-KC

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677	Manifest Document No. 156409	2. Page 1 of 1																													
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709																															
4. Generator's Phone (907) 474-2582		3003																															
5. Transporter 1 Company Name NRC ALASKA LLC	6. US EPA ID Number AKR000004184	A. State Transporter's ID																															
		B. Transporter 1 Phone 907-258-1558																															
7. Transporter 2 Company Name <i>NRC Alaska LLC</i>	8. US EPA ID Number <i>AKR000004184</i>	C. State Transporter's ID																															
		D. Transporter 2 Phone <i>907-258-1558</i>																															
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501	10. US EPA ID Number AKR000004184	E. State Facility's ID																															
		F. Facility's Phone 907-258-1558																															
11. WASTE DESCRIPTION		Containers		13. Total Quantity																													
		No.	Type	14. Unit Wt./Vol.																													
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 5%; text-align: center;">HM</td> <td style="width: 5%; text-align: center;">a.</td> <td style="width: 60%;">X Material Not Regulated by DOT</td> <td style="width: 10%; text-align: center;">1</td> <td style="width: 10%; text-align: center;">TT</td> <td style="width: 10%; text-align: center;">1372</td> <td style="width: 10%; text-align: center;">G</td> </tr> <tr> <td></td> <td>b.</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>c.</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>d.</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>		HM	a.	X Material Not Regulated by DOT	1	TT	1372	G		b.							c.							d.									
HM	a.	X Material Not Regulated by DOT	1	TT	1372	G																											
	b.																																
	c.																																
	d.																																
G. Additional Descriptions for Materials Listed Above 1) EA0325 PFOS/PFOA CONTAMINATED WASTEWATER		H. Handling Codes for Wastes Listed Above D32196																															
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation																																	
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.																																	
				Date																													
Printed/Typed Name <i>Theresa H. Harvey</i>		Signature <i>Theresa Harvey</i>		Month Day Year 9 17 2020																													
17. Transporter 1 Acknowledgement of Receipt of Materials				Date																													
Printed/Typed Name <i>Bret Lancy</i>		Signature <i>Bret Lancy</i>		Month Day Year 10 1 20																													
18. Transporter 2 Acknowledgement of Receipt of Materials				Date																													
Printed/Typed Name <i>Patricia L Beasley</i>		Signature <i>Patricia L Beasley</i>		Month Day Year 10 09 20																													
19. Discrepancy Indication Space																																	
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.				Date																													
Printed/Typed Name <i>Patricia L Beasley</i>		Signature <i>Patricia L Beasley</i>		Month Day Year 10 13 20																													

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 1564091
DATE OF DISPOSAL/RECYCLE: OCT-13-2020

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER	1	TT	1372	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: **PLB** _____

SIGNATURE: Peterica Beasley DATE: OCT 13 2020

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677		Manifest Document No. 156409J	2. Page 1 of 1																													
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		3003																														
4. Generator's Phone (907) 474-2582																																		
5. Transporter 1 Company Name NRC ALASKA LLC		6. US EPA ID Number AKR000004184		A. State Transporter's ID																														
				B. Transporter 1 Phone 907-258-1558																														
7. Transporter 2 Company Name NRC Alaska LLC		8. US EPA ID Number AKR000004184		C. State Transporter's ID																														
				D. Transporter 2 Phone 907-258-1558																														
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501		10. US EPA ID Number AKR000004184		E. State Facility's ID																														
				F. Facility's Phone 907-258-1558																														
11. WASTE DESCRIPTION			Containers		13. Total Quantity																													
			No.	Type																														
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:5%; text-align: center;">a</td> <td style="width:5%; text-align: center;"><input checked="" type="checkbox"/></td> <td style="width:70%;">Material Not Regulated by DOT</td> <td style="width:10%; text-align: center;">1</td> <td style="width:10%; text-align: center;">TT</td> <td style="width:10%; text-align: center;">759</td> <td style="width:10%; text-align: center;">G</td> </tr> <tr> <td>b</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>c</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>d</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>			a	<input checked="" type="checkbox"/>	Material Not Regulated by DOT	1	TT	759	G	b							c							d										
a	<input checked="" type="checkbox"/>	Material Not Regulated by DOT	1	TT	759	G																												
b																																		
c																																		
d																																		
G. Additional Descriptions for Materials Listed Above			H. Handling Codes for Wastes Listed Above																															
1) EA0325 PFOS/PFOA CONTAMINATED WASTEWATER			D02197																															
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation																																		
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.																																		
Printed/Typed Name Theresa H Haney				Signature <i>Theresa H Haney</i>																														
17. Transporter 1 Acknowledgement of Receipt of Materials				Date 9 17 2020																														
Printed/Typed Name Bret Lang				Signature <i>Bret Lang</i>																														
18. Transporter 2 Acknowledgement of Receipt of Materials				Date 10 2 20																														
Printed/Typed Name Patricia L Beasley				Signature <i>Patricia L Beasley</i>																														
19. Discrepancy Indication Space				Date 10 09 20																														
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.																																		
Printed/Typed Name Patricia L Beasley				Signature <i>Patricia L Beasley</i>																														
				Date 10 15 20																														

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 156409J
DATE OF DISPOSAL/RECYCLE: OCT-13-2020

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER	1	TT	759	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: PLB

SIGNATURE: *Potterfield Beasley* DATE: OCT 13 2020

NON-HAZARDOUS WASTE MANIFEST

156409-KC

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677	Manifest Document No. 156409K	2. Page 1 of 1
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709 3003		
4. Generator's Phone (907) 474-2582				
5. Transporter 1 Company Name NRC ALASKA LLC	6. US EPA ID Number AKR000004184	A. State Transporter's ID		
		B. Transporter 1 Phone 907-258-1558		
7. Transporter 2 Company Name NRC ALASKA LLC	8. US EPA ID Number AKR000004184	C. State Transporter's ID		
		D. Transporter 2 Phone 907-258-1558		
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501		10. US EPA ID Number AKR000004184		E. State Facility's ID
		F. Facility's Phone 907-258-1558		
11. WASTE DESCRIPTION		Containers No.	Type	13. Total Quantity
a. <input checked="" type="checkbox"/> Material Not Regulated by DOT		1	TT	1076
b.				
c.				
d.				
G. Additional Descriptions for Materials Listed Above 1) EA0325 PFOS/PFOA CONTAMINATED WASTEWATER		H. Handling Codes for Wastes Listed Above D02199		
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation				
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.				
Printed/Typed Name Theresa H. Harvey		Signature <i>Theresa H. Harvey</i>		Date Month Day Year 9 | 17 | 2020
17. Transporter 1 Acknowledgement of Receipt of Materials		Date		
Printed/Typed Name Bret Lang		Signature <i>Bret Lang</i>		Month Day Year 10 | 6 | 20
18. Transporter 2 Acknowledgement of Receipt of Materials		Date		
Printed/Typed Name Patricia L Beasley		Signature <i>Patricia L Beasley</i>		Month Day Year 10 | 09 | 20
19. Discrepancy Indication Space				
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.		Date		
Printed/Typed Name Patricia L Beasley		Signature <i>Patricia L Beasley</i>		Month Day Year 10 | 13 | 20

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 156409K
DATE OF DISPOSAL/RECYCLE: OCT-13-2020

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER	1	TT	1076	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: **PLB**

SIGNATURE: *Patricia J. Beasley*

DATE: OCT 13 2020

NON-HAZARDOUS WASTE MANIFEST

156409-KC

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677		Manifest Document No. 156409M	2. Page 1 of 1
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		3003	
4. Generator's Phone (907) 474-2582					
5. Transporter 1 Company Name NRC ALASKA LLC		6. US EPA ID Number AKR000004184		A. State Transporter's ID	
				B. Transporter 1 Phone 907-258-1558	
7. Transporter 2 Company Name NRC Alaska LLC		8. US EPA ID Number AKR00004184		C. State Transporter's ID	
				D. Transporter 2 Phone 907-258-1558	
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501		10. US EPA ID Number AKR000004184		E. State Facility's ID	
				F. Facility's Phone 907-258-1558	
11. WASTE DESCRIPTION			Containers		13. Total Quantity
			No.	Type	14. Unit Wt./Vol.
<input checked="" type="checkbox"/> Material Not Regulated by DOT			1	TT	1860 G
b.					
c.					
d.					
G. Additional Descriptions for Materials Listed Above			H. Handling Codes for Wastes Listed Above		
1) EA0325 PFOS/PFOA CONTAMINATED WASTEWATER			D92201		
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation					
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.					
Printed/Typed Name Theresa Harvey				Signature <i>Theresa Harvey</i>	
				Date Month Day Year 9 | 17 | 2000	
17. Transporter 1 Acknowledgement of Receipt of Materials					
Printed/Typed Name Bret Lang				Signature <i>Bret Lang</i>	
				Date Month Day Year | |	
18. Transporter 2 Acknowledgement of Receipt of Materials					
Printed/Typed Name Patricio L Beasley				Signature <i>Patricio L Beasley</i>	
				Date Month Day Year 10 | 09 | 20	
19. Discrepancy Indication Space					
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.					
Printed/Typed Name Patricio L Beasley				Signature <i>Patricio L Beasley</i>	
				Date Month Day Year 10 | 13 | 20	

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 156409M
DATE OF DISPOSAL/RECYCLE: OCT-13-2020

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER	1	TT	1860	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: ^{PLB} _____

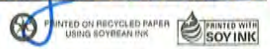
SIGNATURE: Patricia J. Beasley

DATE: OCT 13 2020

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677		Manifest Document No. 156409L		2. Page 1 of 1	
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709 4. Generator's Phone (907) 474-2582				FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		#30021	
5. Transporter 1 Company Name NRC ALASKA LLC		6. US EPA ID Number AKR000004184		A. State Transporter's ID		B. Transporter 1 Phone 907-258-1558	
7. Transporter 2 Company Name		8. US EPA ID Number		C. State Transporter's ID		D. Transporter 2 Phone	
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501				10. US EPA ID Number AKR000004184		E. State Facility's ID	
						F. Facility's Phone 907-258-1558	
11. WASTE DESCRIPTION				Containers		13. Total Quantity	14. Unit Wt./Vol.
				No. Type			
a. <input checked="" type="checkbox"/> Material Not Regulated by DOT				1 TT		958	G
b.							
c.							
d.							
G. Additional Descriptions for Materials Listed Above 1) EA0325 PFOS/PFOA CONTAMINATED WASTEWATER				H. Handling Codes for Wastes Listed Above D32200			
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation							
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.							
Printed/Typed Name Theresa H Harvey				Signature <i>Theresa H Harvey</i>		Date 9/17/2020	
17. Transporter 1 Acknowledgement of Receipt of Materials				Signature <i>Bret Lang</i>		Date 10/5/20	
Printed/Typed Name Bret Lang				Signature		Date	
18. Transporter 2 Acknowledgement of Receipt of Materials				Signature		Date	
Printed/Typed Name				Signature		Date	
19. Discrepancy Indication Space							
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.				Signature <i>Patricia L Beasley</i>		Date 10/29/20	
Printed/Typed Name Patricia L Beasley				Signature		Date	

NON-HAZARDOUS WASTE GENERATOR TRANSPORTER FACILITY





CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 156409L
DATE OF DISPOSAL/RECYCLE: OCT-29-2020

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER	1	TT	958	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: **PLB** _____

SIGNATURE: Patricia Beasley DATE: OCT 29 2020

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677	Manifest Document No. 156409N	2. Page 1 of 1
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		#3002T
4. Generator's Phone (907) 474-2582				
5. Transporter 1 Company Name NRC ALASKA LLC	6. US EPA ID Number AKR000004184	A. State Transporter's ID		
		B. Transporter 1 Phone 907-258-1558		
7. Transporter 2 Company Name	8. US EPA ID Number	C. State Transporter's ID		
		D. Transporter 2 Phone		
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501	10. US EPA ID Number AKR000004184	E. State Facility's ID		
		F. Facility's Phone 907-258-1558		
11. WASTE DESCRIPTION		Containers		13. Total Quantity
		No.	Type	14. Unit Wt./Vol.
a. <input checked="" type="checkbox"/> Material Not Regulated by DOT b. c. d.		1	TT	1312
G. Additional Descriptions for Materials Listed Above		H. Handling Codes for Wastes Listed Above		
1) EA0325 PFOS/PFOA CONTAMINATED WASTEWATER		D02202		
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation				
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.				
Printed/Typed Name		Signature		Date
Theresa Harvey		<i>Theresa Harvey</i>		9 | 17 | 2020
17. Transporter 1 Acknowledgement of Receipt of Materials		Signature		Date
Printed/Typed Name		Signature		Month Day Year
Bret Lang		<i>Bret Lang</i>		10 | 13 | 20
18. Transporter 2 Acknowledgement of Receipt of Materials		Signature		Date
Printed/Typed Name		Signature		Month Day Year
19. Discrepancy Indication Space				
20. Facility Owner or Operator; Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.				
Printed/Typed Name		Signature		Date
Patricia L Beasley		<i>Patricia L Beasley</i>		10 | 29 | 20

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 156409N
DATE OF DISPOSAL/RECYCLE: OCT-29-2020

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER	1	TT	1312	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: PLB

SIGNATURE: Patricia L Beasley DATE: OCT 29 2020

NON-HAZARDOUS WASTE MANIFEST

156409-KC

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677		Manifest Document No. 1564090	2. Page 1 of 1	
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		#30021		
4. Generator's Phone (907) 474-2582						
5. Transporter 1 Company Name NRC ALASKA LLC		6. US EPA ID Number AKR000004184		A. State Transporter's ID		
				B. Transporter 1 Phone 907-258-1558		
7. Transporter 2 Company Name		8. US EPA ID Number		C. State Transporter's ID		
				D. Transporter 2 Phone		
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501		10. US EPA ID Number AKR000004184		E. State Facility's ID		
				F. Facility's Phone 907-258-1558		
11. WASTE DESCRIPTION			Containers		13. Total Quantity	14. Unit Wt./Vol.
			No.	Type		
a. <input checked="" type="checkbox"/> Material Not Regulated by DOT b. <input type="checkbox"/> c. <input type="checkbox"/> d. <input type="checkbox"/>			1	TT	848	G
G. Additional Descriptions for Materials Listed Above 1) EA0325 PFOS/PFOA CONTAMINATED WASTEWATER			H. Handling Codes for Wastes Listed Above D02203			
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation						
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.						
Printed/Typed Name <i>Theresa L. Harvey</i>				Signature <i>Theresa L. Harvey</i>		Date Month Day Year 9/17/2020
17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name <i>Bret Lang</i>				Signature <i>Bret Lang</i>		Date Month Day Year 10/14/20
18. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name				Signature		Date Month Day Year
19. Discrepancy Indication Space						
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19. H135				Signature <i>Patrick W. Beasley</i>		Date Month Day Year 10/29/20

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 1564090
DATE OF DISPOSAL/RECYCLE: OCT-29-2020

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER	1	TT	848	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: PLB

SIGNATURE: Patricia Beasley

DATE: OCT 29 2020

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677	Manifest Document No. 156409P	2. Page 1 of 1
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		
4. Generator's Phone (907) 474-2582				
5. Transporter 1 Company Name NRC ALASKA LLC	6. US EPA ID Number AKR000004184	A. State Transporter's ID		
		B. Transporter 1 Phone 907-258-1558		
7. Transporter 2 Company Name	8. US EPA ID Number	C. State Transporter's ID		
		D. Transporter 2 Phone		
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501		10. US EPA ID Number AKR000004184	E. State Facility's ID	
		F. Facility's Phone 907-258-1558		
11. WASTE DESCRIPTION		Containers	13. Total Quantity	14. Unit Wt./Vol.
		No.	Type	
a. <input checked="" type="checkbox"/> Material Not Regulated by DOT		1	TT	1679 G
b.				
c.				
d.				
G. Additional Descriptions for Materials Listed Above 1) EA0325 PFOS/PFOA CONTAMINATED WASTEWATER		H. Handling Codes for Wastes Listed Above D33114		
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation				
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.				
Printed/Typed Name Susan M. Ault		Signature <i>Susan M. Ault</i>		Date Month Day Year 10 15 20
17. Transporter 1 Acknowledgement of Receipt of Materials		Date		
Printed/Typed Name Bret Lang		Signature <i>Bret Lang</i>		Month Day Year 10 22 20
18. Transporter 2 Acknowledgement of Receipt of Materials		Date		
Printed/Typed Name		Signature		Month Day Year
19. Discrepancy Indication Space				
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.				
Printed/Typed Name Patricia L Beasley		Signature <i>Patricia L Beasley</i>		Date Month Day Year 10 29 20

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 156409P
DATE OF DISPOSAL/RECYCLE: OCT-29-2020

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER	1	TT	1679	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: PLB

SIGNATURE: Patricia J. Brasley DATE: OCT 29 2020

NON-HAZARDOUS WASTE MANIFEST

156409-KC

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677	Manifest Document No. 156409Q	2. Page 1 of 1																														
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709																																
4. Generator's Phone (907) 474-2582		#3002T																																
5. Transporter 1 Company Name NRC ALASKA LLC	6. US EPA ID Number AKR000004184	A. State Transporter's ID																																
7. Transporter 2 Company Name		B. Transporter 1 Phone 907-258-1558																																
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501		C. State Transporter's ID																																
10. US EPA ID Number AKR000004184		D. Transporter 2 Phone																																
11. WASTE DESCRIPTION		E. State Facility's ID																																
		F. Facility's Phone 907-258-1558																																
		G. Additional Descriptions for Materials Listed Above																																
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:5%;">HM</th> <th style="width:65%;">WASTE DESCRIPTION</th> <th style="width:10%;">Containers No.</th> <th style="width:10%;">Type</th> <th style="width:10%;">13. Total Quantity</th> <th style="width:10%;">14. Unit Wt./Vol.</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">X</td> <td>Material Not Regulated by DOT</td> <td style="text-align: center;">1</td> <td style="text-align: center;">TT</td> <td style="text-align: center;">795</td> <td style="text-align: center;">G</td> </tr> <tr> <td style="text-align: center;">b.</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">c.</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">d.</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		HM	WASTE DESCRIPTION	Containers No.	Type	13. Total Quantity	14. Unit Wt./Vol.	X	Material Not Regulated by DOT	1	TT	795	G	b.						c.						d.						H. Handling Codes for Wastes Listed Above D33115		
HM	WASTE DESCRIPTION	Containers No.	Type	13. Total Quantity	14. Unit Wt./Vol.																													
X	Material Not Regulated by DOT	1	TT	795	G																													
b.																																		
c.																																		
d.																																		
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation																																		
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.																																		
Printed/Typed Name Susan M. Ault		Signature <i>Susan M. Ault</i>		Date 10 15 20																														
17. Transporter 1 Acknowledgement of Receipt of Materials		Printed/Typed Name Bret Lang		Date 10 20 20																														
		Signature <i>Bret Lang</i>																																
18. Transporter 2 Acknowledgement of Receipt of Materials		Printed/Typed Name		Date																														
		Signature																																
19. Discrepancy Indication Space																																		
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.																																		
Printed/Typed Name Patricia L Beasley		Signature <i>Patricia L Beasley</i>		Date 10 29 20																														

NON-HAZARDOUS WASTE GENERATOR



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 156409Q
DATE OF DISPOSAL/RECYCLE: OCT-29-2020

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER	1	TT	795	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: **PLB** _____

SIGNATURE: Patrick J Beasley DATE: OCT 29 2020

NON-HAZARDOUS WASTE MANIFEST

156409-KC

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677		Manifest Document No. 156049R		2. Page 1 of 1	
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709				FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709			
4. Generator's Phone (907) 474-2582				#3002T			
5. Transporter 1 Company Name NRC ALASKA LLC		6. US EPA ID Number AKR000004184						A. State Transporter's ID		B. Transporter 1 Phone 907-258-1558
7. Transporter 2 Company Name		8. US EPA ID Number		C. State Transporter's ID		D. Transporter 2 Phone	
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501				10. US EPA ID Number AKR000004184		E. State Facility's ID	
						F. Facility's Phone 907-258-1558	
11. WASTE DESCRIPTION				Containers		13. Total Quantity	14. Unit Wt./Vol.
HM X Material Not Regulated by DOT				No. Type		881	G
b.							
c.							
d.							
G. Additional Descriptions for Materials Listed Above 1) EA0325 PFOS/PFOA CONTAMINATED WASTEWATER				H. Handling Codes for Wastes Listed Above D33116			
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation							
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.							
Printed/Typed Name Susan M. Ault				Signature <i>Susan M. Ault</i>		Date 10 | 15 | 20	
17. Transporter 1 Acknowledgement of Receipt of Materials				Signature <i>Bret Lang</i>		Date 10 | 19 | 20	
Printed/Typed Name Bret Lang				Signature		Date	
18. Transporter 2 Acknowledgement of Receipt of Materials				Signature		Date	
Printed/Typed Name				Signature		Date	
19. Discrepancy Indication Space							
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.				Signature <i>Patricia L Beasley</i>		Date 10 | 29 | 20	
Printed/Typed Name Patricia L Beasley				Signature		Date	

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 156049R
DATE OF DISPOSAL/RECYCLE: OCT-29-2020

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER	1	TT	881	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: PLB

SIGNATURE: Darwin S. Beasley DATE: OCT 29 2020

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677	Manifest Document No. 156409S	2. Page 1 of 1
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		#3002T
4. Generator's Phone (907) 474-2582				
5. Transporter 1 Company Name NRC ALASKA LLC	6. US EPA ID Number AKR000004184	A. State Transporter's ID		
		B. Transporter 1 Phone 907-258-1558		
7. Transporter 2 Company Name	8. US EPA ID Number	C. State Transporter's ID		
		D. Transporter 2 Phone		
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501	10. US EPA ID Number AKR000004184	E. State Facility's ID		
		F. Facility's Phone 907-258-1558		
11. WASTE DESCRIPTION		Containers		13. Total Quantity
		No.	Type	14. Unit Wt./Vol.
<input checked="" type="checkbox"/> Material Not Regulated by DOT b. c. d.		1	TT	875
G. Additional Descriptions for Materials Listed Above 1) EA0325 PFOS/PFOA CONTAMINATED WASTEWATER		H. Handling Codes for Wastes Listed Above D33117		
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation				
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.				
Printed/Typed Name <i>Susan M. Ault</i>		Signature <i>Susan M. Ault</i>		Date Month Day Year 10 | 15 | 20
17. Transporter 1 Acknowledgement of Receipt of Materials		Date		
Printed/Typed Name Susan M. Ault Bret Lang		Signature <i>Br L</i>		Date Month Day Year 10 | 15 | 20
18. Transporter 2 Acknowledgement of Receipt of Materials		Date		
Printed/Typed Name		Signature		Month Day Year
19. Discrepancy Indication Space				
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.				
Printed/Typed Name <i>Noises Aragana</i>		Signature <i>Noises Aragana</i>		Date Month Day Year 10 | 27 | 20

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 156409S
DATE OF DISPOSAL/RECYCLE: OCT-27-2020

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER	1	TT	875	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: Moises Aragona

SIGNATURE: _____ DATE: OCT 27 2020

NON-HAZARDOUS WASTE MANIFEST

156409-KC

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677		Manifest Document No. 156409T		2. Page 1 of 1													
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709 4. Generator's Phone ((907) 474-2582				FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		2014-IM104													
5. Transporter 1 Company Name NRC ALASKA LLC		6. US EPA ID Number AKR000004184		A. State Transporter's ID		B. Transporter 1 Phone 907-258-1558													
7. Transporter 2 Company Name		8. US EPA ID Number		C. State Transporter's ID		D. Transporter 2 Phone													
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501				10. US EPA ID Number AKR000004184		E. State Facility's ID													
						F. Facility's Phone 907-258-1558													
11. WASTE DESCRIPTION				Containers		13. Total Quantity	14. Unit Wt./Vol.												
<table border="1"> <tr> <td>HM</td> <td></td> </tr> <tr> <td>a</td> <td></td> </tr> <tr> <td>X</td> <td>Material Not Regulated by DOT</td> </tr> <tr> <td>b</td> <td></td> </tr> <tr> <td>c</td> <td></td> </tr> <tr> <td>d</td> <td></td> </tr> </table>				HM		a		X	Material Not Regulated by DOT	b		c		d		No. Type			
HM																			
a																			
X	Material Not Regulated by DOT																		
b																			
c																			
d																			
				1		TT	1819												
G. Additional Descriptions for Materials Listed Above				H. Handling Codes for Wastes Listed Above															
1) EA0325 PFOS/PFOA CONTAMINATED WASTEWATER				D03118															
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation D33120, D33119																			
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.																			
Printed/Typed Name Susan M. Ault				Signature <i>Susan M. Ault</i>		Date 10/15/20													
17. Transporter 1 Acknowledgement of Receipt of Materials				Printed/Typed Name Bret Lang		Signature <i>Bret Lang</i>													
						Date 10/29/20													
18. Transporter 2 Acknowledgement of Receipt of Materials				Printed/Typed Name		Signature													
						Date													
19. Discrepancy Indication Space																			
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.				Printed/Typed Name Patricia L Beasley		Signature <i>Patricia L Beasley</i>													
						Date 11/03/20													

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 156409T
DATE OF DISPOSAL/RECYCLE: NOV-03-2020

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER	1	TT	1819	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.





PREPARED BY: PLB

SIGNATURE: Patrick J. Beasley DATE: NOV 03 2020

NON-HAZARDOUS WASTE MANIFEST

156409-KC 

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677		Manifest Document No. <u>156409U</u> 156049U 	2. Page 1 of 1
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		<u>2014-IM104</u>	
4. Generator's Phone (907) 474-2582				<u>156409U-KC</u>	
5. Transporter 1 Company Name NRC ALASKA LLC	6. US EPA ID Number AKR000004184	A. State Transporter's ID		B. Transporter 1 Phone 907-258-1558	
7. Transporter 2 Company Name	8. US EPA ID Number	C. State Transporter's ID		D. Transporter 2 Phone	
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501	10. US EPA ID Number AKR000004184	E. State Facility's ID		F. Facility's Phone 907-258-1558	
11. WASTE DESCRIPTION		Containers		13. Total Quantity	14. Unit Wt./Vol.
		No.	Type		
<input checked="" type="checkbox"/> Material Not Regulated by DOT b. c. d.		1	TT	1800	G
G. Additional Descriptions for Materials Listed Above 1) EA0325 PFOS/PFOA CONTAMINATED WASTEWATER		H. Handling Codes for Wastes Listed Above D33119			
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation <u>D33118, D33120</u>					
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.					
Printed/Typed Name <u>Susan M. Ault</u>		Signature 		Date Month Day Year <u>10 | 15 | 20</u>	
17. Transporter 1 Acknowledgement of Receipt of Materials		Printed/Typed Name <u>Brady S. Siedschlew</u>		Signature 	
18. Transporter 2 Acknowledgement of Receipt of Materials		Printed/Typed Name		Signature	
19. Discrepancy Indication Space					
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in Item 19.		Printed/Typed Name <u>Patricia L Beasley</u>		Signature 	
				Date Month Day Year <u>11 | 03 | 20</u>	

NON-HAZARDOUS WASTE GENERATOR



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 156049U
DATE OF DISPOSAL/RECYCLE: NOV-03-2020

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER	1	TT	1800	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: PLB



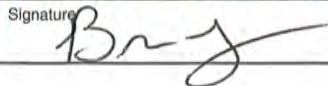
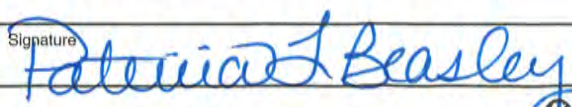
SIGNATURE: Patricia Beasley

DATE: NOV 03 2020

NON-HAZARDOUS WASTE MANIFEST

156409-KC 

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677		Manifest Document No. <u>156409V</u> 156409V 	2. Page 1 of 1																																
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		<u>2014-IM104</u>																																	
4. Generator's Phone (907) 474-2582				<u>156409-KC</u>																																	
5. Transporter 1 Company Name NRC ALASKA LLC	6. US EPA ID Number AKR000004184	A. State Transporter's ID		B. Transporter 1 Phone <u>907-258-1558</u>																																	
7. Transporter 2 Company Name	8. US EPA ID Number	C. State Transporter's ID		D. Transporter 2 Phone																																	
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501		10. US EPA ID Number AKR000004184		E. State Facility's ID																																	
				F. Facility's Phone <u>907-258-1558</u>																																	
11. WASTE DESCRIPTION		Containers		13. Total Quantity	14. Unit Wt./Vol.																																
		No.	Type																																		
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 5%; text-align: center;">HM</td> <td style="width: 5%; text-align: center;">a</td> <td style="width: 5%; text-align: center;">X</td> <td>Material Not Regulated by DOT</td> <td style="width: 5%; text-align: center;">1</td> <td style="width: 5%; text-align: center;">TT</td> <td style="width: 15%; text-align: center; font-size: 1.5em;">1252</td> <td style="width: 5%; text-align: center;">G</td> </tr> <tr> <td></td> <td style="text-align: center;">b</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td style="text-align: center;">c</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td style="text-align: center;">d</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>		HM	a	X	Material Not Regulated by DOT	1	TT	1252	G		b								c								d										
HM	a	X	Material Not Regulated by DOT	1	TT	1252	G																														
	b																																				
	c																																				
	d																																				
G. Additional Descriptions for Materials Listed Above 1) EA0325 PFOS/PFOA CONTAMINATED WASTEWATER		H. Handling Codes for Wastes Listed Above D33120																																			
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation <u>D33118, D33119</u>																																					
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.																																					
Printed/Typed Name <u>Susan M. Ault</u>		Signature 		Date Month Day Year <u>10</u> <u>15</u> <u>20</u>																																	
17. Transporter 1 Acknowledgement of Receipt of Materials		Printed/Typed Name <u>Bret Lang</u>		Signature 																																	
18. Transporter 2 Acknowledgement of Receipt of Materials		Printed/Typed Name		Signature																																	
19. Discrepancy Indication Space																																					
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.																																					
Printed/Typed Name <u>Patricia L Beasley</u>		Signature 		Date Month Day Year <u>11</u> <u>03</u> <u>20</u>																																	

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 156049V
DATE OF DISPOSAL/RECYCLE: NOV-03-2020

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER	1	TT	1252	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: PLB

SIGNATURE: *Patricia L. Beasley*

DATE: NOV 03 2020



**ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SPILL PREVENTION AND RESPONSE**

Contaminated Sites and Prevention Preparedness and Response Programs

Contaminated Media Transport and Treatment or Disposal Approval Form

DEC HAZARD/SPILL ID #	NAME OF CONTAMINATED SITE OR SPILL		
1071	FIA - Fire Training Pit		
CONTAMINATED SITE OR SPILL LOCATION – ADDRESS OR OTHER APPROPRIATE DESCRIPTION			
Southwest portion of Fairbanks International Airport: 64.799169 degrees, -147.880750 degrees			
CURRENT PHYSICAL LOCATION OF MEDIA		SOURCE OF THE CONTAMINATION (DAY TANK, WASH BAY, FIRE TRAINING PIT, LUST, ETC.)	
Fire training pit water		Fire training activities	
CONTAMINANTS OF CONCERN	ESTIMATED VOLUME	DATE(S) GENERATED	
PFOS, PFOA, petroleum analytes	up to 28,600 gallons	7/1 to 10/30/20 (anticipated)	
POST TREATMENT ANALYSIS REQUIRED (such as GRO, DRO, RRO, VOCs, metals, PFAS, and/or Chlorinated Solvents)			
PFAS, metals, petroleum, and other analytes per NRC Alaska, LLC's industrial wastewater discharge permit			
COMMENTS OR OTHER IMPORTANT INFORMATION			
Analytical results from 2019 are enclosed.			

TREATMENT FACILITY, LANDFILL, AND/OR FINAL DESTINATION OF MEDIA	PHYSICAL ADDRESS/PHONE NUMBER
NRC Alaska, LLC	2020 Viking Drive, Anchorage AK
RESPONSIBLE PARTY	ADDRESS/PHONE NUMBER
Fairbanks International Airport, Katrina LeMieux	(907) 474-2598, 6450 Airport Way, Suite No. 1, Fairbanks, AK 99709
WASTE MANAGEMENT CO. / ORGANIZER	ADDRESS/PHONE NUMBER
NRC Alaska, LLC, Shaun Tucker	(907) 258-1558, 619 East Ship Creek Ave, Suite No. 309, Anchorage, AK 99501

*Note, disposal of polluted soil in a landfill requires prior approval from the landfill operator and ADEC Solid Waste Program.

Marcy Nadel

Name of the Person Requesting Approval (printed)

M. Nadel

Signature

Project Manager, Shannon & Wilson, Inc.

Title/Association

6/18/20

Date

(907) 458-3150

Phone Number

-----DEC USE ONLY-----

Based on the information provided, ADEC approves transport of the above mentioned material. The Responsible Party or their consultant must submit to the DEC Project Manager a copy of weight receipts of the loads transported and a post treatment analytical report, if disposed of at an approved treatment facility. The contaminated soil shall be transported as a covered load in compliance with 18 AAC 60.015.

Robert Burgess

DEC Project Manager Name (printed)

Robert Burgess

Signature

Digitally signed by Robert Burgess
Date: 2020.09.15 10:45:45 -08'00'

EPSIV

Project Manager Title

9/15/20

Date

907-451-2153

Phone Number

Fire Training Pit Water Analytical Results

		Sample Name	FTP-pre003	
		Description	Interstitial fire pit water	
Analytical Method	Analyte	Action Level	Units	9/30/19
EPA 537M or 537.1M	Perfluorooctanoic acid (PFOA)	400	ppt	8,800
	Perfluorooctanesulfonic acid (PFOS)	400	ppt	900,000
	Perfluoro-butane sulfonic acid (PFBS)	---	ppt	13,000
	Perfluoro-heptanoic acid (PFHpA)	---	ppt	5,000
	Perfluoro-nonanoic acid (PFNA)	---	ppt	430
	Perfluoro-hexane sulfonic acid (PFHxS)	---	ppt	100,000 B
	4,8-Dioxo-3H-perfluorononanoic acid (ADONA)	---	ppt	<190
	N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	---	ppt	<1900
	11-Chlorooctadecafluoro-3-oxaundecane-1-sulfonic acid	---	ppt	<190
	Perfluoro-tridecanoic acid (PFTriA)	---	ppt	<190
	Perfluoro-tetradecanoic acid (PFTeA)	---	ppt	<190
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	---	ppt	<380
	Perfluorodecanoic acid (PFDA)	---	ppt	160 J
	N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	---	ppt	<1,900
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	---	ppt	<190
	Perfluorohexanoic acid (PFHxA)	---	ppt	34,000
	Perfluoroundecanoic acid (PFUnA)	---	ppt	<190
Perfluoro-dodecanoic acid (PFDoA)	---	ppt	<190	
EPA 602 / 624	Benzene	4.6	ug/L	5.40
	Ethylbenzene	15	ug/L	12.1
	o-Xylene	---	---	40.4
	p & m -Xylene	190	ug/L	62.8
	Toluene	1,100	ug/L	15.6
	Total aromatic hydrocarbons (TAH)†	10†	ug/L	136.3
EPA 625M SIM (PAH)	Acenaphthene	530	ug/L	<0.130
	Acenaphthylene	260	ug/L	<0.130
	Anthracene	43	ug/L	<0.130
	Benzo(a)anthracene	0.12	ug/L	<0.130
	Benzo(a)pyrene	0.034	ug/L	<0.0520
	Benzo(b)fluoranthene	0.34	ug/L	<0.130
	Benzo(g,h,i)perylene	0.26	ug/L	<0.130
	Benzo(k)fluoranthene	0.80	ug/L	<0.130
	Chrysene	2.0	ug/L	<0.130
	Dibenzo(a,h)anthracene	0.034	ug/L	<0.0520
	Fluoranthene	280	ug/L	0.481
	Fluorene	290	ug/L	1.45
	Indeno[1,2,3-c,d]pyrene	0.19	ug/L	<0.130
	Naphthalene	1.7	ug/L	5.06
	Phenanthrene	170	ug/L	1.37
Pyrene	120	ug/L	0.522	
Total aqueous hydrocarbons (TAQH)‡	15†	ug/L	10.16	
EPA 200.8	Arsenic	10§	ug/L	37.0
AK102	Diesel Range Organics	1.5	mg/L	33.1
AK103	Residual Range Organics	1.1	mg/L	6.92
SW8260C	1,1,1,2-Tetrachloroethane	5.7	ug/L	<0.250
	1,1,1-Trichloroethane	8,000	ug/L	<0.500
	1,1,2,2-Tetrachloroethane	0.76	ug/L	<0.250
	1,1,2-Trichloroethane	0.41	ug/L	<0.200
	1,1-Dichloroethane	28	ug/L	<0.500
	1,1-Dichloroethene	280	ug/L	<0.500
	1,1-Dichloropropane	---	ug/L	<0.500
	1,2,3-Trichlorobenzene	7.0	ug/L	<0.500
	1,2,3-Trichloropropane	0.0075	ug/L	<0.500
	1,2,4-Trichlorobenzene	4.0	ug/L	<0.500
	1,2,4-Trimethylbenzene	56	ug/L	25.1
	1,2-Dibromo-3-chloropropane	---	ug/L	<5.00
	1,2-Dibromoethane	0.075	ug/L	<0.0375
	1,2-Dichlorobenzene	300	ug/L	<0.500
	1,2-Dichloroethane	1.7	ug/L	<0.250
	1,2-Dichloropropane	8.2	ug/L	<0.500
	1,3,5-Trimethylbenzene	60	ug/L	11.2
	1,3-Dichlorobenzene	300	ug/L	<0.500
	1,3-Dichloropropane	---	ug/L	<0.250
	1,4-Dichlorobenzene	4.8	ug/L	<0.250
	2,2-Dichloropropane	---	ug/L	<0.500
2-Butanone (MEK)	5,600	ug/L	7.52 J	

Fire Training Pit Water Analytical Results

Analytical Method	Analyte	Sample Name		FTP-pre003
		Description	Intermittent fire pit water	
		Action Level	Units	9/30/19
SW8260C	2-Chlorotoluene	—	µg/L	<0.500
	2-Hexanone	38	µg/L	<5.00
	4-Chlorotoluene	—	µg/L	<0.500
	4-Methyl-2-pentanone (MIBK)	6,300	µg/L	<5.00
	Bromobenzene	62	µg/L	<0.500
	Bromochloromethane	—	µg/L	<0.500
	Bromodichloromethane	1.3	µg/L	<0.250
	Bromoforn	33	µg/L	<0.500
	Bromomethane	7.5	µg/L	<2.50
	Carbon disulfide	810	µg/L	<5.00
	Carbon tetrachloride	4.6	µg/L	<0.500
	Chlorobenzene	78	µg/L	<0.250
	Chloroethane	21,000	µg/L	<0.500
	Chloroform	2.2	µg/L	<0.500
	Chloromethane	190	µg/L	<0.500
	cis-1,2-Dichloroethane	36	µg/L	<0.500
	cis-1,3-Dichloropropene	4.7	µg/L	<0.250
	Dibromochloromethane	8.7	µg/L	<0.250
	Dibromomethane	8.3	µg/L	<0.500
	Dichlorodifluoromethane	200	µg/L	<0.500
	Hexachlorobutadiene	1.4	µg/L	<0.500
	Isopropylbenzene	450	µg/L	2.92
	Methylene chloride	110	µg/L	<2.50
	Methyl-t-butyl ether	140	µg/L	<5.00
	Naphthalene	1.7	µg/L	14.1
	n-Butylbenzene	1,000	µg/L	<0.500
	n-Propylbenzene	660	µg/L	3.64
	p-Isopropyltoluene	—	µg/L	4.05
	sec-Butylbenzene	2,000	µg/L	0.824 J
	Styrene	1,200	µg/L	<0.500
	tert-Butylbenzene	690	µg/L	<0.500
	Tetrachloroethene	41	µg/L	<0.500
	trans-1,2-Dichloroethane	360	µg/L	<0.500
trans-1,3-Dichloropropene	4.7	µg/L	<0.500	
Trichloroethane	2.8	µg/L	<0.500	
Trichlorofluoromethane	5,200	µg/L	<0.500	
Trichlorotrifluoroethane	10,000	µg/L	<5.00	
Vinyl acetate	410	µg/L	<5.00	
Vinyl chloride	0.19	µg/L	<0.0750	

- ppt parts per trillion, equivalent to nanograms per liter
- µg/L micrograms per liter
- mg/L milligrams per liter
- † T4H is sum of EPA 802624 analyte concentrations. Department of Environmental Conservation (DEC) effluent limit under excavation draw.
- ‡ T4qH is the sum of EPA 825M SIM (PAH) LV and EPA 602/624 analyte concentrations. DEC effluent limit under excavation dewatering general permit No. AKG002158. T4H and T4qH sums are calculated in accordance with DEC's April 2017 Technical Memorandum - DEC water quality criteria for toxics and other deleterious substances, criteria for surface water used as drinking water. Value for inorganic is DEC water quality criteria for toxics and other deleterious substances, criteria for surface water used as drinking water. Value for inorganic is
- § Analyte not detected, listed as less than the limit of detection (LOD) or reporting limit (RL) unless otherwise flagged due to quality control fail
- < Cleanup level not established or sample not submitted.
- Concentration exceeds effluent limit or DEC groundwater cleanup levels are reported in 18 AAC 75, Table C.
- Bold** Estimated concentration, detected greater than the detection limit (DL) and less than the limit of quantitation (LOQ). Flag applied by the labo
- J Compound was found in the blank and sample. Flag applied by the laboratory.



**ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SPILL PREVENTION AND RESPONSE
Contaminated Sites and Prevention Preparedness and Response Programs**

Contaminated Media Transport and Treatment or Disposal Approval Form

DEC HAZARD/SPILL ID #	NAME OF CONTAMINATED SITE OR SPILL	
1071	FIA - Fire Training Pit	
CONTAMINATED SITE OR SPILL LOCATION - ADDRESS OR OTHER APPROPRIATE DESCRIPTION		
Southwest portion of Fairbanks International Airport: 64.799169 degrees, -147.880750 degrees		
CURRENT PHYSICAL LOCATION OF MEDIA	SOURCE OF THE CONTAMINATION (DAY TANK, WASH BAY, FIRE TRAINING PIT, LUST, ETC.)	
Groundwater (monitoring well purge water)	Fire training activities	
CONTAMINANTS OF CONCERN	ESTIMATED VOLUME	DATE(S) GENERATED
PFOS, PFOA	275 gallons	6/24 to 7/10/20 (anticipated)
POST TREATMENT ANALYSIS REQUIRED (such as GRO, DRO, RRO, VOCs, metals, PFAS, and/or Chlorinated Solvents)		
PFAS, metals, petroleum, and other analytes per NRC Alaska, LLC's industrial wastewater discharge permit		
COMMENTS OR OTHER IMPORTANT INFORMATION		
Analytical results from 2019 are enclosed.		

TREATMENT FACILITY, LANDFILL, AND/OR FINAL DESTINATION OF MEDIA	PHYSICAL ADDRESS/PHONE NUMBER
NRC Alaska, LLC	2020 Viking Drive, Anchorage AK
RESPONSIBLE PARTY	ADDRESS/PHONE NUMBER
Fairbanks International Airport, Katrina LeMieux	(907) 474-2598, 6450 Airport Way, Suite No. 1, Fairbanks, AK 99709
WASTE MANAGEMENT CO. / ORGANIZER	ADDRESS/PHONE NUMBER
NRC Alaska, LLC, Shaun Tucker	(907) 258-1558, 619 East Ship Creek Ave, Suite No. 309, Anchorage, AK 99501

*Note, disposal of polluted soil in a landfill requires prior approval from the landfill operator and ADEC Solid Waste Program.

Marcy Nadel

Name of the Person Requesting Approval (printed)

M. Nadel

Signature

Project Manager, Shannon & Wilson, Inc.

Title/Association

6/18/20

Date

(907) 458-3150

Phone Number

-----DEC USE ONLY-----

Based on the information provided, ADEC approves transport of the above mentioned material. The Responsible Party or their consultant must submit to the DEC Project Manager a copy of weight receipts of the loads transported and a post treatment analytical report, if disposed of at an approved treatment facility. The contaminated soil shall be transported as a covered load in compliance with 18 AAC 60.015.

Robert Burgess

DEC Project Manager Name (printed)

Robert A. Burgess

Digitally signed by Robert Burgess
Date: 2020.09.15 10:46:51 -08'00'

Signature

EPSIV

Project Manager Title

9/15/20

Date

451-2153

Phone Number

Fairbanks International Airport Monitoring Well Analytical Results

Sample Name			MW-1901-15	MW-1901-40	MW-1901-80	MW-1901-150	MW-1902-15	MW-1902-40	MW-1902-80	MW-1902-150	
Description			Downgradient monitoring well cluster					Upgradient monitoring well cluster			
Analyte	Cleanup Level	Units	9/27/19	9/27/19	10/16/19	10/18/19	10/14/19	10/15/19	10/15/19	10/2/19	
Perfluoro-octanoic acid (PFOA)	400	ppt	120	120	72	<1.8	<1.7	14	0.91 J	<1.9	
Perfluoro-octane sulfonate (PFOS)	400	ppt	95 J*	87 J*	180	1.6 J	<1.7	25	3.2	2.2	
Perfluoro-butane sulfonic acid (PFBS)	—	ppt	410 J*	410 J*	340	0.55 J	<1.7	22	0.65 J	<1.9	
Perfluoro-heptanoic acid (PFHpA)	—	ppt	84	86	59	<1.8	0.27 J	8.0	0.50 J	<1.9	
Perfluoro-nonanoic acid (PFNA)	—	ppt	12 J*	12 J*	<2.0	<1.8	<1.7	<1.8	<1.9	<1.9	
Perfluoro-hexane sulfonic acid (PFHxS)	—	ppt	1,700 J*	1,700 J*	1,000 J*	2.7 JH*	<1.7 B*	110 B	2.3 JH*	<1.9 B*	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	—	ppt	<1.9	<1.9	<2.0	<1.8	<1.7	<1.8	<1.9	<1.9	
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	—	ppt	<1.9	<1.9	<2.0	<1.8	<1.7	<1.8	<1.9	<1.9	
11-Chloroicosafuoro-3-oxaundecane-1-sulfonic acid	—	ppt	<1.9	<1.9	<2.0	<1.8	<1.7	<1.8	<1.9	<1.9	
Perfluoro-tridecanoic acid (PFTriA)	—	ppt	<1.9	<1.9	<2.0	<1.8	<1.7	<1.8	<1.9	<1.9	
Perfluoro-tetradecanoic acid (PFTeA)	—	ppt	<1.9	<1.9	<2.0	<1.8	<1.7	<1.8	<1.9	<1.9	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	ppt	<3.9	<3.9	<4.0	<3.6	<3.4	<3.6	<3.7	<3.8	
Perfluorodecanoic acid (PFDA)	—	ppt	<1.9	<1.9	<2.0	<1.8	<1.7	<1.8	<1.9	<1.9	
N-ethylperfluorooctanesulfonamidoacetic acid (NEFOSAA)	—	ppt	<1.9	<1.9	<2.0	<1.8	<1.7	<1.8	<1.9	<1.9	
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	—	ppt	<1.9	<1.9	<2.0	<1.8	<1.7	<1.8	<1.9	<1.9	
Perfluorohexanoic acid (PFHxA)	—	ppt	750 J*	740 J*	570 J*	1.2 J	<1.7	60	1.4 J	<1.9	
Perfluoroundecanoic acid (PFUnA)	—	ppt	<1.9	<1.9	<2.0	<1.8	<1.7	<1.8	<1.9	<1.9	
Perfluoro-dodecanoic acid (PFDoA)	—	ppt	<1.9	<1.9	<2.0	<1.8	<1.7	<1.8	<1.9	<1.9	

- ppt parts per trillion, equivalent to nanograms per liter
 — Action level not established.
 < Analyte not detected, listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.
 J Estimated concentration, detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.
 J* Result considered estimated due to a QC failure. Flag applied by Shannon & Wilson, Inc.
 JH* Estimated concentration, biased high due to quality control failures. Flag applied by Shannon & Wilson, Inc.
 B Compound was found in the blank and sample. Flag applied by the laboratory.
 B* Result is included in the same preparatory batch as a blank detection for the associated analyte. Flag applied by Shannon & Wilson, Inc.



**ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SPILL PREVENTION AND RESPONSE
Contaminated Sites and Prevention Preparedness and Response Programs**

Contaminated Media Transport and Treatment or Disposal Approval Form

DEC HAZARD/SPILL ID #	NAME OF CONTAMINATED SITE OR SPILL		
1071	FIA - Fire Training Pit		
CONTAMINATED SITE OR SPILL LOCATION - ADDRESS OR OTHER APPROPRIATE DESCRIPTION			
Southwest portion of Fairbanks International Airport: 64.799169 degrees, -147.880750 degrees			
CURRENT PHYSICAL LOCATION OF MEDIA		SOURCE OF THE CONTAMINATION (DAY TANK, WASH BAY, FIRE TRAINING PIT, LUST, ETC.)	
Groundwater (monitoring well purge water)		Fire training activities	
CONTAMINANTS OF CONCERN	ESTIMATED VOLUME	DATE(S) GENERATED	
PFOS, PFOA	200 gallons	10/27 and 10/28	
POST TREATMENT ANALYSIS REQUIRED (such as GRO, DRO, RRO, VOCs, metals, PFAS, and/or Chlorinated Solvents)			
PFAS, metals, petroleum, and other analytes per NRC Alaska, LLC's industrial wastewater discharge permit			
COMMENTS OR OTHER IMPORTANT INFORMATION			
Analytical results from 2020 are enclosed.			

TREATMENT FACILITY, LANDFILL, AND/OR FINAL DESTINATION OF MEDIA	PHYSICAL ADDRESS/PHONE NUMBER
NRC Alaska, LLC	2020 Viking Drive, Anchorage AK
RESPONSIBLE PARTY	ADDRESS/PHONE NUMBER
Fairbanks International Airport - Sammy Cummings	(907) 888-5671, 6450 Airport Way, Suite No. 1, Fairbanks, AK 99709
WASTE MANAGEMENT CO. / ORGANIZER	ADDRESS/PHONE NUMBER
NRC Alaska, LLC, Shaun Tucker	(907) 258-1558, 619 East Ship Creek Ave, Suite No. 309, Anchorage, AK 99501

*Note, disposal of polluted soil in a landfill requires prior approval from the landfill operator and ADEC Solid Waste Program.

Ashley Jaramillo

Name of the Person Requesting Approval (printed)

Ashley Jaramillo

Signature

Chemist, Shannon & Wilson, Inc.

Title/Association

10/30/20

Date

(907) 458-3118

Phone Number

-----DEC USE ONLY-----

Based on the information provided, ADEC approves transport of the above mentioned material. The Responsible Party or their consultant must submit to the DEC Project Manager a copy of weight receipts of the loads transported and a post treatment analytical report, if disposed of at an approved treatment facility. The contaminated soil shall be transported as a covered load in compliance with 18 AAC 60.015.

Robert Burgess

DEC Project Manager Name (printed)

Robert A. Burgess

Signature

Digitally signed by Robert Burgess
Date: 2020.10.30 15:54:57 -08'00'

EPSIV

Project Manager Title

10/30/20

Date

907-451-2153

Phone Number

Table 2 - Summary of June 2020 Monitoring Well Analytical Results

Sample Name		MW-1901-15	MW-1901-40	MW-1901-80	MW-1901-150	MW-1902-15		MW-1902-40	MW-1902-80	MW-1902-150		
Description		Downgradient monitoring well cluster				Upgradient monitoring well cluster						
Analyte	Method	Cleanup Level	Units	6/25/20	6/25/20	6/25/20	6/25/20	6/26/20	6/26/20	6/26/20	6/25/20	
Perfluorohexanesulfonic acid (PFHxS)	EPA 537.1M	—	ng/L	3,400	1,000	<1.8 B*	<1.9 B*	22	22	<1.8 B*	<1.8 B*	<1.8 B*
Perfluorohexanoic acid (PFHxA)		—	ng/L	1,000	760	<1.8	<1.9	8.4	8.2	0.71 J	<1.8	<1.8
Perfluoroheptanoic acid (PFHpA)		—	ng/L	89 J	57 J	<1.8	<1.9	1.5 J	1.4 J	0.26 J	<1.8	<1.8
Perfluorononanoic acid (PFNA)		—	ng/L	<170	<180	<1.8	<1.9	<1.9	<1.8	<1.8	<1.8	<1.8
Perfluorobutanesulfonic acid (PFBS)		—	ng/L	520	470	0.28 J	<1.9	3.6	3.5	0.38 J	0.23 J	0.20 J
Perfluorodecanoic acid (PFDA)		—	ng/L	<170	<180	<1.8	<1.9	<1.9	<1.8	<1.8	<1.8	<1.8
Perfluoroundecanoic acid (PFUnA)		—	ng/L	<170	<180	<1.8	<1.9	<1.9	<1.8	<1.8	<1.8	<1.8
Perfluorododecanoic acid (PFDoA)		—	ng/L	<170	<180	<1.8	<1.9	<1.9	<1.8	<1.8	<1.8	<1.8
Perfluorotridecanoic acid (PFTriDA)		—	ng/L	<170	<180	<1.8	<1.9	<1.9	<1.8	<1.8	<1.8	<1.8
Perfluorotetradecanoic acid (PFTeA)		—	ng/L	<170	<180	0.30 J	<1.9	<1.9	0.40 J	<1.8	<1.8	<1.8
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)		—	ng/L	<1,700	<1,800	<18	<19	<19	<18	<18	<18	<18
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)		—	ng/L	<1,700	<1,800	<18	<19	<19	<18	<18	<18	<18
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid		—	ng/L	<170	<180	<1.8	<1.9	<1.9	<1.8	<1.8	<1.8	<1.8
11-Chloroheptacosafuoro-3-oxaundecane-1-sulfonic acid		—	ng/L	<170	<180	<1.8	<1.9	<1.9	<1.8	<1.8	<1.8	<1.8
4,8-Dioxa-3H-perfluorononanoic acid (DONA)		—	ng/L	<170	<180	<1.8	<1.9	<1.9	<1.8	<1.8	<1.8	<1.8
Hexafluoropropylene oxide dimer acid (HFPO-DA)		—	ng/L	<340	<370	<3.6	<3.8	<3.7	<3.6	<3.7	<3.5	<3.6
Perfluorooctanesulfonic acid (PFOS)		400	ng/L	64 J	170 J	0.98 J	0.58 J	12	12	1.8	0.73 J	0.49 J
Perfluorooctanoic acid (PFOA)		400	ng/L	150 J	<180	<1.8	<1.9	2.6	2.7	<1.8	<1.8	<1.8
Diesel Range Organics (DRO)		AK 102	1.5	mg/L	<0.556 B*	—	—	—	<0.577 B*	<0.577 B*	—	—
1,1,1,2-Tetrachloroethane		SW8260	5.7	µg/L	<0.250	—	—	—	<0.250	<0.250	—	—
1,1,1-Trichloroethane	8,000		µg/L	<0.500	—	—	—	<0.500	<0.500	—	—	
1,1,2,2-Tetrachloroethane	0.76		µg/L	<0.250	—	—	—	<0.250	<0.250	—	—	
1,1,2-Trichloroethane	0.41		µg/L	<0.200	—	—	—	<0.200	<0.200	—	—	
1,1-Dichloroethane	28		µg/L	<0.500	—	—	—	<0.500	<0.500	—	—	
1,1-Dichloroethene	280		µg/L	<0.500	—	—	—	<0.500	<0.500	—	—	
1,1-Dichloropropene	—		µg/L	<0.500	—	—	—	<0.500	<0.500	—	—	
1,2,3-Trichlorobenzene	7		µg/L	<0.500	—	—	—	<0.500	<0.500	—	—	
1,2,3-Trichloropropane	0.0075		µg/L	<0.500	—	—	—	<0.500	<0.500	—	—	
1,2,4-Trichlorobenzene	4		µg/L	<0.500	—	—	—	<0.500	<0.500	—	—	
1,2,4-Trimethylbenzene	56		µg/L	<0.500	—	—	—	<0.500	<0.500	—	—	
1,2-Dibromo-3-chloropropane	—		µg/L	<5.00	—	—	—	<5.00	<5.00	—	—	
1,2-Dibromoethane	0.075		µg/L	<0.0375	—	—	—	<0.0375	<0.0375	—	—	
1,2-Dichlorobenzene	300		µg/L	<0.500	—	—	—	<0.500	<0.500	—	—	
1,2-Dichloroethane	1.7		µg/L	<0.250	—	—	—	<0.250	<0.250	—	—	
1,2-Dichloropropane	8.2		µg/L	<0.500	—	—	—	<0.500	<0.500	—	—	
1,3,5-Trimethylbenzene	60		µg/L	<0.500	—	—	—	<0.500	<0.500	—	—	
1,3-Dichlorobenzene	300		µg/L	<0.500	—	—	—	<0.500	<0.500	—	—	
1,3-Dichloropropane	—		µg/L	<0.250	—	—	—	<0.250	<0.250	—	—	
1,4-Dichlorobenzene	4.8		µg/L	<0.250	—	—	—	<0.250	<0.250	—	—	
2,2-Dichloropropane	—	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—		

Table 2 - Summary of June 2020 Monitoring Well Analytical Results

Sample Name		MW-1901-15	MW-1901-40	MW-1901-80	MW-1901-150	MW-1902-15	MW-1902-40	MW-1902-80	MW-1902-150		
Description		Downgradient monitoring well cluster				Upgradient monitoring well cluster					
Analyte	Method	Cleanup Level	Units	6/25/20	6/25/20	6/25/20	6/25/20	6/26/20	6/26/20	6/26/20	6/25/20
2-Butanone (MEK)	SW8260	5,600	µg/L	<5.00	—	—	—	<5.00	<5.00	—	—
2-Chlorotoluene		—	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
2-Hexanone		38	µg/L	<5.00	—	—	—	<5.00	<5.00	—	—
4-Chlorotoluene		—	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
4-Methyl-2-pentanone (MIBK)		6,300	µg/L	<5.00	—	—	—	<5.00	<5.00	—	—
Benzene		4.6	µg/L	<0.200	—	—	—	<0.200	<0.200	—	—
Bromobenzene		62	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
Bromochloromethane		—	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
Bromodichloromethane		1.3	µg/L	<0.250	—	—	—	<0.250	<0.250	—	—
Bromoform		33	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
Bromomethane		7.5	µg/L	<2.50	—	—	—	<2.50	<2.50	—	—
Carbon disulfide		810	µg/L	<5.00	—	—	—	<5.00	<5.00	—	—
Carbon tetrachloride		4.6	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
Chlorobenzene		78	µg/L	<0.250	—	—	—	<0.250	<0.250	—	—
Chloroethane		21,000	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
Chloroform		2.2	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
Chloromethane		190	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
cis-1,2-Dichloroethene		36	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
cis-1,3-Dichloropropene		4.7	µg/L	<0.250	—	—	—	<0.250	<0.250	—	—
Dibromochloromethane		8.7	µg/L	<0.250	—	—	—	<0.250	<0.250	—	—
Dibromomethane		8.3	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
Dichlorodifluoromethane		200	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
Ethylbenzene		15	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
Hexachlorobutadiene		1.4	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
Isopropylbenzene		450	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
Methylene chloride		110	µg/L	<5.00	—	—	—	<5.00	<5.00	—	—
Methyl-t-butyl ether		140	µg/L	<5.00	—	—	—	<5.00	<5.00	—	—
Naphthalene		1.7	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
n-Butylbenzene		1,000	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
n-Propylbenzene		660	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
o-Xylene		190	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
P & M -Xylene			µg/L	<1.00	—	—	—	<1.00	<1.00	—	—
p-Isopropyltoluene		—	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
sec-Butylbenzene		2,000	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
Styrene	1,200	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—	
tert-Butylbenzene	690	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—	
Tetrachloroethene	41	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—	
Toluene	1,100	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—	
Total Xylenes	190	µg/L	<1.50	—	—	—	<1.50	<1.50	—	—	
trans-1,2-Dichloroethene	360	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—	

Table 2 - Summary of June 2020 Monitoring Well Analytical Results

Sample Name				MW-1901-15	MW-1901-40	MW-1901-80	MW-1901-150	MW-1902-15	MW-1902-40	MW-1902-80	MW-1902-150
Description				Downgradient monitoring well cluster				Upgradient monitoring well cluster			
Analyte	Method	Cleanup Level	Units	6/25/20	6/25/20	6/25/20	6/25/20	6/26/20	6/26/20	6/26/20	6/25/20
trans-1,3-Dichloropropene	SW8260	4.7	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
Trichloroethene		2.8	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
Trichlorofluoromethane		5,200	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
Trichlorotrifluoroethane		10,000	µg/L	<5.00	—	—	—	<5.00	<5.00	—	—
Vinyl acetate		410	µg/L	<5.00	—	—	—	<5.00	<5.00	—	—
Vinyl chloride		0.19	µg/L	<0.0750	—	—	—	<0.0750	<0.0750	—	—

- ng/L nanograms per liter, equivalent to parts per trillion
- mg/L milligrams per liter
- µg/L micrograms per liter
- Cleanup level not established or sample not submitted.
- < Analyte not detected; listed as less than the reporting limit (RL) or limit of quantitation (LOQ) unless otherwise flagged due to quality-control (QC) failures.
- Bold** Concentration exceeds DEC groundwater-cleanup levels reported in 18 AAC 75, Table C.
- J** Estimated concentration, detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.
- B*** Result considered non-detect due to method blank detection; presented as less than the LOQ. Flag applied by Shannon & Wilson, Inc.



**ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SPILL PREVENTION AND RESPONSE
Contaminated Sites and Prevention Preparedness and Response Programs**

Contaminated Media Transport and Treatment or Disposal Approval Form

DEC HAZARD/SPILL ID #	NAME OF CONTAMINATED SITE OR SPILL		
1071	Fairbanks International Airport - Former Fire Training Pit		
CONTAMINATED SITE OR SPILL LOCATION – ADDRESS OR OTHER APPROPRIATE DESCRIPTION			
Southwest portion of Fairbanks International Airport: 64.799169 degrees, -147.880750 degrees			
CURRENT PHYSICAL LOCATION OF MEDIA		SOURCE OF THE CONTAMINATION (DAY TANK, WASH BAY, FIRE TRAINING PIT, LUST, ETC.)	
Groundwater (monitoring well purge water)		Historic fire training	
CONTAMINANTS OF CONCERN	ESTIMATED VOLUME	DATE(S) GENERATED	
PFOS, PFOA	350 gallons	1/18-1/19/21, 4/8-4/9/21	
POST TREATMENT ANALYSIS REQUIRED (such as GRO, DRO, RRO, VOCs, metals, PFAS, and/or Chlorinated Solvents)			
PFAS, metals, petroleum, and other analytes per US Ecology/NRC Alaska's industrial wastewater discharge permit			
COMMENTS OR OTHER IMPORTANT INFORMATION			
Analytical results from January 2021 are enclosed, results from April 2021 are expected to be similar.			

TREATMENT FACILITY, LANDFILL, AND/OR FINAL DESTINATION OF MEDIA	PHYSICAL ADDRESS/PHONE NUMBER
NRC Alaska, LLC	2020 Viking Drive, Anchorage AK
RESPONSIBLE PARTY	ADDRESS/PHONE NUMBER
Fairbanks International Airport, Sammy Cummings	6450 Airport Way, Suite No. 1, Fairbanks, AK 99709 / (907) 888-5671
WASTE MANAGEMENT CO. / ORGANIZER	ADDRESS/PHONE NUMBER
US Ecology/NRC Alaska, Kimberly Curtiss	1315 Queens Way, Fairbanks, AK 99701 / (907) 258-1558

*Note, disposal of polluted soil in a landfill requires prior approval from the landfill operator and ADEC Solid Waste Program.

Marcy Nadel

Name of the Person Requesting Approval (printed)

M. Nadel

Signature

Geologist, Shannon & Wilson, Inc.

Title/Association

4/2/21

Date

(907) 458-3150

Phone Number

-----DEC USE ONLY-----

Based on the information provided, ADEC approves transport of the above mentioned material. The Responsible Party or their consultant must submit to the DEC Project Manager a copy of weight receipts of the loads transported and a post treatment analytical report, if disposed of at an approved treatment facility. The contaminated soil shall be transported as a covered load in compliance with 18 AAC 60.015.

Robert Burgess

DEC Project Manager Name (printed)

Robert A. Burgess

Signature

Digitally signed by Robert Burgess
Date: 2021.04.05 11:37:31 -08'00'

EPSIV

Project Manager Title

4/6/21

Date

451-2153

Phone Number

January 2021 Fire Training Pit Monitoring Well Analytical Results

Sample Name				MW-1901-15	MW-1901-40	MW-1901-80 and DUP		MW-1901-150	MW-1902-15 and DUP		MW-1902-40	MW-1902-80	MW-1902-150
Description				Downgradient monitoring well cluster					Upgradient monitoring well cluster				
Analytical Method	Analyte	Action Level	Units	1/18/21	1/19/21	1/19/21	1/19/21	1/19/21	1/18/21	1/18/21	1/18/21	1/18/21	1/18/21
EPA 537.1M	Perfluorohexanesulfonic acid (PFHxS)	—	ng/L	2,100	2,700	1.4 J	1.4 J	1.0 J	47	45	1.5 J	1.2 J	1.1 J
	Perfluorohexanoic acid (PFHxA)	—	ng/L	770	1,300	<1.9	<1.8	<1.8	14	14	<1.8	<1.8	<1.9
	Perfluoroheptanoic acid (PFHpA)	—	ng/L	64	140	<1.9	<1.8	<1.8	2.2	2.5	<1.8	<1.8	<1.9
	Perfluorononanoic acid (PFNA)	—	ng/L	<1.8	0.25 J	<1.9	<1.8	<1.8	<1.9	<1.9	<1.8	<1.8	<1.9
	Perfluorobutanesulfonic acid (PFBS)	—	ng/L	380	880	0.28 J*	0.36 J	0.18 J	5.9	6.0	0.30 J	0.21 J	0.19 J
	Perfluorodecanoic acid (PFDA)	—	ng/L	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.9	<1.8	<1.8	<1.9
	Perfluoroundecanoic acid (PFUnA)	—	ng/L	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.9	<1.8	<1.8	<1.9
	Perfluorododecanoic acid (PFDoA)	—	ng/L	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.9	<1.8	<1.8	<1.9
	Perfluorotridecanoic acid (PFTrDA)	—	ng/L	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.9	<1.8	<1.8	<1.9
	Perfluorotetradecanoic acid (PFTeA)	—	ng/L	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.9	<1.8	<1.8	<1.9
	N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	ng/L	<4.6	<4.6	<4.8	<4.6	<4.6	<4.7	<4.7	<4.6	<4.6	<4.7
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	ng/L	<4.6	<4.6	<4.8	<4.6	<4.6	<4.7	<4.7	<4.6	<4.6	<4.7
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	—	ng/L	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.9	<1.8	<1.8	<1.9
	11-Chloroicosadecafluoro-3-oxadecane-1-sulfonic acid (11Cl-PF3OUdS)	—	ng/L	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.9	<1.8	<1.8	<1.9
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	—	ng/L	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.9	<1.8	<1.8	<1.9
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	ng/L	<3.6	<3.7	<3.8	<3.7	<3.7	<3.8	<3.8	<3.7	<3.6	<3.7
	Perfluorooctanesulfonic acid (PFOS)	400	ng/L	50	300	0.90 J	0.86 J	—	12	13	1.6 J	0.67 J	0.68 J
Perfluorooctanoic acid (PFOA)	400	ng/L	80	140	<1.9	<1.8	<1.8	—	4.2	5.0	<1.8	<1.8	<1.9
AK102	Diesel Range Organics	1.5	ng/L	<0.577B*	—	—	—	—	<0.577 B*	<0.577 B*	—	—	—
SW8260C	1,1,1,2-Tetrachloroethane	5.7	µg/L	<0.25	—	—	—	—	<0.25	<0.25	—	—	—
	1,1,1-Trichloroethane	8,000	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	1,1,2,2-Tetrachloroethane	0.76	µg/L	<0.25	—	—	—	—	<0.25	<0.25	—	—	—
	1,1,2-Trichloroethane	0.41	µg/L	<0.20	—	—	—	—	<0.20	<0.20	—	—	—
	1,1-Dichloroethane	28	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	1,1-Dichloroethene	280	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	1,1-Dichloropropene	—	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	1,2,3-Trichlorobenzene	7.0	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	1,2,3-Trichloropropane	0.0075	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	1,2,4-Trichlorobenzene	4.0	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	1,2,4-Trimethylbenzene	56	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	1,2-Dibromo-3-chloropropane	—	µg/L	<5.0	—	—	—	—	<5.0	<5.0	—	—	—
	1,2-Dibromoethane	0.075	µg/L	<0.038	—	—	—	—	<0.038	<0.038	—	—	—
	1,2-Dichlorobenzene	300	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	1,2-Dichloroethane	1.7	µg/L	<0.25	—	—	—	—	<0.25	<0.25	—	—	—
	1,2-Dichloropropane	8.2	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	1,3,5-Trimethylbenzene	60	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	1,3-Dichlorobenzene	300	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	1,3-Dichloropropane	—	µg/L	<0.25	—	—	—	—	<0.25	<0.25	—	—	—
	1,4-Dichlorobenzene	4.8	µg/L	<0.25	—	—	—	—	<0.25	<0.25	—	—	—
	2,2-Dichloropropane	—	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	2-Butanone (MEK)	5,600	µg/L	<5.0	—	—	—	—	<5.0	<5.0	—	—	—
	2-Chlorotoluene	—	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	2-Hexanone	38	µg/L	<5.0	—	—	—	—	<5.0	<5.0	—	—	—
	4-Chlorotoluene	—	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Benzene	4.6	µg/L	<0.20	—	—	—	—	<0.20	<0.20	—	—	—
	Bromobenzene	62	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Bromochloromethane	—	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Bromodichloromethane	1.3	µg/L	<0.25	—	—	—	—	<0.25	<0.25	—	—	—
	Bromoform	33	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—

January 2021 Fire Training Pit Monitoring Well Analytical Results

Sample Name				MW-1901-15	MW-1901-40	MW-1901-80 and DUP		MW-1901-150	MW-1902-15 and DUP		MW-1902-40	MW-1902-80	MW-1902-150
Description				Downgradient monitoring well cluster					Upgradient monitoring well cluster				
Analytical Method	Analyte	Action Level	Units	1/18/21	1/19/21	1/19/21	1/19/21	1/19/21	1/18/21	1/18/21	1/18/21	1/18/21	1/18/21
SW8260C	Bromomethane	7.5	µg/L	<2.5	—	—	—	—	<2.5	<2.5	—	—	—
	Carbon disulfide	810	µg/L	<5.0	—	—	—	—	<5.0	<5.0	—	—	—
	Carbon tetrachloride	4.6	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Chlorobenzene	78	µg/L	<0.25	—	—	—	—	<0.25	<0.25	—	—	—
	Chloroethane	21,000	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Chloroform	2.2	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Chloromethane	190	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	cis-1,2-Dichloroethene	36	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	cis-1,3-Dichloropropene	4.7	µg/L	<0.25	—	—	—	—	<0.25	<0.25	—	—	—
	Dibromochloromethane	8.7	µg/L	<0.25	—	—	—	—	<0.25	<0.25	—	—	—
	Dibromomethane	8.3	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Dichlorodifluoromethane	200	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Ethylbenzene	15	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Hexachlorobutadiene	1.4	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Isopropylbenzene	450	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Methyl isobutyl ketone	6,300	µg/L	<5.0	—	—	—	—	<5.0	<5.0	—	—	—
	Methylene chloride	110	µg/L	<5.0	—	—	—	—	<5.0	<5.0	—	—	—
	Methyl-t-butyl ether (MTBE)	140	µg/L	<5.0	—	—	—	—	<5.0	<5.0	—	—	—
	Naphthalene	1.7	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	n-Butylbenzene	1,000	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	n-Propylbenzene	660	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	o-Xylene	190	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	P & M -Xylene	190	µg/L	<1.0	—	—	—	—	<1.0	<1.0	—	—	—
	p-Isopropyltoluene	—	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	sec-Butylbenzene	2,000	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Styrene	1,200	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	tert-Butylbenzene	690	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Tetrachloroethene	41	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Toluene	1,100	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Total Xylenes	190	µg/L	<1.5	—	—	—	—	<1.5	<1.5	—	—	—
trans-1,2-Dichloroethene	360	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—	
trans-1,3-Dichloropropene	4.7	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—	
Trichloroethene	2.8	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—	
Trichlorofluoromethane	5,200	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—	
Trichlorotrifluoroethane	10,000	µg/L	<5.0	—	—	—	—	<5.0	<5.0	—	—	—	
Vinyl acetate	410	µg/L	<5.0	—	—	—	—	<5.0	<5.0	—	—	—	
Vinyl chloride	0.190	µg/L	<0.075	—	—	—	—	<0.075	<0.075	—	—	—	

DUP Field-duplicate sample
ng/L nanograms per liter, equivalent to parts per trillion
µg/L micrograms per liter
mg/L milligrams per liter
— Cleanup level not established or sample not submitted.
BOLD Concentration exceeds DEC groundwater-cleanup level reported in 18 AAC 75, Table C.
BOLD Limit of detection (LOD) exceeds DEC groundwater-cleanup level.
< Analyte not detected; listed as less than the LOD or reporting limit (RL) unless otherwise flagged due to quality-control failures.
J Estimated concentration, detected greater than the method detection limit (MDL) and less than the limit of quantitation (LOQ) or RL. Flag applied by the laboratory.
J* Result considered estimated due to a QC failure. Flag applied by Shannon & Wilson, Inc.
B* Sample result affected by laboratory contamination, result considered not detected reported as <[RL]B*. Flag applied by Shannon & Wilson, Inc.

NON-HAZARDOUS WASTE MANIFEST

153419-KC

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677	Manifest Document No. 153419A	2. Page 1 of 1
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		SHANNON & WILSON 2355 HILL ROAD FAIRBANKS, AK 99709		4020
4. Generator's Phone (907) 474-2582				
5. Transporter 1 Company Name NRC ALASKA LLC	6. US EPA ID Number AKR000004184	A. State Transporter's ID		
7. Transporter 2 Company Name		B. Transporter 1 Phone 907-258-1558		
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501		8. US EPA ID Number	C. State Transporter's ID	
		10. US EPA ID Number AKR000004184	D. Transporter 2 Phone	
		E. State Facility's ID		
		F. Facility's Phone 907-258-1558		
11. WASTE DESCRIPTION		Containers No.	13. Total Quantity	14. Unit Wt./Vol.
HM a. MATERIAL NOT REGULATED BY D.O.T.		3 B DM	450	P
b.				
c.				
d.				
G. Additional Descriptions for Materials Listed Above		H. Handling Codes for Wastes Listed Above		
1) EA0302 IDW DECON WATER / GROUNDWATER ^{KC} 0325 PFOA/PFOS Wastewater for treatment (55)		D30826		
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation				
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.				
Printed/Typed Name Theresa K. Harvey		Signature Theresa K. Harvey	Date 9 / 17 / 2020	
17. Transporter 1 Acknowledgement of Receipt of Materials		Date		
Printed/Typed Name Bret Lang		Signature Bret Lang	Date 10 / 20 / 20	
18. Transporter 2 Acknowledgement of Receipt of Materials		Date		
Printed/Typed Name		Signature	Date	
19. Discrepancy Indication Space				
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.				
Printed/Typed Name Patricia L Beasley		Signature Patricia L Beasley	Date 11 / 04 / 20	

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 153419A
DATE OF DISPOSAL/RECYCLE: NOV-04-2020

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	IDW DECON WATER / GROUNDWATER	3	DM	450	P

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: PLB

SIGNATURE: Patricia Beasley

DATE: NOV 04 2020



**ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SPILL PREVENTION AND RESPONSE
Contaminated Sites and Prevention Preparedness and Response Programs**

Contaminated Media Transport and Treatment or Disposal Approval Form

DEC HAZARD/SPILL ID #	NAME OF CONTAMINATED SITE OR SPILL	
1071	FIA - Fire Training Pit	
CONTAMINATED SITE OR SPILL LOCATION – ADDRESS OR OTHER APPROPRIATE DESCRIPTION		
Southwest portion of Fairbanks International Airport: 64.799169 degrees, -147.880750 degrees		
CURRENT PHYSICAL LOCATION OF MEDIA	SOURCE OF THE CONTAMINATION (DAY TANK, WASH BAY, FIRE TRAINING PIT, LUST, ETC.)	
Groundwater (monitoring well purge water)	Fire training activities	
CONTAMINANTS OF CONCERN	ESTIMATED VOLUME	DATE(S) GENERATED
PFOS, PFOA	275 gallons	6/24 to 7/10/20 (anticipated)
POST TREATMENT ANALYSIS REQUIRED (such as GRO, DRO, RRO, VOCs, metals, PFAS, and/or Chlorinated Solvents)		
PFAS, metals, petroleum, and other analytes per NRC Alaska, LLC's industrial wastewater discharge permit		
COMMENTS OR OTHER IMPORTANT INFORMATION		
Analytical results from 2019 are enclosed.		

TREATMENT FACILITY, LANDFILL, AND/OR FINAL DESTINATION OF MEDIA	PHYSICAL ADDRESS/PHONE NUMBER
NRC Alaska, LLC	2020 Viking Drive, Anchorage AK
RESPONSIBLE PARTY	ADDRESS/PHONE NUMBER
Fairbanks International Airport, Katrina LeMieux	(907) 474-2598, 6450 Airport Way, Suite No. 1, Fairbanks, AK 99709
WASTE MANAGEMENT CO. / ORGANIZER	ADDRESS/PHONE NUMBER
NRC Alaska, LLC, Shaun Tucker	(907) 258-1558, 619 East Ship Creek Ave, Suite No. 309, Anchorage, AK 99501

*Note, disposal of polluted soil in a landfill requires prior approval from the landfill operator and ADEC Solid Waste Program.

Marcy Nadel

Name of the Person Requesting Approval (printed)

Signature

Project Manager, Shannon & Wilson, Inc.

Title/Association

6/18/20

Date

(907) 458-3150

Phone Number

-----DEC USE ONLY-----

Based on the information provided, ADEC approves transport of the above mentioned material. The Responsible Party or their consultant must submit to the DEC Project Manager a copy of weight receipts of the loads transported and a post treatment analytical report, if disposed of at an approved treatment facility. The contaminated soil shall be transported as a covered load in compliance with 18 AAC 60.015.

Robert Burgess

DEC Project Manager Name (printed)

Digitally signed by Robert Burgess
Date: 2020.09.15 10:46:51 -08'00'

Signature

EPSIV

Project Manager Title

9/15/20

Date

451-2153

Phone Number


Fairbanks International Airport Monitoring Well Analytical Results

Sample Name			MW-1901-15	MW-1901-40	MW-1901-80	MW-1901-150	MW-1902-15	MW-1902-40	MW-1902-80	MW-1902-150	
Description			Downgradient monitoring well cluster					Upgradient monitoring well cluster			
Analyte	Cleanup Level	Units	9/27/19	9/27/19	10/16/19	10/18/19	10/14/19	10/15/19	10/15/19	10/2/19	
Perfluoro-octanoic acid (PFOA)	400	ppt	120	120	72	<1.8	<1.7	14	0.91 J	<1.9	
Perfluoro-octane sulfonate (PFOS)	400	ppt	95 J*	87 J*	180	1.6 J	<1.7	25	3.2	2.2	
Perfluoro-butane sulfonic acid (PFBS)	—	ppt	410 J*	410 J*	340	0.55 J	<1.7	22	0.65 J	<1.9	
Perfluoro-heptanoic acid (PFHpA)	—	ppt	84	86	59	<1.8	0.27 J	8.0	0.50 J	<1.9	
Perfluoro-nonanoic acid (PFNA)	—	ppt	12 J*	12 J*	<2.0	<1.8	<1.7	<1.8	<1.9	<1.9	
Perfluoro-hexane sulfonic acid (PFHxS)	—	ppt	1,700 J*	1,700 J*	1,000 J*	2.7 JH*	<1.7 B*	110 B	2.3 JH*	<1.9 B*	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	—	ppt	<1.9	<1.9	<2.0	<1.8	<1.7	<1.8	<1.9	<1.9	
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	—	ppt	<1.9	<1.9	<2.0	<1.8	<1.7	<1.8	<1.9	<1.9	
11-Chloroicosafuoro-3-oxaundecane-1-sulfonic acid	—	ppt	<1.9	<1.9	<2.0	<1.8	<1.7	<1.8	<1.9	<1.9	
Perfluoro-tridecanoic acid (PFTriA)	—	ppt	<1.9	<1.9	<2.0	<1.8	<1.7	<1.8	<1.9	<1.9	
Perfluoro-tetradecanoic acid (PFTeA)	—	ppt	<1.9	<1.9	<2.0	<1.8	<1.7	<1.8	<1.9	<1.9	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	ppt	<3.9	<3.9	<4.0	<3.6	<3.4	<3.6	<3.7	<3.8	
Perfluorodecanoic acid (PFDA)	—	ppt	<1.9	<1.9	<2.0	<1.8	<1.7	<1.8	<1.9	<1.9	
N-ethylperfluorooctanesulfonamidoacetic acid (NEFOSAA)	—	ppt	<1.9	<1.9	<2.0	<1.8	<1.7	<1.8	<1.9	<1.9	
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	—	ppt	<1.9	<1.9	<2.0	<1.8	<1.7	<1.8	<1.9	<1.9	
Perfluorohexanoic acid (PFHxA)	—	ppt	750 J*	740 J*	570 J*	1.2 J	<1.7	60	1.4 J	<1.9	
Perfluoroundecanoic acid (PFUnA)	—	ppt	<1.9	<1.9	<2.0	<1.8	<1.7	<1.8	<1.9	<1.9	
Perfluoro-dodecanoic acid (PFDoA)	—	ppt	<1.9	<1.9	<2.0	<1.8	<1.7	<1.8	<1.9	<1.9	

- ppt parts per trillion, equivalent to nanograms per liter
 — Action level not established.
 < Analyte not detected, listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.
 J Estimated concentration, detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.
 J* Result considered estimated due to a QC failure. Flag applied by Shannon & Wilson, Inc.
 JH* Estimated concentration, biased high due to quality control failures. Flag applied by Shannon & Wilson, Inc.
 B Compound was found in the blank and sample. Flag applied by the laboratory.
 B* Result is included in the same preparatory batch as a blank detection for the associated analyte. Flag applied by Shannon & Wilson, Inc.

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677		Manifest Document No. 158520A	2. Page 1 of 1	
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		4017		
4. Generator's Phone (907)474-2582						
5. Transporter 1 Company Name NRC ALASKA LLC		6. US EPA ID Number AKR000004184		A. State Transporter's ID		
7. Transporter 2 Company Name		8. US EPA ID Number		B. Transporter 1 Phone 907-258-1558		
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501		10. US EPA ID Number AKR000004184		C. State Transporter's ID		
				D. Transporter 2 Phone		
				E. State Facility's ID		
				F. Facility's Phone 907-258-1558		
11. WASTE DESCRIPTION			Containers		13. Total Quantity	14. Unit WL/Vol.
			No.	Type		
<input type="checkbox"/> HM <input checked="" type="checkbox"/> Material Not Regulated by DOT			3	DM	400	P
b.						
c.						
d.						
G. Additional Descriptions for Materials Listed Above 1) EA0325 PFOS/PFOA CONTAMINATED WASTEWATER (SS)			H. Handling Codes for Wastes Listed Above D33401			
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation						
						
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.						
Printed/Typed Name Susan M. Ault				Signature <i>Susan M. Ault</i>		Date Month Day Year 10 30 2000
17. Transporter 1 Acknowledgement of Receipt of Materials				Signature <i>Bret Lang</i>		Date Month Day Year 11 19 20
Printed/Typed Name Bret Lang				Signature		Date
18. Transporter 2 Acknowledgement of Receipt of Materials				Signature		Date
Printed/Typed Name				Signature		Date
19. Discrepancy Indication Space						
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.						
Printed/Typed Name Patricia L Beasley				Signature <i>Patricia L Beasley</i>		Date Month Day Year 12 30 20

NON-HAZARDOUS WASTE GENERATOR



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 158520A
DATE OF DISPOSAL/RECYCLE: DEC-30-2020

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER	3	DM	400	P

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: ^{PLB} _____

SIGNATURE: Patricia L Beasley DATE: DEC 30 2020



**ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SPILL PREVENTION AND RESPONSE
Contaminated Sites and Prevention Preparedness and Response Programs**

Contaminated Media Transport and Treatment or Disposal Approval Form

DEC HAZARD/SPILL ID #	NAME OF CONTAMINATED SITE OR SPILL	
1071	FIA - Fire Training Pit	
CONTAMINATED SITE OR SPILL LOCATION - ADDRESS OR OTHER APPROPRIATE DESCRIPTION		
Southwest portion of Fairbanks International Airport: 64.799169 degrees, -147.880750 degrees		
CURRENT PHYSICAL LOCATION OF MEDIA	SOURCE OF THE CONTAMINATION (DAY TANK, WASH BAY, FIRE TRAINING PIT, LUST, ETC.)	
Groundwater (monitoring well purge water)	Fire training activities	
CONTAMINANTS OF CONCERN	ESTIMATED VOLUME	DATE(S) GENERATED
PFOS, PFOA	200 gallons	10/27 and 10/28
POST TREATMENT ANALYSIS REQUIRED (such as GRO, DRO, RRO, VOCs, metals, PFAS, and/or Chlorinated Solvents)		
PFAS, metals, petroleum, and other analytes per NRC Alaska, LLC's industrial wastewater discharge permit		
COMMENTS OR OTHER IMPORTANT INFORMATION		
Analytical results from 2020 are enclosed.		

TREATMENT FACILITY, LANDFILL, AND/OR FINAL DESTINATION OF MEDIA	PHYSICAL ADDRESS/PHONE NUMBER
NRC Alaska, LLC	2020 Viking Drive, Anchorage AK
RESPONSIBLE PARTY	ADDRESS/PHONE NUMBER
Fairbanks International Airport - Sammy Cummings	(907) 888-5671, 6450 Airport Way, Suite No. 1, Fairbanks, AK 99709
WASTE MANAGEMENT CO. / ORGANIZER	ADDRESS/PHONE NUMBER
NRC Alaska, LLC, Shaun Tucker	(907) 258-1558, 619 East Ship Creek Ave, Suite No. 309, Anchorage, AK 99501

*Note, disposal of polluted soil in a landfill requires prior approval from the landfill operator and ADEC Solid Waste Program.

Ashley Jaramillo

Name of the Person Requesting Approval (printed)

Ashley Jaramillo

Signature

Chemist, Shannon & Wilson, Inc.

Title/Association

10/30/20

Date

(907) 458-3118

Phone Number

-----DEC USE ONLY-----

Based on the information provided, ADEC approves transport of the above mentioned material. The Responsible Party or their consultant must submit to the DEC Project Manager a copy of weight receipts of the loads transported and a post treatment analytical report, if disposed of at an approved treatment facility. The contaminated soil shall be transported as a covered load in compliance with 18 AAC 60.015.

Robert Burgess

DEC Project Manager Name (printed)

Robert A. Burgess

Signature

Digitally signed by Robert Burgess
Date: 2020.10.30 15:54:57 -08'00'

EPSIV

Project Manager Title

10/30/20

Date

907-451-2153

Phone Number

Table 2 - Summary of June 2020 Monitoring Well Analytical Results

Sample Name		MW-1901-15	MW-1901-40	MW-1901-80	MW-1901-150	MW-1902-15		MW-1902-40	MW-1902-80	MW-1902-150		
Description		Downgradient monitoring well cluster				Upgradient monitoring well cluster						
Analyte	Method	Cleanup Level	Units	6/25/20	6/25/20	6/25/20	6/25/20	6/26/20	6/26/20	6/26/20	6/25/20	
Perfluorohexanesulfonic acid (PFHxS)	EPA 537.1M	—	ng/L	3,400	1,000	<1.8 B*	<1.9 B*	22	22	<1.8 B*	<1.8 B*	<1.8 B*
Perfluorohexanoic acid (PFHxA)		—	ng/L	1,000	760	<1.8	<1.9	8.4	8.2	0.71 J	<1.8	<1.8
Perfluoroheptanoic acid (PFHpA)		—	ng/L	89 J	57 J	<1.8	<1.9	1.5 J	1.4 J	0.26 J	<1.8	<1.8
Perfluorononanoic acid (PFNA)		—	ng/L	<170	<180	<1.8	<1.9	<1.9	<1.8	<1.8	<1.8	<1.8
Perfluorobutanesulfonic acid (PFBS)		—	ng/L	520	470	0.28 J	<1.9	3.6	3.5	0.38 J	0.23 J	0.20 J
Perfluorodecanoic acid (PFDA)		—	ng/L	<170	<180	<1.8	<1.9	<1.9	<1.8	<1.8	<1.8	<1.8
Perfluoroundecanoic acid (PFUnA)		—	ng/L	<170	<180	<1.8	<1.9	<1.9	<1.8	<1.8	<1.8	<1.8
Perfluorododecanoic acid (PFDoA)		—	ng/L	<170	<180	<1.8	<1.9	<1.9	<1.8	<1.8	<1.8	<1.8
Perfluorotridecanoic acid (PFTriDA)		—	ng/L	<170	<180	<1.8	<1.9	<1.9	<1.8	<1.8	<1.8	<1.8
Perfluorotetradecanoic acid (PFTeA)		—	ng/L	<170	<180	0.30 J	<1.9	<1.9	0.40 J	<1.8	<1.8	<1.8
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)		—	ng/L	<1,700	<1,800	<18	<19	<19	<18	<18	<18	<18
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)		—	ng/L	<1,700	<1,800	<18	<19	<19	<18	<18	<18	<18
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid		—	ng/L	<170	<180	<1.8	<1.9	<1.9	<1.8	<1.8	<1.8	<1.8
11-Chloroheptacosafuoro-3-oxaundecane-1-sulfonic acid		—	ng/L	<170	<180	<1.8	<1.9	<1.9	<1.8	<1.8	<1.8	<1.8
4,8-Dioxa-3H-perfluorononanoic acid (DONA)		—	ng/L	<170	<180	<1.8	<1.9	<1.9	<1.8	<1.8	<1.8	<1.8
Hexafluoropropylene oxide dimer acid (HFPO-DA)		—	ng/L	<340	<370	<3.6	<3.8	<3.7	<3.6	<3.7	<3.5	<3.6
Perfluorooctanesulfonic acid (PFOS)		400	ng/L	64 J	170 J	0.98 J	0.58 J	12	12	1.8	0.73 J	0.49 J
Perfluorooctanoic acid (PFOA)		400	ng/L	150 J	<180	<1.8	<1.9	2.6	2.7	<1.8	<1.8	<1.8
Diesel Range Organics (DRO)		AK 102	1.5	mg/L	<0.556 B*	—	—	—	<0.577 B*	<0.577 B*	—	—
1,1,1,2-Tetrachloroethane		SW8260	5.7	µg/L	<0.250	—	—	—	<0.250	<0.250	—	—
1,1,1-Trichloroethane	8,000		µg/L	<0.500	—	—	—	<0.500	<0.500	—	—	
1,1,2,2-Tetrachloroethane	0.76		µg/L	<0.250	—	—	—	<0.250	<0.250	—	—	
1,1,2-Trichloroethane	0.41		µg/L	<0.200	—	—	—	<0.200	<0.200	—	—	
1,1-Dichloroethane	28		µg/L	<0.500	—	—	—	<0.500	<0.500	—	—	
1,1-Dichloroethene	280		µg/L	<0.500	—	—	—	<0.500	<0.500	—	—	
1,1-Dichloropropene	—		µg/L	<0.500	—	—	—	<0.500	<0.500	—	—	
1,2,3-Trichlorobenzene	7		µg/L	<0.500	—	—	—	<0.500	<0.500	—	—	
1,2,3-Trichloropropane	0.0075		µg/L	<0.500	—	—	—	<0.500	<0.500	—	—	
1,2,4-Trichlorobenzene	4		µg/L	<0.500	—	—	—	<0.500	<0.500	—	—	
1,2,4-Trimethylbenzene	56		µg/L	<0.500	—	—	—	<0.500	<0.500	—	—	
1,2-Dibromo-3-chloropropane	—		µg/L	<5.00	—	—	—	<5.00	<5.00	—	—	
1,2-Dibromoethane	0.075		µg/L	<0.0375	—	—	—	<0.0375	<0.0375	—	—	
1,2-Dichlorobenzene	300		µg/L	<0.500	—	—	—	<0.500	<0.500	—	—	
1,2-Dichloroethane	1.7		µg/L	<0.250	—	—	—	<0.250	<0.250	—	—	
1,2-Dichloropropane	8.2		µg/L	<0.500	—	—	—	<0.500	<0.500	—	—	
1,3,5-Trimethylbenzene	60		µg/L	<0.500	—	—	—	<0.500	<0.500	—	—	
1,3-Dichlorobenzene	300		µg/L	<0.500	—	—	—	<0.500	<0.500	—	—	
1,3-Dichloropropane	—		µg/L	<0.250	—	—	—	<0.250	<0.250	—	—	
1,4-Dichlorobenzene	4.8		µg/L	<0.250	—	—	—	<0.250	<0.250	—	—	
2,2-Dichloropropane	—	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—		

Table 2 - Summary of June 2020 Monitoring Well Analytical Results

Sample Name		MW-1901-15	MW-1901-40	MW-1901-80	MW-1901-150	MW-1902-15	MW-1902-40	MW-1902-80	MW-1902-150		
Description		Downgradient monitoring well cluster				Upgradient monitoring well cluster					
Analyte	Method	Cleanup Level	Units	6/25/20	6/25/20	6/25/20	6/25/20	6/26/20	6/26/20	6/26/20	6/25/20
2-Butanone (MEK)	SW8260	5,600	µg/L	<5.00	—	—	—	<5.00	<5.00	—	—
2-Chlorotoluene		—	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
2-Hexanone		38	µg/L	<5.00	—	—	—	<5.00	<5.00	—	—
4-Chlorotoluene		—	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
4-Methyl-2-pentanone (MIBK)		6,300	µg/L	<5.00	—	—	—	<5.00	<5.00	—	—
Benzene		4.6	µg/L	<0.200	—	—	—	<0.200	<0.200	—	—
Bromobenzene		62	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
Bromochloromethane		—	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
Bromodichloromethane		1.3	µg/L	<0.250	—	—	—	<0.250	<0.250	—	—
Bromoform		33	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
Bromomethane		7.5	µg/L	<2.50	—	—	—	<2.50	<2.50	—	—
Carbon disulfide		810	µg/L	<5.00	—	—	—	<5.00	<5.00	—	—
Carbon tetrachloride		4.6	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
Chlorobenzene		78	µg/L	<0.250	—	—	—	<0.250	<0.250	—	—
Chloroethane		21,000	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
Chloroform		2.2	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
Chloromethane		190	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
cis-1,2-Dichloroethene		36	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
cis-1,3-Dichloropropene		4.7	µg/L	<0.250	—	—	—	<0.250	<0.250	—	—
Dibromochloromethane		8.7	µg/L	<0.250	—	—	—	<0.250	<0.250	—	—
Dibromomethane		8.3	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
Dichlorodifluoromethane		200	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
Ethylbenzene		15	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
Hexachlorobutadiene		1.4	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
Isopropylbenzene		450	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
Methylene chloride		110	µg/L	<5.00	—	—	—	<5.00	<5.00	—	—
Methyl-t-butyl ether		140	µg/L	<5.00	—	—	—	<5.00	<5.00	—	—
Naphthalene		1.7	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
n-Butylbenzene		1,000	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
n-Propylbenzene		660	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
o-Xylene		190	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
P & M -Xylene			µg/L	<1.00	—	—	—	<1.00	<1.00	—	—
p-Isopropyltoluene		—	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
sec-Butylbenzene		2,000	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
Styrene	1,200	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—	
tert-Butylbenzene	690	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—	
Tetrachloroethene	41	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—	
Toluene	1,100	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—	
Total Xylenes	190	µg/L	<1.50	—	—	—	<1.50	<1.50	—	—	
trans-1,2-Dichloroethene	360	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—	

Table 2 - Summary of June 2020 Monitoring Well Analytical Results

Sample Name				MW-1901-15	MW-1901-40	MW-1901-80	MW-1901-150	MW-1902-15	MW-1902-40	MW-1902-80	MW-1902-150
Description				Downgradient monitoring well cluster				Upgradient monitoring well cluster			
Analyte	Method	Cleanup Level	Units	6/25/20	6/25/20	6/25/20	6/25/20	6/26/20	6/26/20	6/26/20	6/25/20
trans-1,3-Dichloropropene	SW8260	4.7	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
Trichloroethene		2.8	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
Trichlorofluoromethane		5,200	µg/L	<0.500	—	—	—	<0.500	<0.500	—	—
Trichlorotrifluoroethane		10,000	µg/L	<5.00	—	—	—	<5.00	<5.00	—	—
Vinyl acetate		410	µg/L	<5.00	—	—	—	<5.00	<5.00	—	—
Vinyl chloride		0.19	µg/L	<0.0750	—	—	—	<0.0750	<0.0750	—	—

ng/L nanograms per liter, equivalent to parts per trillion

mg/L milligrams per liter

µg/L micrograms per liter

— Cleanup level not established or sample not submitted.

< Analyte not detected; listed as less than the reporting limit (RL) or limit of quantitation (LOQ) unless otherwise flagged due to quality-control (QC) failures.



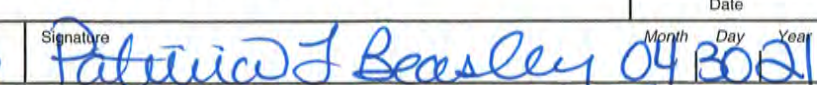
Bold Concentration exceeds DEC groundwater-cleanup levels reported in 18 AAC 75, Table C.

J Estimated concentration, detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.

B* Result considered non-detect due to method blank detection; presented as less than the LOQ. Flag applied by Shannon & Wilson, Inc.

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD983068677		Manifest Document No. 164682A	2. Page 1 of 1
3. Generator's Name and Mailing Address FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		FAIRBANKS INT'L AIRPORT 6450 AIRPORT WAY, SUITE 1 FAIRBANKS, AK 99709		470T	
4. Generator's Phone (907) 474-2582					
5. Transporter 1 Company Name NRC ALASKA LLC		6. US EPA ID Number AKR000004184		A. State Transporter's ID	
7. Transporter 2 Company Name		8. US EPA ID Number		B. Transporter 1 Phone 907-258-1558	
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501		10. US EPA ID Number AKR000004184		C. State Transporter's ID	
				D. Transporter 2 Phone	
				E. State Facility's ID	
				F. Facility's Phone 907-258-1558	
11. WASTE DESCRIPTION			Containers		13. Total Quantity
			No.	Type	14. Unit Wt./Vol.
<input checked="" type="checkbox"/> Material Not Regulated by DOT			5	DM	1100
b.					P
c.					
d.					
G. Additional Descriptions for Materials Listed Above			H. Handling Codes for Wastes Listed Above		
1) EA0325 PFOS/PFOA CONTAMINATED WASTEWATER (DMSS)			D95518		
15. Special Handling Instructions and Additional Information					
Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation					
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.					
Printed/Typed Name A. Spear				Date Month Day Year 4 | 15 | 21	
Signature 					
17. Transporter 1 Acknowledgement of Receipt of Materials				Date	
Printed/Typed Name Eric Gau				Month Day Year 4 | 15 | 21	
Signature 					
18. Transporter 2 Acknowledgement of Receipt of Materials				Date	
Printed/Typed Name				Month Day Year	
Signature					
19. Discrepancy Indication Space					
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.					
H135				Date	
Printed/Typed Name Patricia L Beasley				Month Day Year 04 | 30 | 21	
Signature 					

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY



CERTIFICATE OF DISPOSAL/RECYCLE

A US Ecology subsidiary company

GENERATOR: FAIRBANKS INT'L AIRPORT
6450 AIRPORT WAY, SUITE 1
FAIRBANKS, AK 99709

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD983068677
MANIFEST/DOCUMENT #: 164682A
DATE OF DISPOSAL/RECYCLE: APR-30-2021

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	PFOS/PFOA CONTAMINATED WASTEWATER (DM55)	5	DM	1100	P

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: **PLB**

SIGNATURE: *Patricia J Beasley*

APR 30 2021

DATE: _____



**ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SPILL PREVENTION AND RESPONSE
Contaminated Sites and Prevention Preparedness and Response Programs**

Contaminated Media Transport and Treatment or Disposal Approval Form

DEC HAZARD/SPILL ID #	NAME OF CONTAMINATED SITE OR SPILL		
1071	Fairbanks International Airport - Former Fire Training Pit		
CONTAMINATED SITE OR SPILL LOCATION – ADDRESS OR OTHER APPROPRIATE DESCRIPTION			
Southwest portion of Fairbanks International Airport: 64.799169 degrees, -147.880750 degrees			
CURRENT PHYSICAL LOCATION OF MEDIA		SOURCE OF THE CONTAMINATION (DAY TANK, WASH BAY, FIRE TRAINING PIT, LUST, ETC.)	
Groundwater (monitoring well purge water)		Historic fire training	
CONTAMINANTS OF CONCERN	ESTIMATED VOLUME	DATE(S) GENERATED	
PFOS, PFOA	350 gallons	1/18-1/19/21, 4/8-4/9/21	
POST TREATMENT ANALYSIS REQUIRED (such as GRO, DRO, RRO, VOCs, metals, PFAS, and/or Chlorinated Solvents)			
PFAS, metals, petroleum, and other analytes per US Ecology/NRC Alaska's industrial wastewater discharge permit			
COMMENTS OR OTHER IMPORTANT INFORMATION			
Analytical results from January 2021 are enclosed, results from April 2021 are expected to be similar.			

TREATMENT FACILITY, LANDFILL, AND/OR FINAL DESTINATION OF MEDIA	PHYSICAL ADDRESS/PHONE NUMBER
NRC Alaska, LLC	2020 Viking Drive, Anchorage AK
RESPONSIBLE PARTY	ADDRESS/PHONE NUMBER
Fairbanks International Airport, Sammy Cummings	6450 Airport Way, Suite No. 1, Fairbanks, AK 99709 / (907) 888-5671
WASTE MANAGEMENT CO. / ORGANIZER	ADDRESS/PHONE NUMBER
US Ecology/NRC Alaska, Kimberly Curtiss	1315 Queens Way, Fairbanks, AK 99701 / (907) 258-1558

*Note, disposal of polluted soil in a landfill requires prior approval from the landfill operator and ADEC Solid Waste Program.

Marcy Nadel

Name of the Person Requesting Approval (printed)

M. Nadel

Signature

Geologist, Shannon & Wilson, Inc.

Title/Association

4/2/21

Date

(907) 458-3150

Phone Number

-----DEC USE ONLY-----

Based on the information provided, ADEC approves transport of the above mentioned material. The Responsible Party or their consultant must submit to the DEC Project Manager a copy of weight receipts of the loads transported and a post treatment analytical report, if disposed of at an approved treatment facility. The contaminated soil shall be transported as a covered load in compliance with 18 AAC 60.015.

Robert Burgess

DEC Project Manager Name (printed)

Robert A. Burgess

Signature

Digitally signed by Robert Burgess
Date: 2021.04.05 11:37:31 -08'00'

EPSIV

Project Manager Title

4/6/21

Date

451-2153

Phone Number

January 2021 Fire Training Pit Monitoring Well Analytical Results

Sample Name				MW-1901-15	MW-1901-40	MW-1901-80 and DUP		MW-1901-150	MW-1902-15 and DUP		MW-1902-40	MW-1902-80	MW-1902-150
Description				Downgradient monitoring well cluster					Upgradient monitoring well cluster				
Analytical Method	Analyte	Action Level	Units	1/18/21	1/19/21	1/19/21	1/19/21	1/19/21	1/18/21	1/18/21	1/18/21	1/18/21	1/18/21
EPA 537.1M	Perfluorohexanesulfonic acid (PFHxS)	—	ng/L	2,100	2,700	1.4 J	1.4 J	1.0 J	47	45	1.5 J	1.2 J	1.1 J
	Perfluorohexanoic acid (PFHxA)	—	ng/L	770	1,300	<1.9	<1.8	<1.8	14	14	<1.8	<1.8	<1.9
	Perfluoroheptanoic acid (PFHpA)	—	ng/L	64	140	<1.9	<1.8	<1.8	2.2	2.5	<1.8	<1.8	<1.9
	Perfluorononanoic acid (PFNA)	—	ng/L	<1.8	0.25 J	<1.9	<1.8	<1.8	<1.9	<1.9	<1.8	<1.8	<1.9
	Perfluorobutanesulfonic acid (PFBS)	—	ng/L	380	880	0.28 J*	0.36 J	0.18 J	5.9	6.0	0.30 J	0.21 J	0.19 J
	Perfluorodecanoic acid (PFDA)	—	ng/L	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.9	<1.8	<1.8	<1.9
	Perfluoroundecanoic acid (PFUnA)	—	ng/L	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.9	<1.8	<1.8	<1.9
	Perfluorododecanoic acid (PFDoA)	—	ng/L	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.9	<1.8	<1.8	<1.9
	Perfluorotridecanoic acid (PFTrDA)	—	ng/L	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.9	<1.8	<1.8	<1.9
	Perfluorotetradecanoic acid (PFTeA)	—	ng/L	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.9	<1.8	<1.8	<1.9
	N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	ng/L	<4.6	<4.6	<4.8	<4.6	<4.6	<4.7	<4.7	<4.6	<4.6	<4.7
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	ng/L	<4.6	<4.6	<4.8	<4.6	<4.6	<4.7	<4.7	<4.6	<4.6	<4.7
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	—	ng/L	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.9	<1.8	<1.8	<1.9
	11-Chloroicosadecafluoro-3-oxadecane-1-sulfonic acid (11Cl-PF3OUdS)	—	ng/L	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.9	<1.8	<1.8	<1.9
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	—	ng/L	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.9	<1.8	<1.8	<1.9
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	ng/L	<3.6	<3.7	<3.8	<3.7	<3.7	<3.8	<3.8	<3.7	<3.6	<3.7
	Perfluorooctanesulfonic acid (PFOS)	400	ng/L	50	300	0.90 J	0.86 J	—	12	13	1.6 J	0.67 J	0.68 J
Perfluorooctanoic acid (PFOA)	400	ng/L	80	140	<1.9	<1.8	<1.8	—	4.2	5.0	<1.8	<1.8	<1.9
AK102	Diesel Range Organics	1.5	ng/L	<0.577B*	—	—	—	—	<0.577 B*	<0.577 B*	—	—	—
SW8260C	1,1,1,2-Tetrachloroethane	5.7	µg/L	<0.25	—	—	—	—	<0.25	<0.25	—	—	—
	1,1,1-Trichloroethane	8,000	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	1,1,2-Tetrachloroethane	0.76	µg/L	<0.25	—	—	—	—	<0.25	<0.25	—	—	—
	1,1,2-Trichloroethane	0.41	µg/L	<0.20	—	—	—	—	<0.20	<0.20	—	—	—
	1,1-Dichloroethane	28	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	1,1-Dichloroethene	280	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	1,1-Dichloropropene	—	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	1,2,3-Trichlorobenzene	7.0	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	1,2,3-Trichloropropane	0.0075	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	1,2,4-Trichlorobenzene	4.0	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	1,2,4-Trimethylbenzene	56	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	1,2-Dibromo-3-chloropropane	—	µg/L	<5.0	—	—	—	—	<5.0	<5.0	—	—	—
	1,2-Dibromoethane	0.075	µg/L	<0.038	—	—	—	—	<0.038	<0.038	—	—	—
	1,2-Dichlorobenzene	300	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	1,2-Dichloroethane	1.7	µg/L	<0.25	—	—	—	—	<0.25	<0.25	—	—	—
	1,2-Dichloropropane	8.2	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	1,3,5-Trimethylbenzene	60	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	1,3-Dichlorobenzene	300	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	1,3-Dichloropropane	—	µg/L	<0.25	—	—	—	—	<0.25	<0.25	—	—	—
	1,4-Dichlorobenzene	4.8	µg/L	<0.25	—	—	—	—	<0.25	<0.25	—	—	—
	2,2-Dichloropropane	—	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	2-Butanone (MEK)	5,600	µg/L	<5.0	—	—	—	—	<5.0	<5.0	—	—	—
	2-Chlorotoluene	—	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	2-Hexanone	38	µg/L	<5.0	—	—	—	—	<5.0	<5.0	—	—	—
	4-Chlorotoluene	—	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Benzene	4.6	µg/L	<0.20	—	—	—	—	<0.20	<0.20	—	—	—
	Bromobenzene	62	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Bromochloromethane	—	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Bromodichloromethane	1.3	µg/L	<0.25	—	—	—	—	<0.25	<0.25	—	—	—
	Bromoform	33	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—

January 2021 Fire Training Pit Monitoring Well Analytical Results

Sample Name				MW-1901-15	MW-1901-40	MW-1901-80 and DUP		MW-1901-150	MW-1902-15 and DUP		MW-1902-40	MW-1902-80	MW-1902-150
Description				Downgradient monitoring well cluster					Upgradient monitoring well cluster				
Analytical Method	Analyte	Action Level	Units	1/18/21	1/19/21	1/19/21	1/19/21	1/19/21	1/18/21	1/18/21	1/18/21	1/18/21	1/18/21
SW8260C	Bromomethane	7.5	µg/L	<2.5	—	—	—	—	<2.5	<2.5	—	—	—
	Carbon disulfide	810	µg/L	<5.0	—	—	—	—	<5.0	<5.0	—	—	—
	Carbon tetrachloride	4.6	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Chlorobenzene	78	µg/L	<0.25	—	—	—	—	<0.25	<0.25	—	—	—
	Chloroethane	21,000	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Chloroform	2.2	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Chloromethane	190	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	cis-1,2-Dichloroethene	36	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	cis-1,3-Dichloropropene	4.7	µg/L	<0.25	—	—	—	—	<0.25	<0.25	—	—	—
	Dibromochloromethane	8.7	µg/L	<0.25	—	—	—	—	<0.25	<0.25	—	—	—
	Dibromomethane	8.3	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Dichlorodifluoromethane	200	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Ethylbenzene	15	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Hexachlorobutadiene	1.4	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Isopropylbenzene	450	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Methyl isobutyl ketone	6,300	µg/L	<5.0	—	—	—	—	<5.0	<5.0	—	—	—
	Methylene chloride	110	µg/L	<5.0	—	—	—	—	<5.0	<5.0	—	—	—
	Methyl-t-butyl ether (MTBE)	140	µg/L	<5.0	—	—	—	—	<5.0	<5.0	—	—	—
	Naphthalene	1.7	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	n-Butylbenzene	1,000	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	n-Propylbenzene	660	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	o-Xylene	190	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	P & M -Xylene	190	µg/L	<1.0	—	—	—	—	<1.0	<1.0	—	—	—
	p-Isopropyltoluene	—	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	sec-Butylbenzene	2,000	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Styrene	1,200	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	tert-Butylbenzene	690	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Tetrachloroethene	41	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Toluene	1,100	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—
	Total Xylenes	190	µg/L	<1.5	—	—	—	—	<1.5	<1.5	—	—	—
trans-1,2-Dichloroethene	360	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—	
trans-1,3-Dichloropropene	4.7	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—	
Trichloroethene	2.8	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—	
Trichlorofluoromethane	5,200	µg/L	<0.50	—	—	—	—	<0.50	<0.50	—	—	—	
Trichlorotrifluoroethane	10,000	µg/L	<5.0	—	—	—	—	<5.0	<5.0	—	—	—	
Vinyl acetate	410	µg/L	<5.0	—	—	—	—	<5.0	<5.0	—	—	—	
Vinyl chloride	0.190	µg/L	<0.075	—	—	—	—	<0.075	<0.075	—	—	—	

DUP Field-duplicate sample
ng/L nanograms per liter, equivalent to parts per trillion
µg/L micrograms per liter
mg/L milligrams per liter
— Cleanup level not established or sample not submitted.
BOLD Concentration exceeds DEC groundwater-cleanup level reported in 18 AAC 75, Table C.
BOLD Limit of detection (LOD) exceeds DEC groundwater-cleanup level.
< Analyte not detected; listed as less than the LOD or reporting limit (RL) unless otherwise flagged due to quality-control failures.
J Estimated concentration, detected greater than the method detection limit (MDL) and less than the limit of quantitation (LOQ) or RL. Flag applied by the laboratory.
J* Result considered estimated due to a QC failure. Flag applied by Shannon & Wilson, Inc.
B* Sample result affected by laboratory contamination, result considered not detected reported as <[RL]B*. Flag applied by Shannon & Wilson, Inc.

Appendix D
Boring Logs

APPENDIX D: BORING LOGS

Shannon & Wilson, Inc. (S&W), uses a soil classification system modified from the Unified Soil Classification System (USCS). Elements of the USCS and other definitions are provided on this and the following page. Soil descriptions are based on visual-manual procedures (ASTM D 2488-93) unless otherwise noted.

S&W CLASSIFICATION OF SOIL CONSTITUENTS

- MAJOR constituents compose more than 50 percent, by weight, of the soil. Major constituents are capitalized (i.e., SAND).
- Minor constituents compose 12 to 50 percent of the soil and precede the major constituents (i.e., silty SAND). Minor constituents preceded by "slightly" compose 5 to 12 percent of the soil (i.e., slightly silty SAND).
- Trace constituents compose 0 to 5 percent of the soil (i.e., slightly silty SAND, trace of gravel).

MOISTURE CONTENT DEFINITIONS

Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, from below water table

ABBREVIATIONS

ATD	At Time of Drilling
Elev.	Elevation
ft	feet
FeO	Iron Oxide
MgO	Magnesium Oxide
HSA	Hollow Stem Auger
ID	Inside Diameter
in	inches
lbs	pounds
Mon.	Monument cover
N	Blows for last two 6-inch increments
NA	Not applicable or not available
NP	Non plastic
OD	Outside diameter
OVA	Organic vapor analyzer
PID	Photo-ionization detector
ppm	parts per million
PVC	Polyvinyl Chloride
SS	Split spoon sampler
SPT	Standard penetration test
USC	Unified soil classification
WOH	Weight of hammer
WOR	Weight of drill rods
WLI	Water level indicator

GRAIN SIZE DEFINITION

DESCRIPTION	SIEVE NUMBER AND/OR SIZE
FINES	< #200 (0.08 mm)
SAND* - Fine - Medium - Coarse	#200 to #40 (0.08 to 0.4 mm) #40 to #10 (0.4 to 2 mm) #10 to #4 (2 to 5 mm)
GRAVEL* - Fine - Coarse	#4 to 3/4 inch (5 to 19 mm) 3/4 to 3 inches (19 to 76 mm)
COBBLES	3 to 12 inches (76 to 305 mm)
BOULDERS	> 12 inches (305 mm)

* Unless otherwise noted, sand and gravel, when present, range from fine to coarse in grain size.

RELATIVE DENSITY / CONSISTENCY

COARSE-GRAINED SOILS		FINE-GRAINED SOILS	
N, SPT, BLOWS/FT.	RELATIVE DENSITY	N, SPT, BLOWS/FT.	RELATIVE CONSISTENCY
0 - 4	Very loose	Under 2	Very soft
4 - 10	Loose	2 - 4	Soft
10 - 30	Medium dense	4 - 8	Medium stiff
30 - 50	Dense	8 - 15	Stiff
Over 50	Very dense	15 - 30	Very stiff
		Over 30	Hard

WELL AND OTHER SYMBOLS

	Bent. Cement Grout		Surface Cement Seal
	Bentonite Grout		Asphalt or Cap
	Bentonite Chips		Slough
	Silica Sand		Bedrock
	PVC Screen		
	Vibrating Wire		

FAI Fire Training Pit
Corrective Action
Fairbanks International Airport

SOIL CLASSIFICATION AND LOG KEY
















June 2021

103519-010

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Figure D-1

**UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)
(From ASTM D 2487-98 & 2488-93)**

MAJOR DIVISIONS		GROUP/GRAPHIC SYMBOL	TYPICAL DESCRIPTION	
COARSE-GRAINED SOILS (more than 50% retained on No. 200 sieve)	Gravels (more than 50% of coarse fraction retained on No. 4 sieve)	Clean Gravels (less than 5% fines)	GW 	Well-graded gravels, gravels, gravel/sand mixtures, little or no fines.
		Gravels with Fines (more than 12% fines)	GP 	Poorly graded gravels, gravel-sand mixtures, little or no fines
			GM 	Silty gravels, gravel-sand-silt mixtures
		GC 	Clayey gravels, gravel-sand-clay mixtures	
	Sands (50% or more of coarse fraction passes the No. 4 sieve)	Clean Sands (less than 5% fines)	SW 	Well-graded sands, gravelly sands, little or no fines
		Sands with Fines (more than 12% fines)	SP 	Poorly graded sand, gravelly sands, little or no fines
			SM 	Silty sands, sand-silt mixtures
		SC 	Clayey sands, sand-clay mixtures	
FINE-GRAINED SOILS (50% or more passes the No. 200 sieve)	Silts and Clays (liquid limit less than 50)	Inorganic	ML 	Inorganic silts of low to medium plasticity, rock flour, sandy silts, gravelly silts, or clayey silts with slight plasticity
			CL 	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		Organic	OL 	Organic silts and organic silty clays of low plasticity
	Silts and Clays (liquid limit 50 or more)	Inorganic	MH 	Inorganic silts, micaceous or diatomaceous fine sands or silty soils, elastic silt
			CH 	Inorganic clays of medium to high plasticity, sandy fat clay, or gravelly fat clay
		Organic	OH 	Organic clays of medium to high plasticity, organic silts
HIGHLY-ORGANIC SOILS	Primarily organic matter, dark in color, and organic odor	PT 	Peat, humus, swamp soils with high organic content (see ASTM D 4427)	

NOTE: No. 4 size = 5 mm; No. 200 size = 0.075 mm

NOTES

- Dual symbols (symbols separated by a hyphen, i.e., SP-SM, slightly silty fine SAND) are used for soils with between 5% and 12% fines or when the liquid limit and plasticity index values plot in the CL-ML area of the plasticity chart.
- Borderline symbols (symbols separated by a slash, i.e., CL/ML, silty CLAY/clayey SILT; GW/SW, sandy GRAVEL/gravelly SAND) indicate that the soil may fall into one of two possible basic groups.

FAI Fire Training Pit
Corrective Action
Fairbanks International Airport

**SOIL CLASSIFICATION
AND LOG KEY**

June 2021

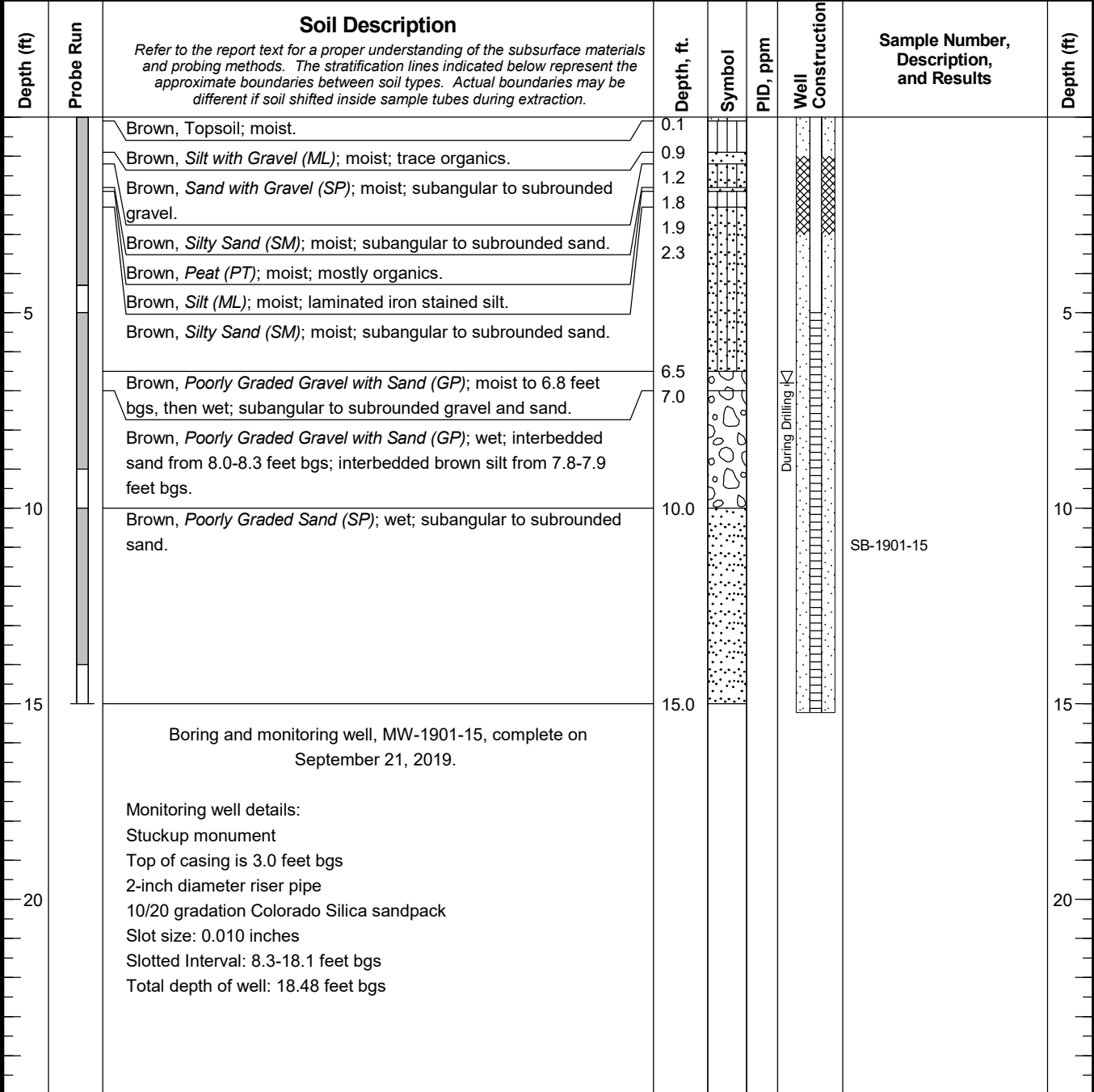
103519-010

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Figure D-1

LOG OF BORING

Date Started	9/21/19	Location	Fairbanks International Airport
Date Completed	9/21/19	Ground Elevation:	431.4
Total Depth (ft)	15.0	Typical Run Length	5 feet
		Drilling Company:	GeoTek
		Hole Diameter:	4.5 inches



NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

- | | |
|--|---|
| 3" 2" Plastic Tube - No Soil Recovery
2" Plastic Tube with Soil Recovery
Run No. | Piezometer Screen and Sand Filter
Ground Water Level ATD |
|--|---|

FAI Fire Training Pit
Corrective Action
Fairbanks International Airport

LOG OF BORING MW-1901-15

June 2021

102519-010

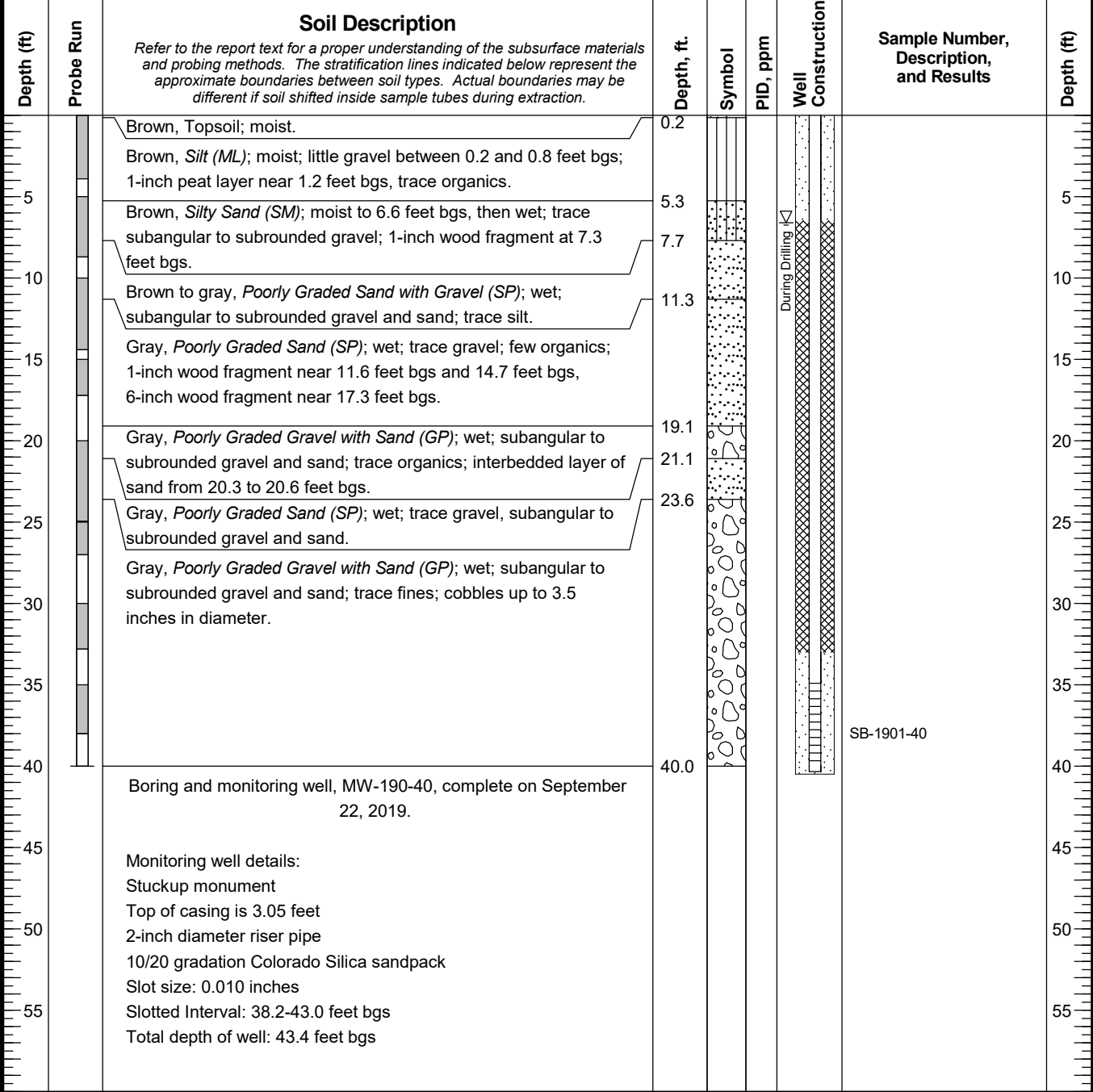
SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Figure D-2

GEOPROBE WELL: 102519-010.GPJ, 21-20447.GPJ, 1/10/20
 Log: CAB
 Rev: DYM
 Typ: BAB

LOG OF BORING

Date Started	9/22/19	Location	Fairbanks International Airport
Date Completed	9/22/19	Ground Elevation:	431.4
Total Depth (ft)	40.0	Typical Run Length	5 feet
		Drilling Company:	GeoTek Alaska
		Hole Diameter:	4.5 inches







Typ: BAB
 Rev: DYM
 Log: CAB
 GEOPROBE WELL: 102519-010.GPJ 21-20447.GPJ 1/10/20

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

 2" Plastic Tube with Soil Recovery	 Piezometer Screen and Sand Filter
 2" Plastic Tube - No Soil Recovery	 Ground Water Level ATD

Run No.

FAI Fire Training Pit
Corrective Action
Fairbanks International Airport

LOG OF BORING MW-1901-40

June 2021 102519-010

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Figure D-3

LOG OF BORING

Date Started	9/22/19	Location	Fairbanks International Airport
Date Completed	10/3/19	Ground Elevation:	431.5
Total Depth (ft)	80.0	Drilling Company:	GeoTek Alaska
		Hole Diameter:	4.5 inches
		Typical Run Length	5 feet

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Well Construction	Sample Number, Description, and Results	Depth (ft)
		Refer to the report text for a proper understanding of the subsurface materials and probing methods. The stratification lines indicated below represent the approximate boundaries between soil types. Actual boundaries may be different if soil shifted inside sample tubes during extraction.						
		Brown, Topsoil; moist.	0.1					
		Brown, Silt (ML); moist; trace gravel.	0.7					
5		Brown, Sandy Silt (SM); moist; subangular to subrounded sand; 4-inch layer of peat near 1.0 feet bgs.	5.1					5
		Brown, Poorly Graded Sand with Silt (SP-SM) interbedded with Silt (ML); moist to 6.0 feet bgs, then wet.	7.8					
10		Brown to gray, Poorly Graded Sand with Gravel (SP); wet; subangular to subrounded gravel and sand; trace fines; 2-inch piece of wood near 7.8 feet bgs.	10.9					10
15		Gray, Poorly Graded Sand (SP); wet; trace subangular to subrounded gravel; subangular to subrounded sand; trace fines; 5-inch peat layer near 16.5 feet bgs.	17.7					15
20		Gray, Poorly Graded Gravel with Sand (GP); wet; subangular to subrounded gravel and sand.	21.0					20
		Gray, Poorly Graded Sand (SP); wet; subangular to subrounded sand; trace fines.	22.4					25
25		Gray, Poorly Graded Gravel with Sand (GP); wet; subangular to subrounded gravel and sand.						25
30								30
35								35
40								40
45								45

CONTINUED NEXT PAGE

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

2" Plastic Tube with Soil Recovery	Piezometer Screen and Sand Filter
2" Plastic Tube - No Soil Recovery	Ground Water Level ATD

Run No.

FAI Fire Training Pit
Corrective Action
Fairbanks International Airport

LOG OF BORING MW-1901-80

June 2021

102519-010

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Figure D-4
Sheet 1 of 2

GEOPROBE WELL: 102519-010.GPJ, 21-20447.GPJ, 1/10/20
Log: CAB
Rev: DYM
Typ: BAB

LOG OF BORING

Date Started	9/22/19	Location	Fairbanks International Airport
Date Completed	10/3/19	Ground Elevation:	431.5
Total Depth (ft)	80.0	Typical Run Length	5 feet
		Drilling Company:	GeoTek Alaska
		Hole Diameter:	4.5 inches

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Well Construction	Sample Number, Description, and Results	Depth (ft)
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">Typ: BAB</div> <div style="margin-bottom: 10px;">Rev: DYM</div> <div style="margin-bottom: 10px;">Log: CAB</div> <div style="margin-bottom: 10px;">GEOPROBE WELL_102519-010.GPJ_21-20447.GPJ_1/10/20</div> </div>		<p>Soil Description</p> <p><i>Refer to the report text for a proper understanding of the subsurface materials and probing methods. The stratification lines indicated below represent the approximate boundaries between soil types. Actual boundaries may be different if soil shifted inside sample tubes during extraction.</i></p>	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">Typ: BAB</div> <div style="margin-bottom: 10px;">Rev: DYM</div> <div style="margin-bottom: 10px;">Log: CAB</div> <div style="margin-bottom: 10px;">GEOPROBE WELL_102519-010.GPJ_21-20447.GPJ_1/10/20</div> </div>			<p>SB-1901-80</p>	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">Typ: BAB</div> <div style="margin-bottom: 10px;">Rev: DYM</div> <div style="margin-bottom: 10px;">Log: CAB</div> <div style="margin-bottom: 10px;">GEOPROBE WELL_102519-010.GPJ_21-20447.GPJ_1/10/20</div> </div>	
55			55					55
60			60					60
65			65					65
70			70					70
75			75					75
80		<p>Boring and monitoring well, MW-1901-80, complete on October 3, 2019.</p> <p>Monitoring well details: Stuckup monument Top of casing is 2.8 feet 2-inch diameter riser pipe 10/20 gradation Colorado Silica sandpack Slot size: 0.010 inches Slotted Interval: 78.1-82.7 feet bgs Total depth of well: 83.37 feet bgs</p>	80.0					80
85			85					85
90			90					90
95			95					95

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

2" Plastic Tube - No Soil Recovery	Piezometer Screen and Sand Filter
2" Plastic Tube with Soil Recovery	Ground Water Level ATD

Run No.

FAI Fire Training Pit
Corrective Action
Fairbanks International Airport

LOG OF BORING MW-1901-80

June 2021

102519-010

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Figure D-4
Sheet 2 of 2

LOG OF BORING

Date Started	10/1/19	Location	Fairbanks International Airport	Ground Elevation:	431.9
Date Completed	10/2/19			Typical Run Length	5 feet
Total Depth (ft)	150.0	Drilling Company:	GeoTek Alaska	Hole Diameter:	4.5 inches

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Well Construction	Sample Number, Description, and Results	Depth (ft)
5		Gray to light gray, <i>Poorly Graded Gravel and Silt (GP-GM)</i> ; moist; some organics at 0.0-0.7 feet bgs.	1.3			During Drilling		5
10		Fill.	6.7					10
15		Gray to light gray, <i>Silty Sand (SM)</i> ; moist to 6.0 feet bgs, then wet; interbedded sand and silt; trace organics.						15
20		Light gray, <i>Poorly Graded Sand (SP)</i> ; wet; wood fragments near 13.9-14.2 and 16.1 feet bgs.						20
25			26.2					25
30		Light gray, <i>Poorly Graded Gravel (GP)</i> ; wet; rounded to subrounded gravel.						30
35		Gray, <i>Silty Sand (SM)</i> ; wet; fine sand; little organics near 31.5-32.3 feet bgs.	31.5					35
40		Gray, <i>Poorly Graded Gravel (GP)</i> ; wet; subrounded to angular gravel; clasts to 1-inch.	35.8					40
45		Note: Soil classification interpreted from drill cuttings.						45
50								50
55							55	
60							60	
65							65	
70							70	
75							75	
80							80	
85							85	
90							90	
95		Gray, <i>Silty Sand with Gravel (SM)</i> ; wet; subrounded to subangular gravel.	95.0					95

CONTINUED NEXT PAGE

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

	2" Plastic Tube - No Soil Recovery		Piezometer Screen and Sand Filter
	2" Plastic Tube with Soil Recovery		Ground Water Level ATD

Run No. 3

FAI Fire Training Pit
Corrective Action
Fairbanks International Airport

LOG OF BORING MW-1901-150

June 2021

102519-010

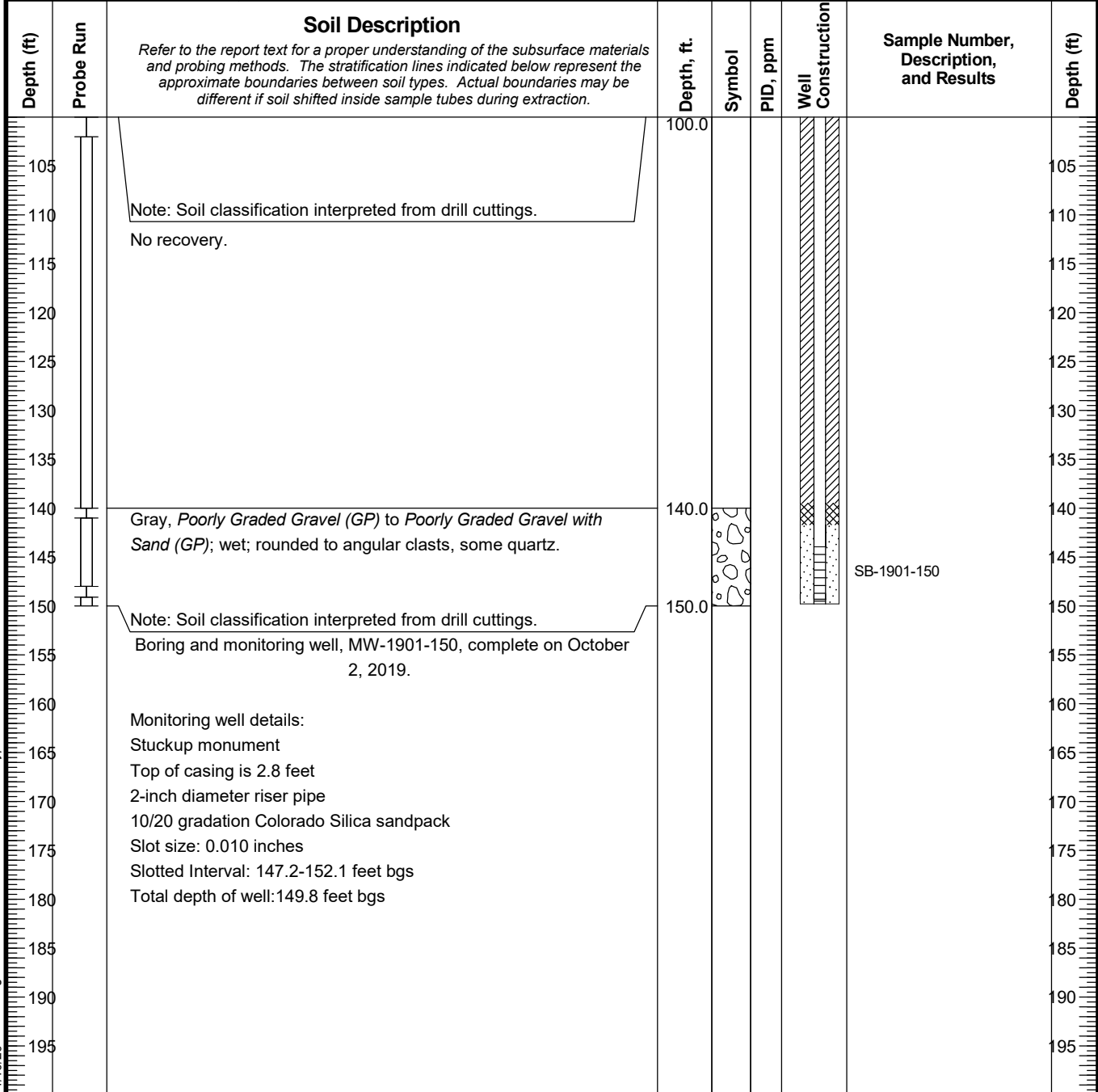
SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Figure D-5
Sheet 1 of 2

GEOPROBE WELL: 102519-010.GPJ 21-20447.GPJ 1/10/20 Log: FLG Rev: DYM Typ: BAB

LOG OF BORING

Date Started	10/1/19	Location	Fairbanks International Airport	Ground Elevation:	431.9
Date Completed	10/2/19			Typical Run Length	5 feet
Total Depth (ft)	150.0	Drilling Company:	GeoTek Alaska	Hole Diameter:	4.5 inches



Typ: BAB
 Rev: DYM
 Log: FLG
 GEOPROBE WELL 102519-010.GPJ 21-20447.GPJ 1/10/20

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

- | | |
|------------------------------------|-----------------------------------|
| 2" Plastic Tube - No Soil Recovery | Piezometer Screen and Sand Filter |
| 2" Plastic Tube with Soil Recovery | Ground Water Level ATD |
- Run No.

FAI Fire Training Pit
Corrective Action
Fairbanks International Airport

LOG OF BORING MW-1901-150

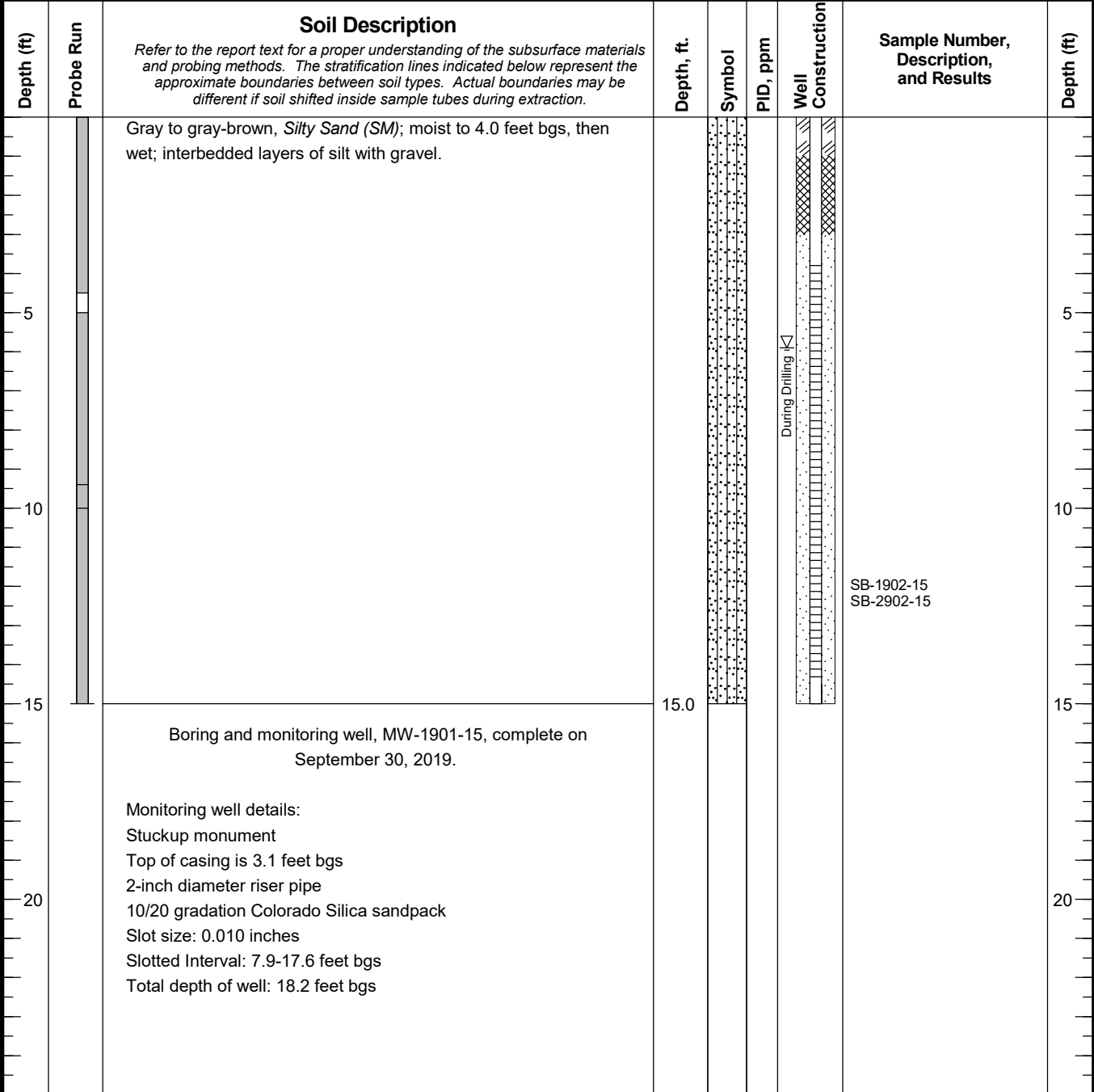
June 2021 102519-010

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Figure D-5
Sheet 2 of 2

LOG OF BORING

Date Started	9/30/19	Location	Fairbanks International Airport
Date Completed	9/30/19	Ground Elevation:	430.2
Total Depth (ft)	15.0	Typical Run Length	5 feet
		Drilling Company:	GeoTek Alaska
		Hole Diameter:	4.5 inches



Typ: BAB
 Rev: DYM
 Log: APW
 GEOPROBE WELL: 102519-010.GPJ 21-20447.GPJ 1/10/20

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

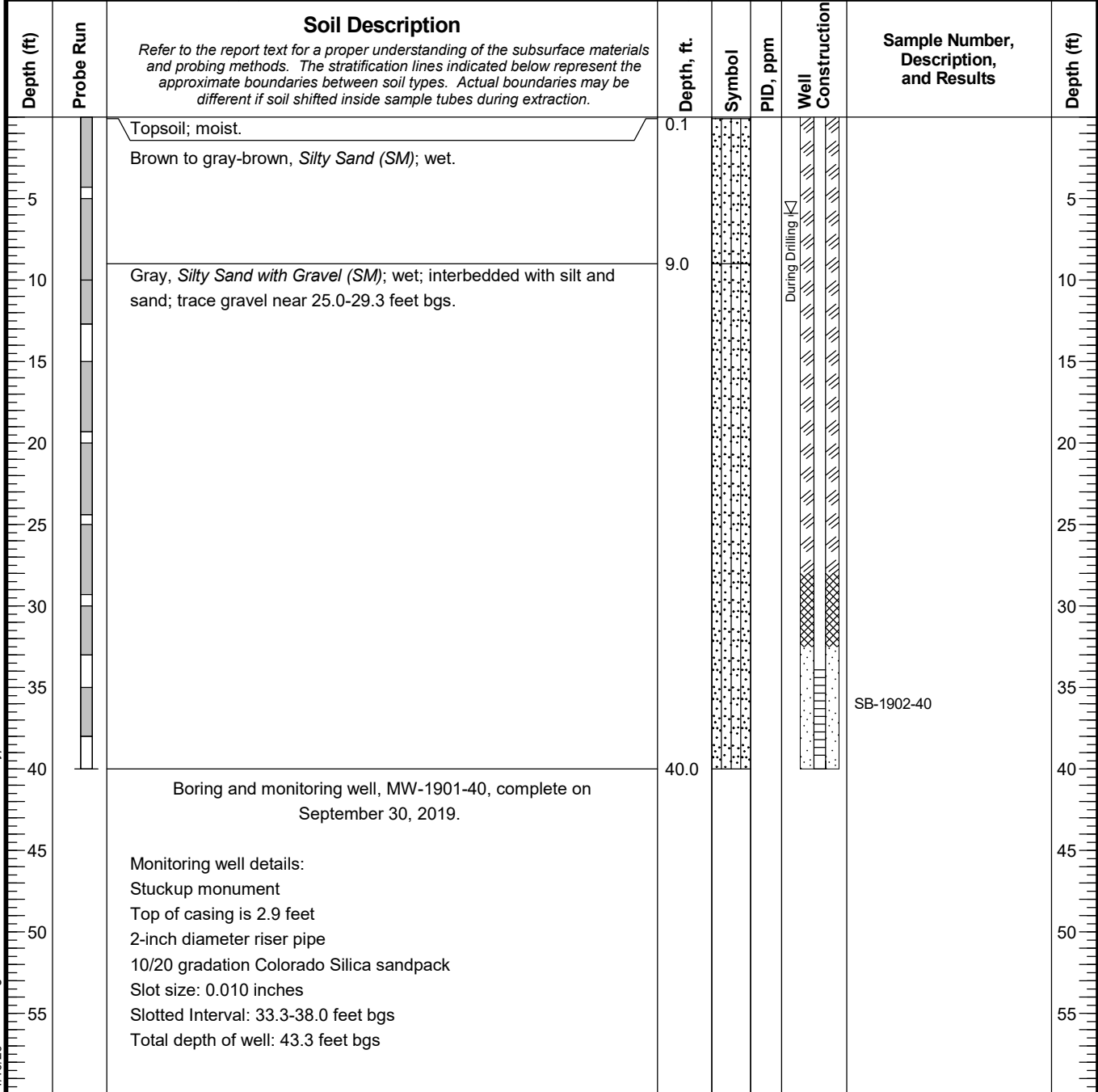
LEGEND

- | | |
|---|---|
| 2" Plastic Tube - No Soil Recovery
2" Plastic Tube with Soil Recovery
Run No. | Piezometer Screen and Sand Filter
Ground Water Level ATD |
|---|---|

FAI Fire Training Pit Corrective Action Fairbanks International Airport	
<h2 style="margin: 0;">LOG OF BORING MW-1902-15</h2>	
June 2021	102519-010
SHANNON & WILSON, INC. Geotechnical and Environmental Consultants	Figure D-6

LOG OF BORING

Date Started	9/30/19	Location	Fairbanks International Airport	Ground Elevation:	430.1
Date Completed	9/30/19			Typical Run Length	5 feet
Total Depth (ft)	40.0	Drilling Company:	GeoTek Alaska	Hole Diameter:	4.5 inches



Typ: BAB
 Rev: DYM
 Log: APW
 GEOPROBE WELL: 102519-010.GPJ 21-20447.GPJ 1/10/20

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

- | | |
|---|---|
| 2" Plastic Tube - No Soil Recovery
2" Plastic Tube with Soil Recovery
Run No. | Piezometer Screen and Sand Filter
Ground Water Level ATD |
|---|---|

FAI Fire Training Pit
Corrective Action
Fairbanks International Airport

LOG OF BORING MW-1902-40

June 2021 102519-010

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Figure D-7

LOG OF BORING

Date Started	9/28/19	Location	Fairbanks International Airport
Date Completed	9/29/19	Ground Elevation:	430.0
Total Depth (ft)	80.0	Typical Run Length	5 feet
		Drilling Company:	GeoTek Alaska
		Hole Diameter:	4.5 inches

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Well Construction	Sample Number, Description, and Results	Depth (ft)
		Topsoil; moist.	0.2					
		Brown to gray-brown, <i>Silty Sand (SM)</i> ; moist to 3.5 feet bgs, then wet.						
5								5
		Gray, <i>Poorly Graded Sand (SP)</i> ; wet.	6.4					
10								10
		Gray, <i>Silty Sand with Gravel (SM)</i> ; wet.	10.0					
15								15
20								20
25								25
		Gray, <i>Poorly Graded Gravel with Sand (GP)</i> ; wet.	25.0					
30								30
		Gray to gray-brown, <i>Poorly Graded Gravel with Silt and Sand (GP-GM)</i> ; wet.	30.0					
35								35
40								40
45								45

CONTINUED NEXT PAGE

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

2" Plastic Tube with Soil Recovery	Piezometer Screen and Sand Filter
2" Plastic Tube - No Soil Recovery	Ground Water Level ATD

Run No. 3

FAI Fire Training Pit
Corrective Action
Fairbanks International Airport

LOG OF BORING MW-1902-80

June 2021

102519-010

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Figure D-8
Sheet 1 of 2

GEOPROBE WELL: 102519-010.GPJ 21-20447.GPJ 1/10/20 Log: APW Rev: DYM Typ: BAB

LOG OF BORING

Date Started	9/28/19	Location	Fairbanks International Airport	Ground Elevation:	430.0
Date Completed	9/29/19			Typical Run Length	5 feet
Total Depth (ft)	80.0	Drilling Company:	GeoTek Alaska	Hole Diameter:	4.5 inches

Depth (ft)	Probe Run	Soil Description <i>Refer to the report text for a proper understanding of the subsurface materials and probing methods. The stratification lines indicated below represent the approximate boundaries between soil types. Actual boundaries may be different if soil shifted inside sample tubes during extraction.</i>	Depth, ft.	Symbol	PID, ppm	Well Construction	Sample Number, Description, and Results	Depth (ft)
55								55
60								60
65								65
70			71.0					70
75		Gray-brown, Silty Sand with Gravel (SM); wet.					SB-1902-80	75
80			80.0					80
85		Boring and monitoring well, MW-1902-80, complete on September 30, 2019.						85
90		Monitoring well details: Stuckup monument Top of casing is 3.0 feet 2-inch diameter riser pipe 10/20 gradation Colorado Silica sandpack Slot size: 0.010 inches Slotted Interval: 78.3-82.7 feet bgs Total depth of well: 83.37 feet bgs						90
95								95

Typ: BAB
 Rev: DYM
 Log: APW
 GEOPROBE WELL: 102519-010.GPJ 21-20447.GPJ 1/10/20

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

2" Plastic Tube - No Soil Recovery	Piezometer Screen and Sand Filter
2" Plastic Tube with Soil Recovery	Ground Water Level ATD

Run No.

FAI Fire Training Pit
 Corrective Action
 Fairbanks International Airport

LOG OF BORING MW-1902-80

June 2021

102519-010

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Figure D-8
Sheet 2 of 2

LOG OF BORING

Date Started	9/25/19	Location	Fairbanks International Airport
Date Completed	9/28/19	Ground Elevation:	429.9
Total Depth (ft)	150.0	Typical Run Length	5 feet
		Drilling Company:	GeoTek Alaska
		Hole Diameter:	4.5 inches

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Well Construction	Sample Number, Description, and Results	Depth (ft)
		<i>Refer to the report text for a proper understanding of the subsurface materials and probing methods. The stratification lines indicated below represent the approximate boundaries between soil types. Actual boundaries may be different if soil shifted inside sample tubes during extraction.</i>						
		Brown, Topsoil; moist.	0.0					
5		Brown, Poorly Graded Sand with Gravel and Silt (SP-SM); moist; subangular to subrounded gravel and sand.	0.6					5
10		Brown to gray, Silt (ML); moist to 2.9 feet bgs, then wet; interbedded sand from 1.9 to 2.6 feet bgs and 5.9 to 7.8 feet bgs; subangular to subrounded sand; trace to little organics between 5.9 to 7.8 feet bgs; up to 2-inch wood fragments from 6.2-7.8 feet bgs; iron staining from 2.6 to 5.9 feet bgs; 1-inch layer of peat at approximately 1.5 feet bgs.	7.8			During Drilling		10
15			10.0					15
20			21.6					20
25		Gray, Poorly Graded Sand (SP); wet; trace subangular to subrounded gravel and sand, trace fines.	25.0					25
30		Gray, Poorly Graded Gravel with Sand (GP); wet; subangular to subrounded gravel and sand; interbedded gray sand.	28.4					30
35		Gray, Poorly Graded Sand with Silt (SP-SM); wet; trace subangular to subrounded gravel and sand; little organics from 21.6-22.2 feet bgs, trace organics from 22.2-25.0 feet bgs.	35.0					35
40								40
45		Gray, Poorly Graded Sand (SP); wet; trace subangular to subrounded gravel and sand; trace fines.						45
50		Gray, Poorly Graded Gravel with Sand (GP); wet; subangular to subrounded gravel and sand, increased sand content below 32.0 feet bgs; trace fines.						50
55								55
60		No recovery	60.0					60
65		Gray, Poorly Graded Gravel with Sand (GP); wet; subangular to subrounded gravel and sand.						65
70								70
75								75
80								80
85								85
90								90
95								95

CONTINUED NEXT PAGE

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

- | | | |
|---|---|--|
| 2" Plastic Tube - No Soil Recovery
2" Plastic Tube with Soil Recovery
Run No. | Piezometer Screen and Sand Filter
Ground Water Level ATD | |
|---|---|--|

FAI Fire Training Pit
Corrective Action
Fairbanks International Airport

LOG OF BORING MW-1902-150

June 2021

102519-010

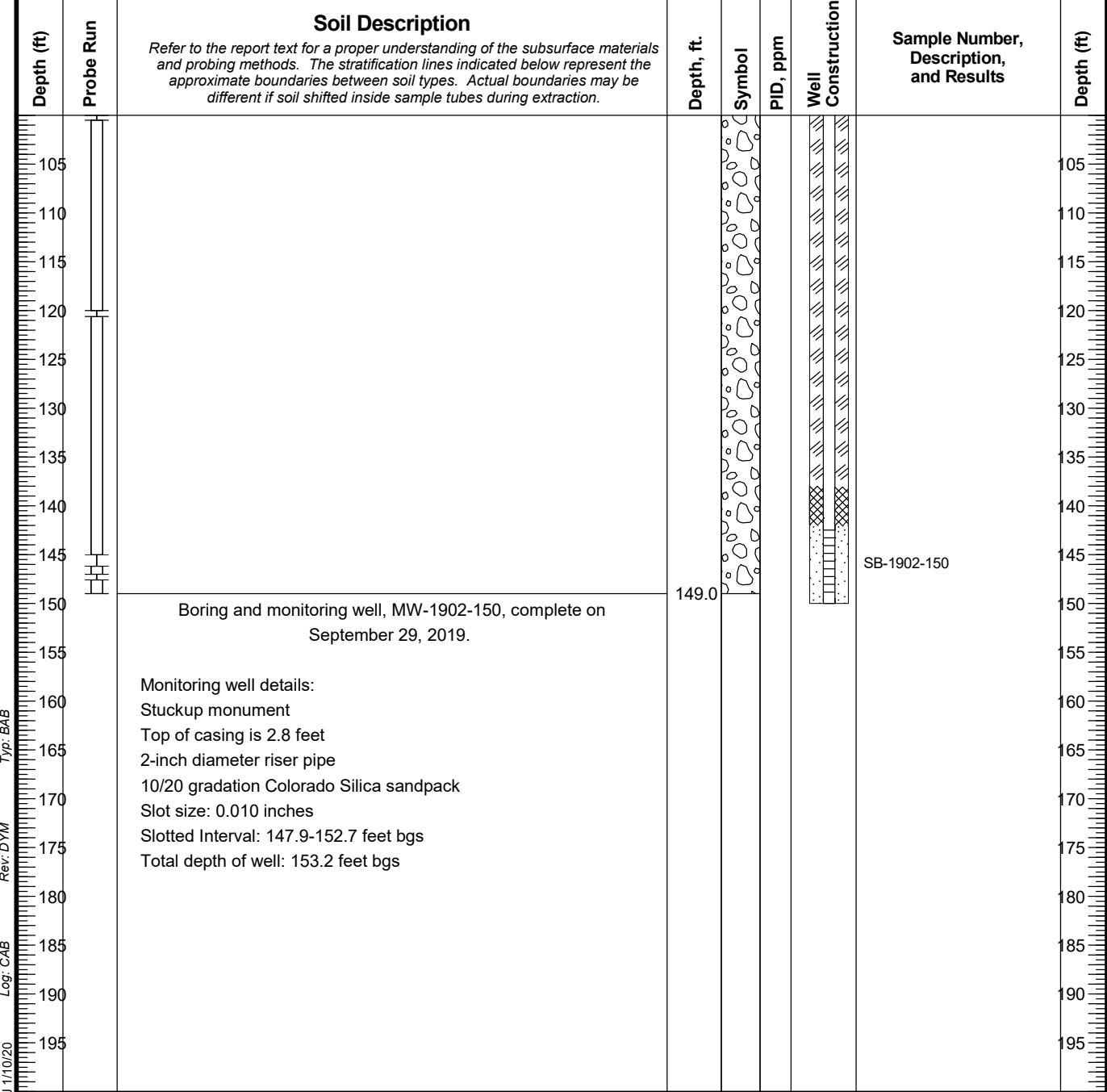
SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Figure D-9
Sheet 1 of 2

GEOPROBE WELL 102519-010.GPJ 21-20447.GPJ 1/10/20 Log: CAB Rev: DYM Typ: BAB

LOG OF BORING

Date Started	9/25/19	Location	Fairbanks International Airport
Date Completed	9/28/19	Ground Elevation:	429.9
Total Depth (ft)	150.0	Typical Run Length	5 feet
		Drilling Company:	GeoTek Alaska
		Hole Diameter:	4.5 inches



NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

- | | |
|------------------------------------|-----------------------------------|
| 2" Plastic Tube - No Soil Recovery | Piezometer Screen and Sand Filter |
| 2" Plastic Tube with Soil Recovery | Ground Water Level ATD |
- Run No.

FAI Fire Training Pit
Corrective Action
Fairbanks International Airport

LOG OF BORING MW-1902-150

June 2021

102519-010

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Figure D-9
Sheet 2 of 2

GEOPROBE WELL 102519-010.GPJ 21-20447.GPJ 1/10/20

Appendix E

Field Notes

CONTENTS

- Daily Field Activity Reports (FARs), August 30, 2019 to July 1, 2020
- Treatment System Effluent Daily Monitoring Forms
- Log of Field Screening, Soil Sample Collection Logs, and Soil Excavation Sketches
- Monitoring Well Construction Details
- Well Development Logs
- Monitoring Well Sampling Logs
- Water Level Datalogger Field Data Forms
- FAI Fire Training Pit Institutional Controls Checklist

DAILY FIELD ACTIVITY REPORT

PROJECT NO.:	102519
REPORT DATE:	August 30, 2019
REPORT NO.:	001
SW FIELD REP.:	VEW, CBD, Austen Whitney
PERMIT NO.:	n/a

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.	Sunny, 65°F
Client <u>DOT&PF</u>	General	TIMES OF SITE VISITS:	
	Subcontractors for Geotechnical Construction	from <u>1:00</u>	to <u>3:00</u>
		from	to

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Site Visit	<p>CBD, VEW, and Austen Whitney (Lab Tech) visited the site to familiarize themselves with the project. We met Jason Griswold and discussed the future project activities.</p> <p>Austen delivered 4 loads of straw wattles and BMPs for future installation for the SWPPP.</p>	None.

Meetings Attended:	N/A
Attachments:	None

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)

MDN 9/10/19

PROJECT NO.:	102519
REPORT DATE:	September 9, 2019
REPORT NO.:	002
SW FIELD REP.:	MDN, APW
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.:	Sunny, 65°F
Client <u>FAI</u>	General <u>NRC Alaska: Cameron Flood,</u> <u>Treatment System Supervisor, Dillan Hillis,</u> <u>Site Foreman, other crew members</u>	TIMES OF SITE VISITS:	
		from <u>12:00</u>	to <u>16:00</u>
		from <u>18:00</u>	to <u>21:00</u>

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Site visit	<p>MDN and APW met NRC Alaska personnel at Gate 51 to deliver equipment, then went to FAI operations to discuss site access. Following the meeting with FAI operations, all personnel returned to the fire training pit (FTP) site. NRC personnel began staging the water treatment system southwest of the FTP.</p> <p>APW was escorted by Rachel Webb to the secure area northwest of the FTP to collect upstream baseline water quality parameters from the slough slated to be used as the discharge location. APW used a YSI Pro Plus multiparameter meter (YSI) to measure temperature, pH, conductivity, dissolved oxygen, and oxidation reduction potential. A Hach 2100P Turbidimeter was used to measure turbidity, and standard Imhoff cones were used to measure settleable solids.</p> <p>Chief Aaron Danielson arrived onsite to confirm which fire training materials NRC should remove. Chief Danielson specified that the metal piping west of the FTP, wreckage of an old Beechcraft airplane, training props, and other metal debris should be removed.</p> <p>APW, MDN, and Cameron Flood discussed the treatment and sampling schedule. Cameron agreed to contact APW once the system was fully assembled. APW and MDN then departed the site.</p>	None.
2	Pre-treatment and effluent sampling	<p>APW returned to the site to observe the system startup and collect the effluent confirmation samples. NRC personnel began treating water from the FTP and pumping the effluent into an 18,000-gallon weir tank. APW noted the effluent water was green in color due to algae in the FTP. This implied the algal cells were either smaller than the systems' filters, or that the filters were rupturing the cells and chlorophyll was coloring the water. APW also noted the hydrocarbon and sulfur odor of the influent water was absent in the effluent.</p> <p>APW collected one primary and one field-duplicate sample from the FTP pre-treatment water.</p> <ul style="list-style-type: none"> • 19FAI-FTP-Pre001 was collected at 19:30 • 19FAI-FTP-Pre101 was listed with a sample time of 19:20. 	Shannon & Wilson, Inc. personnel to ship the pre-treatment and effluent confirmation samples to the analytical laboratories.

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)


MDN 9/10/19

PROJECT NO.:	102519
REPORT DATE:	September 9, 2019
REPORT NO.:	002
SW FIELD REP.:	MDN, APW
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	---

CONSTRUCTION OBSERVATIONS (continued)

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
		<p>APW collected a confirmation sample from the effluent of the first of two parallel treatment trains (Train 1). The second treatment train was being backwashed by NRC and not yet in service.</p> <ul style="list-style-type: none"> 19FAI-FTP-Post001 was collected at 20:00 <p>The samples were submitted for the following analyses: PFOS/PFOA, DRO/RRO, TAqH, TAH, arsenic, and glycol.</p> <p>APW then collected several gallons of effluent water to measure field parameters. The effluent water exhibited higher turbidity, less dissolved oxygen, and higher conductivity than water in the slough. No settleable solids were measurable in the effluent water.</p> <p>APW returned to the Shannon & Wilson office and refrigerated the samples.</p>	
		 <p>Photo 1: Up-stream slough sample location northwest of the FTP.</p>	

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)
 MDN 9/10/19

PROJECT NO.:	102519
REPORT DATE:	September 9, 2019
REPORT NO.:	002
SW FIELD REP.:	MDN, APW
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	---

CONSTRUCTION OBSERVATIONS (continued)

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
		 <p>Photo 2: NRC Alaska Water treatment system staged on the southwest side of the FTP.</p>	

Meetings Attended:	Orientation with FAI Operations
Visitors to Project Site:	Chief Aaron Danielson and Roger Stevener, Airport Police & Fire. FAI Maintenance.
Attachments:	None

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)
 MDN 9/10/19

PROJECT NO.:	102519
REPORT DATE:	September 10, 2019
REPORT NO.:	003
SW FIELD REP.:	MDN, APW
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.	Sunny, 65°F
Client <u>FAI</u>	General <u>NRC Alaska: Dillan Hillis, Site Foreman, and other crew members</u>	TIMES OF SITE VISITS:	
		from <u>08:00</u>	to <u>21:30</u>
		from	to

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Remove training fixtures, flush AST	<p>MDN met NRC crew onsite to coordinate fire training fixture removal. Jason Griswold and Dillan Hillis observed ~7 inches of fuel in the base of the above ground storage tank (AST). NRC will flush the AST and underground fuel distribution piping with a vacuum truck. NRC plugged the liner monitoring port with concrete.</p> <p>FAI maintenance was unsure of the precise location of underground electric lines. Called Star Electric, private utility locate.</p>	None.
2	ADEC site visit	Robert Burgess, ADEC Contaminated Sites, three ADEC Spill Prevention and Response (SPAR) employees, Katrina LeMieux, and R.J. Stumpf visited the site. MDN summarized current and planned corrective action tasks.	None.
3	Treatment-system effluent sampling	<p>APW arrived onsite and collected a confirmation sample from the effluent of the second treatment train (Train 2).</p> <ul style="list-style-type: none"> 19FAI-FTP-Post002 was collected at 11:00 <p>The sample was submitted for PFOS/PFOA, DRO/RRO, TAH, TAqH, glycol and arsenic analyses. APW departed to ship the samples to the analytical laboratories.</p>	None.
4	AST fuel piping removal and debris consolidation	<p>After APW returned to the site, NRC removed residual fuel from the AST and distribution system using a vacuum truck. They flushed the distribution system from both ends (AST, fuel filter northwest of the FTP). Approximately 175 gallons of diesel fuel were recovered.</p> <p>Star Electric marked the locations of underground electric lines, MDN departed. The NRC operator exposed the underground fuel line and used an excavator to break the piping into manageable pieces. The piping debris was staged onsite for transportation the following morning.</p> <p>The NRC operator used the excavator to break down the Beechcraft wreckage on staged south of the FTP.</p>	None.

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)


MDN 9/11/19

PROJECT NO.:	102519
REPORT DATE:	September 10, 2019
REPORT NO.:	003
SW FIELD REP.:	MDN, APW
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	--

CONSTRUCTION OBSERVATIONS (continued)

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
5	Fuel release response effort	<p>During the removal of underground fuel piping, <2 gallons of diesel fuel spilled to the ground surface. The fuel appeared to be trapped in a low spot where the piping passed through a concrete block. Work was halted, NRC and S&W used sorbent pads to absorb fuel released to the ground surface. Fuel remaining in the pipe was drained into a duck pond with additional sorbents.</p> <p>NRC containerized visibly stained soil using hand tools. S&W used a photoionization detector (PID) to field-screen unstained soil, NRC removed additional material with elevated field-screening readings using hand tools and an excavator bucket. Excavation concluded when PID readings dropped to 20 parts per million (ppm) or below. In total, 5.3-cy of potentially contaminated soil was contained within four 1-cy flexible intermediate bulk containers (FIBCs) and four 55-gallon drums.</p> <p>The FIBCs and 55-gallon drums were left onsite so that disposal options could be discussed with ADEC and FAI personnel.</p>	Shannon & Wilson to report the fuel release to the ADEC. FAI to determine if confirmation sampling or further soil excavation will occur. Select soil disposal method.
		 <p>Photo 1: NRC personnel decommissioned the FTP liner monitoring port.</p>	

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)
 MDN 9/11/19

PROJECT NO.:	102519
REPORT DATE:	September 10, 2019
REPORT NO.:	003
SW FIELD REP.:	MDN, APW
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	--

CONSTRUCTION OBSERVATIONS (continued)

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
		 <p>Photo 2: NRC removed the underground fuel distribution piping connecting the AST to the FTP.</p>	
		 <p>Photo 3: NRC contained potentially contaminated soil from the <2 gallon fuel release.</p>	

Meetings Attended:	None
Visitors to Project Site:	Jason Griswold, FAI Maintenance. Robert Burgess, ADEC Contaminated Sites, three ADEC Spill Prevention and Response (SPAR) employees. Katrina LeMieux, FAI Environmental. R.J. Stumpf, P.E., FAI Engineer. Richard, Star Electric.
Attachments:	None

<p><i>LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.</i></p>	REVIEW BY (PM initial/date)
	MDN 9/11/19
Page 3 of 3	

PROJECT NO.:	102519
REPORT DATE:	September 11, 2019
REPORT NO.:	004
SW FIELD REP.:	KLC, APW
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.	Cloudy, rain, 50°F
Client <u>FAI</u>	General <u>NRC Alaska, Dillan Hillis, Site Foreman, and other crew members</u>	TIMES OF SITE VISITS:	
		from <u>08:00</u>	to <u>13:30</u>
		from	to

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Training prop removal and site cleanup	<p>APW arrived onsite to observe training prop and debris loading and removal. NRC used the excavator to load sections of underground fuel piping and metal training props from the north-northwestern side of the FTP into a side-dump truck. The operator then used the excavator to condense and load the scrap metal from the Beechcraft wreckage.</p> <p>NRC attempted to load the large steel piping northwest of the FTP onto a flatbed truck. Their equipment was unable to hoist the piping, given its weight. NRC left the piping in place and plans to bring a larger excavator to move it during their next mobilization.</p>	None.
2	Monitoring well re-development and sampling	<p>KLC arrived onsite to re-develop and sample monitoring wells <i>MW-9701-12</i> and <i>MW-9702-12</i>. The wells were named <i>MW-01</i> and <i>MW-02</i> when they were drilled in 1997. He developed the wells using a surge block and diaphragm pump.</p> <p>KLC removed approximately 90 gallons of water from <i>MW-9701-12</i> during development. The water contained 0.74 feet of sediment from the bottom of the well. He removed 32 gallons of water from <i>MW-9702-12</i>, containing 0.04 feet of sediment.</p> <p>KLC collected a primary, field-duplicate, and field-blank sample at <i>MW-9701-12</i>, and a primary sample from <i>MW-9702-12</i>. Both samples were submitted for PFOS and PFOA analysis.</p>	Shannon & Wilson personnel to ship the samples to the analytical laboratory.

<i>LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.</i>	REVIEW BY (PM initial/date)
	MDN 9/13/19
	Page 1 of 2

PROJECT NO.:	102519
REPORT DATE:	September 11, 2019
REPORT NO.:	004
SW FIELD REP.:	KLC, APW
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	--

CONSTRUCTION OBSERVATIONS (continued)

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
		 <p>Photo 1: Shannon & Wilson personnel sampling MW-9701-12.</p>  <p>Photo 2: NRC removing scrap metal debris from the site.</p>	

Meetings Attended:	N/A
Visitors to Project Site:	None
Attachments:	None

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)
MDN 9/13/19
Page 2 of 2


PROJECT NO.:	102519
REPORT DATE:	September 12, 2019
REPORT NO.:	005
SW FIELD REP.:	MDN, WAP
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.:	Windy, Clear, 55°F
Client <u>Fairbanks International Airport (FAI)</u>	General <u>Great Northwest (GNI): Jim Young, Project Manager and Kody, Site Foreman</u>	TIMES OF SITE VISITS:	
		from <u>10:00</u>	to <u>10:45</u>
		from	to

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Site visit	We met with GNI at the site. We discussed dewatering, PFOS soil excavation, probing to find the existing 80-mil geomembrane, and the tentative construction schedule. We discussed stockpiling and hauling of project fill material, Design Alaska's survey scope, and the FAI construction support scope. We discussed GNI site oversight and reporting expectations.	Schedule project kick-off meeting.
		 <p>Photo 1: Fire training pit and FAI-stockpiled gravel fill.</p>	

Meetings Attended:	N/A
Visitors to Project Site:	None
Attachments:	None

<p><i>LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.</i></p>	REVIEW BY (PM initial/date)
	MDN 9/13/19
	Page 1 of 1

PROJECT NO.:	102519-010
REPORT DATE:	September 13, 2019
REPORT NO.:	006
SW FIELD REP.:	MDN, CAB, AMJ
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.	Sunny, 65°F
Client <u>FAI</u>	General <u>NRC Alaska: Cameron Flood, Treatment System Supervisor, and Dillan Hillis, Site Foreman</u>	TIMES OF SITE VISITS:	
		from <u>11:00</u>	to <u>15:00</u>
		from <u>16:30</u>	to <u>17:00</u>

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Treatment-system evaluation	<p>MDN, CAB arrived onsite, met NRC. Cameron Flood arrived at the same time. Dillan Hillis arrived between 0730 and 0800, had been staging system. NRC replaced and added more 1 micron (μm) and 5 μm pre-treatment filters. We observed abundant algae in the fire training pit, the removed filters were yellow-green in color.</p> <p>Cameron noted the system was designed for a pH less than 8.5. Collected YSI parameters and turbidity readings from pre-treatment water and throughout the system. FTP water had a pH of 9.8 at ~12:30, 10.1 at ~14:00, and 10.2 at ~16:30.</p>	None.
2	SWPPP inspection	AMJ conducted weekly SWPPP inspection, placed additional BMPs.	None.
3	Mid-treatment sampling	<p>NRC planned to run four flow tests: one treatment train each at 63, 45, and 35 gallons per minute (gpm), and both treatment trains in sequence at 63 gpm.</p> <p>CAB collected a mid-treatment confirmation sample from after the lag carbon vessel at 63 gpm. He collected one primary and one field-duplicate sample for PFOS/PFOA analysis.</p> <ul style="list-style-type: none"> • FTP-Post003 was collected at 14:08 • FTP-Post004 was listed with a sample time of 14:12 <p>MDN, CAB, and AMJ returned to the Shannon & Wilson office.</p>	Shannon & Wilson will not submit mid-treatment confirmation samples to the analytical laboratory.
3	Mid-treatment sampling	CAB returned to site to collect mid-treatment confirmation samples, YSI parameters, and turbidity readings at 45 gpm. NRC canceled flow rate tests in favor of a pre-treatment step to lower the influent pH and remove algae.	NRC is reviewing alterations to their treatment plan.

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)



MDN 9/16/19

PROJECT NO.:	102519-010
REPORT DATE:	September 13, 2019
REPORT NO.:	006
SW FIELD REP.:	MDN, CAB, AMJ
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	--

CONSTRUCTION OBSERVATIONS (continued)

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
		 <p>Photo 1: We observed foam in the FTP after agitation.</p>  <p>Photo 2: Mid-treatment water samples were yellow-green in color.</p>	

Meetings Attended:	N/A
Visitors to Project Site:	None
Attachments:	None

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)
MDN 9/16/19
Page 2 of 2


PROJECT NO.:	102519-010
REPORT DATE:	September 16, 2019
REPORT NO.:	007
SW FIELD REP.:	APW
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.	Overcast, 55°F
Client <u>FAI</u>	General	TIMES OF SITE VISITS:	
		from <u>15:00</u> to <u>16:45</u>	
		from	to

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Weekly field parameter check	<p>APW arrived onsite and contacted FAI Operations. Rachel Webb escorted APW to the slough sampling location.</p> <p>APW measured temperature, pH, conductivity, oxidation reduction potential, and dissolved oxygen of the slough water using a YSI multiparameter meter. He measured settleable solids and turbidity using a Hach 2100p Turbidimeter and Imhoff cones, respectively. He then measured the same parameters in the ponded FTP water.</p>	None.
		 <p>Photo 2: Measuring water quality field parameters.</p>	

Meetings Attended:	N/A
Visitors to Project Site:	Rachel Webb, FAI Operations
Attachments:	None

<p><i>LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.</i></p>	REVIEW BY (PM initial/date)
	MDN 9/17/19
	Page 1 of 1

PROJECT NO.:	102519-010
REPORT DATE:	September 19, 2019
REPORT NO.:	008
SW FIELD REP.:	APW, ARM
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.	Overcast, 45°F
Client <u>FAI</u>	<u>Great Northwest, Inc. (GNI)</u>	TIMES OF SITE VISITS:	
		from <u>08:00</u>	to <u>12:30</u>
		from	to

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	PFOS hotspot excavation and sampling	<p>APW arrived at Gate 51 and met two operators from GNI. APW summarizing the project boundaries/restricted areas and other access requirements, gave GNI a gate remote.</p> <p>APW located soil boring FAI18-TH102 while GNI staged a <1/4-cy mini excavator and loader. He spray painted a 10-ft x 10-ft square on the ground, centered on boring FAI18-TH102.</p> <p>Excavation commenced at 08:25. GNI stockpiled excavated soil towards the western side of the FTP, inside the crest of the berm. APW prepared sampling materials and noted the number of loader buckets deposited in the stockpile.</p> <p>GNI concluded the excavation when they encountered groundwater at 8.4-ft below ground surface (bgs). APW estimated 31-cy of potentially PFAS-contaminated soil was excavated and stockpiled.</p> <p>APW worked with the mini-excavator operator to collect analytical soil samples from the limits of the excavation extent. He collected one sample from each sidewall, and one primary and one duplicate sample from the base. All samples were submitted for PFOS / PFOA analysis.</p> <ul style="list-style-type: none"> 19FAI-FTP-EB-001/101 were collected from the excavation base at 09:15. 19FAI-FTP-EW-001 was collected from the eastern sidewall at 09:18. 19FAI-FTP-EW-002 was collected from the northern sidewall at 09:20. 19FAI-FTP-EW-003 was collected from the southern sidewall at 09:25. 19FAI-FTP-EW-004 was collected from the western sidewall at 09:30. <p>APW placed candlestick cones and caution tape around the excavation. ARM arrived at 11:00 to pick up the samples and ship them to the lab.</p>	FAI maintenance to backfill PFOS excavation at the same time as petroleum excavation, after containerized petroleum-impacted soil is moved.

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)


MDN 9/20/19

PROJECT NO.:	102519-010
REPORT DATE:	September 19, 2019
REPORT NO.:	008
SW FIELD REP.:	APW, ARM
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	---

CONSTRUCTION OBSERVATIONS (continued)

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
2	FTP liner location verification	<p>GNI used the mini excavator and hand tools to dig eight shallow test pits around the perimeter of the FTP. After locating the liner near the berm crest, they trenched each test pit outward to find the edge of the existing liner. During this process, three of the four liner corners were identified. The existing liner was not ruptured or damaged during delineation.</p> <p>APW instructed the GNI loader operator to track-walk the path of the former fuel line excavation to roughen the soil for stormwater runoff purposes.</p> <p>GNI departed the site at 11:45. APW collected GPS coordinates from the liner corners and edges before departing the site.</p>	FAI Operations to backfill test pits.
		 <p>Photo 1: PFOS hotspot excavation reaching the water table.</p>	

<p><i>LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.</i></p>	REVIEW BY (PM initial/date)
	MDN 9/20/19
	Page 2 of 3

PROJECT NO.:	102519-010
REPORT DATE:	September 19, 2019
REPORT NO.:	008
SW FIELD REP.:	APW, ARM
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	---

CONSTRUCTION OBSERVATIONS (continued)

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
		 <p>Photo 2: PFOS excavation cordoned off when complete.</p>  <p>Photo 3: Locating a corner of the existing FTP liner.</p>	

Meetings Attended:	N/A
Visitors to Project Site:	None
Attachments:	None

<p><i>LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.</i></p>	REVIEW BY (PM initial/date)
	MDN 9/20/19
	Page 3 of 3

PROJECT NO.:	102519-010
REPORT DATE:	September 21, 2019
REPORT NO.:	009
SW FIELD REP.:	CAB
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.	Overcast, 38°F
Client <u>FAI</u>	<u>GeoTek Alaska, Inc. (GeoTek):</u> <u>James Beckner, Steven Simas</u>	TIMES OF SITE VISITS:	
		from <u>08:00</u>	to <u>17:30</u>
		from	to

CONSTRUCTION OBSERVATIONS


NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Monitoring Well Installation	<p>CAB arrived at Gate 51 and met drillers from GeoTek. CAB summarized the project boundaries/restricted areas, completed site walkthrough during daily safety meeting.</p> <p>GeoTek staged drilling equipment. Drilling commenced at 15:20, drillers completed SB-1901-15 and installed MW-1901-15.</p> <p>CAB collected one primary and one field-duplicate soil sample from the boring. The samples were submitted for PFOS / PFOA analysis.</p> <ul style="list-style-type: none"> • SB-1901-15 was collected at 16:20 • SB-2001-15 was listed with a sample time of 16:10 <p>CAB placed cones around liner exposure excavations before departing the site.</p>	<p>Shannon & Wilson will develop and sample the monitoring wells. We will ship subsurface soil samples to the analytical laboratory.</p> <p>GeoTek will complete the well monument following installation of the other wells.</p>
			

Photo 1: MW-1901-15 and Drill Rig.

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)

MDN 9/23/19

PROJECT NO.:	102519-010
REPORT DATE:	September 21, 2019
REPORT NO.:	009
SW FIELD REP.:	CAB
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	---

CONSTRUCTION OBSERVATIONS (continued)

Meetings Attended:	N/A
Visitors to Project Site:	None
Attachments:	None

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)

MDN 9/23/19


PROJECT NO.:	102519-010
REPORT DATE:	September 22, 2019
REPORT NO.:	010
SW FIELD REP.:	CAB
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.:	Sunny, 45°F
Client FAI	GeoTek Alaska, Inc. (GeoTek): James Beckner, Steven Simas	TIMES OF SITE VISITS:	
		from 08:00	to 18:15
		from	to

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Monitoring Well Installation	<p>CAB arrived at Gate 51 and met the GeoTek drillers. Conducted daily safety meeting.</p> <p>Drilling commenced at 9:05. GeoTek Alaska completed SB-1901-40 and installed MW-1901-40. GeoTek Alaska bored to 60 feet at SB-1901-80 and received 7 feet of heave.</p> <p>CAB collected one primary and one equipment-blank sample from boring SB-1901-40. The samples were submitted for PFOS / PFOA analysis.</p> <ul style="list-style-type: none"> • <i>SBEB-1901-40</i> was collected at 10:33 • <i>SB-1901-40</i> was collected at 11:00 <p>GeoTek moved monitoring well installation equipment to the opposite side of the road from the fence, to allow 6-foot security fence buffer.</p>	Shannon & Wilson will ship subsurface soil samples to the analytical laboratory.
		 <p>Photo 1: Soil Boring SB-1901-80 and Drill Rig.</p>	GeoTek will complete the well monument following installation of the other wells.

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)

MDN 9/23/19

PROJECT NO.:	102519-010
REPORT DATE:	September 22, 2019
REPORT NO.:	010
SW FIELD REP.:	CAB
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	---

CONSTRUCTION OBSERVATIONS (continued)

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
		 <p style="text-align: center;">Photo 2: Fire Training Pit liner excavations.</p>	

Meetings Attended:	N/A
Visitors to Project Site:	None
Attachments:	None

<p><i>LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.</i></p>	REVIEW BY (PM initial/date)
	MDN 9/23/19
	Page 2 of 2


PROJECT NO.:	102519-010
REPORT DATE:	September 23, 2019
REPORT NO.:	011
SW FIELD REP.:	CAB
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.	Sunny, 45°F
Client <u>FAI</u>	<u>GeoTek Alaska, Inc. (GeoTek):</u> <u>James Beckner, Steven Simas</u> <u>NRC: Brady</u>	TIMES OF SITE VISITS:	
		from <u>08:00</u>	to <u>11:45</u>
		from <u>17:30</u>	to <u>18:15</u>

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Monitoring Well Installation	<p>CAB arrived at Gate 51 and met the GeoTek drillers. Conducted daily safety meeting.</p> <p>GeoTek staged for drilling of deeper monitoring wells using tricone rotary wash, pending arrival of remaining materials. GeoTek completed drill rig repairs, removed 50 feet of rod from SB-1901-80.</p> <p>Update from shipping company: remaining equipment was mistakenly delivered elsewhere, expected tomorrow after close of business.</p> <p>CAB coordinated with FAI Operations re: night shift drilling. GeoTek staged monitoring well installation materials near the second cluster.</p>	GeoTek will begin nighttime drilling on Wednesday 9/25.
2		<p>CAB let NRC Alaska driver onsite to collect the water treatment system trailers.</p>  <p>Photo 1: NRC Alaska's onsite water treatment system.</p>	

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)
 MDN 9/24/19

PROJECT NO.:	102519-010
REPORT DATE:	September 23, 2019
REPORT NO.:	011
SW FIELD REP.:	CAB
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	---

CONSTRUCTION OBSERVATIONS (continued)

Meetings Attended:	N/A
Visitors to Project Site:	None
Attachments:	None

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)

MDN 9/24/19

PROJECT NO.:	102519-010
REPORT DATE:	September 24, 2019
REPORT NO.:	012
SW FIELD REP.:	APW
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.	Sunny, 50°F
Client <u>FAI</u>	<u>NRC Alaska</u>	TIMES OF SITE VISITS:	
		from <u>16:00</u>	to <u>17:00</u>
		from	to

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Relocate diesel-impacted soil	<p>APW met two NRC operators onsite. NRC was preparing to move the four 1-cy flexible intermediate bulk containers (FIBCs) and the four 55-gallon drums filled with potentially contaminated soil excavated in response to the aboveground storage tank (AST) piping diesel release.</p> <p>NRC used a forklift to empty the soil containers inside the FTP berm, roughly 30 feet away. They placed the soil in a single pile so it can be easily manipulated at a later date.</p> <p>NRC loaded the empty containers into their truck for cleaning/reuse or disposal.</p>	Potential contaminated soil from AST piping diesel release will be capped along with FTP substrate and excavated PFOS contaminated soil.
		 <p>Photo 1: NRC operator relocating FIBCs to the inner berm.</p>	

Meetings Attended:	N/A
Visitors to Project Site:	None
Attachments:	None

<p><i>LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.</i></p>	REVIEW BY (PM initial/date)
	MDN 9/26/19
	Page 1 of 1


PROJECT NO.:	102519-010
REPORT DATE:	September 25, 2019
REPORT NO.:	013
SW FIELD REP.:	APW
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.:	Partly Cloudy, 40°F
Client <u>FAI</u>	<u>NRC Alaska, LLC: Eric</u>	TIMES OF SITE VISITS:	
		from <u>11:50</u>	to <u>18:00</u>
		from	to

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Transport FTP Water Offsite	<p>APW visited the FAI offices to collect waste transport manifests from Katrina LeMieux on his way to the site. The first NRC dual tanker truck arrived at 13:00. NRC operators and pumping equipment arrived separately. They assembled pumping system to drain the onsite weir tank. A pump mechanical failure required NRC to briefly return to their shop to perform maintenance.</p> <p>ADEC authorization to transport was granted at 15:40.</p> <p>NRC drained the weir tank into the tanker truck to a level of several inches, at which point the 290-gpm trash pump began sucking air and could not maintain pressure. The NRC operators topped the tanker off with water from the FTP.</p> <p>NRC's cage filter and hose were deployed in the FTP sump at 17:15. They drained approximately 2,000 gallons from the FTP before reaching the truck's weight capacity (11,000 gallons). NRC informed APW the second and third tanker trucks were schedule to arrive around 22:00.</p>	NRC Alaska will transport the water to Anchorage for treatment.
		 <p>Photo 1: NRC draining the weir tank into the dual tanker truck.</p>	

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)


MDN 9/26/19

PROJECT NO.:	102519-010
REPORT DATE:	September 25, 2019
REPORT NO.:	013
SW FIELD REP.:	APW
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	---

CONSTRUCTION OBSERVATIONS (continued)

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
		 <p>Photo 2: NRC pumping water from the FTP into the tanker truck.</p>	

Meetings Attended:	N/A
Visitors to Project Site:	None
Attachments:	None

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)
MDN 9/26/19
Page 2 of 2


PROJECT NO.:	102519-010
REPORT DATE:	September 25 and 26, 2019
REPORT NO.:	014
SW FIELD REP.:	CAB
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.:	Cloudy, 35°F
Client <u>FAI</u>	<u>GeoTek Alaska, Inc. (GeoTek):</u> <u>James Beckner, Marty Chapman</u> <u>NRC Alaska, LLC: Eric, Caleb</u>	TIMES OF SITE VISITS:	
		from <u>20:45</u>	to <u>06:15</u>
		from	to

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Monitoring Well Installation	CAB arrived at Gate 51 and met two drillers from GeoTek Alaska. Conducted daily safety meeting. Clint from FAI operations conducted a site walkthrough with CAB. Drilling commenced at 22:10. GeoTek advanced SB-1902-150 to 75 feet below ground surface (bgs). Drillers moved monitoring well installation equipment to the opposite side of the road from the fence for daytime storage. CAB and GeoTek Alaska departed at 6:15.	GeoTek will continue nighttime drilling on Thursday 9/26.
2	Transport FTP Water Offsite	NRC Alaska double tanker trucks were onsite from 20:45 to 22:45. NRC removed 22,000 gallons of water from the FTP.	NRC Alaska will transport the water to Anchorage for treatment.
		 <p style="text-align: center;">Photo 1: Drilling SB-1902-150.</p>	

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)

MDN 9/26/19

PROJECT NO.:	102519-010
REPORT DATE:	September 25 and 26, 2019
REPORT NO.:	014
SW FIELD REP.:	CAB
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	---

CONSTRUCTION OBSERVATIONS (continued)

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
		 <p>Photo 2: NRC Alaska tanker trucks next to the FTP.</p>	

Meetings Attended:	N/A
Visitors to Project Site:	Clint, FAI Operations
Attachments:	None

<p><i>LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.</i></p>	REVIEW BY (PM initial/date)
	MDN 9/26/19
	Page 2 of 2

PROJECT NO.:	102519-010
REPORT DATE:	September 26, 2019
REPORT NO.:	015
SW FIELD REP.:	n/a
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.:	+/-40°F
Client <u>FAI</u>	<u>NRC Alaska, LLC (NRC):</u> <u>Dan Strucher</u>	TIMES OF SITE VISITS:	
		from <u>n/a</u>	to _____
		from _____	to _____

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Receive FTP Water in Anchorage	NRC emptied three dual tanker trucks containing FTP water into Rain-for-Rent storage tanks. Rain-for-Rent will deliver remaining storage tanks. NRC staged water treatment vessels transported from FAI inside their Viking Road facility.	NRC will continue to transport FTP water.
		 <p>Photo 1: Rain-for-Rent storage tanks staged outdoors, within secondary containment, next to NRC's Viking Road facility.</p>	

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)
MDN 9/27/19

PROJECT NO.:	102519-010
REPORT DATE:	September 26, 2019
REPORT NO.:	015
SW FIELD REP.:	n/a
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	--

CONSTRUCTION OBSERVATIONS (continued)

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
		 <p>Photo 2: Tanker trucks unloading FTP water into storage tanks.</p>  <p>Photo 3: Water treatment train inside NRC's Viking Road facility.</p>	

Meetings Attended:	N/A
Visitors to Project Site:	N/A
Attachments:	None

<p><i>LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.</i></p>	REVIEW BY (PM initial/date)
	MDN 9/27/19


PROJECT NO.:	102519-010
REPORT DATE:	September 27 and 28, 2019
REPORT NO.:	016
SW FIELD REP.:	CAB
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.	Cloudy, 35°F
Client FAI	GeoTek Alaska, Inc. (GeoTek): James Beckner, Marty Chapman	TIMES OF SITE VISITS:	
		from 20:45	to 07:00
		from	to

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Monitoring Well Installation	<p>CAB conducted daily safety meeting with two GeoTek drillers.</p> <p>Drilling commenced at 21:20. GeoTek advanced SB-1902-150 to 150 feet below ground surface (bgs).</p> <p>CAB collected one primary sample from boring SB-1902-150. The samples were submitted for PFOS / PFOA analysis.</p> <ul style="list-style-type: none"> • <i>SB-1902-150</i> was collected at 04:17 <p>GeoTek set the well at 150 feet bgs and removed 5 feet out outer drill casing.</p> <p>Tim from FAI operations came to site to check on progress at 6:55, as drillers were finishing moving monitoring well installation equipment to the opposite side of the road from the fence for daytime storage. CAB and GeoTek Alaska departed at 7:00.</p>	GeoTek will continue nighttime drilling on Saturday 9/28.
		 <p>Photo 1: MW-1902-150 with outer drill casing.</p>	

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)

PROJECT NO.:	102519-010
REPORT DATE:	September 27 and 28, 2019
REPORT NO.:	016
SW FIELD REP.:	CAB
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	---

CONSTRUCTION OBSERVATIONS (continued)

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
		 <p>Photo 2: FTP and soil cuttings from SB-1902-150.</p>	

Meetings Attended:	N/A
Visitors to Project Site:	Tim, FAI Operations
Attachments:	None

<p><i>LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.</i></p>	REVIEW BY (PM initial/date)

PROJECT NO.:	102519-010
REPORT DATE:	September 27, 2019
REPORT NO.:	017
SW FIELD REP.:	APW, AMJ, RLW, ALF, BAB
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.	40s
Client <u>FAI</u>	General <u>NRC Alaska, LLC (NRC)</u> <u>Design Alaska: Nate and Aaron</u> <u>Great Northwest, Inc. (GNI): Kody</u>	TIMES OF SITE VISITS:	
		from <u>11:00</u>	to <u>11:30</u>
		from <u>11:45</u>	to <u>17:15</u>

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Transport FTP Water Offsite	APW/AMJ arrived onsite at 11:00, met Design Alaska surveyors. APW measured water level in sump and collected water-quality parameters of FTP water. He observed the water level was below the sump grate. NRC filled three dual tanker trucks today. NRC has removed approximately 66,000 gallons of water from the FTP to date.	NRC Alaska will transport the water to Anchorage for treatment.
2	SWPPP Inspection	AMJ conducted weekly SWPPP inspection.	None.
3	Monitoring Well Development	RLW, ALF, and BAB arrived at 11:45 to develop groundwater monitoring wells MW-1901-15 and MW-1901-40. They finished developing at 14:15.	None.
4	Monitoring well Sampling	RLW, ALF, and BAB collected primary groundwater, field-duplicate, equipment blank, and field blank samples for PFOS/PFOA. They finished sampling at 16:50. <ul style="list-style-type: none"> • MW-1901-15 was collected at 15:46 • MW-1901-115 was listed with a sample time of 15:36 • MW-1901-40 was collected at 16:19 • FB-1901-40 was collected at 16:21 • EB-1901-40 was collected at 16:35 	Shannon & Wilson will ship water samples to the analytical laboratory.
5	Preparation for Cap Construction	Observed Design Alaska placing survey stakes in FTP vicinity. Great Northwest delivered materials, filled shallow berm test pits.	None.

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)

MDN 9/30/19

PROJECT NO.:	102519-010
REPORT DATE:	September 27, 2019
REPORT NO.:	017
SW FIELD REP.:	APW, AMJ, RLW, ALF, BAB
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	--

CONSTRUCTION OBSERVATIONS (continued)

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
		 <p>Photo 1: NRC dual tanker truck removing ponded FTP water.</p>  <p>Photo 2: BAB and ALF developing MW-1901-15.</p>	

Meetings Attended:	N/A
Visitors to Project Site:	NRC, Design Alaska, GNI
Attachments:	None

<p><i>LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.</i></p>	REVIEW BY (PM initial/date)
	MDN 9/30/19
	Page 2 of 2


PROJECT NO.:	102519-010
REPORT DATE:	September 27 and 28, 2019
REPORT NO.:	018
SW FIELD REP.:	CAB
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.	Cloudy, 35°F
Client FAI	GeoTek Alaska, Inc. (GeoTek): James Beckner, Marty Chapman	TIMES OF SITE VISITS:	
		from 20:45	to 07:00
		from	to

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Monitoring Well Installation	<p>CAB conducted daily safety meeting with two GeoTek drillers.</p> <p>Drilling commenced at 21:20. GeoTek advanced SB-1902-150 to 150 feet below ground surface (bgs).</p> <p>CAB collected one primary soil sample from boring SB-1902-150 for PFOS / PFOA analysis.</p> <ul style="list-style-type: none"> • SB-1902-150 was collected at 04:17 <p>GeoTek set the groundwater monitoring well at 150 feet bgs and removed 5 feet of outer drill casing.</p> <p>Tim from FAI operations visited at 6:55, as the drillers were finishing moving monitoring well installation equipment to the opposite side of the road from the runway for daytime storage. CAB and GeoTek Alaska departed at 7:00.</p>	<p>GeoTek will continue nighttime drilling on Saturday 9/28.</p> <p>Have requested an extension on runway closure, ending 7:00 on Wednesday 10/2.</p>
		 <p>Photo 1: MW-1902-150 with outer drill casing.</p>	

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)

MDN 9/28/19

PROJECT NO.:	102519-010
REPORT DATE:	September 27 and 28, 2019
REPORT NO.:	018
SW FIELD REP.:	CAB
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	---

CONSTRUCTION OBSERVATIONS (continued)

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
		 <p style="text-align: center;">Photo 2: FTP and soil cuttings from SB-1902-150.</p>	

Meetings Attended:	N/A
Visitors to Project Site:	Tim, FAI Operations
Attachments:	None

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)
MDN 9/28/19
Page 2 of 2


PROJECT NO.:	102519-010
REPORT DATE:	September 28, 2019
REPORT NO.:	019
SW FIELD REP.:	MDN
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.:	Sunny, 50°F
Client <u>FAI</u>	General <u>Pioneer Wells, Inc.</u>	TIMES OF SITE VISITS:	
		from <u>14:40</u>	to <u>15:30</u>
		from	to

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Deliver additional drilling water	<p>MDN met Pioneer Wells, Inc. water delivery truck at Gate 51. Delivery driver filled GeoTek tanks with 415 gallons of water for drilling.</p> <p>Observed first sump manhole section, placed by FAI maintenance. Great Northwest, Inc. has stockpiled FTP cap construction materials onsite.</p>	GeoTek will continue nighttime drilling.
			
		Photo 1: FTP with newly placed first sump manhole section.	

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)

MDN 9/28/19

PROJECT NO.:	102519-010
REPORT DATE:	September 28, 2019
REPORT NO.:	019
SW FIELD REP.:	MDN
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	---

CONSTRUCTION OBSERVATIONS (continued)

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
		 <p>Photo 2: Textile and sump manhole sections stockpiled near FTP.</p>  <p>Photo 3: Poned water and saturated soil surface.</p>	

Meetings Attended:	N/A
Visitors to Project Site:	None
Attachments:	None

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)
 MDN 9/28/19


PROJECT NO.:	102519-010
REPORT DATE:	September 28 and 29, 2019
REPORT NO.:	020
SW FIELD REP.:	APW
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.:	Cloudy, 35°F
Client <u>FAI</u>	<u>GeoTek Alaska, Inc. (GeoTek):</u> <u>James Beckner, Tommy, and Marty</u>	TIMES OF SITE VISITS:	
		from <u>20:40</u>	to <u>07:00</u>
		from	to

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Monitoring Well Installation	<p>APW and GeoTek personnel arrived and conducted daily safety meeting with three GeoTek drillers.</p> <p>GeoTek pulled the outer drill casing, installed filter pack, and grouted MW-1902-150. They began drilling SB-1902-80 at 01:40. APW logged direct push soil borings at 5-foot depth intervals until 40 feet below the ground surface (bgs). After reaching 40 feet bgs, GeoTek switched to tricone wash rotary and drilled to 60 feet bgs.</p> <p>Drillers packed up equipment and relocated it to the opposite side of the road from the East Ramp runway. They departed at 07:00.</p>	<p>GeoTek will continue nighttime drilling on Sunday 9/29.</p> <p>Have requested an extension on runway closure, ending 7:00 on Wednesday 10/2.</p>
		 <p>Photo 1: Staging equipment near MW-1902-150.</p>	

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)



MDN 9/30/19

PROJECT NO.:	102519-010
REPORT DATE:	September 28 and 29, 2019
REPORT NO.:	020
SW FIELD REP.:	APW
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	--

CONSTRUCTION OBSERVATIONS (continued)

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
		 <p>Photo 2: Grouting MW-1902-150.</p>  <p>Photo 3: Beginning to advance boring SB-1902-80.</p>	

Meetings Attended:	N/A
Visitors to Project Site:	None
Attachments:	None

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)
 MDN 9/30/19


PROJECT NO.:	102519-010
REPORT DATE:	September 29, 2019
REPORT NO.:	021
SW FIELD REP.:	MDN
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.	Light rain, 50°F
Client <u>FAI</u>	General	TIMES OF SITE VISITS:	
		from <u>16:00</u>	to <u>16:45</u>
		from	to

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Observe FTP sump	<p>NRC Alaska, LLC (NRC) was unable to remove planned volume of water between 12:00 and 14:00. MDN visited the project site to observe sump following unsuccessful pumping. Measured liquid in the sump, noted petroleum odor when standing near FTP.</p> <p>The muddy, interstitial water appears to be draining slowly from the surrounding sediment. NRC will continue to dewater into empty, staged dual tanker truck. They have removed approximately 77,000 gallons of water from the FTP to date.</p>	NRC will continue to dewater FTP, transport water to Anchorage.
		 <p>Photo 1: Saturated soil surface and small puddles.</p>	

Meetings Attended:	N/A
Visitors to Project Site:	None
Attachments:	None

<p><i>LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.</i></p>	REVIEW BY (PM initial/date)
	<p><i>VEW 10/01/19</i></p>
<p>Page 1 of 1</p>	

PROJECT NO.:	102519-010
REPORT DATE:	September 29 and 30, 2019
REPORT NO.:	022
SW FIELD REP.:	APW
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.	Light Rain, 42°F
Client <u>FAI</u>	<u>GeoTek Alaska, Inc. (GeoTek):</u> <u>James Beckner, Tommy, and Marty</u> <u>NRC Alaska, LLC (NRC)</u>	TIMES OF SITE VISITS:	
		from <u>20:45</u>	to <u>07:00</u>
		from	to

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Monitoring Well Installation	<p>APW and GeoTek personnel arrived onsite at 20:45, conducted daily safety meeting. Observed NRC was onsite pumping water from the FTP.</p> <p>GeoTek personnel resumed drilling the final 20 vertical feet of SB-1902-80. Upon reaching the screened interval, APW collected an analytical sample for PFOS/PFOA analysis.</p> <ul style="list-style-type: none"> • <i>SB-1902-80</i> was collected at 23:40 on 9/29 <p>GeoTek personnel installed the well casing and grouted MW-1902-80. They began drilling SB-1902-40 at 03:15, APW logged direct push soil borings.</p> <p>NRC changed staff at 04:15. As of this time, they have removed approximately 83,000 gallons.</p> <p>After reaching the screened interval of SB-1902-40, APW collected an analytical soil sample for PFOS/PFOA analysis.</p> <ul style="list-style-type: none"> • <i>SB-1902-40</i> was collected at 04:55 on 9/30 <p>GeoTek installed the 40-foot well casing but did not complete the well. Staff packed equipment and relocated it away from the East Ramp runway, departed at 07:00.</p>	<p>GeoTek will continue nighttime drilling on Monday 9/30.</p> <p>Have requested an extension on runway closure, ending 7:00 on Wednesday 10/2.</p>

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)



MDN 9/30/19

PROJECT NO.:	102519-010
REPORT DATE:	September 29 and 30, 2019
REPORT NO.:	022
SW FIELD REP.:	APW
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	---

CONSTRUCTION OBSERVATIONS (continued)

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
		 <p>Photo 1: Drilling SB-1902-40.</p>  <p>Photo 2: MW-1902-150, MW-1902-80, and unfinished MW-1902-40.</p>	

Meetings Attended:	N/A
Visitors to Project Site:	NRC dual tanker truck drivers
Attachments:	None

<p><i>LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.</i></p>	REVIEW BY (PM initial/date)
	MDN 9/30/19
	Page 2 of 2

PROJECT NO.:	102519-010
REPORT DATE:	September 30, 2019
REPORT NO.:	023
SW FIELD REP.:	MDN, AEF, AMJ
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.	Overcast to sunny, 50°F
Client <u>FAI</u>	General <u>NRC Alaska, LLC (NRC): Caleb, Eric, Brett</u>	TIMES OF SITE VISITS:	
		from 12:00 to 13:30	
		from 14:30 to 21:40	

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Transport FTP water offsite	<p>MDN and AEF arrived onsite, NRC continues to gradually dewater into dual tanker truck from FTP sump. As of the first measurement, they have removed approximately 85,000 gallons so far.</p> <p>NRC operator Caleb arrived at 14:00, began unloading excavator. He dug four small trenches around the perimeter of the concrete pad, allowed surface water to infiltrate. NRC removed training props, fuel dispenser, fuel distribution piping, and power post.</p> <p>Katrina Lemieux, Clark Klimaschesky, and R.J. Stumpf arrived at 15:00 to discuss dewatering schedule. Matt Ellingson arrived shortly afterward.</p> <p>NRC used an up-to-290-gallon per minute (gpm) trash pump to transfer surface water from small trenches to concrete pad. They proceeded to pump water from the sump at a faster rate of ~30 gallons per minute. Dual tanker truck departed for Anchorage.</p> <p>NRC began constructing a vertical sump/well to access water below the concrete base of the existing sump at 17:30. They carefully dug to the liner using both hand tools and an excavator. The liner was not damaged. They observed a consistent flow of water into the newly dug low point. NRC placed an up-to-50 gpm sump pump to dewater overnight.</p> <p>MDN and AEF used a peristaltic pump to collect a water sample from the base of the sump. The water sample will be submitted for analysis of PFOS, PFOA, DRO, RRO, VOC, TAqH, and arsenic. AEF departed at 18:00.</p> <ul style="list-style-type: none"> • <i>FTP-Pre003</i> was collected at 17:40 <p>NRC began power washing the training fixtures and piping at 20:00. MDN measured water level in the weir tank. NRC has removed approximately 94,000 gallons from the FTP.</p> <p>Coordinated with FAI Operations and nighttime drill crew (APW, GeoTek Alaska) before departing. NRC continued to power wash fixtures and equipment.</p>	<p>NRC will continue dewatering from FTP overnight, complete sump/well construction beginning at 07:30.</p> <p>Shannon & Wilson will deliver analytical samples to local receiving office and ship to laboratory.</p>

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.



REVIEW BY (PM initial/date)
<u>VEW 10/1/19</u>

PROJECT NO.:	102519-010
REPORT DATE:	September 30, 2019
REPORT NO.:	023
SW FIELD REP.:	MDN
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	---

CONSTRUCTION OBSERVATIONS (continued)

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
2	SWPPP site visit	AMJ arrived 13:00 for SWPPP site visit. She replaced straw wattles around the newly relocated gravel stockpile ramp.	None
		 <p>Photo 1: Foam on water's surface inside FTP sump.</p>  <p>Photo 2: NRC digging small ponds or trenches in the FTP fill.</p>	

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)

VEW 10/1/19

PROJECT NO.:	102519-010
REPORT DATE:	September 30, 2019
REPORT NO.:	023
SW FIELD REP.:	MDN
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	---

CONSTRUCTION OBSERVATIONS (continued)

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
		 <p>Photo 3: NRC pumping water from directly above the liner.</p>	

Meetings Attended:	N/A
Visitors to Project Site:	Katrina Lemieux, R.J. Stumpf, Clark Klimaschesky, and Matt Ellingson
Attachments:	None

<p><i>LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.</i></p>	REVIEW BY (PM initial/date)
	VEW 10/1/19
	Page 3 of 3

PROJECT NO.:	102519-010
REPORT DATE:	September 30 and Oct. 1, 2019
REPORT NO.:	024
SW FIELD REP.:	APW
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.	Clear, 33°F
Client <u>FAI</u>	<u>GeoTek Alaska, Inc. (GeoTek):</u> <u>James Beckner, Tommy, and Marty</u> <u>NRC Alaska, LLC (NRC): Caleb</u> <u>and Erick</u>	TIMES OF SITE VISITS:	
		from <u>20:45</u>	to <u>07:00</u>
		from	to

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Monitoring Well Installation	<p>APW and GeoTek personnel arrived onsite at 20:45, conducted daily safety meeting. MDN was onsite with NRC pumping water from the FTP.</p> <p>GeoTek personnel resumed installing the filter pack and grout around MW-1902-40. Upon completion of the 40-foot well, GeoTek began advancing boring SB-1902-15 at 23:00, APW logged direct push soil cores.</p> <p>After reaching the screened interval of SB-1902-15, APW collected an analytical soil sample and field duplicate sample for PFOS/PFOA analysis.</p> <ul style="list-style-type: none"> • <i>SB-1902-15 and SB-2902-15</i> were collected at 23:30 on 9/30 <p>GeoTek installed the 15-foot well casing along with the filter pack and grouting. Once the 15-foot well was completed, GeoTek transitioned to constructing the monuments for all four wells in the 1902 cluster and surrounding the well nest with concrete bollards.</p> <p>With the 1902 monitoring well nest completed, GeoTek began relocating the drill rig and all equipment over to the 1901 cluster.</p> <p>APW visited the NRC worksite. As of 06:00 on 10/1, NRC had removed approximately 96,200 gallons.</p> <p>APW and the GeoTek night crew departed the site at 07:00.</p>	GeoTek will continue 24-hour drilling on Tuesday 10/1.

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)

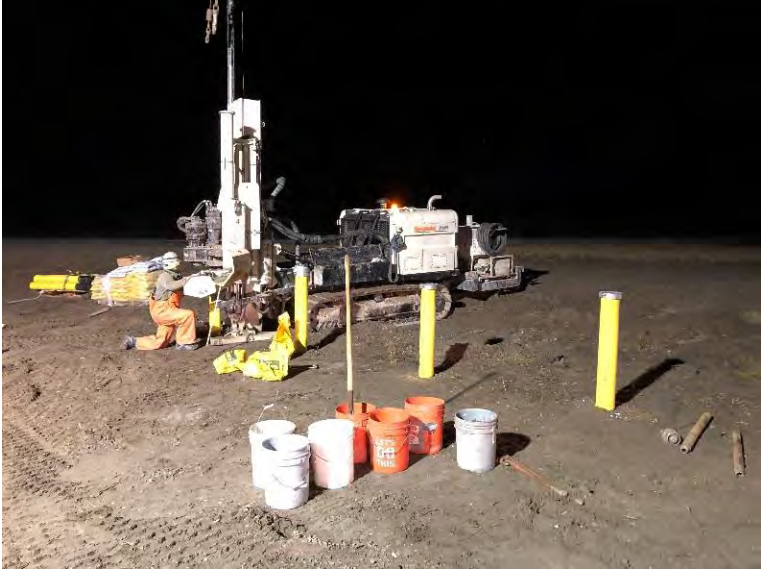

VEW 10/1/19

PROJECT NO.:	102519-010
REPORT DATE:	September 30 and Oct. 1, 2019
REPORT NO.:	024
SW FIELD REP.:	APW
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	---

CONSTRUCTION OBSERVATIONS (continued)

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
		 <p>Photo 1: Installing well monuments at the 1902 cluster.</p>  <p>Photo 2: Monitoring well cluster 1902 completed.</p>	

Meetings Attended:	N/A
Visitors to Project Site:	NRC dual tanker truck drivers
Attachments:	None

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)
 VEW 10/1/19

DAILY FIELD ACTIVITY REPORT

PROJECT NO.:	102519-010
REPORT DATE:	October 1, 2019
REPORT NO.:	025
SW FIELD REP.:	MDN, AEF, ARM, FLG
PERMIT NO.:	n/a

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.	Overcast, 33 to 45°F
Client <u>FAI</u>	General <u>NRC Alaska, LLC (NRC): Caleb, GeoTek Alaska, Inc. (GeoTek): Glen, Tommy, and Mason</u>	TIMES OF SITE VISITS:	
	<u>Great Northwest, Inc. (GNI)</u>	from <u>07:30</u>	to <u>07:00</u>
		from	to

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Dewatering and Training Prop Removal	<p>MDN arrived onsite, hole NRC dug for sump had filled with water to approximately 11 inches below the surface between 01:00 and 07:00. The hole was originally 5 feet in diameter, now approximately 9 feet wide. GNI delivered 10 cubic yards of pea gravel to enlarge planned sump/well.</p> <p>8:15 – Alaska Interior Transport, NRC’s hauling contractor, arrived to collect metal piping and training props.</p> <p>9:10 – AEF, GCD, and RLW arrive onsite. GCD and RLW begin monitoring well development (see FAR No. 26).</p> <p>10:00 – Consistent flow into sump continues. NRC has removed approximately 97,600 gallons so far.</p> <p>11:00 – FTP construction planning meeting with Clark Klimaschesky, Matt Ellingson, Jason Griswold, Jim Young, and Kody Dewese.</p> <p>NRC constructed dewatering sump from corrugated polyethylene pipe and pea gravel. Pipe was placed immediately above the existing geomembrane. Observed new sump draws water at a faster rate than existing sump, placed approximately 10 inches higher within FTP fill.</p>	NRC will continue dewatering from FTP overnight.
2	Saturated Soil Sampling	<p>MDN, AEF, and ARM collected four in-situ standard soil samples and one field-duplicate sample from the base of FTP.</p> <ul style="list-style-type: none"> • <i>FTP-001</i> was collected at 11:25 • <i>FTP-002</i> was collected at 12:10. Duplicate <i>FTP-003</i> was listed with a sample time of 12:00. • <i>FTP-004</i> was collected at 12:40 • <i>FTP-005</i> was collected at 12:50 <p>The soil samples will be submitted for analysis of PFOS, PFOA, VOCs, DRO, RRO, and TCLP RCRA metals. AEF and ARM departed at 13:30.</p>	Shannon & Wilson will deliver analytical samples to local receiving office and ship to laboratory.

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.


REVIEW BY (PM initial/date)
<u>10/2/19</u>

PROJECT NO.:	102519-010
REPORT DATE:	October 1, 2019
REPORT NO.:	025
SW FIELD REP.:	MDN, AEF, ARM, FLG
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	--

CONSTRUCTION OBSERVATIONS (continued)

3	Monitoring Well Installation	<p>FLG arrived 07:30, met with MDN and GeoTek drillers. Conducted safety meeting, staged equipment.</p> <p>GeoTek started drilling SB-1901-150 at 09:50, advanced to 40 feet. Drillers set up for tricone drilling and set casing to 60 feet. GeoTek began drilling using tricone method at 12:35. Water pump required troubleshooting. After re-starting and drilling to 100 feet, drillers noticed 1.5-feet of heave at the bottom of the casing. Tripped out in preparation for night shift to continue hole. GeoTek had reached depth of 102 feet.</p> <p>Pioneer Wells delivered approximately 500 gallons of water at 15:00. FLG and GeoTek departed at 19:00.</p>	GeoTek will continue nighttime drilling on Tuesday 10/1.
4	Cap Construction	GNI and DOT&PF operators began arriving around 12:15. They finished placing fabric rolls at 15:15. Operators began placing and compacting gravel fill.	DOT&PF will continue to place and compact fill.
5	ADEC Site Visit	Katrina Lemieux, Clark Klimaschesky, Robert Burgess, and Janice Wieggers arrived for site visit from 14:00 to 15:00. Observed dewatering, fabric placement, drilling, and other activities. MDN departed at 16:00.	None
		 <p>Photo 1: Pumping water from hole dug for new sump at 07:40.</p>	

<p><i>LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.</i></p>	REVIEW BY (PM initial/date)
	10/2/19
	Page 2 of 3

PROJECT NO.:	102519-010
REPORT DATE:	October 1, 2019
REPORT NO.:	025
SW FIELD REP.:	MDN, AEF, ARM, FLG
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	---

CONSTRUCTION OBSERVATIONS (continued)

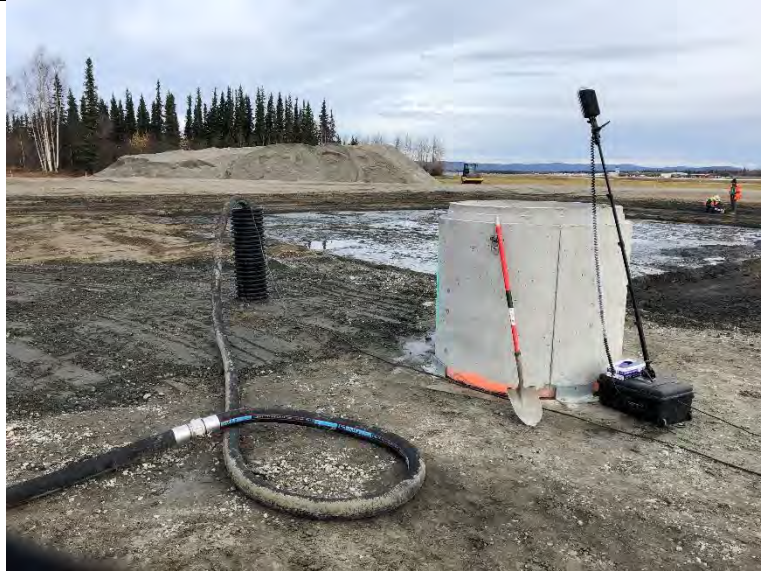


Photo 2: Corrugated polyethylene pipe sump.



Photo 2: GNI and DOT&PF placing fabric rolls.

Meetings Attended:	N/A
Visitors to Project Site:	Multi-agency tour (DEC, DOT&PF, U.S. EPA). Katrina Lemieux, Clark Klimaschesky, Robert Burgess, and Janice Wieggers.
Attachments:	None

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)

10/2/19


PROJECT NO.:	102519-010
REPORT DATE:	October 1, 2019
REPORT NO.:	026
SW FIELD REP.:	RWL, GCD
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.:	Overcast, 33 to 45°F
Client <u>FAI</u>	<u>NRC, GeoTek, and GNI (see FAR No. 025)</u>	TIMES OF SITE VISITS:	
		from <u>09:10</u>	to <u>07:00</u>
		from	to

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Monitoring Well Development	<p>RLW and GCD arrived onsite, began setting up equipment to develop MW-1902-150 and MW-1902-80. Met with MDN and AEF.</p> <p>Began purging and surging both wells simultaneously. Developed continuously, MW-1902-150 complete at 16:00.</p> <p>Development had filled four 55-gallon drums with silty, sandy water. Park vehicle with purge water onsite near FTP to allow sediment to settle out before combining with other FTP water.</p>	Shannon & Wilson will continue to develop MW-1902-80.
2	Monitoring Well Sampling	<p>Began purging MW-1902-150 for sampling at 16:10. Unable to complete sampling because drums were filled.</p>  <p>Photo 1: Developing monitoring well MW-1902-150.</p>	Shannon & Wilson will sample MW-1902-150.

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)

MDN 10/2/19

PROJECT NO.:	102519-010
REPORT DATE:	October 1, 2019
REPORT NO.:	026
SW FIELD REP.:	RWL, GCD
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	--

CONSTRUCTION OBSERVATIONS (continued)

Meetings Attended:	N/A
Visitors to Project Site:	See FAR No. 025.
Attachments:	None

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)
MDN 10/2/19
Page 2 of 2


PROJECT NO.:	102519-010
REPORT DATE:	October 1 and 2, 2019
REPORT NO.:	027
SW FIELD REP.:	APW
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.	Rain, 40°F
Client <u>FAI</u>	<u>GeoTek Alaska, Inc. (GeoTek):</u> <u>James Beckner, Tommy, and Marty</u> <u>NRC Alaska, LLC (NRC)</u>	TIMES OF SITE VISITS:	
		from <u>20:45</u>	to <u>07:15</u>
		from	to

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Monitoring Well Installation	<p>APW met GeoTek at Gate 51, APW conducted a daily safety meeting.</p> <p>GeoTek personnel resumed drilling SB-1901-150 from where the day crew had left off, APW logged split-spoon samples.</p> <p>APW visited the NRC worksite at the FTP. As of 06:30 on 10/2, NRC had removed approximately 98,500 gallons of water.</p> <p>Drilling on SB-1901-150 was paused so the night crew could demobilize prior to the day crew's arrival. GeoTek had reached a depth of 140 feet. APW and the GeoTek night crew departed at 07:15.</p>	GeoTek will continue daytime drilling on Wednesday 10/2.
		 <p>Photo 1: Low recovery in split-spoon samples due to wash-out.</p>	

Meetings Attended:	N/A
Visitors to Project Site:	None
Attachments:	None

<p><i>LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.</i></p>	REVIEW BY (PM initial/date)
	MDN 10/2/19
	Page 1 of 1

PROJECT NO.:	102519-010
REPORT DATE:	October 2, 2019
REPORT NO.:	028
SW FIELD REP.:	RLW, FLG, MDN
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.:	Overcast, 33 to 40°F
Client <u>FAI</u>	<u>GeoTek Alaska, Inc. (GeoTek):</u>	TIMES OF SITE VISITS:	
	<u>Glen and Mason</u>	from <u>8:15</u>	to <u>19:00</u>
	<u>NRC Alaska, LLC (NRC): Porter</u>	from	to
	<u>Great Northwest, Inc. (GNI): Kody</u>		

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Monitoring Well Installation	<p>FLG and GeoTek drillers arrive onsite at 8:15. Conducted daily safety meeting.</p> <p>GeoTek started drilling SB-1901-150 at 8:25. They drove the casing to 150 feet below the ground surface (bgs). FLG collected a soil sample for PFAS analysis.</p> <ul style="list-style-type: none"> • <i>SB-1901-150</i> was collected at 15:33 <p>Monitor well construction began at 15:40. Set well screen at 145 to 150 feet bgs. Drillers and FLG departed at 18:50.</p>	GeoTek will continue nighttime drilling.
2	Monitoring Well Sampling	<p>RLW arrived onsite at 1400. NRC emptied four 55-gallon drums of purge water into the FTP sump for transfer to the weir tank.</p> <p>RLW set up equipment to sample MW-1902-150. After purging the well using a submersible pump, she collected PFAS groundwater, field blank, equipment blank samples.</p> <ul style="list-style-type: none"> • <i>MW-1902-150</i> was collected at 16:18 • <i>FB-MW-1902-150</i> was marked with a sample time of 16:13 • <i>EB-MW-1902-150</i> was marked with a sample time of 16:53 	Shannon & Wilson will ship analytical water samples to the laboratory.
3	FTP Dewatering	<p>DOT&PF and NRC extended sump access to continue to place fill. As of 18:30 on 10/2, NRC had removed approximately 115,500 gallons of water.</p>	NRC will continue to dewater from the FTP.

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)

MDN 10/4/19

PROJECT NO.:	102519-010
REPORT DATE:	October 2, 2019
REPORT NO.:	028
SW FIELD REP.:	RLW, FLG, MDN
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	---

CONSTRUCTION OBSERVATIONS (continued)



Photo 1: Drilling MW-1901-150, down-gradient from the FTP.



Photo 2: NRC pumping water from existing FTP sump.

Meetings Attended:	N/A
Visitors to Project Site:	None
Attachments:	None

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)

MDN 10/4/19


PROJECT NO.:	102519-010
REPORT DATE:	October 2 and 3, 2019
REPORT NO.:	029
SW FIELD REP.:	APW
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.	Foggy, 37°F
Client <u>FAI</u>	<u>GeoTek Alaska, Inc. (GeoTek):</u> <u>James Beckner, Orlin Sutliff</u> <u>NRC Alaska, LLC (NRC): Eric</u>	TIMES OF SITE VISITS:	
		from <u>21:00</u>	to <u>07:00</u>
		from	to

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Monitoring Well Installation	<p>APW met GeoTek at Gate 51, conducted daily safety meeting.</p> <p>While GeoTek was setting up, APW visited the NRC worksite. As of 21:30, NRC had removed approximately 117,000 gallons from the FTP. Two NRC dual tankers arrived at 22:30. The first tanker filled and departed for Anchorage. The second tanker remained onsite while NRC continued to dewater.</p> <p>GeoTek personnel resumed drilling SB-1901-80 from where they had left off on 9/22. APW logged split-spoon soil samples. He collected an analytical soil sample from the screened interval for PFOS and PFOA analysis.</p> <ul style="list-style-type: none"> • <i>SB-1901-80</i> was collected at 01:15 on 10/3 <p>GeoTek installed and grouted the well casing for MW-1901-80. They placed the well monuments and demobilized prior to the day crew's arrival. APW and the GeoTek night crew departed at 07:00.</p>	<p>GeoTek will complete finishing work on Thursday 10/3.</p> <p>NRC will continue to dewater from the FTP.</p>
		 <p>Photo 1: Four monitoring wells in MW-1901 cluster.</p>	

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.


REVIEW BY (PM initial/date)
 MDN 10/3/19

PROJECT NO.:	102519-010
REPORT DATE:	October 2 and 3, 2019
REPORT NO.:	029
SW FIELD REP.:	APW
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	---

CONSTRUCTION OBSERVATIONS (continued)

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
		 <p>Photo 2: Constructing well monuments in MW-1901 cluster.</p>	

Meetings Attended:	N/A
Visitors to Project Site:	FAI Operations
Attachments:	None

<p><i>LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.</i></p>	REVIEW BY (PM initial/date)
	MDN 10/3/19
	Page 2 of 2


PROJECT NO.:	102519-010
REPORT DATE:	October 3, 2019
REPORT NO.:	030
SW FIELD REP.:	FLG, RLW, MDN
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.	Cloudy/light rain, 33 to 37°F
Client <u>FAI</u>	<u>GeoTek Alaska, Inc. (GeoTek):</u>	TIMES OF SITE VISITS:	
	<u>Glen and Mason</u>	from <u>08:00</u>	to <u>13:20</u>
	<u>NRC Alaska, LLC (NRC): Porter</u>	from	to
	<u>Great Northwest, Inc. (GNI)</u>		

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Monitoring Well Installation	<p>FLG and GeoTek drillers arrive on site at 8:00. Conducted safety meeting.</p> <p>GeoTek installed bollards around the down-gradient well cluster and packed up their equipment. At 12:00 MDN and RLW arrived onsite and FLG departed. GeoTek brought three 55-gallon drums of drill cuttings to NRC work site, they pumped liquid into FTP sump.</p>	None
2	Dewater FTP	<p>RLW and MDN measure 1.3 feet of water in temporary sump/well. Before arrival NRC had extended sump/well access to 3.5 feet above the local ground surface.</p> <p>Sump/well recharge took approximately 50 minutes. The majority of the change in water level occurred in the first 10 to 15 minutes. NRC observed FTP water continues to drain steadily.</p>	NRC will continue to dewater NTP and transport to Anchorage for treatment.
		 <p>Photo 1: Four monitoring wells in MW-1901 cluster, facing slough.</p>	

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)

MDN 10/4/19

PROJECT NO.:	102519-010
REPORT DATE:	October 3, 2019
REPORT NO.:	030
SW FIELD REP.:	FLG, RLW, MDN
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	--

CONSTRUCTION OBSERVATIONS (continued)

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
		 <p>Photo 2: NRC pumping water from FTP sump.</p>	

Meetings Attended:	None
Visitors to Project Site:	None
Attachments:	N/A

<p><i>LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.</i></p>	REVIEW BY (PM initial/date)
	MDN 10/4/19
	Page 2 of 2


PROJECT NO.:	102519-010
REPORT DATE:	October 4, 2019
REPORT NO.:	031
SW FIELD REP.:	n/a
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.	Raining, +/-50°F
Client <u>FAI</u>	<u>NRC Alaska, LLC (NRC):</u> <u>Dan Strucher</u>	TIMES OF SITE VISITS:	
		from <u>n/a</u>	to
		from	to

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	FTP Water Treatment	NRC treated the first batch of water from the FTP. The water will be containerized in Rain-for-Rent storage tanks pending receipt of the analytical results. NRC has 13 storage tanks staged in the yard of their Viking Road facility.	NRC will continue to transport FTP water.
		 <p>Photo 1: NRC's Viking Road facility FTP water storage area.</p>	

Meetings Attended:	N/A
Visitors to Project Site:	N/A
Attachments:	None

<p><i>LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.</i></p>	REVIEW BY (PM initial/date)
	MDN 10/4/19
	Page 1 of 1


PROJECT NO.:	102519-010
REPORT DATE:	October 4, 2019
REPORT NO.:	031
SW FIELD REP.:	MDN, AMJ, PMW
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.	Light rain, 35°F
Client <u>FAI</u>	<u>NRC Alaska, LLC (NRC): Porter</u> <u>Great Northwest, Inc. (GNI)</u>	TIMES OF SITE VISITS:	
		from <u>12:15</u>	to <u>13:15</u>
		from	to

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Dewater FTP	MDN measured 1.2 feet of water in the temporary sump/well. As of 12:30, NRC had removed approximately 128,800 gallons from the FTP.	NRC will continue to dewater NTP and transport to Anchorage for treatment.
2	FTP Cap Construction	AMJ conducted weekly SWPPP inspection. PMW tested compaction at several locations on gravel pad. DOT&PF continues to level and compact gravel. DOT&PF placed second manhole section for sump extension. GNI marked elevation of 40-mil geomembrane and placed stakes for final grade.	DOT&PF will continue to place and compact gravel fill.
		 <p>Photo 1: NRC continued to dewater from temporary sump/well.</p>	

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)
 MDN 10/7/19

PROJECT NO.:	102519-010
REPORT DATE:	October 4, 2019
REPORT NO.:	031
SW FIELD REP.:	MDN, AMJ, PMW
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	--

CONSTRUCTION OBSERVATIONS (continued)

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
		 <p>Photo 2: Compacted gravel fill and stakes.</p>	

Meetings Attended:	None
Visitors to Project Site:	None
Attachments:	N/A

<p><i>LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.</i></p>	REVIEW BY (PM initial/date)
	MDN 10/7/19
	Page 2 of 2

PROJECT NO.:	102519-010
REPORT DATE:	October 7, 2019
REPORT NO.:	033
SW FIELD REP.:	RLW, MDN
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.	Overcast, briefly snowing, 34°F
Client <u>FAI</u>	<u>Great Northwest, Inc. (GNI)</u>	TIMES OF SITE VISITS:	
		from <u>13:10</u>	to <u>16:00</u>
		from	to

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	FTP Dewatering	MDN and RLW measured 1.8 feet of water in the temporary sump/well. NRC halted dewatering at 17:00 on October 6 due to slow draw rate. NRC has removed approximately 135,700 gallons from the FTP.	NRC will transport water to Anchorage for treatment.
2	Consolidate Investigation Derived Waste	MDN and RLW transferred monitoring well purge, development, and drilling water into onsite storage tank. Five empty 55-gallon drums are stored next to MW-1902 well cluster. RLW collected a waste-characterization sample for disposal of saturated soil cuttings from the MW-1901 well cluster. The sample will be submitted for analysis of PFOS and PFOA. • <i>MW-1901-drum</i> was collected at 14:10	Shannon & Wilson will ship sample to the analytical laboratory.
3	FTP Cap Construction	DOT&PF continues to level and compact gravel following recent snowfall (<1 inch). Observe GNI has transported liner sections and heater to the site.	DOT&PF will continue to level gravel fill.

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)
<u>MDN 10/8/19</u>

PROJECT NO.:	102519-010
REPORT DATE:	October 7, 2019
REPORT NO.:	033
SW FIELD REP.:	RLW, MDN
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	---

CONSTRUCTION OBSERVATIONS (continued)

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
		 <p>Photo 1: DOT&PF continued to level gravel fill.</p>	
		 <p>Photo 2: Compacted gravel fill and DOT&PF roller.</p>	

Meetings Attended:	None
Visitors to Project Site:	FAI Police & Fire personnel
Attachments:	N/A

<p><i>LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.</i></p>	REVIEW BY (PM initial/date)
	MDN 10/8/19
	Page 2 of 2


PROJECT NO.:	102519-010
REPORT DATE:	October 8, 2019
REPORT NO.:	034
SW FIELD REP.:	MDN
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.	Snowing, 33°F
Client <u>FAI</u>	<u>Design Alaska</u> <u>Great Northwest, Inc. (GNI)</u>	TIMES OF SITE VISITS:	
		from <u>08:30</u>	to <u>09:20</u>
		from	to

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Monitoring Well Survey	MDN met Design Alaska surveyors at Gate 51. They began to survey 10 groundwater monitoring wells and FTP temporary sump/well. MDN measured 2.1 feet of water in the temporary sump/well.	GNI will decommission temporary sump/well.
2	FTP Cap Construction	Observed DOT&PF has finished leveling gravel.	GNI and Layfield will install fabric and geomembrane.
		 <p>Photo 1: FTP temporary sump/well (left) and permanent sump extension manhole (right).</p>	

Meetings Attended:	None
Visitors to Project Site:	None
Attachments:	N/A

<i>LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.</i>	REVIEW BY (PM initial/date)
	MDN 10/8/19
	Page 1 of 1


DAILY FIELD ACTIVITY REPORT

PROJECT NO.:	102519-010
REPORT DATE:	October 9, 2019
REPORT NO.:	035
SW FIELD REP.:	MDN
PERMIT NO.:	n/a

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.	Light rain, 38°F
Client <u>FAI</u>	<u>NRC Alaska</u>	TIMES OF SITE VISITS:	
		from <u>15:00</u>	to <u>16:10</u>
		from	to

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	FTP Dewatering	<p>NRC pumped water from onsite weir tank into final tanker truck. Total volume removed is approximately 135,700 gallons.</p> <p>MDN measured 2.4 feet of water above the FTP liner.</p> <p>Observed diesel release soil excavation has been backfilled.</p>	NRC will transport FTP water to Anchorage for treatment.
		 <p>Photo 1: NRC filling final tanker truck with FTP water.</p>	

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)
 MDN 10/9/19

PROJECT NO.:	102519-010
REPORT DATE:	October 9, 2019
REPORT NO.:	035
SW FIELD REP.:	MDN
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	--

CONSTRUCTION OBSERVATIONS (continued)

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
		 <p>Photo 2: Heater and 40-mil liner stored near the FTP in preparation for placement.</p>	

Meetings Attended:	None
Visitors to Project Site:	None
Attachments:	N/A

<i>LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.</i>	REVIEW BY (PM initial/date)
	MDN 10/9/19
	Page 2 of 2

DAILY FIELD ACTIVITY REPORT

PROJECT NO.:	102519-010
REPORT DATE:	October 11, 2019
REPORT NO.:	036
SW FIELD REP.:	AMJ
PERMIT NO.:	n/a

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.	Light snow, 33°F
Client <u>FAI</u>	<u>n/a</u>	TIMES OF SITE VISITS:	
		from <u>14:45</u>	to <u>15:30</u>
		from	to

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	FTP Dewatering	AMJ measured 2.1 feet of water in the permanent FTP sump. Temporary sump/well has been removed, estimate 2.8 feet of water above FTP liner.	Develop a plan for water removal and treatment in 2020.
2	FTP Cap Construction	AMJ conducted weekly SWPPP inspection. Observed DOT&PF has moved gravel stockpiles to outside project area.	GNI and Layfield will install fabric and geomembrane.
		 <p>Photo 1: Location of the former gravel stockpile.</p>	

Meetings Attended:	None
Visitors to Project Site:	None
Attachments:	N/A

<p><i>LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.</i></p>	REVIEW BY (PM initial/date)
	MDN 10/14/19
	Page 1 of 1


PROJECT NO.:	102519-010
REPORT DATE:	October 14, 2019
REPORT NO.:	037
SW FIELD REP.:	BAB, AMJ
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.	Overcast, 33 to 45°F
Client <u>FAI</u>	<u>n/a</u>	TIMES OF SITE VISITS:	
		from <u>09:10</u>	to <u>15:45</u>
		from	to

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Monitoring Well Development	BAB and AMJ developed monitoring well MW-1902-15. Ended pumping and surging at 12:20 when water was clear of sediment. Began setting up for MW-1902-40 development.	Shannon & Wilson will continue to develop MW-1902-40.
2	Monitoring Well Sampling	Collected water sample and field blank for analysis of 21 PFAS. <ul style="list-style-type: none"> • MW-1902-15 was collected at 16:00 • FB-MW-1902-15 was collected at 16:20 	Ship water samples to the analytical laboratory.
		 <p style="text-align: center;">Photo 1: MW-1902 well cluster.</p>	

Meetings Attended:	N/A
Visitors to Project Site:	None
Attachments:	None

<p><i>LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.</i></p>	REVIEW BY (PM initial/date)
	MDN 10/15/19
	Page 1 of 1

PROJECT NO.:	102519-010
REPORT DATE:	October 15, 2019
REPORT NO.:	038
SW FIELD REP.:	BAB, AMJ, ALF, MDN
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.	Cloudy, 18 to 35°F
Client FAI	Great Northwest, Inc. (GNI) NRC Alaska	TIMES OF SITE VISITS:	
		from 09:30	to 15:45
		from	to

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Monitoring Well Development	BAB and AMJ developed monitoring well MW-1902-40, alternating between surging and purging. Finished at 11:25. MW-1902-80 development was begun on 10/1, finish developing.	Shannon & Wilson will continue to develop and sample remaining monitoring wells.
2	FTP Cap Construction	MDN met GNI onsite to turn off liner heater. The liner welding contractor's availability has changed, they are planning to begin next week (10/23 or 10/24). Measured 3.0 feet of water in the permanent FTP sump, observed possible sheen. Estimate 3.7 feet of water above the lower liner.	GNI and Layfield will install fabric and geomembrane.
3	Monitoring Well Sampling	Collected primary water samples and field blank for analysis of 21 PFAS. <ul style="list-style-type: none"> • MW-1902-40 was collected at 15:06 • MW-1902-80 was collected at 16:13 • MW-1902-80-FB was collected at 16:18 	Ship water samples to the analytical laboratory.
4	Pressure Transducer Deployed	ALF installed a Solinst Levellogger pressure transducer in MW-9701-12 to log water levels. He installed a Solinst Barlogger pressure transducer in the MW-1901-40 monument to log barometric pressure.	Shannon & Wilson will download transducer data quarterly.

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)


MDN 10/16/19

PROJECT NO.:	102519-010
REPORT DATE:	October 15, 2019
REPORT NO.:	038
SW FIELD REP.:	BAB, AMJ, ALF, MDN
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	--

CONSTRUCTION OBSERVATIONS (continued)

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
		 <p>Photo 1: Sampling MW-1902-80 using a submersible pump.</p>  <p>Photo 2: Possible sheen on water in the FTP sump.</p>	

Meetings Attended:	N/A
Visitors to Project Site:	None
Attachments:	None

<p><i>LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.</i></p>	REVIEW BY (PM initial/date)
	MDN 10/16/19
	Page 2 of 2


DAILY FIELD ACTIVITY REPORT

PROJECT NO.:	102519-010
REPORT DATE:	October 16, 2019
REPORT NO.:	039
SW FIELD REP.:	BAB, AMJ, MDN, ALF
PERMIT NO.:	n/a

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.	Cloudy, 18 to 35°F
Client <u>FAI</u>	<u>NRC Alaska</u>	TIMES OF SITE VISITS:	
		from <u>08:30</u>	to <u>15:45</u>
		from	to

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	FTP Dewatering	MDN met NRC onsite. They collected the Rain-for-Rent weir tank for transportation to Kenai.	None.
1	Monitoring Well Development	BAB and AMJ developed monitoring well MW-1901-80, alternating between surging and purging until the water was clear of sediment. Finished at 11:30. Developed MW-1901-150, water took longer to clear than anticipated. ALF purchased two additional drums for monitoring well purge water and brought them to the FAI. Finished developing 150-foot well at 15:30.	None.
2	Monitoring Well Sampling	Collected primary water sample, equipment blank, and field blank for analysis of 18 PFAS by a modified method 537.1. Attempted to sample MW-1901-150, equipment malfunction. <ul style="list-style-type: none"> • MW-1901-80 was collected at 13:40 • MW-1901-80-EB was collected at 14:31 • MW-1901-80-FB was collected at 14:45 	Will sample MW-1701-150 on Friday 10/18 with a new pump. Shannon & Wilson will ship water samples to the analytical laboratory.
		 <p>Photo 1: NRC and Weaver Brothers collecting weir tank.</p>	

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)

MDN 10/17/19

PROJECT NO.:	102519-010
REPORT DATE:	October 16, 2019
REPORT NO.:	039
SW FIELD REP.:	BAB, AMJ, MDN, ALF
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	--

CONSTRUCTION OBSERVATIONS (continued)

Meetings Attended:	N/A
Visitors to Project Site:	None
Attachments:	None

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)
MDN 10/17/19
Page 2 of 2


PROJECT NO.:	102519-010
REPORT DATE:	October 18, 2019
REPORT NO.:	040
SW FIELD REP.:	BAB, ARM, AMJ
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.:	Cloudy, 30 to 34°F
Client <u>FAI</u>	<u>Design Alaska, Inc: Michael Schmetzer and Isaac Ladines</u>	TIMES OF SITE VISITS:	
		from <u>09:20</u> to <u>11:00</u>	
		from <u>12:00</u> to <u>12:45</u>	

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Monitoring Well Sampling	BAB and ARM purged water from MW-1901-150 into 55-gallon drum. Produced 7 drums of development and purge water at MW-1901 well cluster, total of 12 drums. <ul style="list-style-type: none"> MW-1901-150 was collected at 10:27 MW-1901-150-FB was collected at 10:30 	Shannon & Wilson will ship water samples to the analytical laboratory.
2	FTP Dewatering	BAB measured 3.2 feet of water in the permanent FTP sump. Estimate 3.9 feet of water above the lower liner.	None.
3	FTP Cap Construction	AMJ met Design Alaska, Inc. engineers at Gate 51 for site walkthrough. She conducted weekly SWPPP inspection.	GNI and Layfield will install fabric and geomembrane.
		 <p>Photo 1: MW sampling following development.</p>	

Meetings Attended:	N/A
Visitors to Project Site:	None
Attachments:	None

<p><i>LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.</i></p>	REVIEW BY (PM initial/date)
	MDN 10/21/19
	Page 1 of 1

PROJECT NO.:	102519-010
REPORT DATE:	October 22, 2019
REPORT NO.:	041
SW FIELD REP.:	GCD
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.:	Partly Cloudy, 30°F
Client <u>FAI</u>		TIMES OF SITE VISITS:	
		from <u>12:30</u>	to <u>13:00</u>

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	FTP Cap Construction	GCD visited site to document construction status, coordinate investigation-derived waste disposal. Measured 3.2 feet of water in the permanent FTP sump, unchanged from previous measurement. Observed Police & Fire training east of FTP.	GNI and Layfield will install fabric and geomembrane.
		 <p>Photo 1: Observed heated liner tent near FTP.</p>	

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)

MDN 10/23/19

PROJECT NO.:	102519-010
REPORT DATE:	October 22, 2019
REPORT NO.:	041
SW FIELD REP.:	GCD
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	--

CONSTRUCTION OBSERVATIONS (continued)

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
		 <p>Photo 2: Piping and final concrete manhole sections staged onsite.</p>	

Meetings Attended:	N/A
Visitors to Project Site:	None
Attachments:	None

<p><i>LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.</i></p>	REVIEW BY (PM initial/date)
	MDN 10/23/19
	Page 2 of 2


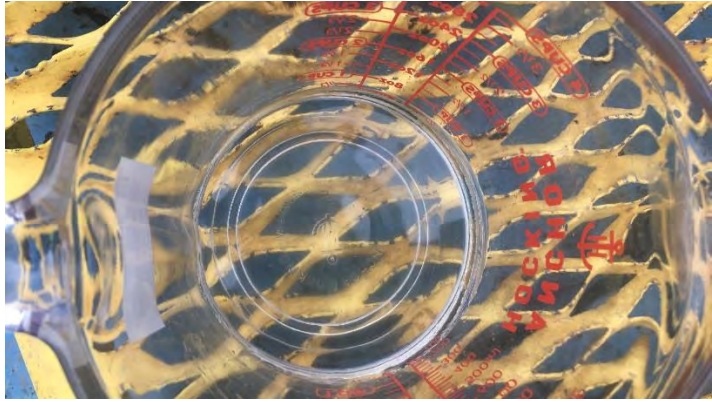
PROJECT NO.:	102519-010
REPORT DATE:	October 23, 2019
REPORT NO.:	042
SW FIELD REP.:	n/a
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.:	Cloudy, 42°F
Client <u>FAI</u>	<u>NRC Alaska, LLC (NRC):</u>	TIMES OF SITE VISITS:	
	<u>Dan Strucher</u>	from <u>n/a</u>	to _____
		from _____	to _____

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	FTP Water Treatment	NRC received PFAS, metals, and hydrocarbon sample results collected after treating the first 20,000 gallons of water. To date they have treated and containerized approximately 60,000 gallons. NRC plans to begin discharging treated water to the utility under applicable Anchorage Water and Wastewater Utility permits tomorrow.	NRC will continue to treat FTP water.
		 <p>Photo 1: Pre-flocculation water in NRC's holding tank.</p>  <p>Photo 2: Post-flocculation water in glass container.</p>	

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)

MDN 10/23/19


PROJECT NO.:	102519-010
REPORT DATE:	October 28, 2019
REPORT NO.:	043
SW FIELD REP.:	BAB
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.:	Mostly Cloudy, 41°F
Client <u>FAI</u>	<u>NRC Alaska</u> <u>Great Northwest, Inc. (GNI)</u>	TIMES OF SITE VISITS:	
		from <u>9:00</u>	to <u>10:00</u>

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Investigation-derived waste (IDW)	BAB met NRC Alaska onsite. They collected 12 drums of monitoring well development and purge water and 2 partially-filled drums of soil cuttings.	NRC Alaska will store IDW pending the receipt of analytical results.
2	FTP Dewatering	BAB measured 3.3 feet of water in the permanent FTP sump.	Shannon & Wilson will continue to monitor water level until geomembrane is placed.
		 <p style="text-align: center;">Photo 1: Three soil drums</p>	

Meetings Attended:	N/A
Visitors to Project Site:	None
Attachments:	None

<i>LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.</i>	REVIEW BY (PM initial/date)
	MDN 10/29/19
	Page 1 of 1

PROJECT NO.:	102519-010
REPORT DATE:	October 29, 2019
REPORT NO.:	044
SW FIELD REP.:	BAB
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.:	Mostly Cloudy, 29°F
Client <u>FAI</u>	<u>Great Northwest Inc. (GNI)</u>	TIMES OF SITE VISITS:	
		from <u>9:10</u>	to <u>9:30</u>

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	FTP Cap Construction	BAB visited FTP to document construction status. Observed GNI moving materials, heating fabric in preparation for placement.	GNI and Layfield will install fabric and geomembrane.
		 <p>Photo 1: GNI moving fabric.</p>	

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)

MDN 10/29/19

PROJECT NO.:	102519-010
REPORT DATE:	October 29, 2019
REPORT NO.:	044
SW FIELD REP.:	BAB
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	---

CONSTRUCTION OBSERVATIONS (continued)

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
		 <p style="text-align: center;">Photo 2: GNI covering fabric.</p>	

Meetings Attended:	N/A
Visitors to Project Site:	None
Attachments:	None

<p><i>LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.</i></p>	REVIEW BY (PM initial/date)
	MDN 10/29/19
	Page 2 of 2


DAILY FIELD ACTIVITY REPORT

PROJECT NO.:	102519-010
REPORT DATE:	October 31, 2019
REPORT NO.:	045
SW FIELD REP.:	AEF, MDN
PERMIT NO.:	n/a

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.	Partly Cloudy to Sunny, 26°F
Client FAI	Great Northwest Inc. (GNI): Kody Layfield USA Corporation: Brian	TIMES OF SITE VISITS:	
		from 08:45	to 09:45
		10:30	17:00

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	FTP Dewatering	AEF and MDN measured 3.3 feet of water in the permanent FTP sump, unchanged from previous measurement.	Shannon & Wilson will continue to monitor water level until geomembrane is placed.
2	Separation Fabric Installation	GNI and Layfield personnel laid out geotextile separation fabric using a telescopic forklift to place each 15 foot-by-300-foot roll. They used small propane torches to weld the fabric edges together with a one-to-two-foot overlap. GNI and Layfield finished placing the separation fabric at 15:00. They partially used 18 rolls.	None.
3	Liner Installation	GNI and Layfield unfolded and unrolled the first liner section and spread it across the separation fabric. The liner section is approximately 75 feet in width and extends from the southwest edge of the FTP cap to the sump.	GNI and Layfield will continue installing the geomembrane.
		 <p>Photo 1: Geomembrane liner and textile inside heated tent.</p>	

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)

MDN 11/1/19

PROJECT NO.:	102519-010
REPORT DATE:	October 31, 2019
REPORT NO.:	045
SW FIELD REP.:	AEF, MDN
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	---

CONSTRUCTION OBSERVATIONS (continued)

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
		 <p>Photo 2: GNI and Layfield placing separation fabric.</p>  <p>Photo 3: GNI and Layfield placing the first liner section.</p>	

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)
 MDN 11/1/19

PROJECT NO.:	102519-010
REPORT DATE:	October 31, 2019
REPORT NO.:	045
SW FIELD REP.:	AEF, MDN
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	--

CONSTRUCTION OBSERVATIONS (continued)

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
		 <p style="text-align: center;">Photo 4: First liner section in place.</p>	

Meetings Attended:	N/A
Visitors to Project Site:	Clark Klimaschesky, FAI
Attachments:	None

<p><i>LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.</i></p>	REVIEW BY (PM initial/date)
	MDN 11/1/19
	Page 3 of 3

PROJECT NO.:	102519-010
REPORT DATE:	November 1, 2019
REPORT NO.:	046
SW FIELD REP.:	AEF, AMJ, MDN
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.	28°F, snowing, cloudy
Client <u>FAI</u>	<u>Great Northwest Inc. (GNI): Kody</u> <u>Layfield USA Corporation: Brian</u>	TIMES OF SITE VISITS:	
		from <u>09:15</u>	to <u>10:40</u>
		<u>14:15</u>	<u>16:40</u>

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Liner Installation	GNI and Layfield laid out second and third liner sections. GNI observed liner is approximately 3 feet short along northeast edge. MDN met Michael Schmetzer of Design Alaska at the site. Compared to drawings, concluded extent of placed liner is sufficient to cover existing FTP given design margin of error.	GNI and Layfield will continue installing the geomembrane.
2	SWPPP Inspection	AMJ conducted weekly SWPPP inspection.	None.
		 <p style="text-align: center;">Photo 1: Second liner section in place.</p>	

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)

MDN 11/1/19

PROJECT NO.:	102519-010
REPORT DATE:	November 1, 2019
REPORT NO.:	046
SW FIELD REP.:	AEF, AMJ, MDN
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	---

CONSTRUCTION OBSERVATIONS (continued)

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
		 <p>Photo 2: Northeastern edge of FTP cap.</p>	

Meetings Attended:	N/A
Visitors to Project Site:	Michael Schmetzer, Design Alaska
Attachments:	None

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)
 MDN 11/1/19


PROJECT NO.:	102519-010
REPORT DATE:	November 2, 2019
REPORT NO.:	047
SW FIELD REP.:	MDN
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.:	Overcast, 21°F
Client <u>FAI</u>	<u>Great Northwest Inc. (GNI)</u> <u>Layfield USA Corporation: Brian</u>	TIMES OF SITE VISITS:	
		from <u>15:15</u>	to <u>16:15</u>

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Liner Installation	MDN observed Layfield and GNI personnel installing separation fabric on top of the liner and constructing the sump gasket. Earlier in the day, Layfield cleared snow from the liner seams using a portable heater and blower. They used a hot wedge welder to complete three, 250-foot seams running NW-SE. Layfield has completed seam tension testing.	GNI and Layfield will continue placing the separation fabric.
2	FTP Dewatering	MDN measured 3.3 feet of water in the permanent FTP sump, unchanged from previous measurement.	Shannon & Wilson will coordinate FTP dewatering in spring 2020.
		 <p>Photo 1: Layfield placing fabric on top of the welded liner.</p>	

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.


REVIEW BY (PM initial/date)
 MDN 11/2/19

PROJECT NO.:	102519-010
REPORT DATE:	November 2, 2019
REPORT NO.:	047
SW FIELD REP.:	MDN
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	--

CONSTRUCTION OBSERVATIONS (continued)

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
		 <p>Photo 2: Layfield constructing the liner gasket around the FTP sump extension.</p>	

Meetings Attended:	N/A
Visitors to Project Site:	None
Attachments:	None

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)
 MDN 11/2/19


PROJECT NO.:	102519-010
REPORT DATE:	November 3, 2019
REPORT NO.:	048
SW FIELD REP.:	AEF
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.:	Overcast, snowing, 18°F
Client <u>FAI</u>	<u>Great Northwest Inc. (GNI)</u> <u>Layfield USA Corporation: Brian</u>	TIMES OF SITE VISITS:	
		from <u>13:15</u>	to <u>13:45</u>

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Liner Installation	Earlier in the day, Layfield personnel finished constructing the sump gasket using track and extrusion bead welding techniques. Layfield completed seam air and probe testing on the 250-foot liner seams. GNI and Layfield finished placing the second layer of geotextile fabric on top of the liner.	Layfield will finish demobilizing 11/4.
		 <p style="text-align: center;">Photo 1: Completed sump gasket.</p>	

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)


MDN 11/4/19

PROJECT NO.:	102519-010
REPORT DATE:	November 3, 2019
REPORT NO.:	048
SW FIELD REP.:	AEF
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	---

CONSTRUCTION OBSERVATIONS (continued)

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
		 <p>Photo 2: Completed second layer of geotextile separation fabric.</p>	

Meetings Attended:	N/A
Visitors to Project Site:	None
Attachments:	None

<p><i>LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.</i></p>	REVIEW BY (PM initial/date)
	MDN 11/4/19
	Page 2 of 2


PROJECT NO.:	102519-010
REPORT DATE:	November 6, 2019
REPORT NO.:	049
SW FIELD REP.:	AEF
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.:	Light snow, 27°F
Client FAI		TIMES OF SITE VISITS:	
		from 13:50	to 14:20

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	FTP Cap Construction	AEF observed GNI and Layfield have demobilized remaining equipment from the site. She also observed the water within the sump was frozen.	FAI will place temporary barriers around the FTP.
		 <p>Photo 1: Snow accumulation on the FTP liner and textile.</p>	

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)

MDN 11/6/19

PROJECT NO.:	102519-010
REPORT DATE:	November 6, 2019
REPORT NO.:	049
SW FIELD REP.:	AEF
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	---

CONSTRUCTION OBSERVATIONS (continued)

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
		 <p>Photo 2: Manhole extension staged onsite for future installation.</p>	

Meetings Attended:	N/A
Visitors to Project Site:	None
Attachments:	None

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)
MDN 11/6/19
Page 2 of 2


PROJECT NO.:	102519-010
REPORT DATE:	December 11, 2019
REPORT NO.:	050
SW FIELD REP.:	BAB
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.:	Partly Cloudy, 22°F
Client FAI		TIMES OF SITE VISITS:	
		from 13:15	to 15:15

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	FTP Data Logger	BAB downloaded barometric and water pressure data from the automated loggers in MW-1901-40 and MW-9701-12.	None
		 <p>Photo 1: Downloading barometric data from MW-1901-40 logger.</p>	

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)

MDN 12/12/19

PROJECT NO.:	102519-010
REPORT DATE:	May 12, 2020
REPORT NO.:	051
SW FIELD REP.:	MDN
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.:	Partly Cloudy, upper 50s°F
Client <u>FAI</u>	<u>Jim Conlon, Great Northwest</u>	TIMES OF SITE VISITS:	
		from <u>13:00</u>	to <u>15:00</u>

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	FTP Cap	MDN met Great Northwest foreman for a site walk through. Observed snow/ice have melted, liner and sandbags remain in place. Visible welds are in good condition. Water in the FTP sump is frozen.	Great Northwest will begin transporting silt when stockpile is no longer frozen.
		 <p>Photo 1: Geotextile and liner held in place by sandbags.</p>	

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)
 MDN 5/14/20


PROJECT NO.:	102519-010
REPORT DATE:	May 21, 2020
REPORT NO.:	052
SW FIELD REP.:	ALF
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.:	Partly Cloudy, upper 60s°F
Client <u>FAI</u>		TIMES OF SITE VISITS:	
		from <u>13:00</u>	to <u>13:20</u>

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	FTP Cap	Downloaded barometric and water pressure data from the automated loggers in MW-1901-40 and MW-9701-12. Barometric logger appears to have logged erroneous data sporadically in winter 2019-2020.	Continue to monitor groundwater elevations throughout summer 2020
		 <p>Photo 1: MW-1901-40 data logger.</p>	

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)

MDN 5/22/20


PROJECT NO.:	102519-010
REPORT DATE:	June 5, 2020
REPORT NO.:	053
SW FIELD REP.:	MDN
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.:	Sunny, 73°F
Client FAI		TIMES OF SITE VISITS:	
		from 15:15	to 15:30

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	FTP Cap	Observed newly placed and graded silt layer, final sump extension riser section, and flat manhole lid. At the FAI's request, Great Northwest placed a shorter final section than indicated in the cap design drawings.	Great Northwest will place topsoil starting Monday.
		 <p>Photo 1: Fire trianing pit cap silt layer.</p>	

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)
 MDN 6/5/20

PROJECT NO.:	102519-010
REPORT DATE:	June 5, 2020
REPORT NO.:	053
SW FIELD REP.:	MDNF
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	--

CONSTRUCTION OBSERVATIONS (continued)

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
		 <p>Photo 2: Completed sump extension and flat manhole lid.</p>	

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)
 MDN 6/5/20


PROJECT NO.:	102519-010
REPORT DATE:	June 18, 2020
REPORT NO.:	054
SW FIELD REP.:	MDN
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.	Overcast, 60s°F
Client <u>FAI</u>	<u>Design Alaska</u>	TIMES OF SITE VISITS:	
		from <u>9:00</u>	to <u>10:00</u>

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	FTP Cap	Design Alaska conducted final topographic survey of cap and vicinity. Observed newly placed hydroseed has sprouted.	None.
2	FTP Dewatering	Measured 3.7 feet of water in the FTP sump.	NRC will draw water from the sump for offsite treatment.
		 <p>Photo 1: Newly hydroseeded fire training pit cap.</p>	

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)

MDN 6/24/20

PROJECT NO.:	102519-013
REPORT DATE:	June 25, 2020
REPORT NO.:	055
SW FIELD REP.:	CAB
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.:	Sunny, 60s°F
Client FAI		TIMES OF SITE VISITS:	
		from 10:30	to 17:15

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Monitoring Well Sampling	Collected five primary groundwater samples and one quality control sample for 18 PFAS by EPA Method 537.1M. <ul style="list-style-type: none"> • MW-1901-150 • MW-1901-80 • MW-1901-40 • MW-1901-15: also submitted for DRO and VOCs • MW-1902-150 • FB-1902-150: field-blank sample 	Continue sampling tomorrow. Submit water samples to the analytical laboratories.

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)

MDN 7/7/20


PROJECT NO.:	102519-013
REPORT DATE:	June 26, 2020
REPORT NO.:	056
SW FIELD REP.:	CAB, ARM
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.:	Rain to sunny, 60s°F
Client <u>FAI</u>		TIMES OF SITE VISITS:	
		from <u>11:30</u>	to <u>16:45</u>

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Monitoring Well Sampling	Collected three primary samples and three quality control sample for 18 PFAS by EPA Method 537.1M. <ul style="list-style-type: none"> MW-1902-80 MW-1902-40 MW-1902-15: also submitted for DRO and VOCs MW-2002-15: field-duplicate sample FB-1902-15: field-blank sample EB-1902-15: equipment-blank sample 	Submit water samples to the analytical laboratories.
		 <p>Photo 1: ARM collecting groundwater sample from MW-1902-40.</p>	

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)
 MDN 7/7/20


PROJECT NO.:	102519-013
REPORT DATE:	July 1, 2020
REPORT NO.:	057
SW FIELD REP.:	MDN
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
------------------------------	--

REPORT SUBMITTED TO:	CONTRACTOR NAME AND CONTACT:	WEATHER & TEMP.	Sunny, 58°F
Client <u>FAI</u>	<u>GeoTek Alaska</u>	TIMES OF SITE VISITS:	
		from <u>9:20</u>	to <u>9:40</u>

CONSTRUCTION OBSERVATIONS

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
1	Monitoring wells	GeoTek Alaska finished painting bollards surrounding MW-1901 monitoring well cluster.	None.
2	FTP Dewatering	Observed water in the FTP sump, level unchanged from previous measurement. Appears sediment-rich.	NRC will draw water from the sump for offsite treatment.
		 <p>Photo 1: Water in fire training pit sump.</p>	

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, procedures, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)

MDN 6/1/20

PROJECT NO.:	102519-013
REPORT DATE:	July 1, 2020
REPORT NO.:	057
SW FIELD REP.:	MDN
PERMIT NO.:	n/a

DAILY FIELD ACTIVITY REPORT

PROJECT NAME/LOCATION	Fairbanks International Airport Fire Training Pit Corrective Action
-----------------------	---

CONSTRUCTION OBSERVATIONS (continued)

NO.	TOPIC AND LOCATION	DESCRIPTION OF FIELD ACTIVITY, OBSERVATIONS AND RECOMMENDATIONS TO OWNER	FURTHER ACTION RECOMMENDED TO OWNER
		 <p style="text-align: center;">Photo 2: Hydroseeded fire training pit cap.</p>	

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)
MDN 6/1/20
Page 2 of 2



SHANNON & WILSON, INC.

Treatment System Effluent Daily Monitoring Form

Field Personnel: APW

Date: 9/9/2019

Project Name: FAI FTP corrective Action

Project Number: 102519

Site Observations:

Pre-treatment samples 19 FAI-FTP-Pre001 and 19 FAI-FTP-Pre101 were collected at 19:30 for the same analyte list as post-treatment below.

Daily Monitoring Parameters

Sheen Observed?

Yes No

System Flow Rate (gpm): ~~65~~ APW ~~30~~ ~ 62.5 per NRC

Hours of Operation (hrs): + 0.5

Estimated Daily Discharge (gal): ~~4,000~~ APW ~ 2,000

Weekly Monitoring Parameters

Temperature (°C): 15.6

YSI Pro Plus or equivalent

pH: 7.10

YSI Pro Plus or pH Meter

Conductivity (µs/cm): 1444

YSI Pro Plus or equivalent

Dissolved Oxygen (mg/l): 1.94

YSI Pro Plus or equivalent

Oxidation Reduction Potential (mV): 239.3

YSI Pro Plus or equivalent

Turbidity (NTU): 74.9 Green color due to algae

Hach 2100p Turbidimeter

Settleable Solids (ml/L): 0

Imhoff Cones

Sample Collection

Analytical Sample Collected?

Yes No

Sample ID: 19 FAI-FTP-Post001

Sample Time: 20:00

Sample Location: Treatment train 1 effluent

Requested Analyses:

PFOS/PFOA

Yes No

1 sample per 50,000 gallons passed through lead GAC vessel

DRO/RRO

Yes No

1 sample collected from system effluent per 300,000 gallons treated

TAH

Yes No

1 sample per 50,000 gallons passed through organoclay vessel

TAqH

Yes No

1 sample per 50,000 gallons passed through organoclay vessel

VOCs

Yes No

1 sample collected from system effluent per 300,000 gallons treated

Arsenic

Yes No

1 sample per 50,000 gallons passed through organoclay vessel

Glycol

Yes No

1 sample collected from system effluent per 100,000 gallons treated

Checked By: APW

Date: 12/2/2019



SHANNON & WILSON, INC.

Treatment System Effluent Daily Monitoring Form

Field Personnel: APW

Date: 9/9/2019

Project Name: FAI FTP Corrective Action

Project Number: 102519

Site Observations: Pre-treatment up-stream monitoring

Monitoring point was the northern end of the slough located north west of the FTP.

Daily Monitoring Parameters

Sheen Observed? Yes No

System Flow Rate (gpm): N/A

Hours of Operation (hrs): N/A

Estimated Daily Discharge (gal): N/A

Weekly Monitoring Parameters

Temperature (°C): 15 YSI Pro Plus or equivalent

pH: 7.99 YSI Pro Plus or pH Meter

Conductivity (µs/cm): 220.3 YSI Pro Plus or equivalent

Dissolved Oxygen (mg/l): 7.78 YSI Pro Plus or equivalent

Oxidation Reduction Potential (mV): 252.6 YSI Pro Plus or equivalent

Turbidity (NTU): 2.09 Hach 2100p Turbidimeter

Settleable Solids (ml/L): Trace grains, not measurable Imhoff Cones

Sample Collection

Analytical Sample Collected? Yes No

Sample ID:

Sample Time:

Sample Location:

Requested Analyses:

Analysis	Yes	No	Frequency
PFOS/PFOA			1 sample per 50,000 gallons passed through lead GAC vessel
DRO/RRO			1 sample collected from system effluent per 300,000 gallons treated
TAH			1 sample per 50,000 gallons passed through organoclay vessel
TAqH			1 sample per 50,000 gallons passed through organoclay vessel
VOCs			1 sample collected from system effluent per 300,000 gallons treated
Arsenic			1 sample per 50,000 gallons passed through organoclay vessel
Glycol			1 sample collected from system effluent per 100,000 gallons treated

Checked By: APW

Date: 12/2/2019



SHANNON & WILSON, INC.

Treatment System Effluent Daily Monitoring Form

Field Personnel: APW

Date: 9/10/2019

Project Name: FAI FTP corrective Action Project Number: 102519

Site Observations: N/A

Daily Monitoring Parameters

Sheen Observed? Yes No

System Flow Rate (gpm): 65 ^{APW} ~~~30~~ ~62.5 per NRC

Hours of Operation (hrs): 0.75 ~~0.5~~ 0.22

Estimated Daily Discharge (gal): 825

Weekly Monitoring Parameters

Temperature (°C): 17.6 YSI Pro Plus or equivalent

pH: 7.01 YSI Pro Plus or pH Meter

Conductivity (µs/cm): 1318 YSI Pro Plus or equivalent

Dissolved Oxygen (mg/l): 3.20 YSI Pro Plus or equivalent

Oxidation Reduction Potential (mV): 141.3 YSI Pro Plus or equivalent

Turbidity (NTU): 72.1 Hach 2100p Turbidimeter

Settleable Solids (ml/L): 0 Imhoff Cones

Sample Collection

Analytical Sample Collected? Yes No

Sample ID: 19FAI-FTP-Post 002 Sample Time: 11:00

Sample Location: Treatment train 2 effluent

Requested Analyses:

PFOS/PFOA	<input checked="" type="radio"/> Yes	<input type="radio"/> No	1 sample per 50,000 gallons passed through lead GAC vessel
DRO/RRO	<input checked="" type="radio"/> Yes	<input type="radio"/> No	1 sample collected from system effluent per 300,000 gallons treated
TAH	<input checked="" type="radio"/> Yes	<input type="radio"/> No	1 sample per 50,000 gallons passed through organoclay vessel
TAqH	<input checked="" type="radio"/> Yes	<input type="radio"/> No	1 sample per 50,000 gallons passed through organoclay vessel
VOCs	<input type="radio"/> Yes	<input checked="" type="radio"/> No	1 sample collected from system effluent per 300,000 gallons treated
Arsenic	<input checked="" type="radio"/> Yes	<input type="radio"/> No	1 sample per 50,000 gallons passed through organoclay vessel
Glycol	<input checked="" type="radio"/> Yes	<input type="radio"/> No	1 sample collected from system effluent per 100,000 gallons treated

Checked By: APW

Date: 12/2/2019



SHANNON & WILSON, INC.

Treatment System Effluent Daily Monitoring Form

Field Personnel: APW

Date: 9/16/2019

Project Name: FAI Fire Training Pit Water Trmt

Project Number: 120519-010

Site Observations: Slough upstream parameter monitoring

Effluent Monitoring Parameters

System Flow Rate (gpm): N/A

Total Flow (gallons): N/A

Hours of Operation (hrs): N/A

Estimated Daily Discharge (gal): N/A

Sheen Observed? Yes No

Temperature (°C): 13.5 YSI Pro Plus or equivalent

pH: 8.13 YSI Pro Plus or pH Meter

Conductivity (µs/cm): 207.8 YSI Pro Plus or equivalent

Dissolved Oxygen (mg/l): 7.85 YSI Pro Plus or equivalent

Oxidation Reduction Potential (mV): 260 YSI Pro Plus or equivalent

Turbidity (NTU): 5.44 Hach 2100p Turbidimeter

Weekly Monitoring Parameters

Settleable Solids (ml/L), Slough: 0.25 Imhoff Cones

Settleable Solids (ml/L), Effluent: N/A Imhoff Cones

Sample Collection

Analytical Sample(s) Collected? Yes No

Sample ID: _____ Sample Time: _____

Sample ID: _____ Sample Time: _____

Requested Analyses: _____ Sample Location(s): _____

PFOS/PFOA (EPA 537 mod) Yes No

DRO/RRO (AK102/103) Yes No

TAH (EPA 624) Yes No

TAqH (EPA 625M SIM) Yes No

Arsenic (EPA 200.8) Yes No

Glycol (SW8015M) Yes No

Checked By: APW

Date: 12/2/2019



SHANNON & WILSON, INC.

Treatment System Effluent Daily Monitoring Form

Field Personnel: APW

Date: 9/16/2019

Project Name: FAI Fire Training Pit Water Trmt

Project Number: 120519-010

Site Observations: FTP pond water parameter monitoring

Effluent Monitoring Parameters

System Flow Rate (gpm): N/A

Total Flow (gallons): N/A

Hours of Operation (hrs): N/A

Estimated Daily Discharge (gal): N/A

Sheen Observed? Yes No

Temperature (°C): 12.8

YSI Pro Plus or equivalent

pH: 8.68

YSI Pro Plus or pH Meter

Conductivity (µs/cm): 187.4

YSI Pro Plus or equivalent

Dissolved Oxygen (mg/l): 0.89

YSI Pro Plus or equivalent

Oxidation Reduction Potential (mV): 217.5

YSI Pro Plus or equivalent

Turbidity (NTU): 89.3

Hach 2100p Turbidimeter

Weekly Monitoring Parameters

Settleable Solids (ml/L), Slough: N/A

Imhoff Cones

Settleable Solids (ml/L), Effluent: N/A

Imhoff Cones

Sample Collection

Analytical Sample(s) Collected? Yes No

Sample ID:

Sample Time:

Sample ID:

Sample Time:

Requested Analyses:

Sample Location(s):

PFOS/PFOA (EPA 537 mod) Yes No

DRO/RRO (AK102/103) Yes No

TAH (EPA 624) Yes No

TAqH (EPA 625M SIM) Yes No

Arsenic (EPA 200.8) Yes No

Glycol (SW8015M) Yes No

Checked By: APW

Date: 12/2/2019

Log of Field Screening

Project Number: 102519 Location: Fairbanks International Airport FTP - petroleum excavation Page 1 of 1
 Date: 9/10/2019 Soil screening
 Sampler: APW

Sample Number	Description	Time Collected	Time Analyzed	Depth Interval (ft)		Matrix Type	Sample Type	PID Reading
				top	bottom			
1	west sidewall	19:15	19:30	0	1	Soil	FS	13.6
2	North Sidewall	19:16	19:31	0	1	↓	↓	824.3
3	East Sidewall	19:17	19:32	0	1	↓	↓	429.1
4	South Sidewall	19:18	19:33	0	1	↓	↓	408.2
5	Base	19:19	19:34	0	1	↓	↓	520.4
Additional Excavation								
6	west sidewall	19:35	19:45	1	2.5	Soil	FS	4.2
7	North Sidewall	19:36	19:46	1	2.5	↓	↓	4.1
8	East Sidewall	19:37	19:47	1	2.5	↓	↓	472.5
9	South Sidewall	19:38	19:48	1	2.5	↓	↓	115.1
10	Base	19:39	19:49	1	2.5	↓	↓	67.4
Additional Excavation								
11	East Sidewall	19:51	20:10	1	2.5	Soil	FS	3.7
12	South Sidewall	19:52	20:11	1	2.5	Soil	FS	31.1
Additional Excavation								
13	west sidewall	20:20	20:32	2	2.5	Soil	FS	16.8
14	North Sidewall	20:21	20:33	2	2.5	↓	↓	71.3
15	East Sidewall	20:22	20:34	2	2.5	↓	↓	11.3
16	South Sidewall	20:23	20:35	2	2.5	↓	↓	30.8
17	Base	20:24	20:36	2.5	3.0	↓	↓	16.8 207.1
Additional Excavation								
18	North sidewall	20:43	20:55	1	2.5	Soil	FS	4.3 20.8
19	South sidewall	20:44	20:56	1	2.5	↓	↓	30.8 19.8
20	base	20:45	20:57	3.0	3.5	↓	↓	20.4 12.6

Sample Type FS = Field screening measurement only ES = Environmental sample FD = Field duplicate



SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

JOB NAME FBI FTP Corridor Action

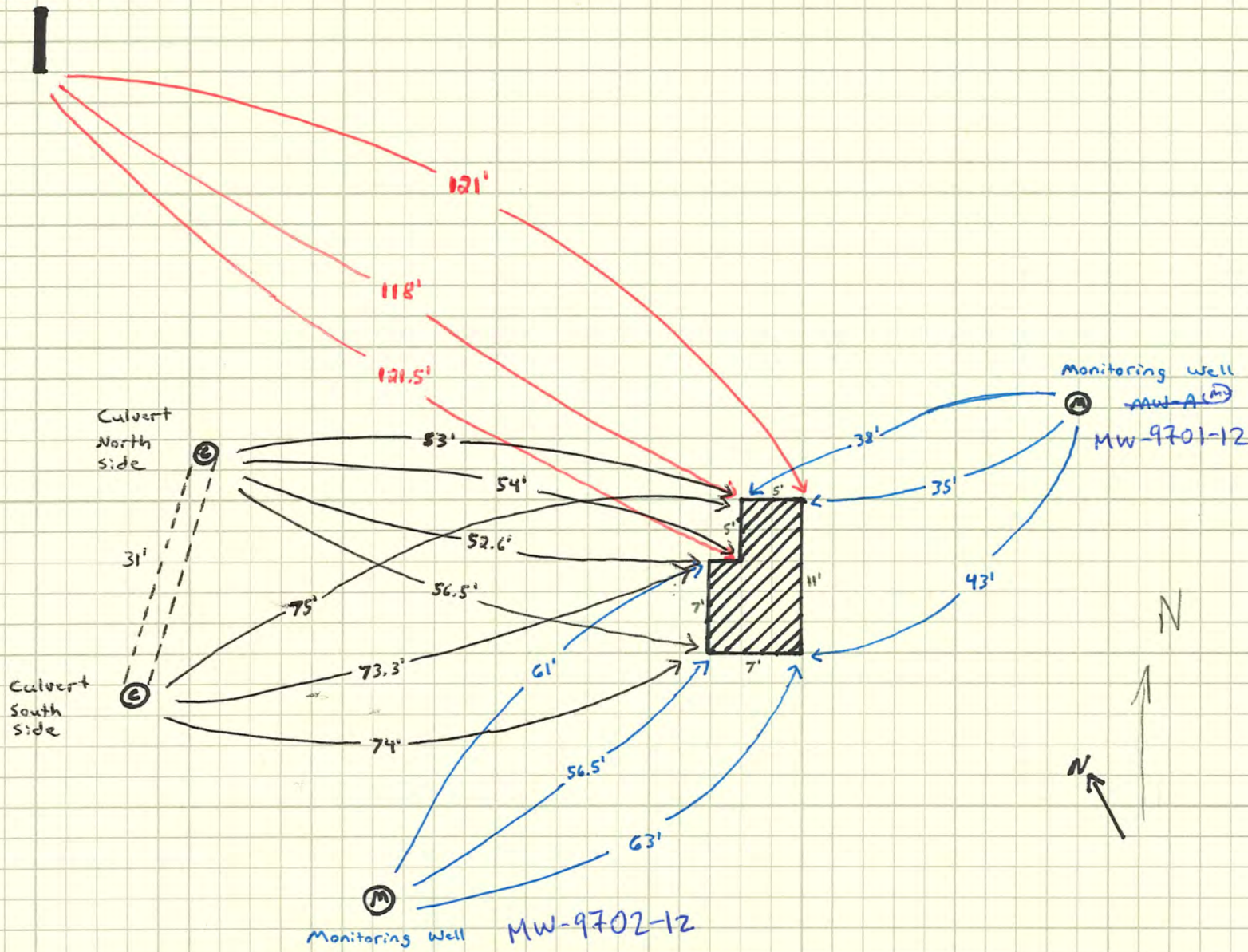
SUBJECT Swing ties

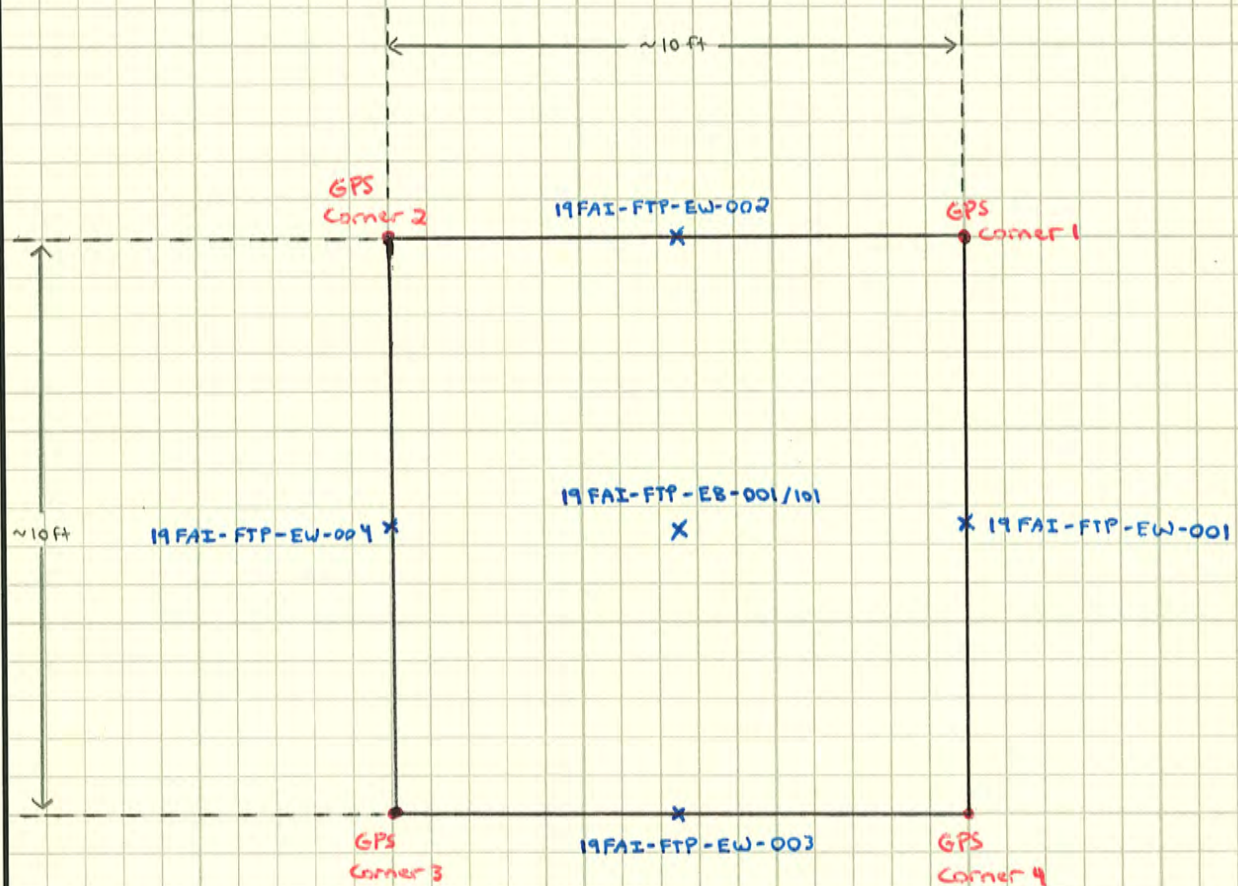
DATE 9/11/2019

SHEET 1 of 1

BY APW CHK'D MDV

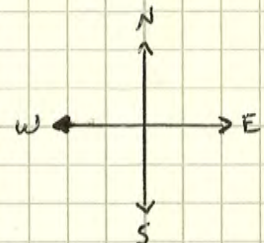
Control Panel



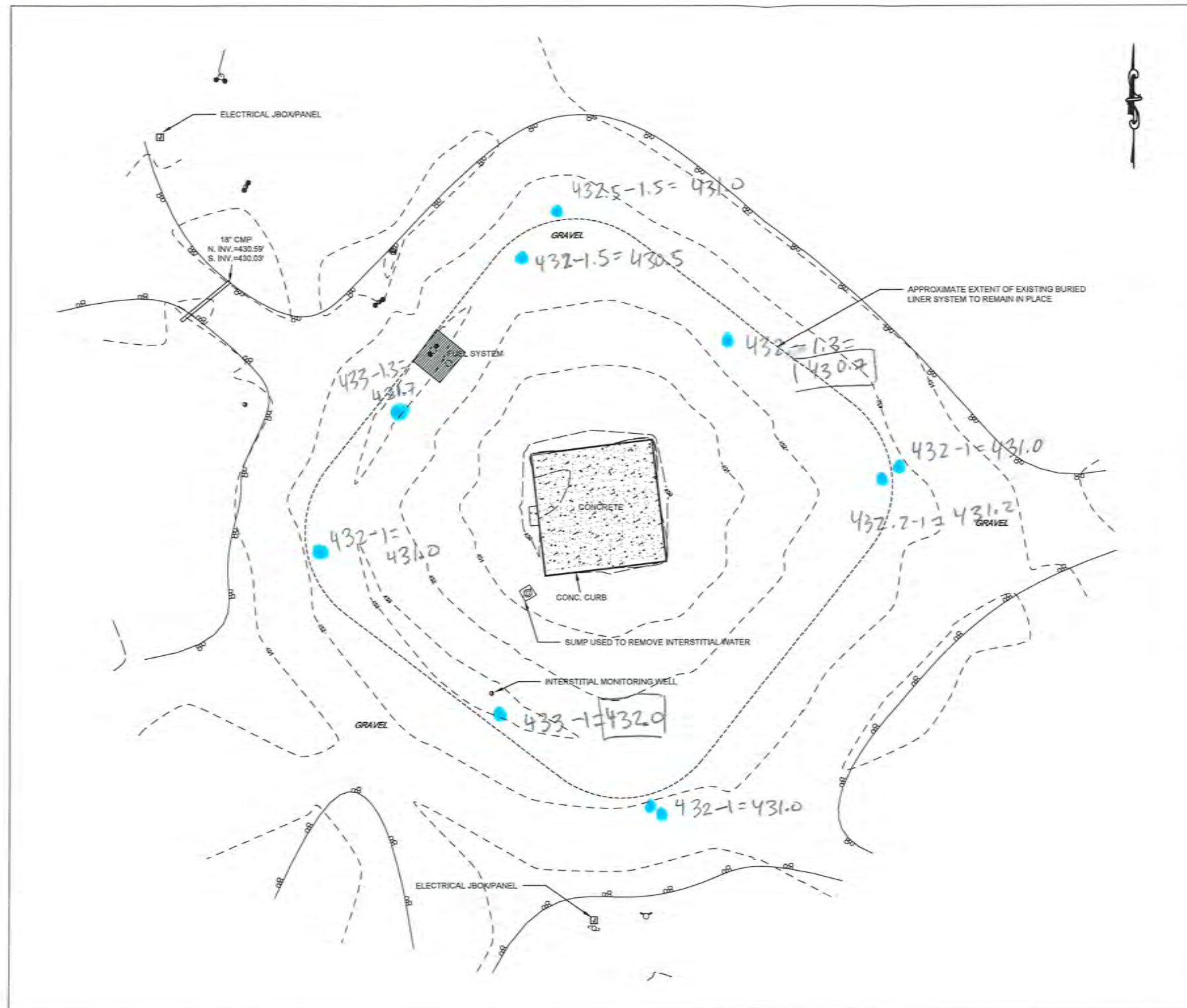


- 19FAI-FTP-EB-001/101 Collected at 09:15
- 19FAI-FTP-EW-001 Collected at 09:18
- 19FAI-FTP-EW-002 Collected at 09:20
- 19FAI-FTP-EW-003 Collected at 09:25
- 19FAI-FTP-EW-004 Collected at 09:30

Reference GPS log for excavation corner spatial locations.



9/19/19 Uncover FTP liner w/ in beams



LEGEND	
	MONITORING WELL
	EXISTING CONTOURS
	NEW CONTOURS
	DEMOLITION
	GRAVEL
	SIGN
	BOLLARD
	DIRECTION OF WATER FLOW
	SUMP
	HYDRANT
	SEWER MANHOLE
	UTILITY POLE
	JUNCTION BOX
	LIGHTPOLE
	ELECTRICAL MANHOLE

SURVEY NOTES

1. A SURVEY WAS DONE WITH THE PURPOSE TO LOCATE TOPOGRAPHY AND IMPROVEMENTS AROUND THE FAI FIRE TRAINING PIT FOR ENGINEERING DESIGN.
2. COORDINATES ARE ALASKA STATE PLANE ZONE 3, NAD83 US FEET, ELEVATIONS ARE NAVD83 VERTICAL DATUM, FEET.
3. BURIED UTILITIES MAY EXIST THAT ARE NOT SHOWN, CONTACT ALASKA DIGLINE OR FAI PERSONNEL PRIOR TO EXCAVATION.

GENERAL AND DEMOLITION NOTES

1. NO BURIED UTILITY LOCATES WERE PERFORMED. CONTRACTOR SHALL CONFIRM UTILITY LOCATIONS PRIOR TO WORK.
2. CONTRACTOR SHALL PROTECT EXISTING FEATURES TO REMAIN SUCH AS UTILITIES, ENVIRONMENTAL MONITORING WELLS, ETC., AND ADJACENT AREAS OF THE PROPERTY.
3. DEMOLISH ALL COMPONENTS OF THE FUEL DELIVERY SYSTEM AND COMPONENTS TO AN EXTENT OUTSIDE OF THE TOE OF THE COVER SYSTEM.
4. REMOVE AND PROPERLY DISPOSE OF ALL MATERIALS AND DEBRIS WITHIN THE WORK AREA, OR RELOCATE ON THE PROJECT SITE OUTSIDE OF THE WORK AREA, AS DIRECTED BY THE ENGINEER. ALL REMOVED ITEMS SHALL BE DISPOSED OF IN A LEGAL MANNER, COMPLYING WITH ALL LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS.
5. THE WORK DOES NOT INCLUDE THE EXCAVATION, HANDLING OR MANAGEMENT OF ANY CONTAMINATED SOIL OR WATER.

● FTP liner obs'n pts

Range of liner beam elevations:
430.7 to 432.0

(when in doubt assume elev'n is lower, more conservative)

1 EXISTING CONDITIONS AND DEMOLITION PLAN
C100 1" = 30'

Prepared by: MDN
Reviewed by: APW



FAI FIRE TRAINING PIT CAP SURVEY AND DESIGN

ISSUE DATE	09 AUG. 2019
COMM. NUMBER	281901
DESIGNED BY	MUS
DRAWN BY	IAL
SCALE	0" = 1"

EXISTING CONDITIONS AND DEMOLITION PLAN

C100

SOIL SAMPLE COLLECTION LOG

Project Number: 102519 Project Name: FA Burn Pit Corrective Action Page 1 of 1
 Date: 9/21/2019 - 10/3/2019
 Sampler: CAS, APW

Sample Number	Location	Sample Date	Sample Time	Depth Interval (ft)	Sample Type	PID Reading	Analyses
SB-1901-15	SB-1901-15	9/21/19	16:20	9.4'-10.8'	ES		PFOS/PFOA / Soil
SB-2001-15	11	9/21/19	16:10	9.4'-10.8'	DUP		PFOS/PFOA / Soil
EB-1901-40	SB-1901-40	9/22/19	10:37	35'-40'	EB		PFOS/PFOA / Water
SB-1901-40	11	9/22/19	11:00	37.4-37.6'	ES		PFOS/PFOA / Soil
SB-1902-150	SB-1902-150	9/28/19	04:17	146.4-147'	ES		PFOS/PFOA / Soil
SB-1902-80	SB-1902-80	9/29/19	23:40	75'-80'	ES		PFOS/PFOA / Soil
SB-1902-40	SB-1902-40	9/30/19	04:55	35'-40'	ES		PFOS/PFOA / Soil
SB-1902-15	SB-1902-15	9/30/19	23:30	10'-15'	ES		PFOS/PFOA / Soil
SB-2902-15	SB-1902-15	9/30/19	23:20	10'-15'	DUP		PFOS/PFOA / Soil
SB-1901-150	SB-1901-150	10/3/19	15:33	149-150'	ES		PFOS/PFOA / Soil
SB-1901-80	SB-1901-80	10/3/19	01:15	75'-77'	ES		PFAS Soil

Sample Type FS = Field screening measurement only ES = Environmental sample FD = Field duplicate TB = Trip blank EB = Equipment blank FB = Field blank

APW 1/20/20

SOIL SAMPLE COLLECTION LOG

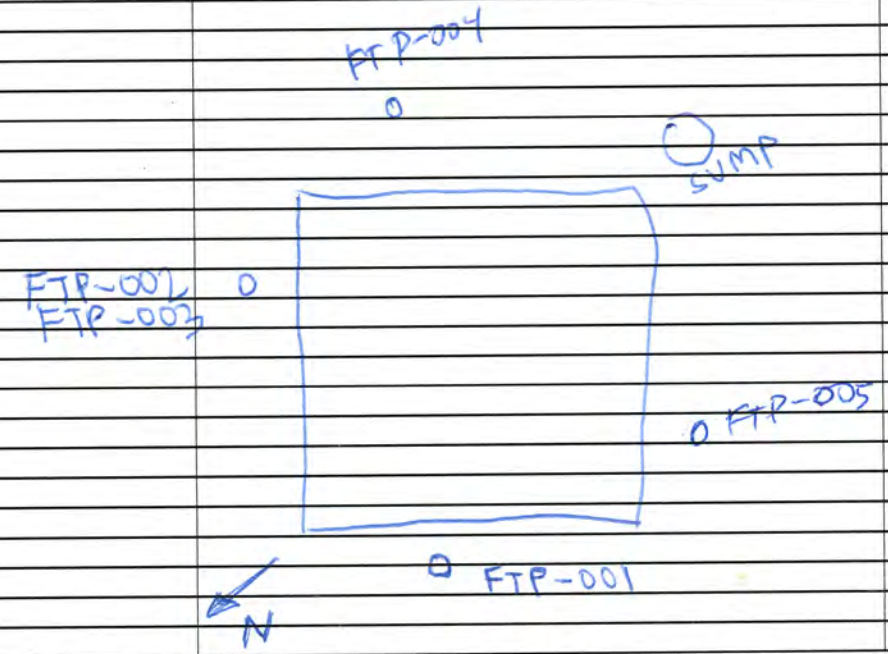
Project Number: 102519-010 Project Name: FAI Fire Training Pit

Date: 10/1/19

Sampler: AEF/MDN

Sample Number	Location	Sample Date	Sample Time	Depth Interval (ft)	Sample Type	PID Reading	Analyses
FTP-001	northwest side of worksite/burnpit (collect extra volume for MS/MSD)	10/1/19	11:25	0.5	Soil	N/A	PFOS/PFOA/VOCs/RO/RR/TCLP
FTP-002	northeast side of burnpit		12:10	0.5			
FTP-003	northeast side of burnpit		12:00	0.5			
FTP-004	southeast side of burnpit		12:40	0.5			
FTP-005	southwest side of burnpit		12:55	0.5			

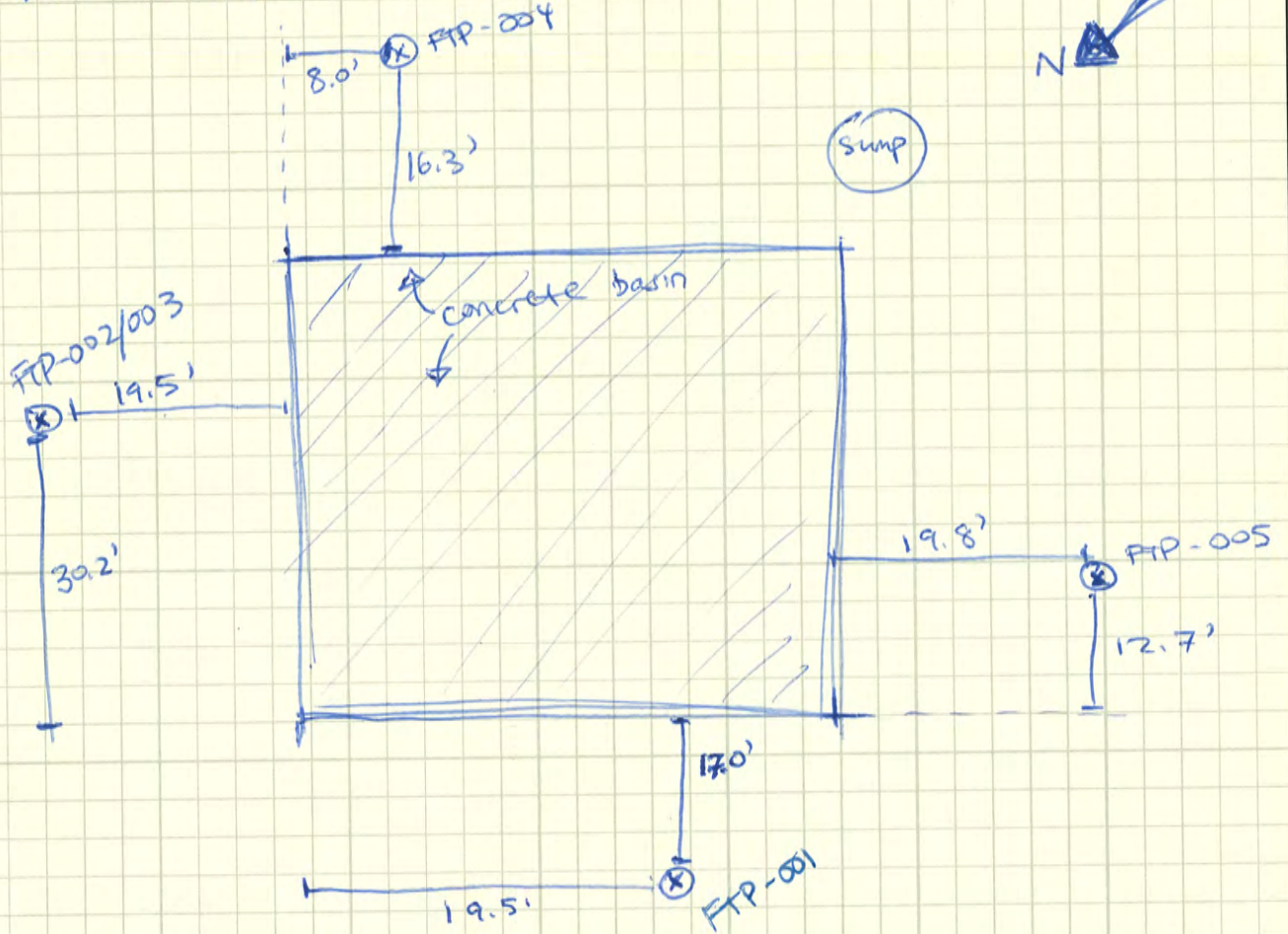
RCRA matrix





Schematic

NOT TO SCALE



WELL DEVELOPMENT LOG

Owner-Client FAC Well No. MW-9701-12
 Location FAC Burn Pit Project No. 102519-010
 Weather cloudy, light rain, 48°F Date 9/11/19
 Development Personnel KLC

Diameter and Type of Casing: 2" PVC
 Total Depth of Well **Before** Development (feet below top of casing): 11.44'
 Depth to Water **Before** Development (feet below top of casing): 6.61
 Depth to Screen Top and Bottom (from Construction Log): Top: unk Bottom: unk

Development Details

Feet of water in well 4.83 Time pumping started 9:48
 Gallons per foot 0.17 Flow rate (gal/min) ~ 1.25
 Gallons in well 0.82 Flow-rate measurement method: _____
 Surge method surge block
 Pump used air sponge Time pumping ended 11:00
 Tubing used (ft) 20 Gallons Pumped 90
 Disposal: burn pit

Depth to Water **After** Development (feet below top of casing): 6.62
 Total Depth of Well **After** Development (feet below top of casing): 12.18

Observations

	Time	Water Clarity (Visual)		Time	Water Clarity (Visual)
	9:48	brown - dark		10:42	brown
surged →	9:54	slightly brown		10:44	clear
surged →	9:58	brown	surge	10:49	light brown
	10:06	clear		10:52	clear
surged →	10:13	brown	surge	10:55	light brown
	10:15	clear		10:56	clear
surge →	10:19	brown	surge	10:59	slight brown color
	10:24	clear		11:00	clear
surge →	10:32	medium brow			
	10:34	clear			

NOTES: _____

WELL CASING VOLUMES

Diameter of Well [ID-inches]	1 1/4	2	3	4	6	8
Gallons per lineal foot	0.08	0.17	0.38	0.66	1.5	2.6

28
10
12
10
24
6

MONITORING WELL SAMPLING LOG

Owner/Client FAI
 Location FAI Burn Pit
 Sampling Personnel KLC
 Weather Conditions partly cloudy Air Temp. (°F) 51

Project No. 102519-010
 Date 9/11/19
 Well MW-9701-12
 Time started 11:08
 Time completed 11:51

Field Sample No. MW-9701-12 Time 11:34
 Duplicate MW-9701-112 Time 11:34
 Equipment-Blank FB-9701-12 Time 11:35

Pump Whole
 Purging Method portable / dedicated pump
 Pumping Start 11:19
 Purge Rate (gal./min.) ~1
 Pumping End 11:34
 Pump Set Depth Below MP (ft.) -11.00
 KuriTec Tubing (ft.) 20
 TruPoly Tubing (ft.) -

Diameter and Type of Casing 2" PVC
 Approximate Total Depth of Well Below MP (ft.) -
 Measured Total Depth of Well Below MP (ft.) 12.18
 Depth to Water Below MP (ft.) 6.62
 Depth to Ice (if frozen) Below MP (ft.) -
 Feet of Water in Well 5.56
 Gallons per foot 0.17
 Gallons in Well 0.95
 Purge Water Volume (gal.) 15
 Purge Water Disposal Burn Pit

Monument Condition Good
 Casing Condition Good
 Wiring Condition -
 (dedicated pumps)

Measuring Point (MP) Top of Casing (TOC)

Monument type: Stickup ~~Flushmount~~
 Measurement method: Rod & level ~~Tape measure~~

Top-of-casing to monument (ft.) 0.12
 Monument to ground surface (ft.) -

Datalogger type n/a
 Datalogger serial # n/a
 Measured cable length (ft.) n/a

- Lock present and operational
- Well name legible on outside of well
- Evidence of frost-jacking No

Notes -

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1¼	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

APW 1/20/20

Well No.
MW-9701-12

MONITORING WELL SAMPLING LOG

Field Parameter Instrument VSI

Circle one: Parameters stabilized or >3 well volumes purged

Sample Observations clear

Notes _____

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [±10%]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
11:19	pump started					
11:20	7.5	26.7	827 881	6.33	8.4	clear
11:23	7.5	20.7	877	6.46	-11.0	clear
11:26	7.2	11.5	884	6.49	-28.8	clear
11:29	7.2	10.7	882	6.48	-30.2	clear
11:33	7.2	9.5	884	6.48	-33.6	clear
11:34	sample collected					

Laboratory SGS

Analysis	Sample Containers	Preservatives	Dup	Field Blank
<input checked="" type="checkbox"/> PFOS + PFOA			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> * Field Blank
<input type="checkbox"/>			<input type="checkbox"/>	
<input type="checkbox"/>			<input type="checkbox"/>	
<input type="checkbox"/>			<input type="checkbox"/>	
<input type="checkbox"/>			<input type="checkbox"/>	
<input type="checkbox"/>			<input type="checkbox"/>	
<input type="checkbox"/>			<input type="checkbox"/>	

Well No.
MW-9701-12

WELL DEVELOPMENT LOG

Owner-Client <u>FAI</u>	Well No. <u>MW-9702-12</u>
Location <u>FAE Burn Pit</u>	Project No. <u>102519-010</u>
Weather <u>Partly Cloudy 58</u>	Date <u>9/11/19</u>
Development Personnel <u>KLC</u>	

Diameter and Type of Casing: 2" PVC

Total Depth of Well **Before** Development (feet below top of casing): 11.75

Depth to Water **Before** Development (feet below top of casing): 5.95

Depth to Screen Top and Bottom (from Construction Log): Top: CHK Bottom: CHK

Development Details

Feet of water in well <u>5.8</u>	Time pumping started <u>12:30</u>
Gallons per foot <u>0.17</u>	Flow rate (gal/min) <u>~2.1</u>
Gallons in well <u>1</u>	Flow-rate measurement method: _____
Surge method <u>surge block</u>	
Pump used <u>diaphragm pump</u>	Time pumping ended <u>12:45</u>
Tubing used (ft) <u>20</u>	Gallons Pumped <u>32</u>
	Disposal: <u>burn pit</u>

Depth to Water **After** Development (feet below top of casing): 5.96

Total Depth of Well **After** Development (feet below top of casing): 11.79

Observations

	Time	Water Clarity (Visual)		Time	Water Clarity (Visual)
	12:30	dark red			
surge	12:31	clear			
surge	12:36	dark red straight to clear			
	12:41	light brown			
surge	12:42	clear			
	12:45	slight red to clear			

NOTES: _____

WELL CASING VOLUMES

Diameter of Well [ID-inches]	1 1/4	<u>2</u>	3	4	6	8
Gallons per lineal foot	0.08	<u>0.17</u>	0.38	0.66	1.5	2.6

MONITORING WELL SAMPLING LOG

Owner/Client FAI
 Location FAE Burn pit
 Sampling Personnel KLC
 Weather Conditions Partly cloudy Air Temp. (°F) 60

Project No. 102519-010
 Date 9/11/19
 Well MW-9702-12
 Time started 12:54
 Time completed 13:25

Sample No. MW-9702-12 Time 13:12
 Duplicate - Time -
 Equipment Blank - Time -

Pump Wheeler
 Purging Method portable / dedicated pump
 Pumping Start 12:58
 Purge Rate (gal./min.) ~1
 Pumping End 13:12
 Pump Set Depth Below MP (ft.) ~10.79
 KuriTec Tubing (ft.) 25
 TruPoly Tubing (ft.) -

Diameter and Type of Casing 2" PVC
 Approximate Total Depth of Well Below MP (ft.) -
 Measured Total Depth of Well Below MP (ft.) 11.79
 Depth to Water Below MP (ft.) 5.96
 Depth to Ice (if frozen) Below MP (ft.) -
 Feet of Water in Well 5.83
 Gallons per foot 0.17
 Gallons in Well 14
 Purge Water Volume (gal.) 14
 Purge Water Disposal Burn pit

Monument Condition Good
 Casing Condition Good
 Wiring Condition -
 (dedicated pumps)

Measuring Point (MP) Top of Casing (TOC) Monument type: Stickup / Flushmount
 Measurement method: Rod & level / Tape measure
 Top-of-casing to monument (ft.) 0.33 Datalogger type n/a
 Monument to ground surface (ft.) - Datalogger serial # n/a
 Measured cable length (ft.) n/a

- Lock present and operational
- Well name legible on outside of well
- Evidence of frost-jacking No

Notes -

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1 1/4	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

APW 1/20/20

Well No.
MW-9702-12

MONITORING WELL SAMPLING LOG

Field Parameter Instrument _____
 Sample Observations _____
 Notes _____

YSI

Circle one: Parameters stabilized or >3 well volumes purged

clear

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [±10%]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
12:58	pump	started				
12:59	8.0	6.6	498.8	6.05	78.5	clear
13:02	8.0	8.7	494.9	6.43	30.9	clear
13:05	7.9	14.5	488.1	6.52	25.5	clear
13:08	7.9	10.7	495.0	6.53	21.3	clear
13:11	8.0	7.7	493.3	6.53	14.0	clear
13:12	sample	collected				

Laboratory SGS

	Analysis	Sample Containers	Preservatives	Dup
<input checked="" type="checkbox"/>	DFOS + PFGA			<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>

Well No.
MW-9702-12

MONITORING WELL CONSTRUCTION DETAILS

Monitoring Well No. <u>MW-1901-15</u>	Date Installed <u>9/21/2019</u>
Project Name <u>FIA Burn Pit</u>	Logged By <u>CS</u>
Project Number <u>102519</u>	Driller <u>overTEK / James B. Knox</u>

I. TOP SECTION (CASING)

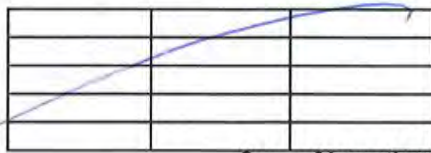
Initial Pipe Length 10.01
 Cutoff Length 1.79
 Add-on Length —
Total Length 8.22

IV. WELL DATA

Pipe Type: PVC SS Other _____
 Diameter: 2" 4" Other _____
 Slot Size: 0.01 0.02 Other _____
 Joint Pin End: Up Down Type _____

II. MID SECTION (CASING)

Number of Blank Sections —
 Length of Section(s): _____

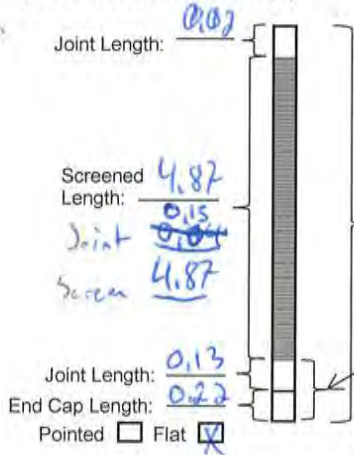


Sum of Lengths: —

V. BACKFILL

	Depth Below GS	
	Bottom	Top
CEM (No Pipe)	—	—
CEM_PB	—	—
*SLUF_PB/FIL_PB	<u>1.0</u>	<u>0.0</u>
BCH_PB	<u>3.0</u>	<u>1.0</u>
*SLUF_PB/FIL_PB	—	—
BGR_PB	—	—
*SLUF_PB/FIL_PB	<u>5.0</u>	<u>3.0</u>
*SLUF_PS/FIL_PS	<u>15.0</u>	<u>5.0</u>
*SLUF/FIL (No Pipe)	<u>16.0</u>	<u>15.0</u>
*SLUF_PB/FIL_PB	<u>15.47</u>	<u>15.12</u>
Filter Pack Type or Gradation	<u>Prepack screen</u>	

III. SCREENED SECTION(S)



Total Pipe Length: 10.26

BOW to BOS: 0.35
10.04
0.35

TOC to BOW: 10.2 18.48

VI. MONUMENTS

Stuckup Flushmount
 TOM to GS 3.04
 TOM to TOC 0.41
 ^TOC to GS 3.04 2.63
 Lock type N/A

VII. MOISTURE CONTENT

Depth to Water Below GS 8.44 8.00'
~~10.71~~ ~~3.01~~ ~~11.04~~

	Frozen Soil Below GS	
	Bottom	Top
Seasonal 1	—	—
Seasonal 2	—	—
Permafrost 1	—	—
Permafrost 2	—	—

- BCH = Bentonite Chips (gINT code)
- BGR = Bentonite Grout (gINT code)
- bgs = Below Ground Surface
- BOS = Bottom of Screen
- BOW = Bottom of Well
- CEM = Cement (gINT code)
- FIL = Sand Pack (gINT code)
- GS = Ground Surface
- SLUF = Natural Collapse/ Pea Gravel (gINT code)
- SS = Stainless Steel
- TOC = Top of Casing
- TOM = Top of Monument
- TOS = Top of Screen
- PB = Blank Pipe (gINT code)
- PS = Slotted Pipe (gINT code)
- * Circle filter-pack type
- ^ Flushmount = Negative Number
- Stickup = Positive Number

VIII. CALCULATIONS BELOW GROUND SURFACE

TOC to BOW 18.48
 - BOW to BOS 0.35
 = TOC to BOS 18.13
 TOC to BOS 18.13
 - Screened Length 9.87
 = TOC to TOS 8.26

TOC to BOW	<u>18.48</u>
- TOC to GS	<u>3.01</u>
BOW bgs	<u>15.47</u>
TOC to TOS	<u>8.26</u>
- TOC to GS	<u>3.01</u>
TOS bgs	<u>5.25</u>
TOC to BOS	<u>18.13</u>
- TOC to GS	<u>3.01</u>
BOS bgs	<u>15.12</u>

MONITORING WELL CONSTRUCTION DETAILS

Monitoring Well No. <u>MW-1901-40</u>	Date Installed <u>8/9/2019</u>
Project Name <u>102519 (10) BumPif FIA</u>	Logged By <u>CAZ</u>
Project Number <u>102519</u>	Driller <u>GeoTek/Sumers</u>

I. TOP SECTION (CASING)

Initial Pipe Length 10.01
 Cutoff Length 1.86
 Add-on Length
Total Length 8.15

IV. WELL DATA

Pipe Type: PVC SS Other
 Diameter: 2" 4" Other
 Slot Size: 0.01 0.02 Other
 Joint Pin End: Up Down Type

II. MID SECTION (CASING)

Number of Blank Sections 3
 Length of Section(s):

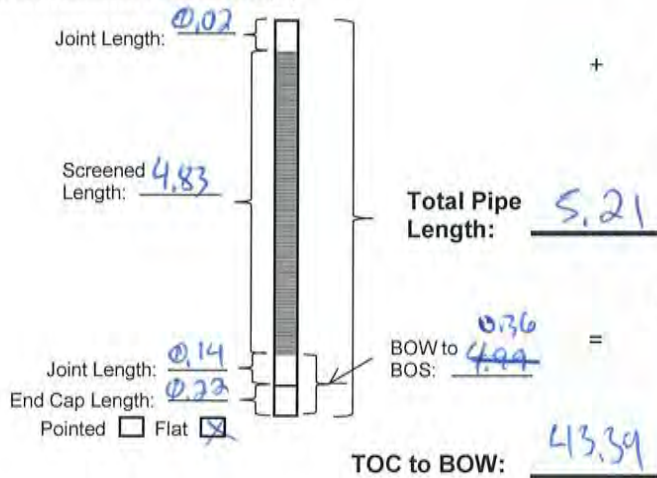
<u>10.01</u>			
<u>10.01</u>			
<u>10.01</u>			

Sum of Lengths: 30.03

V. BACKFILL

	Bottom	Top
CEM (No Pipe)	-	-
CEM_PB	-	-
*SLUF_PB/FIL_PB	<u>0.5</u>	<u>0.0</u>
BCH_PB	<u>33.00</u>	<u>0.5</u>
*SLUF_PB/FIL_PB	-	-
BGR_PB	-	-
*SLUF_PB/FIL_PB	<u>34.91</u>	<u>32.89</u> <u>33.00</u>
*SLUF_PS/FIL_PS	<u>40.0</u> <u>39.98</u>	<u>34.91</u>
*SLUF/FIL (No Pipe)	<u>40.5</u>	<u>40.0</u> <u>40.34</u>
*SLUF_PB/FIL_PB	<u>40.0</u> <u>39.98</u>	<u>39.98</u>
Filter Pack Type or Gradation	<u>Prepack</u>	

III. SCREENED SECTION(S)



VI. MONUMENTS

Stuckup Flushmount
 TOM to GS 3.08
 TOM to TOC 0.55
 ^TOC to GS 3.05 2.53
 Lock type

VII. MOISTURE CONTENT

Depth to Water Below GS 8.65
10.83 3.05
 Frozen Soil Below GS
 Bottom Top
 Seasonal 1
 Seasonal 2
 Permafrost 1
 Permafrost 2

- BCH = Bentonite Chips (gINT code)
- BGR = Bentonite Grout (gINT code)
- bgs = Below Ground Surface
- BOS = Bottom of Screen
- BOW = Bottom of Well
- CEM = Cement (gINT code)
- FIL = Sand Pack (gINT code)
- GS = Ground Surface
- SLUF = Natural Collapse/ Pea Gravel (gINT code)
- SS = Stainless Steel
- TOC = Top of Casing
- TOM = Top of Monument
- TOS = Top of Screen
- PB = Blank Pipe (gINT code)
- PS = Slotted Pipe (gINT code)
- * Circle filter-pack type
- ^ Flushmount = Negative Number
- Stickup = Positive Number

VIII. CALCULATIONS BELOW GROUND SURFACE

TOC to BOW 43.39
 - BOW to BOS 0.36
= TOC to BOS 43.03
 TOC to BOS 43.03
 - Screened Length 4.83
= TOC to TOS 38.20

TOC to BOW	<u>43.39</u>
- TOC to GS	<u>3.05</u>
BOW bgs	<u>43.34</u>
TOC to TOS	<u>38.20</u>
- TOC to GS	<u>3.05</u>
TOS bgs	<u>35.15</u>
TOC to BOS	<u>43.03</u>
- TOC to GS	<u>3.05</u>
BOS bgs	<u>39.98</u>

MONITORING WELL CONSTRUCTION DETAILS

Monitoring Well No. <u>MW-1902-150</u>	Date Installed <u>9/28 - 9/29/2019</u>
Project Name <u>FAI FTP Corrective Action</u>	Logged By <u>CAB / APW</u>
Project Number <u>102519-010</u>	Driller <u>James Beckner</u>

I. TOP SECTION (CASING)

Initial Pipe Length 10.01
 Cutoff Length 2.44
 Add-on Length -
Total Length 7.57

IV. WELL DATA

Pipe Type: PVC SS Other _____
 Diameter: 2" 4" Other _____
 Slot Size: 0.01 0.02 Other _____
 Joint Pin End: Up Down Type _____

II. MID SECTION (CASING)

Number of Blank Sections 14
 Length of Section(s):

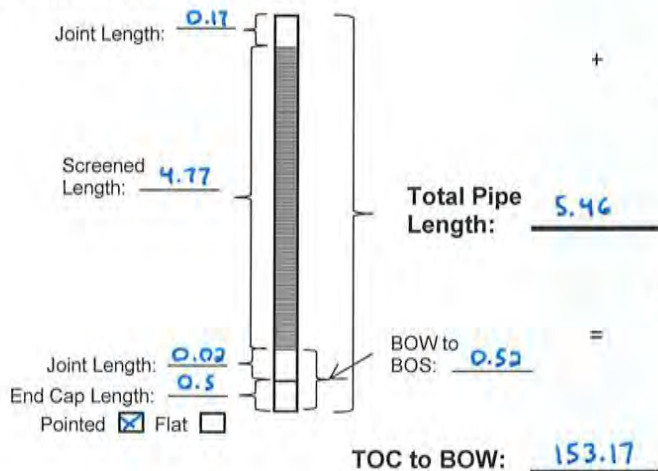
<u>10.01</u>	<u>10.01</u>	<u>10.01</u>
<u>10.01</u>	<u>10.01</u>	<u>10.01</u>
<u>10.01</u>	<u>10.01</u>	<u>10.01</u>
<u>10.01</u>	<u>10.01</u>	<u>10.01</u>
<u>10.01</u>	<u>10.01</u>	<u>10.01</u>

Sum of Lengths: 140.14

V. BACKFILL

	Bottom	Top
CEM (No Pipe)	-	-
CEM_PB	-	-
*SLUF_PB/FIL_PB	<u>138</u>	<u>0.0</u>
BCH_PB	<u>142</u>	<u>138</u>
*SLUF_PB/FIL_PB	-	-
BGR_PB	-	-
*SLUF_PB/FIL_PB	<u>142.5</u>	<u>142.0</u>
*SLUF_PS/FIL_PS	<u>149.5</u>	<u>142.5</u>
*SLUF/FIL (No Pipe)	-	-
*SLUF_PB/FIL_PB	<u>150</u>	<u>149.5</u>
Filter Pack Type or Gradation	<u>prepack</u>	

III. SCREENED SECTION(S)



VI. MONUMENTS

Stuckup Flushmount
 TOM to GS 3.34
 TOM to TOC 0.56
 ^TOC to GS 3.48 2.78
 Lock type N/A

VII. MOISTURE CONTENT

Depth to Water Below GS 6.68

	Bottom	Top
Seasonal 1	<u>N/A</u>	<u>N/A</u>
Seasonal 2	<u>N/A</u>	<u>N/A</u>
Permafrost 1	<u>N/A</u>	<u>N/A</u>
Permafrost 2	<u>N/A</u>	<u>N/A</u>

- BCH = Bentonite Chips (gINT code)
- BGR = Bentonite Grout (gINT code)
- bgs = Below Ground Surface
- BOS = Bottom of Screen
- BOW = Bottom of Well
- CEM = Cement (gINT code)
- FIL = Sand Pack (gINT code)
- GS = Ground Surface
- SLUF = Natural Collapse/ Pea Gravel (gINT code)
- SS = Stainless Steel
- TOC = Top of Casing
- TOM = Top of Monument
- TOS = Top of Screen
- PB = Blank Pipe (gINT code)
- PS = Slotted Pipe (gINT code)
- * Circle filter-pack type
- ^ Flushmount = Negative Number
- Stickup = Positive Number

VIII. CALCULATIONS BELOW GROUND SURFACE

TOC to BOW 153.17
 - BOW to BOS 0.52
= TOC to BOS 152.65
 TOC to BOS 152.65
 - Screened Length 4.77
= TOC to TOS 147.88

TOC to BOW	<u>153.17</u>
- TOC to GS	<u>3.18</u>
BOW bgs	<u>149.99</u>
TOC to TOS	<u>147.88</u>
- TOC to GS	<u>3.18</u>
TOS bgs	<u>144.7</u>
TOC to BOS	<u>152.65</u>
- TOC to GS	<u>3.18</u>
BOS bgs	<u>149.47</u>

MONITORING WELL CONSTRUCTION DETAILS

Monitoring Well No. <u>MW-1902-80</u>	Date Installed <u>9/30/2019</u>
Project Name <u>FAI FTP Corrective Action</u>	Logged By <u>APW</u>
Project Number <u>102519-010</u>	Driller <u>James Beckner</u>

I. TOP SECTION (CASING)

Initial Pipe Length 10.01
 Cutoff Length 1.92
 Add-on Length
Total Length 8.09

IV. WELL DATA

Pipe Type: PVC SS Other
 Diameter: 2" 4" Other
 Slot Size: 0.01 0.02 Other
 Joint Pin End: Up Down Type

II. MID SECTION (CASING)

Number of Blank Sections 7
 Length of Section(s):

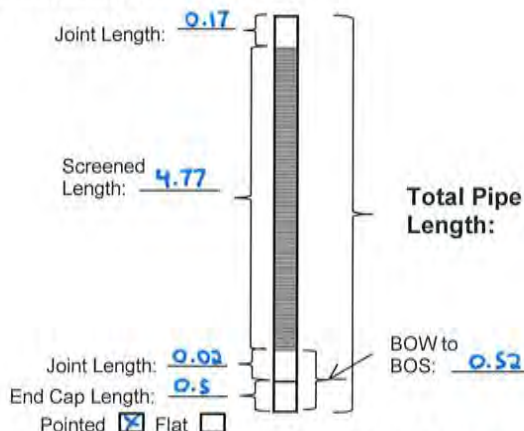
<u>10.01</u>	<u>10.01</u>	<u>10.01</u>
<u>10.01</u>	<u>10.01</u>	<u>10.01</u>
<u>10.01</u>		

Sum of Lengths: 70.07

V. BACKFILL

	Bottom	Top
CEM (No Pipe)	-	-
CEM_PB	-	-
*SLUF_PB/FIL_PB	<u>69'</u>	<u>0.0'</u>
BCH_PB	<u>73'</u>	<u>69'</u>
*SLUF_PB/FIL_PB	-	-
BGR_PB	-	-
*SLUF_PB/FIL_PB	-	-
*SLUF_PS/FIL_PS	<u>79.5'</u>	<u>73'</u>
*SLUF/FIL (No Pipe)	-	-
*SLUF_PB/FIL_PB	<u>80'</u>	<u>79.5'</u>
Filter Pack Type or Gradation	<u>prepack</u>	

III. SCREENED SECTION(S)



VI. MONUMENTS

Stuckup Flushmount
 TOM to GS 3.6
 TOM to TOC 0.56
 ^TOC to GS ~~3.06~~ 3.04
 Lock type N/A

VII. MOISTURE CONTENT

Depth to Water Below GS 7.11

	Bottom	Top
Seasonal 1	<u>N/A</u>	<u>N/A</u>
Seasonal 2	<u>N/A</u>	<u>N/A</u>
Permafrost 1	<u>N/A</u>	<u>N/A</u>
Permafrost 2	<u>N/A</u>	<u>N/A</u>

- BCH = Bentonite Chips (gINT code)
- BGR = Bentonite Grout (gINT code)
- bgs = Below Ground Surface
- BOS = Bottom of Screen
- BOW = Bottom of Well
- CEM = Cement (gINT code)
- FIL = Sand Pack (gINT code)
- GS = Ground Surface
- SLUF = Natural Collapse/ Pea Gravel (gINT code)
- SS = Stainless Steel
- TOC = Top of Casing
- TOM = Top of Monument
- TOS = Top of Screen
- PB = Blank Pipe (gINT code)
- PS = Slotted Pipe (gINT code)
- * Circle filter-pack type
- ^ Flushmount = Negative Number
- Stickup = Positive Number

VIII. CALCULATIONS BELOW GROUND SURFACE

TOC to BOW 83.62
 - BOW to BOS 0.52
= TOC to BOS 83.1

TOC to BOS 83.1
 - Screened Length 4.77
= TOC to TOS 78.33

TOC to BOW	<u>83.62</u>
- TOC to GS	<u>3.18</u>
BOW bgs	<u>80.44</u>
TOC to TOS	<u>78.33</u>
- TOC to GS	<u>3.18</u>
TOS bgs	<u>75.15</u>
TOC to BOS	<u>83.1</u>
- TOC to GS	<u>3.18</u>
BOS bgs	<u>79.92</u>

MONITORING WELL CONSTRUCTION DETAILS

Monitoring Well No. <u>MW-1902-40</u>	Date Installed <u>9/30/2019</u>
Project Name <u>FAI FTP Corrective Action</u>	Logged By <u>APW</u>
Project Number <u>102519-010</u>	Driller <u>James Beckner</u>

I. TOP SECTION (CASING)

Initial Pipe Length 10.01
 Cutoff Length 2.19
 Add-on Length -
Total Length 7.82

IV. WELL DATA

Pipe Type: PVC SS Other _____
 Diameter: 2" 4" Other _____
 Slot Size: 0.01 0.02 Other _____
 Joint Pin End: Up Down Type _____

II. MID SECTION (CASING)

Number of Blank Sections 3
 Length of Section(s):

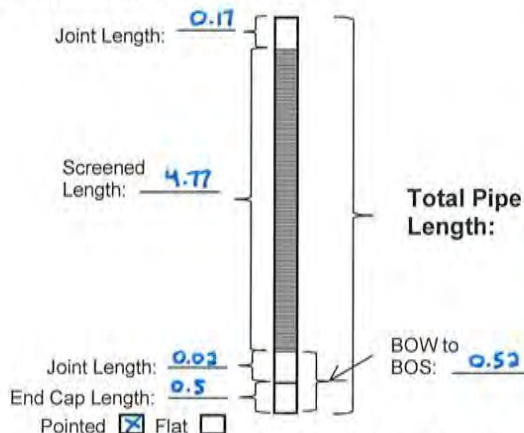
<u>10.01</u>	<u>10.01</u>	<u>10.01</u>

Sum of Lengths: 30.03

V. BACKFILL

	Depth Below GS	
	Bottom	Top
CEM (No Pipe)	<u>-</u>	<u>-</u>
CEM_PB	<u>-</u>	<u>-</u>
<u>SLUF_PB/FIL_PB</u>	<u>28.0'</u>	<u>0.0'</u>
BCH_PB	<u>32.5'</u>	<u>28.0'</u>
*SLUF_PB/FIL_PB	<u>-</u>	<u>-</u>
BGR_PB	<u>-</u>	<u>-</u>
*SLUF_PB/FIL_PB	<u>-</u>	<u>-</u>
*SLUF_PS/FIL_PS	<u>39.5'</u>	<u>32.5'</u>
*SLUF/FIL (No Pipe)	<u>-</u>	<u>-</u>
*SLUF_PB/FIL_PB	<u>40'</u>	<u>39.5'</u>
Filter Pack Type or Gradation	<u>prepack</u>	

III. SCREENED SECTION(S)



VI. MONUMENTS

Stuckup Flushmount
 TOM to GS 3.32
 TOM to TOC 0.44
 ^TOC to GS 3.2 2.88
 Lock type N/A

VII. MOISTURE CONTENT

Depth to Water Below GS 7.25

	Frozen Soil Below GS	
	Bottom	Top
Seasonal 1	<u>N/A</u>	<u>N/A</u>
Seasonal 2	<u>N/A</u>	<u>N/A</u>
Permafrost 1	<u>N/A</u>	<u>N/A</u>
Permafrost 2	<u>N/A</u>	<u>N/A</u>

- BCH = Bentonite Chips (gINT code)
- BGR = Bentonite Grout (gINT code)
- bgs = Below Ground Surface
- BOS = Bottom of Screen
- BOW = Bottom of Well
- CEM = Cement (gINT code)
- FIL = Sand Pack (gINT code)
- GS = Ground Surface
- SLUF = Natural Collapse/ Pea Gravel (gINT code)
- SS = Stainless Steel
- TOC = Top of Casing
- TOM = Top of Monument
- TOS = Top of Screen
- PB = Blank Pipe (gINT code)
- PS = Slotted Pipe (gINT code)
- * Circle filter-pack type
- ^ Flushmount = Negative Number
- Stickup = Positive Number

VIII. CALCULATIONS BELOW GROUND SURFACE

TOC to BOW 43.31
 - BOW to BOS 0.52
= TOC to BOS 42.79
 TOC to BOS 38.02
 - Screened Length 4.77
= TOC to TOS 33.25

TOC to BOW	<u>43.31</u>
- TOC to GS	<u>3.2</u>
BOW bgs	<u>40.11</u>
TOC to TOS	<u>33.25</u>
- TOC to GS	<u>3.2</u>
TOS bgs	<u>30.05</u>
TOC to BOS	<u>42.79</u>
- TOC to GS	<u>3.2</u>
BOS bgs	<u>39.59</u>

MONITORING WELL CONSTRUCTION DETAILS

Monitoring Well No. <u>MW-1902-15</u>	Date Installed <u>9/30/2019</u>
Project Name <u>FAI FTP Corrective Action</u>	Logged By <u>APW</u>
Project Number <u>102519-010</u>	Driller <u>James Beckner</u>

I. TOP SECTION (CASING)

Initial Pipe Length 10.01
 Cutoff Length 2.28
 Add-on Length -
Total Length 7.73

IV. WELL DATA

Pipe Type: PVC SS Other _____
 Diameter: 2" 4" Other _____
 Slot Size: 0.01 0.02 Other _____
 Joint Pin End: Up Down Type _____

II. MID SECTION (CASING)

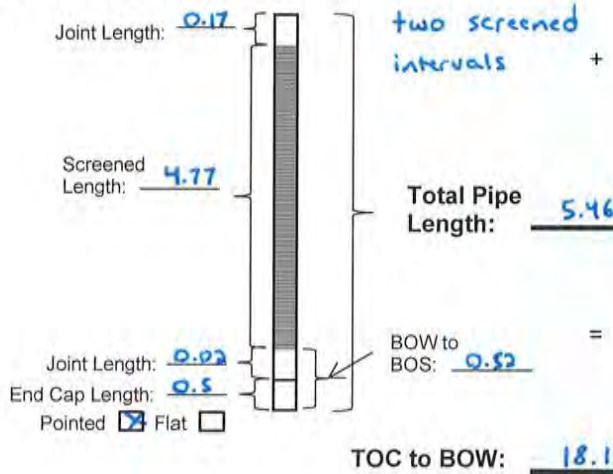
Number of Blank Sections _____
 Length of Section(s): _____

Sum of Lengths: _____

V. BACKFILL

	Bottom	Top
CEM (No Pipe)	-	-
CEM_PB	-	-
<u>SLUF_PB/FIL_PB</u>	<u>1.0'</u>	<u>0.0'</u>
BCH_PB	<u>3.0'</u>	<u>1.0'</u>
*SLUF_PB/FIL_PB	-	-
BGR_PB	-	-
*SLUF_PB/FIL_PB	-	-
*SLUF_PS/FIL_PS	<u>14.5'</u>	<u>3.0'</u>
*SLUF/FIL (No Pipe)	-	-
*SLUF_PB/FIL_PB	<u>15.0'</u>	<u>14.5'</u>
Filter Pack Type or Gradation	<u>pre pack</u>	

III. SCREENED SECTION(S)



VI. MONUMENTS

Stuckup Flushmount
 TOM to GS 3.56
 TOM to TOC 0.45
 ^TOC to GS 3.11
 Lock type N/A

VII. MOISTURE CONTENT

Depth to Water Below GS 7.23

	Bottom	Top
Seasonal 1	<u>N/A</u>	<u>N/A</u>
Seasonal 2	<u>N/A</u>	<u>N/A</u>
Permafrost 1	<u>N/A</u>	<u>N/A</u>
Permafrost 2	<u>N/A</u>	<u>N/A</u>

- BCH = Bentonite Chips (gINT code)
- BGR = Bentonite Grout (gINT code)
- bgs = Below Ground Surface
- BOS = Bottom of Screen
- BOW = Bottom of Well
- CEM = Cement (gINT code)
- FIL = Sand Pack (gINT code)
- GS = Ground Surface
- SLUF = Natural Collapse/ Pea Gravel (gINT code)
- SS = Stainless Steel
- TOC = Top of Casing
- TOM = Top of Monument
- TOS = Top of Screen
- PB = Blank Pipe (gINT code)
- PS = Slotted Pipe (gINT code)
- * Circle filter-pack type
- ^ Flushmount = Negative Number
- Stickup = Positive Number

VIII. CALCULATIONS BELOW GROUND SURFACE

TOC to BOW 18.15
 - BOW to BOS 0.52
= TOC to BOS 17.63
 TOC to BOS 17.63
 - Screened Length 4.77 x 2
= TOC to TOS 7.92

TOC to BOW	<u>18.15</u>
- TOC to GS	<u>3.15</u>
BOW bgs	<u>15.0</u>
TOC to TOS	<u>7.92</u>
- TOC to GS	<u>3.15</u>
TOS bgs	<u>4.77</u>
TOC to BOS	<u>17.63</u>
- TOC to GS	<u>3.15</u>
BOS bgs	<u>14.48</u>

MONITORING WELL CONSTRUCTION DETAILS

Monitoring Well No. <u>MW-1901-150</u>	Date Installed <u>10/2/19</u>
Project Name <u>FAT FTP Corrective Action</u>	Logged By <u>FLG & APW</u>
Project Number <u>102519-010</u>	Driller <u>GeoTek Gilon</u>

I. TOP SECTION (CASING)

Initial Pipe Length 10.01'
 Cutoff Length 2.1
 Add-on Length
Total Length 7.91

IV. WELL DATA

Pipe Type: PVC SS Other
 Diameter: 2" 4" Other
 Slot Size: 0.01 0.02 Other
 Joint Pin End: Up Down Type

II. MID SECTION (CASING)

Number of Blank Sections 14
 Length of Section(s):

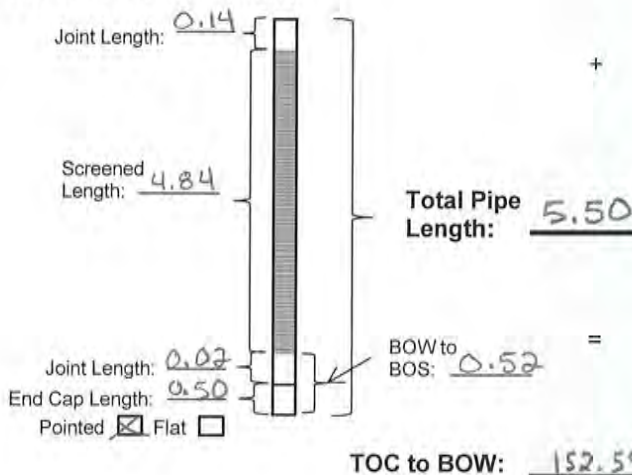
<u>10.01</u>	<u>10.01</u>	<u>10.01</u>
<u>10.01</u>	<u>10.01</u>	<u>10.01</u>
<u>10.01</u>	<u>10.01</u>	<u>10.01</u>
<u>10.01</u>	<u>10.01</u>	<u>10.01</u>
<u>10.01</u>	<u>10.01</u>	<u>10.01</u>

Sum of Lengths: 140.14

V. BACKFILL

	Bottom	Top
CEM (No Pipe)	<u> </u>	<u> </u>
CEM_PB	<u> </u>	<u> </u>
*SLUF_PB/FIL_PB	<u>2.10</u>	<u>0.0</u>
BCH_PB	<u>141.70</u>	<u>139.50</u>
*SLUF_PB/FIL_PB	<u> </u>	<u> </u>
BGR_PB	<u>139.50</u>	<u>2.10</u>
*SLUF_PB/FIL_PB	<u>144.47</u>	<u>141.70</u>
*SLUF_PS/FIL_PS	<u>149.31</u>	<u>144.47</u>
*SLUF/FIL (No Pipe)	<u> </u>	<u> </u>
*SLUF_PB/FIL_PB	<u>149.83</u>	<u>149.31</u>
Filter Pack Type or Gradation	<u>Pre pack</u>	

III. SCREENED SECTION(S)



VI. MONUMENTS

Stuckup Flushmount
 TOM to GS 3.33
 TOM to TOC 0.57
 ^TOC to GS 2.76
 Lock type

VII. MOISTURE CONTENT

Depth to Water Below GS 12.02

	Bottom	Top
Seasonal 1	<u> </u>	<u> </u>
Seasonal 2	<u> </u>	<u> </u>
Permafrost 1	<u> </u>	<u> </u>
Permafrost 2	<u> </u>	<u> </u>

- BCH = Bentonite Chips (gINT code)
- BGR = Bentonite Grout (gINT code)
- bgs = Below Ground Surface
- BOS = Bottom of Screen
- BOW = Bottom of Well
- CEM = Cement (gINT code)
- FIL = Sand Pack (gINT code)
- GS = Ground Surface
- SLUF = Natural Collapse/ Pea Gravel (gINT code)
- SS = Stainless Steel
- TOC = Top of Casing
- TOM = Top of Monument
- TOS = Top of Screen
- PB = Blank Pipe (gINT code)
- PS = Slotted Pipe (gINT code)
- * Circle filter-pack type
- ^ Flushmount = Negative Number
- Stickup = Positive Number

VIII. CALCULATIONS BELOW GROUND SURFACE

TOC to BOW 152.59
 - BOW to BOS 0.52
= TOC to BOS 152.07
 TOC to BOS 152.07
 - Screened Length 4.84
= TOC to TOS 147.23

TOC to BOW	<u>152.59</u>
- TOC to GS	<u>2.76</u>
BOW bgs	<u>149.83</u>
TOC to TOS	<u>147.23</u>
- TOC to GS	<u>2.76</u>
TOS bgs	<u>144.47</u>
TOC to BOS	<u>152.07</u>
- TOC to GS	<u>2.76</u>
BOS bgs	<u>149.31</u>

MONITORING WELL CONSTRUCTION DETAILS

Monitoring Well No. <u>MW-1901-80</u>	Date Installed <u>10/3/2019</u>
Project Name <u>FAI FTP Corrective Action</u>	Logged By <u>APW</u>
Project Number <u>102519-010</u>	Driller <u>James Beckner</u>

I. TOP SECTION (CASING)

Initial Pipe Length 10.01
 Cutoff Length 2.15
 Add-on Length -
Total Length 7.86

IV. WELL DATA

Pipe Type: PVC SS Other _____
 Diameter: 2" 4" Other _____
 Slot Size: 0.01 0.02 Other _____
 Joint Pin End: Up Down Type _____

II. MID SECTION (CASING)

Number of Blank Sections 7
 Length of Section(s):

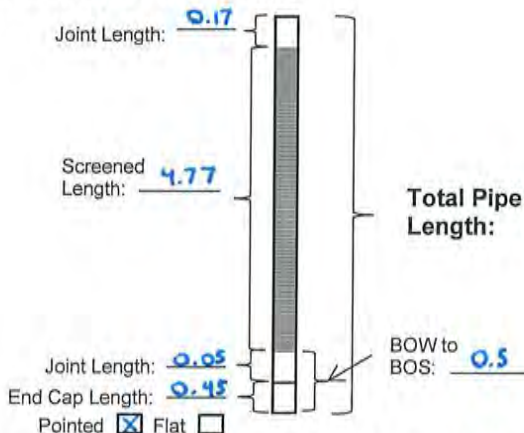
<u>10.01</u>	<u>10.01</u>	<u>10.01</u>
<u>10.01</u>	<u>10.01</u>	<u>10.01</u>
<u>10.01</u>	<u>10.01</u>	<u>10.01</u>

Sum of Lengths: 70.07

V. BACKFILL

	Depth Below GS	
	Bottom	Top
CEM (No Pipe)	-	-
CEM_PB	-	-
*SLUF_PB/FIL_PB	<u>69'</u>	<u>0.0</u>
BCH_PB	<u>73'</u>	<u>69'</u>
*SLUF_PB/FIL_PB	-	-
BGR_PB	-	-
*SLUF_PB/FIL_PB	<u>75'</u>	<u>73'</u>
*SLUF_PS/FIL_PS	<u>79.5'</u>	<u>75'</u>
*SLUF/FIL (No Pipe)	-	-
*SLUF_PB/FIL_PB	<u>80'</u>	<u>79.5'</u>
Filter Pack Type or Gradation	<u>prepack</u>	

III. SCREENED SECTION(S)



Total Pipe Length: 5.44

TOC to BOW: 83.37

VI. MONUMENTS

Stuckup Flushmount
 TOM to GS 3.4
 TOM to TOC 0.58
 ^TOC to GS 3.43 2.83
 Lock type _____

VII. MOISTURE CONTENT

Depth to Water Below GS 8.96

	Frozen Soil Below GS	
	Bottom	Top
Seasonal 1	<u>N/A</u>	<u>N/A</u>
Seasonal 2	<u>N/A</u>	<u>N/A</u>
Permafrost 1	<u>N/A</u>	<u>N/A</u>
Permafrost 2	<u>N/A</u>	<u>N/A</u>

- BCH = Bentonite Chips (gINT code)
- BGR = Bentonite Grout (gINT code)
- bgs = Below Ground Surface
- BOS = Bottom of Screen
- BOW = Bottom of Well
- CEM = Cement (gINT code)
- FIL = Sand Pack (gINT code)
- GS = Ground Surface
- SLUF = Natural Collapse/ Pea Gravel (gINT code)
- SS = Stainless Steel
- TOC = Top of Casing
- TOM = Top of Monument
- TOS = Top of Screen
- PB = Blank Pipe (gINT code)
- PS = Slotted Pipe (gINT code)
- * Circle filter-pack type
- ^ Flushmount = Negative Number
- Stickup = Positive Number

VIII. CALCULATIONS BELOW GROUND SURFACE

TOC to BOW 83.37
 - BOW to BOS 0.5
= TOC to BOS 82.87

TOC to BOS 82.87
 - Screened Length 4.77
= TOC to TOS 78.1

TOC to BOW	<u>83.37</u>
- TOC to GS	<u>3.43</u>
BOW bgs	<u>79.94</u>
TOC to TOS	<u>78.1</u>
- TOC to GS	<u>3.43</u>
TOS bgs	<u>74.67</u>
TOC to BOS	<u>82.87</u>
- TOC to GS	<u>3.43</u>
BOS bgs	<u>79.44</u>

WELL DEVELOPMENT LOG

Owner-Client FAL + DOT Well No. MW-1901-15
 Location FAL Project No 102519
 Weather Sunny 80-50° Date 9/27/19
 Development Personnel ALF, BAB, RLW

Diameter and Type of Casing: 2" PVC GS to TOC = 3.04 ft
 Total Depth of Well **Before** Development (feet below top of casing): 17.28 + 1.2 = 18.48
 Depth to Water **Before** Development (feet below top of casing): 10.98
 Depth to Screen Top and Bottom (from Construction Log): Top: _____ Bottom: _____

Development Details

Feet of water in well 7.5 Time pumping started 12:48
 Gallons per foot 0.17 Flow rate (gal/min) 4.35
 Gallons in well 1.275 Flow-rate measurement method: _____
 Surge method surge block Gallon jug
 Pump used Air diaphragm Time pumping ended 1324
 Tubing used (ft) 30 Gallons Pumped ~90
 Disposal: FTP

Depth to Water **After** Development (feet below top of casing): 11.04
 Total Depth of Well **After** Development (feet below top of casing): 17.27 + 1.2 = 18.47

Observations

Time	Water Clarity (Visual)	Time	Water Clarity (Visual)
12:51	Turbid	13:19	slightly turbid
12:54	slightly turbid	13:22	clear
12:56	Pump stop. Surge	13:23	clear
13:04	pump on again		
13:05	very turbid, silty		
13:07	Flow rate measured (5.85 gal/min)		
13:09	Less turbid		
13:09	Pump off (surge)		
13:15	Pump on		
13:17	mittly turbid		

NOTES: _____

WELL CASING VOLUMES

Diameter of Well [ID-inches]	1 1/4	2	3	4	6	8
Gallons per lineal foot	0.08	0.17	0.38	0.66	1.5	2.6

MONITORING WELL SAMPLING LOG

Owner/Client Flint Hills Resources Alaska FAI/DOT Project No. 102519
 Location North Pole Refinery-- Onsite FAI Airport Date 9/27/19
 Sampling Personnel ALF, BAB, RLW Well MW-1901-15
 Weather Conditions Partly cloudy Air Temp. (°F) 50° Time started 1430
 Time completed 1546
 Sample No. MW-1901-15 Time 1546
 Duplicate MW-1901-115 Analysis: PFAS Time 1536 Depth to Water (ft.) 11.04
 Equipment Blank (EB) --- Analysis: --- Time --- Depth to LNAPL (ft.) ---
 NAPL Thickness (ft.) ---
 Method of NAPL Measurement ---
 Pump/Controller Whale pump Diameter and Type of Casing 2" PVC
 Purging Method portable / dedicated pump Approximate Total Depth of Well Below MP (ft.) ---
 Pumping Start 1430 Measured Total Depth of Well Below MP (ft.) 18.47
 Purge Rate (gal./min.) 1 Depth to Water Below MP (ft.) 11.04
 Pumping End 1545 Depth to Ice (if frozen) Below MP (ft.) ---
 Pump Set Depth Below MP (ft.) 17.47 Feet of Water in Well 7.43
 KuriTec Tubing (ft.) 60 Gallons per foot 0.17
 TruPoly Tubing (ft.) --- Gallons in Well 1.26
 Silicone Tubing (ft.) --- Gallons in Well x3 = 3.79
 (also enter on back) Total Gallons Purged ~22
 Purge Water Disposal Refinery Wastewater System FTP
 Monument Condition new KW not installed
 Casing Condition new
 Wiring Condition ---
 (dedicated pumps) ---
 Measuring Point (MP) Top of Casing (TOC) Monument type: Stickup / Flushmount
 Measurement method: Tape measure
 Top-of-casing to monument (ft.) 3.04 (Monument not yet constructed) Datalogger Type (circle): RT-100 GW WL-16
 Monument to ground surface (ft.) MIA AT-200 LT-700 LT-500
TOC to TOM 0.41 Top of casing to monument 0.41 Other: HOBO
TOM to GS 3.04 (after construction) Datalogger serial #: ---
 Measured cable length (ft) ---
 Frost-jacking? Y / N Temperature Logger Present (TidBit)? Y / N
 Lock present and operational
 Well name legible on outside of well (stickup) or inside of well (flushmount)
 Notes Original pump malfunctioned. Used different pump

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1 1/4	2	3	4	6	8
Gallons per lineal foot	0.01057	0.08	0.17	0.38	0.66	1.5	2.6

APW 1/20/20
2/22/2016

SHANNON & WILSON, INC

Well No. MW-1901-15

MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSI Pro Plus C OR Rental # _____ Handheld s/n: _____
 Parameter Criteria: Circle One: Parameters stabilized OR 3 well volumes purged
 Total Gallons purged: _____ Gallons needed for 3WV: 3.79
 Water observations: clear
 Notes: when first started, pump wasn't working. Got new pump from sh. used new tubing w/ new pump

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C)	Dissolved Oxygen (mg/L) [± 0.10 mg/L]	Conductivity (µS/cm) [± 3%]	pH [± 0.10]	ORP (mV) [± 10 mV]	Water Clarity (visual)
<u>14:30</u>	<u>Purging start time</u>					
<u>14:33</u>	<u>7.4</u>	<u>0.31</u>	<u>657</u>	<u>6.18</u>	<u>56.9</u>	
<u>14:39</u>	<u>7.6</u>	<u>0.30</u>	<u>658</u>	<u>6.29</u>	<u>38.4</u>	
<u>14:43</u>	<u>8.8</u>	<u>0.29</u>	<u>686</u>			
<u>14:43</u>	<u>Trouble shooting pump</u>					
<u>15:32</u>	<u>Restart pump</u>					
<u>15:33</u>	<u>7.7</u>	<u>0.31</u>	<u>655</u>	<u>6.14</u>	<u>107.9</u>	<u>clear</u>
<u>15:36</u>	<u>7.7</u>	<u>0.30</u>	<u>660</u>	<u>6.41</u>	<u>97.5</u>	<u>clear</u>
<u>15:39</u>	<u>7.6</u>	<u>0.32</u>	<u>661</u>	<u>6.44</u>	<u>42.3</u>	<u>clear</u>
<u>15:42</u>	<u>7.6</u>	<u>0.31</u>	<u>661</u>	<u>6.46</u>	<u>34.1</u>	<u>clear</u>
<u>15:45</u>	<u>7.6</u>	<u>0.31</u>	<u>661</u>	<u>6.47</u>	<u>27.7</u>	<u>clear</u>
<u>15:46</u>	<u>Sample</u>					
<u>15:46</u>						

Laboratory SGS

	Analysis	Sample Containers	Preservatives	Dup	EB
<input type="checkbox"/>	<u>Sulfolane</u>	<u>2 x 1-L amber jars</u>	<u>-</u>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<u>BTEX</u>	<u>3 x 40-mL VOA vials</u>	<u>HCl</u>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<u>GRO</u>	<u>3 x 40-mL VOA vials</u>	<u>HCl</u>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<u>DRO</u>	<u>2 x 250-mL amber jars</u>	<u>HCl</u>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<u>PFAS</u>	<u>2 x 250ml bottles</u>	<u>-</u>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>

WELL DEVELOPMENT LOG

Owner-Client FAI + DOT Well No. MW-1901-40
 Location FAI Project No. 102519
 Weather 50° Sunny Date 9/27/19
 Development Personnel ALF, BAB, RLW

Diameter and Type of Casing: 2" PVC GS to TDC: 3.08ft
 Total Depth of Well **Before** Development (feet below top of casing): 42.21 + 1.2 = 43.41
 Depth to Water **Before** Development (feet below top of casing): 11.15
 Depth to Screen Top and Bottom (from Construction Log): Top: _____ Bottom: _____

Development Details

Feet of water in well 53.4ft 32.23 Time pumping started 13:49
 Gallons per foot 0.17 Flow rate (gal/min) 5.5 gpm
 Gallons in well 5.48 Flow-rate measurement method: Gallon jug
 Surge method surge block Time pumping ended 13:59
 Pump used Air diaphragm Gallons Pumped ~40
 Tubing used (ft) 55 Disposal: Discharged to FAI FTP

Depth to Water **After** Development (feet below top of casing): ALF H-04 11.18
 Total Depth of Well **After** Development (feet below top of casing): ~~17.27 + 1.2 = 18.47 ALF~~
 42.21 + 1.2 = 43.41

Surged prior to pumping

Observations

Time	Water Clarity (Visual)
13:50	Very Turbid
13:54	Moderately turbid
13:58	clear
13:59	clear - pump off

Time	Water Clarity (Visual)

NOTES: _____

WELL CASING VOLUMES

Diameter of Well [ID-inches]	1 1/4	2	3	4	6	8
Gallons per lineal foot	0.08	0.17	0.38	0.66	1.5	2.6

MONITORING WELL SAMPLING LOG

Owner/Client Flint Hills Resources Alaska FAI/DOT Project No. 102519
 Location North Pole Refinery - Onsite FAI Airport Date 9/27/19
 Sampling Personnel ALF, BAB, RLW Well MW-1901-40
 Weather Conditions Partly cloudy Air Temp. (°F) 42 Time started 1559
 Time completed 1650

Sample No. MW-1901-40 Time 1619
 Duplicate Field blank Analysis: PFAS Time 1621 Depth to Water (ft.) 11.18
 Equipment Blank (EB) EB-MW-1901-40 Analysis: PFAS Time 1635 Depth to LNAPL (ft.) _____
 NAPL Thickness (ft.) _____
 Method of NAPL Measurement _____

Pump/Controller Whole pump
 Purging Method portable / dedicated pump Diameter and Type of Casing 2" PVC
 Pumping Start 1559 Approximate Total Depth of Well Below MP (ft.) 43.41
 Purge Rate (gal./min.) 1 Measured Total Depth of Well Below MP (ft.) 43.41
 Pumping End 1619 Depth to Water Below MP (ft.) 11.18
 Depth to Ice (if frozen) Below MP (ft.) _____
 Pump Set Depth Below MP (ft.) 42.41 Feet of Water in Well 32.23
 KuriTec Tubing (ft.) 52 Gallons per foot 0.17
 TruPoly Tubing (ft.) - Gallons in Well 5.48
 Silicone Tubing (ft.) - Gallons in Well x3 = 16.44
 (also enter on back) Total Gallons Purged ~20

Purge Water Disposal Refinery Wastewater System - ETP

Monument Condition no monument installed yet
 Casing Condition new
 Wiring Condition N/A
 (dedicated pumps) _____

Measuring Point (MP) Top of Casing (TOC) Monument type: Stickup / Flushmount
 Measurement method: Tape measure

Top-of-casing to monument (ft.) 3.08 0.55 (after monument construction) Datalogger Type (circle): RT-100 GW WL-16
 Monument to ground surface (ft.) 3.08 AT-200 LT-700 LT-500
 Other: _____ HOBO
 Datalogger serial #: _____
 Measured cable length (ft) _____

Frost-jacking? Y / N Temperature Logger Present (TidBit)? Y / N
 Lock present and operational
 Well name legible on outside of well (stickup) or inside of well (flushmount)

Notes _____

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1 1/4	2	3	4	6	8
Gallons per lineal foot	0.01057	0.08	0.17	0.38	0.66	1.5	2.6

APW 1/20/20

MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSI *Pro Plus* C OR Rental # _____ Handheld s/n: _____
 Parameter Criteria: Circle One: Parameters stabilized OR > 3 well volumes purged
 Total Gallons purged: ~ 20 Gallons needed for 3WV: 16.44
 Water observations: clear
 Notes: _____

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C)	Dissolved Oxygen (mg/L) [± 0.10 mg/L]	Conductivity (µS/cm) [± 3%]	pH [± 0.10]	ORP (mV) [± 10 mV]	Water Clarity (visual)
<u>1559</u>	<u>Purging start time</u>					
<u>1604</u>	<u>4.7</u>	<u>2.61</u>	<u>309.0</u>	<u>6.91</u>	<u>25.3</u>	<u>clear</u>
<u>1608</u>	<u>4.7</u>	<u>1.77</u>	<u>305.8</u>	<u>6.96</u>	<u>7.4</u>	↓
<u>1611</u>	<u>4.7</u>	<u>1.59</u>	<u>305.0</u>	<u>6.98</u>	<u>-1.0</u>	
<u>1615</u>	<u>4.7</u>	<u>1.43</u>	<u>304.3</u>	<u>7.00</u>	<u>-11.3</u>	
<u>1618</u>	<u>4.7</u>	<u>1.30</u>	<u>304.0</u>	<u>7.01</u>	<u>-16.3</u>	
<u>1619</u>	<u>Sample</u>					

Laboratory SGS

Analysis	Sample Containers	Preservatives	Dup	EB
<input type="checkbox"/> <u>Sulfolane</u>	<u>2 x 1-L amber jars</u>	<u>-</u>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> <u>BTEX</u>	<u>3 x 40-mL VOA vials</u>	<u>HCl</u>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> <u>GRO</u>	<u>3 x 40-mL VOA vials</u>	<u>HCl</u>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> <u>DRO</u>	<u>2 x 250-mL amber jars</u>	<u>HCl</u>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> <u>PFAS</u>	<u>2 x 250 ml bottles</u>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>

WELL DEVELOPMENT LOG

Owner-Client FAI Well No. MW-1902-150
 Location FAI FTP Project No. 102519
 Weather 45° Date 10/1/19
 Development Personnel GCO, RLW

Diameter and Type of Casing: 2" PVC
 Total Depth of Well **Before** Development (feet below top of casing): 152.47
 Depth to Water **Before** Development (feet below top of casing): 9.46
 Depth to Screen Top and Bottom (from Construction Log): Top: _____ Bottom: _____

Development Details

Feet of water in well 143.01 Time pumping started APW 11:20 12:30
 Gallons per foot 0.17 Flow rate (gal/min) 1.43 gal/min 1 gal in 42 s
 Gallons in well 24.31 Flow-rate measurement method: gal jug 0.7 min
 Surge method n/a not enough lengths
 Pump used diaphragm pump Time pumping ended ~ 130 gal
 Tubing used (ft) 170 Gallons Pumped end @ 1415
 Disposal: FTP Sump

Depth to Water **After** Development (feet below top of casing): 9.48
 Total Depth of Well **After** Development (feet below top of casing): 151.51

Observations

Time	Water Clarity (Visual)
12:31	very silty
12:35	Turbid
12:40	Turbid, silty
12:44	Turbid
12:47	Turbid
12:51	slightly turbid
12:55	Turbid
13:00	slightly turbid
13:05	very slightly turbid
13:10	slightly turbid

Time	Water Clarity (Visual)
1319	clear
1324	clear
1329	slightly turbid
1339	slightly turbid
1400	clear
1405	clear
1415	compressor out of gas
1520-1530	purged 4 more gal w/ megamonsoon
	clear

NOTES: Ran out of fuel, was about to stop compressor before fuel.
Decided to purge use ~~low~~ ss mega monsoon pro to purge ~~20~~ ~10 more gal
RLW RLW

WELL CASING VOLUMES

Diameter of Well [ID-inches]	1 1/4	2	3	4	6	8
Gallons per lineal foot	0.08	0.17	0.38	0.66	1.5	2.6

MONITORING WELL SAMPLING LOG

Owner/Client Flint Hills Resources Alaska
 Location North Pole Refinery-- Onsite
 Sampling Personnel ACD, RLW
 Weather Conditions overcast, windy Air Temp. (°F) 45

Project No. 102519
~~MW-1902-150~~
 Date 10/1/19
 Well MW-1902-150
 Time started 1000
 Time completed 1700

Sample No. MW-1902-150
 Duplicate - Analysis: _____
 Equipment Blank (EB) EB-1902-150 Analysis: _____

Time -
 Time - Depth to Water (ft.) _____
 Time - Depth to LNAPL (ft.) _____
 NAPL Thickness (ft.) _____
 Method of NAPL Measurement _____

Pump/Controller 35 Mega Monsoon
 Purging Method portable / dedicated pump
 Pumping Start 1601
 Purge Rate (gal./min.) 11
 Pumping End 16:59
 Pump Set Depth Below MP (ft.) 2141.5
 KuriTec Tubing (ft.) 2150
 TruPoly Tubing (ft.) 21
 Silicone Tubing (ft.) -

Diameter and Type of Casing 2" PVC
 Approximate Total Depth of Well Below MP (ft.) -
 Measured Total Depth of Well Below MP (ft.) 9.46 152.47
 Depth to Water Below MP (ft.) 9.48
 Depth to Ice (if frozen) Below MP (ft.) -
 Feet of Water in Well 142.99
 Gallons per foot 0.17
 Gallons in Well 24.31
 Gallons in Well x3 = 72.9
 (also enter on back) Total Gallons Purged ~ 60

Purge Water Disposal Refinery Wastewater System

Monument Condition Good - Newly installed & developed
 Casing Condition Good - Newly installed & developed
 Wiring Condition N/A
 (dedicated pumps)

Measuring Point (MP) Top of Casing (TOC)

Monument type: Stickup / Flushmount
 Measurement method: Tape measure

Top-of-casing to monument (ft.) .56
 Monument to ground surface (ft.) 3.34

Datalogger Type (circle): ~~RT-100 GW WL-16~~
~~AT-200 LT-700 LT-500~~
 Other: ~~HOBO~~

Datalogger serial #: _____
 Measured cable length (ft) _____

- Frost-jacking? Y / N
 - Lock present and operational
 - Well name legible on outside of well (stickup) or inside of well (flushmount)
- Temperature Logger Present (TidBit)? Y / N

Notes Sample Not taken until 10/2/2019 ; See Next Page

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1 1/4	2	3	4	6	8
Gallons per lineal foot	0.01057	0.08	<u>0.17</u>	0.38	0.66	1.5	2.6

MONITORING WELL SAMPLING LOG

Field Parameter Instrument VSI Pro Plus B OR Rental # _____ Handheld s/n: _____

Parameter Criteria: Circle One: Parameters stabilized OR > 3 well volumes purged

Total Gallons purged: _____ Gallons needed for 3WV: 72.9

Water observations: _____

Notes: * VSI batteries died/replaced

** turned off pump - need additional containers for purge water

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C)	Dissolved Oxygen (mg/L) [± 0.10 mg/L]	Conductivity (µS/cm) [± 3%]	pH [± 0.10]	ORP (mV) [± 10 mV]	Water Clarity (visual)
1601	Purging start time					
1603	4.1	0.67	201.4	5.83	212.3	Clear
1607	4.0	0.38	200.7	6.45	149.3	Clear
1613	4.0	0.27	200.6	6.85	108.9	Clear
1616	4.0	0.24	200.5	6.98	97.1	Clear
1619	4.0	0.22	200.5	7.08	84.4	Clear
1622	4.0	0.20	200.5	7.18	74.3	Clear
1625	4.0	0.20	200.5	7.24	69.0	Clear
1628	4.0	0.18	200.4	7.26	61.7	Clear
1631	4.0	0.18	200.4	7.30	53.6	Clear
1634	*					
1641	4.0	0.56	200.4	7.35	38.3	Clear
1644	4.0	0.28	200.4	7.35	25.5	Clear
1647	4.0	0.23	200.3	7.36	9.2	Clear
1650	4.0	0.20	200.4	7.37	-14.5	Clear
1654	4.0	0.18	200.4	7.38	-26.2	Clear
1659	4.0	0.17	200.4	7.40	-42.3	Clear

Laboratory SGS

	Analysis	Sample Containers	Preservatives	Dup	EB
<input type="checkbox"/>	Sulfolane	2 x 1-L amber jars	-	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	BTEX	3 x 40-mL VOA vials	HCl	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	GRO	3 x 40-mL VOA vials	HCl	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	DRO	2 x 250-mL amber jars	HCl	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	PFOS / PFOA	2 x 250-mL	N/A	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>

MONITORING WELL SAMPLING LOG

Owner/Client Flint Hills Resources Alaska FAI
 Location North Pole Refinery - Onsite FAI FTP
 Sampling Personnel RLW
 Weather Conditions overcast Air Temp. (°F) 35

Project No. 102519
 Date 10/2/19
 Well MW-1902-150
 Time started 1445
 Time completed 1715

Sample No. run MW-1902-150
~~SS Mega-M~~ Time 1618
 Duplicate N/A Analysis: _____ Time _____
 Equipment Blank (EB) EB-MW-1902-150 Analysis: PFAS/PPFA Time 1650
FB-MW-1902-150 PFAS/PPFA 1613
 Method of NAPL Measurement _____

Depth to Water (ft.) 10.39
 Depth to LNAPL (ft.) _____
 NAPL Thickness (ft.) _____

49 min

Pump/Controller SS Mega-Monsoon Pro
 Purging Method portable / dedicated pump
 Pumping Start 1529
 Purge Rate (gal./min.) 0.35
 Pumping End 1618
 Pump Set Depth Below MP (ft.) 149.4
 KuriTec Tubing (ft.) 2
 TruPoly Tubing (ft.) 160
 Silicone Tubing (ft.) _____

Diameter and Type of Casing 2" PVC
 Approximate Total Depth of Well Below MP (ft.) 150
 Measured Total Depth of Well Below MP (ft.) 151.40 + 1.9
 Depth to Water Below MP (ft.) 10.39
 Depth to Ice (if frozen) Below MP (ft.) _____
 Feet of Water in Well 141.01
 Gallons per foot 0.17
 Gallons in Well 23.97
 Gallons in Well x3 = 71.91
 (also enter on back) Total Gallons Purged ~17 gal
 Purge Water Disposal Refinery Wastewater System FTA Sump

Monument Condition New
 Casing Condition New
 Wiring Condition _____
 (dedicated pumps) _____

Measuring Point (MP) Top of Casing (TOC) Monument type: Stickup / Flushmount
 Measurement method: Tape measure

Top-of-casing to monument (ft.) 0.56
 Monument to ground surface (ft.) 3.34

Datalogger Type (circle): RT-100 GW WL-16
 AT-200 LT-700 LT-500
 Other: _____ HOBO

Datalogger serial #: _____
 Measured cable length (ft) _____

- Frost-jacking? Y / N Temperature Logger Present (TidBit)? Y / N
- Lock present and operational NA
- Well name legible on outside of well (stickup) or inside of well (flushmount)

Notes _____

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1 1/4	2	3	4	6	8
Gallons per lineal foot	0.01057	0.08	0.17	0.38	0.66	1.5	2.6

APW 1/20/20

MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSI Pro Plus 8 OR Rental # Handheld s/n:
 Parameter Criteria: Circle One: Parameters stabilized OR > 3 well volumes purged
 Total Gallons purged: ~17 gal Gallons needed for 3WV: 71.91
 Water observations: _____
 Notes: _____

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C)	Dissolved Oxygen (mg/L) [± 0.10 mg/L]	Conductivity (µS/cm) [± 3%]	pH [± 0.10]	ORP (mV) [± 10 mV]	Water Clarity (visual)
Purging start time <u>1529</u>						
1530	4.3	4.01	217.7	5.42	278.0	Grey - clear
1533	4.3	3.68	211.1	5.90	266.7	less grey
1536	4.2	2.91	209.1	6.40	243.2	James
1539	4.2	1.30	206.1	6.56	165.0	clear/grey
1544	4.1	0.59	203.3	6.66	129.1	clear
1550	4.1	0.42	202.3	6.94	117.2	clear
1554	4.1	0.37	201.9	7.04	111.4	clear
1557	4.1	0.31	201.6	7.15	105.8	clear
1601		YSI turned off	Batteries	were replaced 10/1/19.		Still will change
1602	4.1	1.00	201.3	7.20	98.2	clear
1606	4.2	0.35	202.3	7.23	95.3	clear
1609	4.3	0.37	202.4	7.26	92.6	clear
1612	4.3	0.26	202.3	7.27	90.7	clear
1615	4.3	0.23	202.3	7.30	85.6	
1618	sample					

Laboratory SGS Test America

Analysis	Sample Containers	Preservatives	Dup	EB
<input type="checkbox"/> Sulfolane	2 x 1-L amber jars	-	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> BTEX	3 x 40-mL VOA vials	HCl	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> GRO	3 x 40-mL VOA vials	HCl	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> DRO	2 x 250-mL amber jars	HCl	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> PFA/PFOA	2 x 250 mL	NA	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/> _____			<input type="checkbox"/>	<input type="checkbox"/>

WELL DEVELOPMENT LOG

Owner-Client AK-DOOT Well No. MW-1902-15
 Location FAI Project No 102519
 Weather 21°F and Sunny Date 10/14/19
 Development Personnel BAB

Diameter and Type of Casing: 2 in
 Total Depth of Well **Before** Development (feet below top of casing): 17.84 ft ± 9 ft
 Depth to Water **Before** Development (feet below top of casing): 10.34 ft
 Depth to Screen Top and Bottom (from Construction Log): Top: 7.92 Bottom: 18.15

Development Details

Feet of water in well 8.4 Time pumping started 11:44
 Gallons per foot 0.17 Flow rate (gal/min) 3.57 ~~2.57~~ 3.16
 Gallons in well 1.43 Flow-rate measurement method: gallon container
 Surge method surge block Time pumping ended 12:17
 Pump used diapharm Gallons Pumped 60 gals
 Tubing used (ft) 25 ft Disposal: containerized onsite

Depth to Water **After** Development (feet below top of casing): 10.38 ft
 Total Depth of Well **After** Development (feet below top of casing): 17.87 ft

Observations

Time	Water Clarity (Visual)	Time	Water Clarity (Visual)
11:48	Turbid		
11:52	turbid		
12:07	Turbid		
12:09	Mild Turbidity		
12:11	Mild Turbidity		
12:17	Clear		

NOTES: _____

WELL CASING VOLUMES

Diameter of Well [ID-inches]	1/4"	2"	3"	4"	6"	8"
Gallons per lineal foot	0.08	0.17	0.38	0.66	1.5	2.6

BAB

MONITORING WELL SAMPLING LOG

Owner/Client AK-DOT
 Location FAI
 Sampling Personnel 21°F and Sunny BAB AMJ
 Weather Conditions 21°F and Sunny Air Temp. (°F) _____

Project No. 102519
 Date 10/14/15
 Well MW-1902-15
 Time started 1530
 Time completed 1600

Sample No. MW-1902-15 Time 4/ 1600
 Duplicate _____ Time _____
 Equipment Blank _____ Time _____

Whole pump + purged through development

~~Purging Method surge block~~
 Pumping Start 11:48 1530
 Purge Rate (gal./min.) 3.57 0.5
 Pumping End 12:17 1554
 Pump Set Depth Below MP (ft.) 17.77
 Tubing (ft.) 35ft

Diameter and Type of Casing 2 in PVC
 Approximate Total Depth of Well Below MP (ft.) _____
 Measured Total Depth of Well Below MP (ft.) 18.77
 Depth to Water Below MP (ft.) 6.34 10.38
 Depth to Ice (if frozen) Below MP (ft.) _____
 Feet of Water in Well 12.43
 Gallons per foot 2.11 0.17
 Gallons in Well 2.11
 Purge Water Volume (gal.) 6.74 ~12
 Purge Water Disposal contained

Monument Condition brand new
 Casing Condition _____

*35ft Kuritec
4503*

Measuring Point (MP) Top of Casing (TOC) Monument type: Stickup Flushmount

Top-of-casing to monument (ft.) 0.45
 Monument to ground surface (ft.) 3.56

- Lock present and operational
- Well name legible on outside of well
- Evidence of frost-jacking _____

Notes _____

WELL CASING VOLUMES

Diameter of Well [ID-inches]	1 1/4	2	3	4	6	8
Gallons per lineal foot	0.08	0.17	0.38	0.66	1.5	2.6

APW 1/20/20

Well No.
MW-1902-15

MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSI pro plus 15 Circle: Parameters stabilized OR 3 well volumes purged
Sample Observations 0.5 gal/min flow rate
Notes _____

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 0.2 °C]	Dissolved Oxygen (mg/L) [± 0.1 mg/L]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10mV]	Turbidity (visual)
1530	5.9	4.01	9.1	6.39	110.2	clear
1533	6.9	2.18	3.9	6.46	93.2	clear
1536	6.5	10.00	581	6.42	94.9	clear
1539	6.7	1.08	590	6.62	63.8	clear
1542	6.8	0.93	581	6.68	40.0	clear
1545	6.8	0.32	588	6.75	16.2	clear
1548	6.8	0.28	594	6.79	-18.8	clear
1551	6.8	0.25	586	6.8	-35.3	clear
1554	6.8	0.23	581	6.8	-40.2	clear

Laboratory _____

	Analysis	Sample Containers	Preservatives
<input checked="checked" type="checkbox"/>	PFAS EPA 537M/WS-LC-0025	2x250 mL	none
<input type="checkbox"/>	VOC EPA SW8260	3x40 mL	HCl
<input type="checkbox"/>	Metals EPA 200.8	125 mL HDPE	HNO3
<input type="checkbox"/>	DRO AK 102	2x1 L amber	HCl
<input type="checkbox"/>	RRO AK 103	2x1 L amber	HCl
<input type="checkbox"/>			
<input type="checkbox"/>			

Well No.

mw-1902-15

WELL DEVELOPMENT LOG

Owner-Client <u>AK-DOJ</u>	Well No. <u>MW-1902-40</u>
Location <u>FAI</u>	Project No. <u>102519</u>
Weather <u>Sunny 20°F</u>	Date <u>10/14/19 - 10/15/19</u>
Development Personnel <u>BAB/AMJ</u>	

Diameter and Type of Casing: 2" PVC

Total Depth of Well **Before** Development (feet below top of casing): 42.35 + 0.9 = 43.25

Depth to Water **Before** Development (feet below top of casing): 10.13 ft

Depth to Screen Top and Bottom (from Construction Log): Top: 33.25 Bottom: 43.31

Development Details

Feet of water in well <u>33.12</u>	Time pumping started <u>10:52</u>
Gallons per foot <u>0.17</u>	Flow rate (gal/min) <u>2.15 ^{3AL} min</u>
Gallons in well <u>5.63 gal/ft</u>	Flow-rate measurement method: <u>1 gal Jug</u>
Surge method <u>surge block</u>	Time pumping ended <u>11:25</u>
Pump used <u>diaphragm</u>	Gallons Pumped <u>85</u>
Tubing used (ft) <u>59 ft</u>	Disposal: <u>containerized on site</u>

+ 60 10/14/19

Depth to Water **After** Development (feet below top of casing): 42.4 + 0.9 = 43.3

Total Depth of Well **After** Development (feet below top of casing): 10.2

Observations

Time	Water Clarity (Visual)	Time	Water Clarity (Visual)
10:54	extremely turbid	11:24	clear
10:56	very turbid		
11:00	mild turbidity		
11:03	mild turbidity		
11:05	mild turbidity		
11:08	mild turbidity		
11:10	light turbidity		
11:12	light turbidity		
11:15	almost clear		
11:20	almost clear		

NOTES: _____

WELL CASING VOLUMES

Diameter of Well [ID-inches]	1 1/4	2	3	4	6	8
Gallons per lineal foot	0.08	0.17	0.38	0.66	1.5	2.6

MONITORING WELL SAMPLING LOG

Owner/Client AK-DOT
 Location FAI
 Sampling Personnel BAB/AMJ
 Weather Conditions sunny Air Temp. (°F) 26°

Project No. 102519
 Date 10/15/19
 Well MW-1902-40
 Time started 14:12
 Time completed 1506

Sample No. MW-1902-40 Time 1506
 Duplicate NA Time -
 Equipment Blank NA Time -

Purging Method whole pump
 Pumping Start 14:13
 Purge Rate (gal./min.) 0.5
 Pumping End 1500

Diameter and Type of Casing 2" PVC
 Approximate Total Depth of Well Below MP (ft.) 43.3-40
 Measured Total Depth of Well Below MP (ft.) 19.2-43.3
 Depth to Water Below MP (ft.) 33.1-10.2
 Depth to Ice (if frozen) Below MP (ft.) -
 Feet of Water in Well 33.1
 Gallons per foot 0.17
 Gallons in Well 5.63
 Purge Water Volume (gal.) 16.55 ~ 27
 Purge Water Disposal contained on site

Pump Set Depth Below MP (ft.) 42.3
 Tubing (ft.) 60

Monument Condition new

Casing Condition new

Measuring Point (MP) Top of Casing (TOC)

Monument type: Stickup Flushmount

Top-of-casing to monument (ft.) 0.44
 Monument to ground surface (ft.) 3.32

- Lock present and operational
- Well name legible on outside of well
- Evidence of frost-jacking N/A

Notes _____

WELL CASING VOLUMES

Diameter of Well (ID-inches)	1¼	2	3	4	6	8
Gallons per lineal foot	0.08	0.17	0.38	0.66	1.5	2.6

APW 1/20/20

Well No.

MW-1902-40

MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSI pro plus B Circle: Parameters stabilized OR >3 well volumes purged
 Sample Observations _____
 Notes _____

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 0.2 °C]	Dissolved Oxygen (mg/L) [± 0.1 mg/L]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10mV]	Turbidity (visual)
14:13	4.2	10.76	2.2	5.82	270.6	Slightly turbid
14:16	4.3	3.41	271.1	6.25	220.9	mostly clear
14:21	4.3	0.83	446 269.8	6.41	200.5	mostly clear
14:24	4.3	0.53	269.4	6.58	179.0	clear
14:27	4.3	0.42	268.7	6.69	167.8	clear
14:31	4.3	0.39	268.3	6.78	157.8	clear
14:35	4.3	0.33	267.7	6.84	146.4	clear
14:37	4.3	0.32	267.3	6.92	139.6	clear
14:40	4.3	0.25	267.1	6.77	131.9	clear
14:43	4.3	0.21	266.8	7.10	124.4	clear
14:46	4.3	0.39	266.6	7.07	109	
14:52	4.3	0.31	266.4	7.1	104.1	
14:57	4.3	0.23	266.2	7.13	92.5	
15:00	4.3	0.24	265	7.16	88.3	
15:05	sampled					

Laboratory _____

	Analysis	Sample Containers	Preservatives
<input checked="" type="checkbox"/>	PFAS EPA 537M/WS-LC-0025	2x250 mL	none
<input type="checkbox"/>	VOC EPA SW8260	3x40 mL	HCl
<input type="checkbox"/>	Metals EPA 200.8	125 mL HDPE	HNO3
<input type="checkbox"/>	DRO AK 102	2x1 L amber	HCl
<input type="checkbox"/>	RRO AK 103	2x1 L amber	HCl
<input type="checkbox"/>			

Well No.

MW-1902-40

WELL DEVELOPMENT LOG

Owner-Client FAI
 Location FAI FTP
 Weather cloudy 45°
 Development Personnel GCD, RLW

Well No. MW-1902-80 *Sheet 1 of 2*
 Project No. 102519
 Date 10/1/19

Diameter and Type of Casing: 2" PVC
 Total Depth of Well **Before** Development (feet below top of casing): ~~82.31~~ 83.51
 Depth to Water **Before** Development (feet below top of casing): 9.86
 Depth to Screen Top and Bottom (from Construction Log): Top: 78.33 Bottom: 83.62

Development Details

Feet of water in well 73.65
 Gallons per foot 0.17
 Gallons in well 12.52
 Surge method block
 Pump used diaphragm
 Tubing used (ft) ~95

Time pumping started 1600
 Flow rate (gal/min) ~0.4 *1 gal in 2:36*
 Flow-rate measurement method: Gal bucket
 Time pumping ended 1640
 Gallons Pumped 16 gal
 Disposal: FTP Sump

Depth to Water **After** Development (feet below top of casing): N/A
 Total Depth of Well **After** Development (feet below top of casing): N/A

Observations

Time	Water Clarity (Visual)
1601	Very silty
1617	Still silty
1622	turbid, less silty
1630	slightly turbid
1640	Pump off

Time	Water Clarity (Visual)

NOTES: Ran out of volume in 50 gal drums. Did not finish developing well

WELL CASING VOLUMES

Diameter of Well [ID-inches]	1 1/4	2	3	4	6	8
Gallons per lineal foot	0.08	0.17	0.38	0.66	1.5	2.6

WELL DEVELOPMENT LOG

Owner-Client AK-DOT
 Location FAI
 Weather Sunny 26°F
 Development Personnel AMJ/BAB

Well No. MW-1902-80 continued
 Project No. 102519 Sheet 2 of 2
 Date 10/15/19

Diameter and Type of Casing: 2" PVC
 Total Depth of Well **Before** Development (feet below top of casing): 82.37 + 0.9 = 83.2
 Depth to Water **Before** Development (feet below top of casing): 10.15ft
 Depth to Screen Top and Bottom (from Construction Log): Top: 78.33 Bottom: 83.67

Development Details

Feet of water in well <u>73.05</u>	Time pumping started <u>1246</u>
Gallons per foot <u>0.17</u>	Flow rate (gal/min) <u>1.27</u>
Gallons in well <u>12.42</u>	Flow-rate measurement method:
Surge method <u>surge block</u>	<u>1 gallon container</u>
Pump used <u>diaphragm</u>	Time pumping ended <u>1307</u>
Tubing used (ft) <u>1054</u>	Gallons Pumped <u>30</u>
	Disposal: <u>contained on site</u>

Depth to Water **After** Development (feet below top of casing): 83.75 + 0.9 = 84.65
 Total Depth of Well **After** Development (feet below top of casing): 1005

Observations

Time	Water Clarity (Visual)
1248	mild turbidity
1252	light turbidity
1255	light turbidity
13:00	very lightly turbid
13:04	very lightly turbid
13:05	clear
13:07	clear

Time	Water Clarity (Visual)

NOTES: _____

WELL CASING VOLUMES

Diameter of Well [ID-inches]	1¼	2	3	4	6	8
Gallons per lineal foot	0.08	0.17	0.38	0.66	1.5	2.6

MONITORING WELL SAMPLING LOG

Owner/Client AK DOT
 Location FAI
 Sampling Personnel AMJ/BAB
 Weather Conditions 26° Sunny Air Temp. (°F) _____

Project No. A 102519
 Date 10/15/19
 Well MW-1902-80
 Time started 1553
 Time completed 1613

Sample No. MW-1902-80 Time 1613
 Duplicate - Time -
 Equipment Blank - Time -

Purging Method Well development/hurricane Diameter and Type of Casing 2" PVC
 Pumping Start 1553 Approximate Total Depth of Well Below MP (ft.) _____
 Purge Rate (gal./min.) 0.5 Measured Total Depth of Well Below MP (ft.) 84.69
 Pumping End 1605 Depth to Water Below MP (ft.) 10.05
 Pump Set Depth Below MP (ft.) 82.65 Depth to Ice (if frozen) Below MP (ft.) 25.60
 Tubing (ft.) 100 Feet of Water in Well 79.60
 Gallons per foot 0.17
 Gallons in Well 12.60
 Purge Water Volume (gal.) ~~38.55~~ 7.5 + 30
 Purge Water Disposal Containerized

Monument Condition new
 Casing Condition new

Measuring Point (MP) Top of Casing (TOC) Monument type: Stickup Flushmount

Top-of-casing to monument (ft.) 0.56
 Monument to ground surface (ft.) 3.6

- Lock present and operational
- Well name legible on outside of well
- Evidence of frost-jacking N/A

Notes _____

WELL CASING VOLUMES

Diameter of Well [ID-inches]	1¼	2	3	4	6	8
Gallons per lineal foot	0.08	0.17	0.38	0.66	1.5	2.6

APW 1/20/20

Well No.
MW-1902-80

MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSI pro plus 6 Circle: Parameters stabilized OR >3 well volumes purged
 Sample Observations _____
 Notes _____

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 0.2 °C]	Dissolved Oxygen (mg/L) [± 0.1 mg/L]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10mV]	Turbidity (visual)
1553	4.5	4.45	228.8	7.16	129.7	fairly turbid
1556	9.3	0.97	225	7.16	110.0	mildly turbid
1559	4.2	0.45	223.6	7.21	92.9	slightly turbid
1602	4.1	0.31	223.1	7.25	79.8	clear
1605	4.2	0.26	222.9	7.2	67.1	clear

Laboratory _____

	Analysis	Sample Containers	Preservatives
<input checked="" type="checkbox"/>	PFAS EPA 537M/WS-LC-0025	2x250 mL	none
<input type="checkbox"/>	VOC EPA SW8260	3x40 mL	HCl
<input type="checkbox"/>	Metals EPA 200.8	125 mL HDPE	HNO3
<input type="checkbox"/>	DRO AK 102	2x1 L amber	HCl
<input type="checkbox"/>	RRO AK 103	2x1 L amber	HCl
<input type="checkbox"/>			
<input type="checkbox"/>			

WELL DEVELOPMENT LOG

Owner-Client <u>DOT</u>	Well No. <u>MW-1901-150</u>
Location <u>FAI</u>	Project No. <u>102519</u>
Weather <u>18°F Sunny</u>	Date <u>10/16/19</u>
Development Personnel <u>AMJ/BAB</u>	

Diameter and Type of Casing: 2 in PVC

Total Depth of Well **Before** Development (feet below top of casing): 153.11 ft

Depth to Water **Before** Development (feet below top of casing): 11.95 ft

Depth to Screen Top and Bottom (from Construction Log): Top: 147.23 Bottom: 152.59

Development Details

Feet of water in well <u>141.16</u>	Time pumping started <u>1210 pm</u>
Gallons per foot <u>0.17</u>	Flow rate (gal/min) <u>2.73 gal/min</u>
Gallons in well <u>~24</u>	Flow-rate measurement method:
Surge method <u>-</u>	<u>1 gallon container</u>
Pump used <u>diaphragm</u>	Time pumping ended <u>1531</u>
Tubing used (ft) <u>~170</u>	Gallons Pumped <u>234.75 ~ 235 gallons</u>
	Disposal: <u>onsite containment (drums)</u>

Depth to Water **After** Development (feet below top of casing): 152.95 ft

Total Depth of Well **After** Development (feet below top of casing): 11.89 ft

Observations

Time	Water Clarity (Visual)	Time	Water Clarity (Visual)
1110	started pumping, ^{very} turbid	1321	start
1128	stop, sulfur smell	1323	stop
1211	start, very turbid	1326	start
1215	medium turbidity	1328	stop
1221	mild turbidity	1331	start
1230	light turbidity	1333	stop
1239	very light turbidity	1336	start
1245	out of gas/stop	1338	stop
1312	start	1343	start
1315	stop	1345	stop

NOTES: -

(continued on reverse →)

WELL CASING VOLUMES

Diameter of Well [ID-inches]	1¼	2	3	4	6	8
Gallons per lineal foot	0.08	0.17	0.38	0.66	1.5	2.6

MDW

MW-1901-150 cont'd

time	water clarity
1349	start
1350	stop
1353	start
1355	stop
1359	start
1400	stop
1405	start
1406	turbid, stop
1448	start, medium turbidity
1523	turbid stop
1527	very lightly turbid
1531	clear
1450	stop
1455	start
1456	stop
1505	start
1507	stop
1520	start
1523	turbid
1527	very lightly turbid
1531	clear stop

MONITORING WELL SAMPLING LOG

Owner/Client DOT
 Location FAI
 Sampling Personnel BAB ARM
 Weather Conditions Cloudy Air Temp. (°F) 31°

Project No. 102519
 Date 10/18/19
 Well MW-1901-150
 Time started 0915
 Time completed 1027

Sample No. MW-1901-150 Time 1027
 Duplicate - Time -
 Equipment Blank - Time -

Purging Method Mega-Monsoon
whale pump
 Pumping Start 0948
 Purge Rate (gal./min.) 1 gal/min to 1/2 gal/min
 Pumping End 1030
 Pump Set Depth Below MP (ft.) 149.59
 Tubing (ft.) 175
 Diameter and Type of Casing 2" PVC
 Approximate Total Depth of Well Below MP (ft.) 152.59
 Measured Total Depth of Well Below MP (ft.) 152.59
 Depth to Water Below MP (ft.) 12.02
 Depth to Ice (if frozen) Below MP (ft.) 11.89
 Feet of Water in Well 10.87
 Gallons per foot 0.17
 Gallons in Well 23.89
 Purge Water Volume (gal.) 71.69 ~ 39
 Purge Water Disposal drums

Monument Condition good
 Casing Condition good

Measuring Point (MP) Top of Casing (TOC) Monument type: Stickup Flushmount

Top-of-casing to monument (ft.) 0.57
 Monument to ground surface (ft.) 3.33

- Lock present and operational
- Well name legible on outside of well
- Evidence of frost-jacking _____

Notes smells like sulphur

WELL CASING VOLUMES

Diameter of Well [ID-inches]	1/4	2	3	4	6	8
Gallons per lineal foot	0.08	0.17	0.38	0.66	1.5	2.6

APW 1/20/20

Well No.
MW-1901-150

MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSI pro plus β Circle: Parameters stabilized OR >3 well volumes purged
 Sample Observations _____
 Notes _____

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 0.2 °C]	Dissolved Oxygen (mg/L) [± 0.1 mg/L]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10mV]	Turbidity (visual)
940	4.1	3.66	243.2	4.99	272.2	slightly turbid
946						
949	4.1	3.66	246.3	4.99	272.2	slightly turbid
0953	4.1	0.53	204.3	5.93	168.6	clear
1002	4.1	0.34	203.7	6.57	141.7	clear
1009	4.1	0.27	203.5	6.96	125.9	clear
1012	4.1	0.26	203.5	7.06x	119.4	clear
1015	4.1	0.25	203.5	7.13x	113.9	clear
1018	4.1	0.32	203.0	7.18x	112.4	clear
1021	4.1	0.30	203.4	7.23	117.5	clear
1024	4.2	0.39	203.8	7.26	118.9	clear
1027						

Laboratory _____

	Analysis	Sample Containers	Preservatives
<input checked="" type="checkbox"/>	PFAS EPA 537M/WS-LC-0025	2x250 mL	none
<input type="checkbox"/>	VOC EPA SW8260	3x40 mL	HCl
<input type="checkbox"/>	Metals EPA 200.8	125 mL HDPE	HNO3
<input type="checkbox"/>	DRO AK 102	2x1 L amber	HCl
<input type="checkbox"/>	RRO AK 103	2x1 L amber	HCl
<input type="checkbox"/>			

Well No.
MW-1901-150

WELL DEVELOPMENT LOG

Owner-Client AK-DOT Well No. MW-1901-80
 Location FAI Project No. 100519
 Weather clear 17°F sunny Date 10/16/19
 Development Personnel AUT/BAB

Diameter and Type of Casing: 2 in PVC
 Total Depth of Well **Before** Development (feet below top of casing): 82.69 Feet
 Depth to Water **Before** Development (feet below top of casing): 11.79 ft
 Depth to Screen Top and Bottom (from Construction Log): Top: 78.1 Bottom: 83.37

Development Details

Feet of water in well 70.9 Time pumping started 11:04
 Gallons per foot 0.17 Flow rate (gal/min) 4.71 gal/min
 Gallons in well 11.93 Flow-rate measurement method: 1 gallon container
 Surge method surge block Time pumping ended ~~11:25~~ 11:28
 Pump used Hurricane Gallons Pumped 38.2
 Tubing used (ft) 160 Disposal: containerized on site (drains)

Depth to Water **After** Development (feet below top of casing): 82.55 + 1.14 = 83.55
 Total Depth of Well **After** Development (feet below top of casing): 11.75 ft

Observations

Time	Water Clarity (Visual)	Time	Water Clarity (Visual)
11:10	very turbid		
11:15	turbid		
11:18	turbid		
11:20	light turbid		
11:25	almost clear		
11:28	clear		

NOTES: _____

WELL CASING VOLUMES

Diameter of Well [ID-inches]	1¼	2	3	4	6	8
Gallons per lineal foot	0.08	0.17	.38	0.66	1.5	2.6

MWB

MONITORING WELL SAMPLING LOG

Owner/Client AKDOT
 Location FAI
 Sampling Personnel SAB/AMJ
 Weather Conditions Sunny Air Temp. (°F) 27°

Project No. 102519
 Date 10/16/19
 Well MW-1901-80
 Time started 1305
 Time completed 1329
1340

Sample No. MW-1901-80 Time 1340
 Duplicate _____ Time -
 Equipment Blank MW-1901-80-EB Time -

Purging Method hurricane + well development Diameter and Type of Casing 2" PVC
 Pumping Start 1306 Approximate Total Depth of Well Below MP (ft.) 80
 Purge Rate (gal./min.) 0.5 Measured Total Depth of Well Below MP (ft.) 83.55
 Pumping End 1324 Depth to Water Below MP (ft.) 11.75
1324 Depth to Ice (if frozen) Below MP (ft.) -
 Pump Set Depth Below MP (ft.) 82.55 Feet of Water in Well 76.8
 Tubing (ft.) 105 Gallons per foot 0.17
 Gallons in Well 12.20
 Purge Water Volume (gal.) 36.62 + 6 gals
 Purge Water Disposal Containerized 17

Monument Condition good, new
 Casing Condition good

Measuring Point (MP) Top of Casing (TOC) Monument type: Stickup Flushmount

Top-of-casing to monument (ft.) 0.58
 Monument to ground surface (ft.) 3.4

- Lock present and operational
- Well name legible on outside of well
- Evidence of frost-jacking N/A

Notes Approximately 34.2 gals were purged during well development

WELL CASING VOLUMES

Diameter of Well [ID-inches]	1 1/4	2	3	4	6	8
Gallons per lineal foot	0.08	0.17	0.38	0.66	1.5	2.6

APW 1/20/20

Well No.
MW-1901-80

MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSI pro plus 8 Circle: Parameters stabilized OR >3 well volumes purged
 Sample Observations _____
 Notes purge volume includes well development

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 0.2 °C]	Dissolved Oxygen (mg/L) [± 0.1 mg/L]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10mV]	Turbidity (visual)
1306	4.3	6.03	227.1	5.23	271.8	turbid
1311	4.2	0.98	226.1	6.01	216.0	slightly turbid
1315	4.2	0.71	226.1	6.06	188.6	slightly turbid
1318	4.2	0.56	225.6	6.62	177.3	clearish
1321	4.2	0.58	225.4	6.75	170.1	clear
1324	4.2	0.45	225.1	6.90	160.6	clear
1340	sampled					

Laboratory _____

	Analysis	Sample Containers	Preservatives
<input checked="" type="checkbox"/>	PFAS EPA 537M/WS-LC-0025	2x250 mL	none
<input type="checkbox"/>	VOC EPA SW8260	3x40 mL	HCl
<input type="checkbox"/>	Metals EPA 200.8	125 mL HDPE	HNO3
<input type="checkbox"/>	DRO AK 102	2x1 L amber	HCl
<input type="checkbox"/>	RRO AK 103	2x1 L amber	HCl
<input type="checkbox"/>			

Well No.

MW-1906-80

Water Level Datalogger Field Data Form

Monitoring Well <u>MW-9701-12</u> Logger Type <u>Selinst Levelogger F30/mvc</u>	Conducted By <u>ALF</u> Serial Number <u>0031053412</u> Data Downloaded? <u>yes / no n/a</u> Time Synced? <u>yes / no</u>
Initial Visit Date <u>10-15-19</u> Initial Visit Time <u>13:30</u>	Last Survey TOC _____ GS @ Last Survey _____ Previous Min DTW _____
Previous Max DTW <u>—</u>	
Does casing need to be cut: <u>Y</u> / N Is Re-Survey required <u>Y</u> / <u>N</u> <small>(ΔTOC more than 0.06' from last survey)</small>	If Y do not proceed until surveyor is on-site. If Y, do not proceed until surveyor is on-site.

Non-Survey Related Data

Block 1: Non-Survey Data

Date / Time	<u>10-15-19</u>	<u>13:35</u>	
GS->TOM	<u>-1.25</u>	+/- _____	estimated error, if other than +/- 0.021'
TOM->TOC	<u>-0.20</u>	+/- _____	estimated error, if other than +/- 0.021'
TOC Elevation	<u>—</u>	Calculated from GS, GS->TOM, and TOM->TOC	
DTW from TOC	<u>8.23</u>	+/- _____	estimated error, if other than +/- 0.01'
Measured Cable Length	<u>10.97</u>	+/- _____	estimated error, if other than +/- 0.021'

(Required for initial installation of all DLs, otherwise every time the DL is pulled)

Block 1 Notes Well Depth = 11.91 ft. b.t.c. Cut casing on next survey.

Survey Related Data

Block 2: Riser Change

To be completed when the length of the riser is changed, either by cut or adding casing.

Date / Time	_____		
GS->TOM	_____	+/- _____	estimated error, if other than +/- 0.021'
TOM->TOC	_____	+/- _____	estimated error, if other than +/- 0.021'
TOC Elevation	Surveyed, error will be +/- 0.01'		
DTW from TOC	_____	+/- _____	estimated error, if other than +/- 0.01'

Block 2 Notes _____

Block 3: Survey

To be completed any time the TOC is surveyed.

Date / Time	_____		
GS->TOM	_____	+/- _____	estimated error, if other than +/- 0.021'
TOM->TOC	_____	+/- _____	estimated error, if other than +/- 0.021'
TOC Elevation	Surveyed, error will be +/- 0.01'		
DTW from TOC	_____	+/- _____	estimated error, if other than +/- 0.01'
Measured Cable Length	_____	+/- _____	estimated error, if other than +/- 0.021'

Block 3 Notes _____

Miscellaneous Notes: Logger programmed for readings every 6 hours. Start time 13:00 on 10-15-19. Deployed Barologger in MW-1901-40 monument. Barologger programmed to take reading every 6 hours w/ start time 13:00 on 10-15-19.

MW

Water Level Datalogger Field Data Form

Monitoring Well <u>MW-9701-12</u>	Conducted By <u>BAB</u>
Logger Type RT-100 GW WL-16	Serial Number <u>0031053912</u>
(Circle Type) LT-500 HOBO	Data Downloaded? <u>(yes) no</u>
LT-700 Other <u>LTF30</u>	Time Synced? <u>yes / no</u>
Initial Visit Date <u>12/11/19</u>	Last Survey TOC _____
Initial Visit Time <u>1350</u>	GS @ Last Survey _____
Previous Max DTW _____	Previous Min DTW _____
Does casing need to be cut: <u>Y</u> / N	If Y do not proceed until surveyor is on-site.
Is Re-Survey required <u>Y</u> / N	If Y, do not proceed until surveyor is on-site.
<small>(ΔTOC more than 0.06' from last survey)</small>	

Non-Survey Related Data

Block 1: Non-Survey Data

Date / Time	<u>1356 12/11/2019</u>	
GS->TOM	<u>flush</u>	+/- _____ estimated error, if other than +/- 0.021'
TOM->TOC	<u>-0.2</u>	+/- _____ estimated error, if other than +/- 0.021'
TOC Elevation	<u>_____</u>	Calculated from GS, GS->TOM, and TOM->TOC
DTW from TOC	<u>8.41</u>	+/- _____ estimated error, if other than +/- 0.01'
Measured Cable Length	<u>_____</u>	+/- _____ estimated error, if other than +/- 0.021'
<small>(Required for Initial Installation of all DLs, otherwise every time the DL is pulled)</small>		

Block 1 Notes

Survey Related Data

Block 2: Riser Change To be completed when the length of the riser is changed, either by cut or adding casing.

Date / Time	_____	
GS->TOM	_____	+/- _____ estimated error, if other than +/- 0.021'
TOM->TOC	_____	+/- _____ estimated error, if other than +/- 0.021'
TOC Elevation	_____	Surveyed, error will be +/- 0.01'
DTW from TOC	_____	+/- _____ estimated error, if other than +/- 0.01'

Block 2 Notes

Block 3: Survey To be completed any time the TOC is surveyed.

Date / Time	_____	
GS->TOM	_____	+/- _____ estimated error, if other than +/- 0.021'
TOM->TOC	_____	+/- _____ estimated error, if other than +/- 0.021'
TOC Elevation	_____	Surveyed, error will be +/- 0.01'
DTW from TOC	_____	+/- _____ estimated error, if other than +/- 0.01'
Measured Cable Length	_____	+/- _____ estimated error, if other than +/- 0.021'

Block 3 Notes

Miscellaneous Notes:

Historical data to be determined before arriving on-site.

MBA

Water Level Datalogger Field Data Form

Monitoring Well <u>MW-19 01-40</u>	Conducted By <u>BAB</u>
Logger Type RT-100 GW WL-16	Serial Number <u>00 1104557</u>
(Circle Type) LT-500 HOBO	Data Downloaded? <u>yes</u> / no
LT-700 Other <u>LT-5F</u>	Time Synced? yes / <u>no</u>
Initial Visit Date <u>12/11/19</u>	Last Survey TOC _____
Initial Visit Time <u>12:50</u>	GS @ Last Survey _____
Previous Max DTW <u>-</u>	Previous Min DTW _____
Does casing need to be cut: Y / N	If Y do not proceed until surveyor is on-site.
Is Re-Survey required Y / N	If Y, do not proceed until surveyor is on-site.
<small>(ΔTOC more than 0.06' from last survey)</small>	

Non-Survey Related Data

Block 1: Non-Survey Data

Date / Time	<u>1502, 12/11/19</u>	
GS->TOM	<u>---</u>	+/- _____ estimated error, if other than +/- 0.021'
TOM->TOC	<u>---</u>	+/- _____ estimated error, if other than +/- 0.021'
TOC Elevation	<u>---</u>	Calculated from GS, GS->TOM, and TOM->TOC
DTW from TOC	<u>---</u>	+/- _____ estimated error, if other than +/- 0.01'
Measured Cable Length	<u>---</u>	+/- _____ estimated error, if other than +/- 0.021'
<small>(Required for initial installation of all DLs, otherwise every time the DL is pulled)</small>		

Block 1 Notes

Survey Related Data

Block 2: Riser Change To be completed when the length of the riser is changed, either by cut or adding casing.

Date / Time	<u>---</u>	
GS->TOM	<u>---</u>	+/- _____ estimated error, if other than +/- 0.021'
TOM->TOC	<u>---</u>	+/- _____ estimated error, if other than +/- 0.021'
TOC Elevation	<u>---</u>	Surveyed, error will be +/- 0.01'
DTW from TOC	<u>---</u>	+/- _____ estimated error, if other than +/- 0.01'

Block 2 Notes

Block 3: Survey To be completed any time the TOC is surveyed.

Date / Time	<u>---</u>	
GS->TOM	<u>---</u>	+/- _____ estimated error, if other than +/- 0.021'
TOM->TOC	<u>---</u>	+/- _____ estimated error, if other than +/- 0.021'
TOC Elevation	<u>---</u>	Surveyed, error will be +/- 0.01'
DTW from TOC	<u>---</u>	+/- _____ estimated error, if other than +/- 0.01'
Measured Cable Length	<u>---</u>	+/- _____ estimated error, if other than +/- 0.021'

Block 3 Notes

Miscellaneous Notes:

Historical data to be determined before arriving on-site.

MDW

Water Level Datalogger Field Data Form

Monitoring Well <u>MGJ-9701-12</u> Logger Type RT-100 GW WL-16 (Circle Type) LT-500 HOBO LT-700 Other <u>LL-F30</u> Initial Visit Date <u>5-21-20</u> Initial Visit Time <u>13:00</u> Previous Max DTW <u>—</u> Does casing need to be cut: <input checked="" type="radio"/> Y / N Is Re-Survey required Y / N	Conducted By <u>ALF</u> Serial Number <u>1053472 / 11045574</u> Data Downloaded? <input checked="" type="radio"/> yes / no Time Synced? <input checked="" type="radio"/> yes / no Last Survey TOC <u>430.95</u> GS @ Last Survey <u>431.907</u> Previous Min DTW <u>—</u> If Y do not proceed until surveyor is on-site. If Y, do not proceed until surveyor is on-site.
--	--

(ATOC more than 0.06' from last survey)

Non-Survey Related Data

Block 1: Non-Survey Data

Date / Time	<u>5-21-20 13:04</u>		
GS->TOM	<u>~flush</u>	+/-	estimated error, if other then +/- 0.021'
TOM->TOC	<u>-0.15</u>	+/-	estimated error, if other then +/- 0.021'
TOC Elevation	<u>—</u>		Calculated from GS, GS->TOM, and TOM->TOC
DTW from TOC	<u>6.76</u>	+/-	estimated error, if other then +/- 0.01'
Measured Cable Length	<u>—</u>	+/-	estimated error, if other then +/- 0.021'

(Required for initial installation of all DLS, otherwise every time the DL is pulled)

Block 1 Notes Downloaded Barologger also.

Survey Related Data

Block 2: Riser Change To be completed when the length of the riser is changed, either by cut or adding casing.

Date / Time	_____		
GS->TOM	_____	+/-	estimated error, if other then +/- 0.021'
TOM->TOC	_____	+/-	estimated error, if other then +/- 0.021'
TOC Elevation	_____		Surveyed, error will be +/- 0.01'
DTW from TOC	_____	+/-	estimated error, if other then +/- 0.01'

Block 2 Notes _____

Block 3: Survey To be completed any time the TOC is surveyed.

Date / Time	_____		
GS->TOM	_____	+/-	estimated error, if other then +/- 0.021'
TOM->TOC	_____	+/-	estimated error, if other then +/- 0.021'
TOC Elevation	_____		Surveyed, error will be +/- 0.01'
DTW from TOC	_____	+/-	estimated error, if other then +/- 0.01'
Measured Cable Length	_____	+/-	estimated error, if other then +/- 0.021'

Block 3 Notes _____

Miscellaneous Notes: _____

Historical data to be determined before arriving on-site.

MDN

MONITORING WELL SAMPLING LOG

Owner/Client FAI
 Location FAI
 Sampling Personnel CAB
 Weather Conditions Sunny Air Temp. (°F) 60

Project No. 102519-013
 Date 6/25/2020
 Well MW-1901-150
 Time started 1040
 Time completed 1236

Sample No. MW-1901-150 Time 1210
 Duplicate — Time —
 Equipment Blank — Time —

Pump Mega Monsoon Pro
 Purging Method portable / dedicated pump
 Pumping Start 1150
 Purge Rate (gal/min) 100 L/min
 Pumping End 1210

Diameter and Type of Casing 2" PVC
 Approximate Total Depth of Well Below MP (ft.) 150
 Measured Total Depth of Well Below MP (ft.) 152.94
 Depth to Water Below MP (ft.) 6.45
 Depth to Ice (if frozen) Below MP (ft.) —
 Feet of Water in Well 146.49
 Gallons per foot 0.17
 Gallons in Well 24.9
 Purge Water Volume (gal.) 5 gal ~~18.45~~
 Purge Water Disposal 55 gal drum / NRC

Pump Set Depth Below MP (ft.) 150
 KuriTec Tubing (ft.) 10
 TruPoly Tubing (ft.) 310

Monument Condition Good
 Casing Condition Good
 Wiring Condition N/A
 (dedicated pumps)

Measuring Point (MP) Top of Casing (TOC)

Monument type: Stickup / Flushmount
 Measurement method: Rod & level / Tape measure

Top-of-casing to monument (ft.) 0.55
 Monument to ground surface (ft.) 3.40

Datalogger type n/a
 Datalogger serial # n/a
 Measured cable length (ft.) n/a

- Lock present and operational N/A
- Well name legible on outside of well Inside
- Evidence of frost-jacking N/A

Notes —————

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1/4	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

MDN

Well No. MW-1901-150

MONITORING WELL SAMPLING LOG

Field Parameter Instrument
 Sample Observations
 Notes

YSI D

Circle one: Parameters stabilized or >3 well volumes purged

3x^{uv is} 74.71

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [±10%]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
1155	6.2	0.54	210.8	7.56	12.2	Clear
1158	5.9	0.37	209.2	7.48	24.2	Slightly turbid
1201	5.2	0.39	209.9	7.54	25.0	Slightly turbid
1204	5.2	0.38	209.6	7.55	25.1	Very slightly turbid
1207	5.2	0.38	209.2	7.56	26.1	Clear
1210	Sample					

Laboratory Eurofins TestAve

	Analysis	Sample Containers	Preservatives	Dup
<input checked="" type="checkbox"/>	PEAS 5371	2 HOPE	-	<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>

MDU

Well No. MW-1901-150

MONITORING WELL SAMPLING LOG

Owner/Client FAI
 Location FA#
 Sampling Personnel CAB
 Weather Conditions Sunny Air Temp. (°F) 60

Project No. 102519-013
 Date 6/25/2020
 Well MW-1901-80
 Time started 1237
 Time completed 1340

Sample No. MW-1901-80 Time 1322
 Duplicate — Time —
 Equipment Blank — Time —

Pump Mezz Monsoon
 Purging Method portable / dedicated pump
 Pumping Start 1245
 Purge Rate (gal./min.) 0.61 L/m
 Pumping End 1322
 Pump Set Depth Below MP (ft.) 81
 KuriTec Tubing (ft.) —
 TruPoly Tubing (ft.) 90

Diameter and Type of Casing 2" PVC
 Approximate Total Depth of Well Below MP (ft.) 80
 Measured Total Depth of Well Below MP (ft.) 83.54
 Depth to Water Below MP (ft.) 6.33
 Depth to Ice (if frozen) Below MP (ft.) —
 Feet of Water in Well 77.21
 Gallons per foot 0.17
 Gallons in Well 13.13
 Purge Water Volume (gal.) 6 gal or 22.71 L
 Purge Water Disposal 55 gallon Drum / NRC

Monument Condition Good
 Casing Condition Good
 Wiring Condition N/A
 (dedicated pumps)

Measuring Point (MP) Top of Casing (TOC)

Monument type: Stickup / Flushmount
 Measurement method: Rod & level / Tape measure

Top-of-casing to monument (ft.) 0.52
 Monument to ground surface (ft.) 3.42

Datalogger type n/a
 Datalogger serial # n/a
 Measured cable length (ft.) n/a

Lock present and operational N/A
 Well name legible on outside of well (Inside)
 Evidence of frost-jacking N/A

Notes _____

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1¼	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

MDW

Well No. MW-1901-80

MONITORING WELL SAMPLING LOG

360V=39.37

Field Parameter Instrument YSE D
 Sample Observations _____
 Notes _____

Circle one: Parameters stabilized or >3 well volumes purged

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [±10%]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
1251	6.6	0.76	233.2	7.14	59.1	Slightly turbid
1254	6.5	0.85	231.5	7.25	25.2	Very Slightly turbid
1258	6.0	0.87	228.5	7.30	3.6	Clear
1301	6.0	0.68	228.4	7.34	-15.9	Clear
1304	5.8	0.36	227.0	7.37	-31.6	Clear
1307	6.0	0.58	229.1	7.40	-45.4	Clear
1310	6.1	0.52	229.2	7.42	-56.4	Clear
1313	5.9	0.52	227.0	7.45	-60.2	Clear
1316	6.0	0.50	228.4	7.44	-72.3	Clear
1319	5.9	0.50	227.6	7.45	-75.9	Clear
1320	Sample					

Laboratory EuroFins / Test American

	Analysis	Sample Containers	Preservatives	Dup
<input checked="" type="checkbox"/>	PFAS @537.1M	2 x 250mL HDPE	—	<input type="checkbox"/>
<input type="checkbox"/>	_____	_____	_____	<input type="checkbox"/>
<input type="checkbox"/>	_____	_____	_____	<input type="checkbox"/>
<input type="checkbox"/>	_____	_____	_____	<input type="checkbox"/>
<input type="checkbox"/>	_____	_____	_____	<input type="checkbox"/>
<input type="checkbox"/>	_____	_____	_____	<input type="checkbox"/>

MDN

Well No. MW-1901-80

MONITORING WELL SAMPLING LOG

Owner/Client FAI
 Location FAI
 Sampling Personnel CAB
 Weather Conditions Sunny Air Temp. (°F) 60

Project No. 102519-013
 Date 6/25/2020
 Well MW-1901-40
 Time started 1340
 Time completed 1430

Sample No. MW-1901-40 Time 1415
 Duplicate - Time -
 Equipment Blank - Time -

Pump Mega Monsoon
 Purging Method portable / dedicated pump
 Pumping Start 1352
 Purge Rate (gal/min) 0.82 L/min
 Pumping End 1415
 Pump Set Depth Below MP (ft.) 41
 KuriTec Tubing (ft.) -
 TruPoly Tubing (ft.) 50

Diameter and Type of Casing 2" PVC
 Approximate Total Depth of Well Below MP (ft.) 40
 Measured Total Depth of Well Below MP (ft.) 43.37
 Depth to Water Below MP (ft.) 6.46
 Depth to Ice (if frozen) Below MP (ft.) -
 Feet of Water in Well 36.91
 Gallons per foot 0.17
 Gallons in Well 6.28
 Purge Water Volume (gal.) ~5 gal or 18.93L
 Purge Water Disposal 55 gal drum / NRC

Monument Condition Good
 Casing Condition Good
 Wiring Condition N/A
 (dedicated pumps)

Measuring Point (MP) Top of Casing (TOC)

Monument type: Stickup / Flushmount
 Measurement method: Rod & level / Tape measure

Top-of-casing to monument (ft.) 0.56
 Monument to ground surface (ft.) 3.40

Datalogger type n/a
 Datalogger serial # n/a
 Measured cable length (ft.) n/a

- Lock present and operational N/A
- Well name legible on outside of well Inside
- Evidence of frost-jacking N/A

Notes _____

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1¼	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

MDN

Well No. MW-1901-40

MONITORING WELL SAMPLING LOG

32 UV = 18.84

Field Parameter Instrument YSI D Circle one: Parameters stabilized or >3 well volumes purged
Sample Observations _____
Notes _____

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [±10%]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
1355	5.8	0.36	330.6	7.04	11.8	Very Slightly turbid
1358	5.9	0.30	331.6	7.12	-6.1	Clear
1401	5.5	0.29	328.7	7.15	-21.7	Clear
1404	5.7	0.26	329.6	7.17	-42.7	Clear
1409	5.6	0.26	329.1	7.18	-45.9	Clear
1412	5.7	0.26	331.1	7.19	-51.0	Clear
1415	Sample					

Laboratory Eurofins/TestAmerica

	Analysis	Sample Containers	Preservatives	Dup
<input checked="" type="checkbox"/>	PFAS 537.1m	2 x 250ml HDPE	—	<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>

MDW

Well No. MW-1901-4A

MONITORING WELL SAMPLING LOG

Owner/Client FAI
 Location FAI
 Sampling Personnel CAB
 Weather Conditions Sunny Air Temp. (°F) 60

Project No. 102519-013
 Date 6/25/2020
 Well MW-1901-15
 Time started 1430
 Time completed 1545

Sample No. MW-1901-15 Time 1502
 Duplicate — Time —
 Equipment Blank — Time —

Pump Mega Monsoon
 Purging Method portable / dedicated pump
 Pumping Start 1436
 Purge Rate (gal./min.) 1.02 L/min
 Pumping End 1502
 Pump Set Depth Below MP (ft.) 1456
 KuriTec Tubing (ft.) 25
 TruPoly Tubing (ft.) 25

Diameter and Type of Casing 2" PVC
 Approximate Total Depth of Well Below MP (ft.) 15
 Measured Total Depth of Well Below MP (ft.) 18.56
 Depth to Water Below MP (ft.) 6.56
 Depth to Ice (if frozen) Below MP (ft.) —
 Feet of Water in Well 12.0
 Gallons per foot 0.17
 Gallons in Well 2.04
 Purge Water Volume (gal.) 7 gal. or 26.5L
 Purge Water Disposal 55 gal drum / NRC

Monument Condition Good
 Casing Condition Good
 Wiring Condition (dedicated pumps) N/A

Measuring Point (MP) Top of Casing (TOC)

Monument type: Stickup / Flushmount
 Measurement method: Rod & level / Tape measure

Top-of-casing to monument (ft.) 0.40
 Monument to ground surface (ft.) 3.29

Datalogger type n/a
 Datalogger serial # n/a
 Measured cable length (ft.) n/a

- Lock present and operational Inside CAB
- Well name legible on outside of well Inside
- Evidence of frost-jacking N/A

Notes _____

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1 1/4	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

MDN

Well No. MW-1901-15

MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSE D Circle one: Parameters stabilized or >3 well volumes purged

3mv = 6.12

Sample Observations _____

Notes Orange tint to water

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) <i>0.2</i> [± 3%]	Dissolved Oxygen (mg/L) [± 10%] <i>0.1</i>	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
1441	4.4	0.30	594	6.72	28.4	Clear / orange tint
1444	4.3	0.30	588	6.74	12.7	" / "
1447	4.2	0.36	585	6.74	-11.1	" / "
1450	4.3	0.44	583	6.73	-18.9	" / "
1453	4.2	0.52	580	6.70	-21.8	" / "
1456	4.4	0.53	583	6.69	-22.9	" / "
1459	4.4 <i>4.4</i>	0.54	585	6.68	-22.4	" / Very slight orange tint
1502	Sample					

Laboratory TestAmerica/EuroFins + SGS

	Analysis	Sample Containers	Preservatives	Dup
<input checked="" type="checkbox"/>	PFAS 537.1m	2x250ml HDPE	—	<input type="checkbox"/>
<input checked="" type="checkbox"/>	VOCs (8200)	3x40ml Amber	HCl	<input type="checkbox"/>
<input checked="" type="checkbox"/>	DRO	2x ml Amber	HCl	<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>

MDN

MONITORING WELL SAMPLING LOG

Owner/Client FAI
 Location FAI
 Sampling Personnel CAS
 Weather Conditions Sunny / Partly Cloudy Air Temp. (°F) 60

Project No. 102519-013
 Date 6/25/2020
 Well MW-1902-150
 Time started 1550
 Time completed 1705

Sample No. MW-1902-150 Time 1638
 Duplicate _____ Time _____
 Field Blank Equipment-Blank FB-1902-150 Time 1626

Pump Meq Monsoon
 Purging Method portable / dedicated pump
 Pumping Start 1612
 Purge Rate (gal./min.) 1.02 L/min
 Pumping End 1638
 Pump Set Depth Below MP (ft.) 150
 KuriTec Tubing (ft.) -
 TruPoly Tubing (ft.) 160

Diameter and Type of Casing 2" PVC
 Approximate Total Depth of Well Below MP (ft.) 150
 Measured Total Depth of Well Below MP (ft.) 152.76
 Depth to Water Below MP (ft.) 4.49
 Depth to Ice (if frozen) Below MP (ft.) _____
 Feet of Water in Well 148.27
 Gallons per foot 0.17
 Gallons in Well 25.21
 Purge Water Volume (gal.) 7 gal or 26.5L
 Purge Water Disposal 55 gal drum / NRC

Monument Condition Good
 Casing Condition Good
 Wiring Condition N/A
 (dedicated pumps)

Measuring Point (MP) Top of Casing (TOC)

Monument type: Stickup / Flushmount
 Measurement method: Rod & level / Tape measure

Top-of-casing to monument (ft.) 0.62
 Monument to ground surface (ft.) 3.46

Datalogger type n/a
 Datalogger serial # n/a
 Measured cable length (ft.) n/a

- Lock present and operational N/A
- Well name legible on outside of well Inside
- Evidence of frost-jacking N/A

Notes _____

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1 1/4	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

MDW

Well No. MW1902-150

MONITORING WELL SAMPLING LOG

3uv = 75.63

Field Parameter Instrument YSE D
 Sample Observations -
 Notes -

Circle one: Parameters stabilized or >3 well volumes purged

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) ^{0.2} [± 3%] ^{0.2}	Dissolved Oxygen (mg/L) ^{0.1} [± 10%] ^{0.1}	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
1616	6.1	0.20	210.4	7.57	-108.4	Slightly turbid
1619	6.0	0.17	209.4	7.56	-113.1	Very slightly turbid
1622	5.9	0.18	208.4	7.55	-114.5	Clear
1625	6.1	0.21	209.3	7.54	-115.3	Clear
1627	5.6	0.20	206.6	7.54	-115.3	Clear
1632	5.5	0.20	205.6	7.54	-115.3	Clear
1635	5.6	0.17	206.5	7.55	-116.4	Clear
1638	Sample					

Laboratory Test America / Eurofins

#	Analysis	Sample Containers	Preservatives	Dup	Field Blank
<input checked="" type="checkbox"/>	PFAS 537.1M	2 x 250ml HDPE	-	<input type="checkbox"/>	Field Blank x
<input type="checkbox"/>				<input type="checkbox"/>	
<input type="checkbox"/>				<input type="checkbox"/>	
<input type="checkbox"/>				<input type="checkbox"/>	
<input type="checkbox"/>				<input type="checkbox"/>	
<input type="checkbox"/>				<input type="checkbox"/>	
<input type="checkbox"/>				<input type="checkbox"/>	

MW

MONITORING WELL SAMPLING LOG

Owner/Client FAI
 Location FAI
 Sampling Personnel CAS
 Weather Conditions Rain Air Temp. (°F) 60

Project No. 102519-013
 Date 6/26/2020
 Well MW-1902-80
 Time started 1145
 Time completed 1315

Sample No. MW-1902-80 Time 1304
 Duplicate — Time —
 Equipment Blank — Time —

Pump Mega Monsoon
 Purging Method portable / dedicated pump
 Pumping Start 1159
 Purge Rate (gal./min.) 0.17
 Pumping End 1304
 Pump Set Depth Below MP (ft.) 81.5
 KuriTec Tubing (ft.) —
 TruPoly Tubing (ft.) 90

Diameter and Type of Casing 2" PVC
 Approximate Total Depth of Well Below MP (ft.) 80
 Measured Total Depth of Well Below MP (ft.) 82.28 + 127.8355
 Depth to Water Below MP (ft.) 4.54 / 4.94
 Depth to Ice (if frozen) Below MP (ft.) —
 Feet of Water in Well 78.46 / 78.61
 Gallons per foot 0.17
 Gallons in Well 13.42 / 13.36
 Purge Water Volume (gal.) 13.12 gallons
 Purge Water Disposal 55 gal drum / NRC

Monument Condition N/A Good

Casing Condition Good

Wiring Condition N/A
 (dedicated pumps)

Measuring Point (MP) Top of Casing (TOC)

Monument type: Stickup / Flushmount
 Measurement method: Rod & level / Tape measure

Top-of-casing to monument (ft.) 0.43
 Monument to ground surface (ft.) 3.59

Datalogger type n/a
 Datalogger serial # n/a
 Measured cable length (ft.) n/a

- Lock present and operational
- Well name legible on outside of well
- Evidence of frost-jacking N/A

Notes _____

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1¼	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

MDN

Well No. MW-1902-80

MONITORING WELL SAMPLING LOG

40.08

Field Parameter Instrument YSI D
 Sample Observations -
 Notes -

3 wv = 40.26
 Circle one: Parameters stabilized or >3 well volumes purged

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) <small>± 3%</small>	Dissolved Oxygen (mg/L) <small>± 10%</small>	Conductivity (µS/cm) <small>± 3%</small>	pH <small>± 0.1</small>	ORP (mV) <small>± 10 mV</small>	Water Clarity (visual)
1155	6.8	0.77	233.7	7.39	174.8	Clear
1200	6.4	0.29	229.9	7.37	120.2	Clear
1203	6.0	0.19	227.2	7.38	95.0	Clear
1206	5.8	0.17	225.0	7.39	80.1	Clear
1209	5.8	0.17	225.3	7.40	63.4	Clear
1214	5.5	0.15	223.4	7.45	41.8	Clear
1218	5.7	0.15	224.3	7.43	32.1	Clear
1221	6.0	0.15	226.1	7.43	23.5	Clear
1224	6.0	0.15	226.9	7.45	13.6	Clear
1228	6.3	0.13	228.4	7.45	4.3	Clear
1232	6.1	0.17	226.5	7.47	-5.2	Clear
1236	6.6	0.13	230.3	7.47	-11.9	Clear
1239	6.4	0.13	229.0	7.48	-18.2	Clear
1242	6.2	0.12	228.0	7.49	-23.7	Clear
1245	6.3	0.12	228.4	7.50	-30.3	Clear
1248	6.1	0.14	227.0	7.50	-35.9	Clear
1251	6.0	0.14	226.5	7.52	-41.1	Clear
1254	5.6	0.12	223.9	7.53	-45.8	Clear
1258	5.6	0.12	223.4	7.54	-51.7	Clear
1301	5.5	0.12	223.0	7.55	-55.5	Clear
1304	Sample					

Laboratory TestAmerica/EuroFins

Analysis	Sample Containers	Preservatives	Dup
<input checked="" type="checkbox"/> PEAS S371M	2 x 250ml HDPE	-	<input type="checkbox"/>
<input type="checkbox"/>			<input type="checkbox"/>
<input type="checkbox"/>			<input type="checkbox"/>
<input type="checkbox"/>			<input type="checkbox"/>
<input type="checkbox"/>			<input type="checkbox"/>
<input type="checkbox"/>			<input type="checkbox"/>

MDN

Well No.
Mw-1902-80

MONITORING WELL SAMPLING LOG

Owner/Client FAI
 Location FAI
 Sampling Personnel ADM/CAB
 Weather Conditions Rain Scattered Air Temp. (°F) 60

Project No. 102519-013
 Date 6/26/2020
 Well MW-1902-40
 Time started 1315
 Time completed 1426

Sample No. MW-1902-40 Time 1426
 Duplicate — Time —
 Equipment Blank — Time —

Pump Mega Monsoon
 Purging Method portable / dedicated pump
 Pumping Start 1321
 Purge Rate (gal./min.) 0.17
 Pumping End 1426
 Pump Set Depth Below MP (ft.) 41
 KuriTec Tubing (ft.) —
 TruPoly Tubing (ft.) 50

Diameter and Type of Casing 2" PVC
 Approximate Total Depth of Well Below MP (ft.) 40
 Measured Total Depth of Well Below MP (ft.) 43.21
 Depth to Water Below MP (ft.) 4.91
 Depth to Ice (if frozen) Below MP (ft.) —
 Feet of Water in Well 38.30
 Gallons per foot 0.17
 Gallons in Well 6.51
 Purge Water Volume (gal.) 11gal
 Purge Water Disposal 55gal Steel Drum

Monument Condition Good
 Casing Condition Good
 Wiring Condition N/A
 (dedicated pumps)

Measuring Point (MP) Top of Casing (TOC)

Monument type: Stickup / Flushmount
 Measurement method: Rod & level / Tape measure

Top-of-casing to monument (ft.) 0.59
 Monument to ground surface (ft.) 3.28

Datalogger type n/a
 Datalogger serial # n/a
 Measured cable length (ft.) n/a

- Lock present and operational N/A
- Well name legible on outside of well
- Evidence of frost-jacking N/A

Notes _____

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1¼	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

MDW

Well No. MW-1902-40

MONITORING WELL SAMPLING LOG

3/20/03 = 19.53

Field Parameter Instrument YSI D

Circle one: Parameters stabilized or >3 well volumes purged

Sample Observations temperature fluctuated when sun/rain changed

Notes _____

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [± 10%] <u>0.1</u>	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
1325	6.7	0.14	255.9	7.25	97.3	Clear/Slight orange tint
1328	6.5	0.12	254.9	7.24	85.7	clear
1331	6.5	0.12	265.5	7.26	72.1	clear
1334	6.3	0.14	254.7	7.28	67.2	clear
1337	6.7	0.12	256.9	7.29	41.6	clear
1340	6.5	0.13	256.0	7.31	29.5	clear
1343	6.3	0.11	254.7	7.32	15.1	clear
1346	6.4	0.10	265.5	7.34	0.0	clear
1349	6.3	0.11	254.8	7.35	-10.0	clear
1352	6.0	0.11	253.1	7.36	22.2 -22.2	clear
1355	5.9	0.10	251.9	7.37	-30.5	clear
1359	6.0	0.10	253.4	7.38	-45.4	clear
1402	6.1	0.09	253.9	7.40	-52.6	clear
1405	6.2	0.10	254.1	7.40	-59.3	clear
1408	6.5	0.11	256.3	7.40	-66.4	clear
1411	6.3	0.11	255.0	7.41	-70.5	clear
1414	6.3	0.09	255.5	7.41	-74.6	clear
1417	6.6	0.11	257.6	7.41	-78.3	clear
1420	6.7	0.11	258.3	7.41	-80.9	clear
1423	6.5	0.12	257.2	7.42	-83.6	clear
1426	~SAMPLE~					

Laboratory TestAmerica/EuroFins

	Analysis	Sample Containers	Preservatives	Dup
<input checked="" type="checkbox"/>	PFAS 537.1m	2 x 250ml HDPE	—	<input type="checkbox"/>
<input type="checkbox"/>	_____	_____	_____	<input type="checkbox"/>
<input type="checkbox"/>	_____	_____	_____	<input type="checkbox"/>
<input type="checkbox"/>	_____	_____	_____	<input type="checkbox"/>
<input type="checkbox"/>	_____	_____	_____	<input type="checkbox"/>
<input type="checkbox"/>	_____	_____	_____	<input type="checkbox"/>

MDN

Well No.
Mw-1902-40

MONITORING WELL SAMPLING LOG

Owner/Client FAI
 Location FAI
 Sampling Personnel CAB
 Weather Conditions scattered rain/sun Air Temp. (°F) 65

Project No. 102519-013
 Date 6/26/10
 Well MW-1902-15
 Time started 1447
 Time completed 1620

Sample No. MW-1902-15 Time 1520
 Duplicate MW-2002-15 Time 1510
 Equipment Blank EB-1902-15 Time 1530
FB-1902-15 1540

Pump Mega Monsoon
 Purging Method portable / dedicated pump
 Pumping Start 1442
 Purge Rate (gal./min.) 0.26
 Pumping End 1520
 Pump Set Depth Below MP (ft.) 15
 KuriTec Tubing (ft.) -
 TruPoly Tubing (ft.) 20

Diameter and Type of Casing 2" PVC
 Approximate Total Depth of Well Below MP (ft.) 15
 Measured Total Depth of Well Below MP (ft.) 18.66
 Depth to Water Below MP (ft.) 5.33
 Depth to Ice (if frozen) Below MP (ft.) -
 Feet of Water in Well 13.33
 Gallons per foot 0.17
 Gallons in Well 2.27
 Purge Water Volume (gal.) 10 gallons
 Purge Water Disposal 55 gal drum / NRC

Monument Condition Good
 Casing Condition Good
 Wiring Condition N/A
 (dedicated pumps)

Measuring Point (MP) Top of Casing (TOC)

Monument type: Stickup / Flushmount
 Measurement method: Rod & level / Tape measure

Top-of-casing to monument (ft.) 0.31
 Monument to ground surface (ft.) 3.57

Datalogger type n/a
 Datalogger serial # n/a
 Measured cable length (ft.) n/a

- Lock present and operational N/A
- Well name legible on outside of well
- Evidence of frost-jacking N/A

Notes _____

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1 1/4	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

MDN

Well No. MW-1902-15

MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSF D Circle one: Parameters stabilized or >3 well volumes purged
 Sample Observations _____
 Notes _____

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [± 10%] 0.1	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
1443	5.7	0.50	300.9	7.28	104.5	clear
1447	5.8	0.20	301.9	7.25	75.7	clear
1451	5.7	0.16	303.7	7.29	35.0	clear
1454	6.6	0.15	304.5	7.29	9.9	clear
1458	5.4	0.11	305.9	7.31	-29.3	clear
1501	5.5	0.12	308.6	7.31	-51.7	clear
1505	5.5	0.12	310.3	7.32	-76.9	clear
1508	5.5	0.13	311.2	7.32	-84.3	clear
1511	5.5	0.12	312.1	7.32	-92.8	clear
1514	5.4	0.15	312.8	7.32	-97.0	clear
1517	5.4	0.12	312.2	7.32	-102.1	clear
1620	SAMPLE					

Laboratory Test America/Eurofins & SGS

	Analysis	Sample Containers	Preservatives	Dup	EB	FB
<input checked="" type="checkbox"/>	PFAS S37.1m	2x 250ml HDPE	—	<input checked="" type="checkbox"/>	x	x
<input checked="" type="checkbox"/>	DRO	2x ml Amber	HCl	<input checked="" type="checkbox"/>	x	
<input checked="" type="checkbox"/>	VOCs (8260)	3x 40ml Amber	HCl	<input checked="" type="checkbox"/>	x	
<input type="checkbox"/>				<input type="checkbox"/>		
<input type="checkbox"/>				<input type="checkbox"/>		
<input type="checkbox"/>				<input type="checkbox"/>		

MDN

Well No.
MW-1902-15

Water Level Datalogger Field Data Form

Monitoring Well <u>MW-9701-12</u> Logger Type RT-100 GW WL-16 (Circle Type) LT-500 HOBO LT-700 Other <u>Subinst-LL</u> Initial Visit Date <u>8-26-20</u> Initial Visit Time <u>10:58</u> Previous Max DTW <u>-</u> Does casing need to be cut: <input checked="" type="radio"/> Y / N Is Re-Survey required Y / N <small>(ATOC more than 0.06' from last survey)</small>	Conducted By <u>ALF</u> Serial Number <u>1053412</u> Data Downloaded? <input checked="" type="radio"/> yes / no Time Synced? <input checked="" type="radio"/> yes / no Last Survey TOC <u>430.95</u> GS @ Last Survey <u>431.07</u> Previous Min DTW <u>-</u> If Y do not proceed until surveyor is on-site. If Y, do not proceed until surveyor is on-site.
---	--

Non-Survey Related Data

Block 1: Non-Survey Data

Date / Time	<u>8-26-20 10:58</u>		
GS->TOM	<u>flush</u>	+/- _____	estimated error, if other than +/- 0.021'
TOM->TOC	<u>0.12</u>	+/- _____	estimated error, if other than +/- 0.021'
TOC Elevation	_____	Calculated from GS, GS->TOM, and TOM->TOC	
DTW from TOC	<u>4.64</u>	+/- _____	estimated error, if other than +/- 0.01'
Measured Cable Length	_____	+/- _____	estimated error, if other than +/- 0.021'

(Required for initial installation of all DLs, otherwise every time the DL is pulled)

Block 1 Notes

Survey Related Data

Block 2: Riser Change To be completed when the length of the riser is changed, either by cut or adding casing.

Date / Time	_____		
GS->TOM	_____	+/- _____	estimated error, if other than +/- 0.021'
TOM->TOC	_____	+/- _____	estimated error, if other than +/- 0.021'
TOC Elevation	_____	Surveyed, error will be +/- 0.01'	
DTW from TOC	_____	+/- _____	estimated error, if other than +/- 0.01'

Block 2 Notes

Block 3: Survey To be completed any time the TOC is surveyed.

Date / Time	_____		
GS->TOM	_____	+/- _____	estimated error, if other than +/- 0.021'
TOM->TOC	_____	+/- _____	estimated error, if other than +/- 0.021'
TOC Elevation	_____	Surveyed, error will be +/- 0.01'	
DTW from TOC	_____	+/- _____	estimated error, if other than +/- 0.01'
Measured Cable Length	_____	+/- _____	estimated error, if other than +/- 0.021'

Block 3 Notes

Miscellaneous Notes:

Historical data to be determined before arriving on-site.

MDW

MONITORING WELL SAMPLING LOG

Owner/Client DOT + PF FAI
 Location FAI FTP
 Sampling Personnel AmJ and ARM
 Weather Conditions cloudy snow Air Temp. (°F) high 20s

Project No. 102519-015
 Date 10/27/20
 Well MW-1901-15
 Time started 1300
 Time completed 1400

Sample No. MW-1901-15 Time 1340
 Duplicate MW-2901-15 Time 1335
 Equipment Blank EB-15 Time 1350

Pump Hurricane
 Purging Method portable / dedicated pump
 Pumping Start 1322
 Purge Rate (gal./min.) 0.5 gal/min
 Pumping End 1351

Diameter and Type of Casing 2" PVC
 Approximate Total Depth of Well Below MP (ft.)
 Measured Total Depth of Well Below MP (ft.) 18.37
 Depth to Water Below MP (ft.) 12.42
 Depth to Ice (if frozen) Below MP (ft.)
 Feet of Water in Well 5.95
 Gallons per foot 0.17
 Gallons in Well 1.01
 Purge Water Volume (gal.) 14.5 gal
 Purge Water Disposal Drums

Pump Set Depth Below MP (ft.) ~10
 KuriTec Tubing (ft.) ~15
 TruPoly Tubing (ft.)

Monument Condition good
 Casing Condition good
 Wiring Condition N/A
 (dedicated pumps)

Measuring Point (MP) Top of Casing (TOC)

Monument type: Stickup / Flushmount
 Measurement method: Rod & level / Tape measure

Top-of-casing to monument (ft.) 0.39
 Monument to ground surface (ft.) 3.06

Datalogger type n/a
 Datalogger serial # n/a
 Measured cable length (ft.) n/a

- Lock present and operational N/A
- Well name legible on outside of well
- Evidence of frost-jacking none

Notes none

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1¼	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

MDW

Well No.
MW-1901-15

MONITORING WELL SAMPLING LOG

Field Parameter Instrument Ysi B Circle one: *Parameters stabilized* or >3 well volumes purged

Sample Observations none

Notes none

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [±10%] <u>0.1</u>	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
<u>1324</u>	<u>6.1</u>	<u>4.92</u>	<u>659</u>	<u>6.52</u>	<u>122.6</u>	<u>brown/whisty</u>
<u>1328</u>	<u>6.2</u>	<u>0.92</u>	<u>640</u>	<u>6.56</u>	<u>107.6</u>	<u>slightly brown</u>
<u>1331</u>	<u>6.2</u>	<u>0.61</u>	<u>631</u>	<u>6.58</u>	<u>105.6</u>	<u>clear</u>
<u>1334</u>	<u>6.2</u>	<u>0.59</u>	<u>629</u>	<u>6.59</u>	<u>103.3</u>	<u>clear</u>
<u>1337</u>	<u>6.2</u>	<u>0.44</u>	<u>619</u>	<u>6.61</u>	<u>95.7</u>	<u>clear</u>

Laboratory SGS + Test America

Analysis	Sample Containers	Preservatives	Dup
<u>PFAS</u>	<u>2</u>	<u>---</u>	<input checked="" type="checkbox"/>
<u>VOC</u>	<u>3</u>	<u>HCl</u>	<input checked="" type="checkbox"/>
<u>DRD</u>	<u>2</u>	<u>HCl</u>	<input checked="" type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>

MDN

Well No. MW-1901-15

MONITORING WELL SAMPLING LOG

Owner/Client DOT & PF FAI
 Location FAI FTP
 Sampling Personnel AMJ and ARM
 Weather Conditions Cloudy snow Air Temp. (°F) high 20s

Project No. 102519-015
 Date 10/27/20
 Well MW-1901-40
 Time started 1225
 Time completed 1310

Sample No. MW-1901-40
 Duplicate ~~_____~~
 Equipment Blank ~~_____~~

Time 1307 Field blank FB-40
 Time ~~_____~~ 1304
 Time ~~_____~~

Pump Hurricane
 Purging Method portable / dedicated pump
 Pumping Start 1233
 Purge Rate (gal./min.) 0.5 gal/min
 Pumping End 1308
 Pump Set Depth Below MP (ft.) ~35
 KuriTec Tubing (ft.) ~40
 TruPoly Tubing (ft.) _____

Diameter and Type of Casing 2" PVC
 Approximate Total Depth of Well Below MP (ft.) _____
 Measured Total Depth of Well Below MP (ft.) 43.18
 Depth to Water Below MP (ft.) 12.45
 Depth to Ice (if frozen) Below MP (ft.) _____
 Feet of Water in Well 30.73
 Gallons per foot 0.17
 Gallons in Well 5.22
 Purge Water Volume (gal.) 17.5 gal
 Purge Water Disposal Drums

Monument Condition good

Casing Condition good

Wiring Condition N/A
 (dedicated pumps)

Measuring Point (MP) Top of Casing (TOC)

Monument type: Stickup / Flushmount
 Measurement method: Rod & level / Tape measure

Top-of-casing to monument (ft.) 0.55
 Monument to ground surface (ft.) 3.24

Datalogger type n/a
 Datalogger serial # n/a
 Measured cable length (ft.) n/a

- Lock present and operational N/A
- Well name legible on outside of well
- Evidence of frost-jacking none

Notes none

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1 1/4	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

MDW

Well No.
MW-1901-40

MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSI B Circle one: *Parameters stabilized* or >3 well volumes purged
 Sample Observations none
 Notes none

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [±10%]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
1235	4.3	0.45	287.2	6.91	120.6	clear
1238	4.2	0.24	302.4	7.01	54.4	" "
1243	4.2	0.19	303.4	7.05	12.7	" "
1249	4.1	0.16	302.7	7.09	-16.5	" "
1252	4.2	0.15	302.6	7.10	-26.2	" "
1255	4.2	0.16	302.5	7.11	-33.2	" "
1258	4.2	0.20	302.3	7.12	-38.2	" "
1301	4.2	0.27	302.6	7.12	-44.3	" "
1304	4.2	0.29	302.5	7.11	-47.2	" "
1307	Sample					

Laboratory SGS Test America

	Analysis	Sample Containers	Preservatives	Dup
<input checked="" type="checkbox"/>	<u>PFAS</u>	<u>2</u>	<u>none</u>	<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>

MDN

Well No.
MW-1901-40

MONITORING WELL SAMPLING LOG

Owner/Client DOT + PF FAI
 Location FAI FTP
 Sampling Personnel AMJ and ARM
 Weather Conditions cloudy + snow Air Temp. (°F) high 20s

Project No. 102519-015
 Date 10/27/20
 Well MW-1901-80
 Time started 1100
 Time completed 1220

Sample No. MW-1901-80 Time 1214
 Duplicate ~~_____~~ Time ~~_____~~
 Equipment Blank ~~_____~~ Time ~~_____~~

Pump Hurricane
 Purging Method (portable) / dedicated pump
 Pumping Start 1136
 Purge Rate (gal./min.) 1 gal/min
 Pumping End 1215

Diameter and Type of Casing 2" PVC
 Approximate Total Depth of Well Below MP (ft.) _____
 Measured Total Depth of Well Below MP (ft.) 83.39
 Depth to Water Below MP (ft.) 12.44
 Depth to Ice (if frozen) Below MP (ft.) _____
 Feet of Water in Well 70.95
 Gallons per foot 0.17
 Gallons in Well 12.06
 Purge Water Volume (gal.) 39 gal

Pump Set Depth Below MP (ft.) ~75
 KuriTec Tubing (ft.) ~80
 TruPoly Tubing (ft.) _____

Purge Water Disposal Drums

Monument Condition good

Casing Condition good

Wiring Condition N/A
 (dedicated pumps)

Measuring Point (MP) Top of Casing (TOC)

Monument type: Stickup / Flushmount
 Measurement method: Rod & level / Tape measure

Top-of-casing to monument (ft.) 0.56
 Monument to ground surface (ft.) 3.28 (snow)

Datalogger type n/a
 Datalogger serial # n/a
 Measured cable length (ft.) n/a

- Lock present and operational N/A
- Well name legible on outside of well
- Evidence of frost-jacking none

Notes none

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1¼	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

Well No.
MW-1901-80

MDW

MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSI D Circle one: Parameters stabilized or >3 well volumes purged
 Sample Observations Sulfur smell
 Notes none

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [±10%]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
1151	4.4	2.88	323.9	4.35	297.9	cloudy grey
1155	4.4	0.49	230.7	5.22	105.2	" "
1158	4.4	0.35	230.3	5.56	55.3	" "
1203	4.4	0.25	229.7	6.02	-0.5	clear light grey
1209	4.4	0.18	229.5	6.30	-34.1	clear
1211	4.4	0.18	229.5	6.41	-47.6	clear
1214	sample					

Laboratory ~~SGS~~ Test America

	Analysis	Sample Containers	Preservatives	Dup
<input checked="" type="checkbox"/>	PFAS	2	none	<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>

M.D.N

Well No.
mw-1901-80

MONITORING WELL SAMPLING LOG

Owner/Client DOT+PF FAI
 Location FAI FTP
 Sampling Personnel AMJ and ARM
 Weather Conditions cloudy + snow Air Temp. (°F) high 20's

Project No. 102519-015
 Date 10/27/20
 Well MW-1901-150
 Time started 1000
 Time completed 1100

Sample No. MW-1901-150 Time 1055
 Duplicate ~~_____~~ Time ~~_____~~
 Equipment Blank ~~_____~~ Time ~~_____~~

Pump Hurricane
 Purging Method portable / dedicated pump
 Pumping Start 1030
 Purge Rate (gal./min.) 0.25 gal/min
 Pumping End 1056

Diameter and Type of Casing 2" PVC
 Approximate Total Depth of Well Below MP (ft.) _____
 Measured Total Depth of Well Below MP (ft.) 156.02 ft
 Depth to Water Below MP (ft.) 12.51 ft
 Depth to Ice (if frozen) Below MP (ft.) _____
 Feet of Water in Well 143.51 ft
 Gallons per foot 0.17 gal
 Gallons in Well 24.39 gal
 Purge Water Volume (gal.) ~6.5 gal
 Purge Water Disposal Drums

Pump Set Depth Below MP (ft.) ~145 ft
 KuriTec Tubing (ft.) ~3 ft
 TruPoly Tubing (ft.) ~150 ft

Monument Condition good
 Casing Condition good
 Wiring Condition N/A
 (dedicated pumps)

Measuring Point (MP) Top of Casing (TOC)

Monument type: Stickup / Flushmount
 Measurement method: Rod & level / Tape measure

Top-of-casing to monument (ft.) 0.54
 Monument to ground surface (ft.) 3.26
 (snow)

Datalogger type n/a
 Datalogger serial # n/a
 Measured cable length (ft.) n/a

- Lock present and operational N/A
- Well name legible on outside of well
- Evidence of frost-jacking none

Notes ADAR

parameters not stabilized, flag analytical results J

WELL CASING VOLUMES

Diameter of Well (ID-inches)	CMT	1/4	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

MDW

Well No.
MW-1901-150

MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSI B Circle one: Parameters stabilized or >3 well volumes purged
 Sample Observations sulfur smell
 Notes none

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [± 10%]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
1030	3.6	0.82	205.9	5.47	135	clear grey sediment
1033	3.4	0.43	204.5	6.19	99.1	" "
1038	3.6	0.35	205.1	6.71	67.2	clear light grey
1041	3.5	0.29	205.3	6.97	68.5	" "
1044	3.5	0.28	205.1	7.05	68.2	" "
1047	3.5	0.24	205.1	7.14	65.9	" "
1050	3.5	0.21	204.7	7.19*	60.2	clear
1055	Sample					

Laboratory ~~SGS~~ Test America

	Analysis	Sample Containers	Preservatives	Dup
<input checked="" type="checkbox"/>	PFAS	2	none	<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>

*parameters not stabilized

MDW

Well No.
MW-1901-150

MONITORING WELL SAMPLING LOG

Owner/Client DOT & PF FAI
 Location FAI FTP
 Sampling Personnel AMJ and ARM
 Weather Conditions Foggy cloudy Air Temp. (°F) 20.5

Project No. 102519-015
 Date 10/28/20
 Well MW-1902-15
 Time started 1300
 Time completed 1400

Sample No. MW-1902-15 Time 1333
 Duplicate MW-2902-15 Time 1343
 Equipment Blank EB-15-2 Time 1350

Pump Hurricane
 Purging Method portable / dedicated pump
 Pumping Start 1305
 Purge Rate (gal./min.) 0.5 gal/min
 Pumping End 1351
 Pump Set Depth Below MP (ft.) ~14
 KuriTec Tubing (ft.) ~20
 TruPoly Tubing (ft.) —

Diameter and Type of Casing 2" PVC
 Approximate Total Depth of Well Below MP (ft.) —
 Measured Total Depth of Well Below MP (ft.) 18.56
 Depth to Water Below MP (ft.) 11.47
 Depth to Ice (if frozen) Below MP (ft.) —
 Feet of Water in Well 7.09
 Gallons per foot 0.17
 Gallons in Well 1.21
 Purge Water Volume (gal.) 3.62 ~23 gal
 Purge Water Disposal Drums

Monument Condition good
 Casing Condition good
 Wiring Condition N/A
 (dedicated pumps)

Measuring Point (MP) Top of Casing (TOC)

Monument type: Stickup / Flushmount
 Measurement method: Rod & level / Tape measure

Top-of-casing to monument (ft.) 0.32
 Monument to ground surface (ft.) 3.44 (snow)

Datalogger type n/a
 Datalogger serial # n/a
 Measured cable length (ft.) n/a

- Lock present and operational N/A
- Well name legible on outside of well
- Evidence of frost-jacking none

Notes none

WELL CASING VOLUMES

Diameter of Well (ID-Inches)	CMT	1 1/4	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSI B Circle one: Parameters stabilized or >3 well volumes purged
 Sample Observations none
 Notes none

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [±10%] <i>0.1</i>	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
1306	5.8	0.23	414.1	7.03	-80.9	cloudy
1321	5.9	0.20	426.8	7.02	-90.3	clear
1324	5.8	0.22	428.1	7.02	-92.3	" "
1327	5.9	0.23	430.0	7.02	-94.3	" "
1330	5.8	0.27	436.1	7.02	-96.1	" "

Laboratory SGS + Test America

Analysis	Sample Containers	Preservatives	Dup
<input checked="" type="checkbox"/> PFAS	2	none	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> PRD	2	HCl	<input type="checkbox"/>
<input checked="" type="checkbox"/> VOL	3	HCl	<input type="checkbox"/>
<input type="checkbox"/>			<input type="checkbox"/>
<input type="checkbox"/>			<input type="checkbox"/>
<input type="checkbox"/>			<input type="checkbox"/>

MDN

MONITORING WELL SAMPLING LOG

Owner/Client DOT+PF FAI
 Location FAI FTP
 Sampling Personnel AMJ and ARM
 Weather Conditions partly cloudy Air Temp. (°F) ~20°F
Foggy

Project No. 102519-015
 Date 10/28/20
 Well MW-1902-40
 Time started 1230
 Time completed 1315

Sample No. MW-1902-40 Time 1254
 Duplicate ~~_____~~ Time ~~_____~~
 Equipment Blank ~~_____~~ Time ~~_____~~

Pump Hurricane
 Purging Method portable / dedicated pump
 Pumping Start 1240
 Purge Rate (gal./min.) 0.5 gal/min
 Pumping End 1255
 Pump Set Depth Below MP (ft.) ~35
 KuriTec Tubing (ft.) ~40
 TruPoly Tubing (ft.) _____

Diameter and Type of Casing 2" PVC
 Approximate Total Depth of Well Below MP (ft.) _____
 Measured Total Depth of Well Below MP (ft.) 43.10
 Depth to Water Below MP (ft.) 11.02
 Depth to Ice (if frozen) Below MP (ft.) _____
 Feet of Water in Well 32.08
 Gallons per foot 0.17
 Gallons in Well 5.45
 Purge Water Volume (gal.) 11.312 (7.5 gal)
 Purge Water Disposal Drums

Monument Condition good

Casing Condition good

Wiring Condition N/A
 (dedicated pumps)

Measuring Point (MP) Top of Casing (TOC)

Monument type: Stickup / Flushmount
 Measurement method: Rod & level / Tape measure

Top-of-casing to monument (ft.) 0.59
 Monument to ground surface (ft.) 3.28

Datalogger type n/a
 Datalogger serial # n/a
 Measured cable length (ft.) n/a

- Lock present and operational - N/A
- Well name legible on outside of well
- Evidence of frost-jacking none

Notes none

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1/4	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

MDW

Well No.

MW-1902-40

MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSI B Circle one: Parameters stabilized or >3 well volumes purged
Sample Observations none
Notes none

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [± 10%] <u>0.1</u>	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
<u>1238</u>	<u>3.7</u>	<u>0.81</u>	<u>252.7</u>	<u>7.09</u>	<u>94.2</u>	<u>clear</u>
<u>1243</u>	<u>3.7</u>	<u>0.30</u>	<u>255.3</u>	<u>7.25</u>	<u>-38.2</u>	<u>clear</u>
<u>1247</u>	<u>3.7</u>	<u>0.22</u>	<u>255.2</u>	<u>7.33</u>	<u>-66.0</u>	<u>clear</u>
<u>1250</u>	<u>3.7</u>	<u>0.24</u>	<u>255.0</u>	<u>7.32</u>	<u>-75.0</u>	<u>clear</u>
<u>1253</u>	<u>3.7</u>	<u>0.24</u>	<u>254.8</u>	<u>7.34</u>	<u>-74.2</u>	<u>clear</u>

Laboratory ~~SGS~~ TestAmerica

	Analysis	Sample Containers	Preservatives	Dup
<input checked="" type="checkbox"/>	<u>PEAS</u>	<u>2</u>	<u>none</u>	<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>

MDW

Well No.
MW-1902-40

MONITORING WELL SAMPLING LOG

Owner/Client DOT+PF FAI
 Location FAI FTP
 Sampling Personnel AMJ and ARM
 Weather Conditions partly cloudy Air Temp. (°F) ~20°F
Foggy

Project No. 102519-015
 Date 10/28/20
 Well MW-1902-80
 Time started 1140
 Time completed 1230

Sample No. MW-1902-80 Time 1220
 Duplicate ~~_____~~ Time ~~_____~~
 Equipment Blank ~~_____~~ Time ~~_____~~

Pump Hurricane
 Purging Method portable / dedicated pump
 Pumping Start 1200
 Purge Rate (gal./min.) 0.5 gal/min
 Pumping End 1221
 Pump Set Depth Below MP (ft.) ~75
 KuriTec Tubing (ft.) ~80
 TruPoly Tubing (ft.) _____

Diameter and Type of Casing 2" PVC
 Approximate Total Depth of Well Below MP (ft.) _____
 Measured Total Depth of Well Below MP (ft.) 83.46
 Depth to Water Below MP (ft.) 11.26
 Depth to Ice (if frozen) Below MP (ft.) _____
 Feet of Water in Well 72.20
 Gallons per foot 0.17
 Gallons in Well 12.2827
 Purge Water Volume (gal.) 36.83 ^{M10.5}
 Purge Water Disposal Drums

Monument Condition good
 Casing Condition good
 Wiring Condition N/A
 (dedicated pumps)

Measuring Point (MP) Top of Casing (TOC)

Monument type: Stickup / Flushmount
 Measurement method: Rod & level / Tape measure

Top-of-casing to monument (ft.) 0.43
 Monument to ground surface (ft.) 3.43

Datalogger type n/a
 Datalogger serial # n/a
 Measured cable length (ft.) n/a

- Lock present and operational - N/A
- Well name legible on outside of well
- Evidence of frost-jacking none

Notes none

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1 1/4	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

Well No.
MW-1902-80

MDN

MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSI B Circle one: Parameters stabilized or >3 well volumes purged
 Sample Observations sulfur smell
 Notes none

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [±10%] <u>0.1</u>	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
1156	3.3	0.99	219.9	7.30	73.4	cloudy
1201	3.3	0.48	221.5	7.36	0.8	cloudy
1204	3.3	0.43	221.7	7.38	-28.4	clear
1207	3.3	0.34	221.9	7.42	-60.9	clear
1212	3.4	0.31	222.0	7.46	-68.7	clear
1215	3.3	0.36	221.9	7.47	-70.2	clear

Laboratory SGS Test America

	Analysis	Sample Containers	Preservatives	Dup
<input checked="" type="checkbox"/>	<u>PFAS</u>	<u>2</u>	<u>none</u>	<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>

MDN

Well No.
MW-1902-80

MONITORING WELL SAMPLING LOG

Owner/Client DOT & PF FAI
 Location FAI FTP
 Sampling Personnel AMJ and ARM
 Weather Conditions Foggy Air Temp. (°F) 20

Project No. 102519-015
 Date 10/28/20
 Well MW-1902-150
 Time started 1000
 Time completed 1135

Sample No. MW-1902-150 Time 1130
 Duplicate ~~_____~~ Time ~~_____~~
 Equipment Blank ~~_____~~ Time ~~_____~~

Pump Hurricane
 Purging Method portable / dedicated pump
 Pumping Start 11:06
 Purge Rate (gal./min.) 0.25 gal/min
 Pumping End 1131
 Pump Set Depth Below MP (ft.) ~145
 KuriTec Tubing (ft.) _____
 TruPoly Tubing (ft.) ~150

Diameter and Type of Casing 2" PVC
 Approximate Total Depth of Well Below MP (ft.) _____
 Measured Total Depth of Well Below MP (ft.) 156.05
 Depth to Water Below MP (ft.) 10.75
 Depth to Ice (if frozen) Below MP (ft.) _____
 Feet of Water in Well 145.34
 Gallons per foot 0.17
 Gallons in Well 24.71
 Purge Water Volume (gal.) 24.72 ~6 gal
 Purge Water Disposal DWMS

Monument Condition good
 Casing Condition good
 Wiring Condition N/A
 (dedicated pumps)

Measuring Point (MP) Top of Casing (TOC)

Monument type: Stickup / Flushmount
 Measurement method: Rod & level / Tape measure

Top-of-casing to monument (ft.) 0.61
 Monument to ground surface (ft.) 3.36 (snow)

Datalogger type n/a
 Datalogger serial # n/a
 Measured cable length (ft.) n/a

- Lock present and operational N/A
- Well name legible on outside of well
- Evidence of frost-jacking none

Notes none

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1¼	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

Well No.

MW-1901-150

MDN

MONITORING WELL SAMPLING LOG

Field Parameter Instrument YS1B Circle one: Parameters stabilized or >3 well volumes purged
 Sample Observations strong sulfur smell
 Notes none

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) +1- [±10%] Dilution	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
1111	2.9	0.89	201.7	6.22	-30.8	black
1114	3.0	0.60	201.0	6.98	-19.5	black grey
1116	3.3	0.55	200.5	7.07	-17.9	grey cloudy
1121	3.1	0.46	199.9	7.14	-14.9	cloudy grey
1125	3.1	0.47	200.0	7.17	-13.9	clear slight grey

Laboratory ~~SGS~~ Test America

Analysis	Sample Containers	Preservatives	Dup
<input checked="" type="checkbox"/> PFAS	2	—	<input type="checkbox"/>
<input type="checkbox"/>			<input type="checkbox"/>
<input type="checkbox"/>			<input type="checkbox"/>
<input type="checkbox"/>			<input type="checkbox"/>
<input type="checkbox"/>			<input type="checkbox"/>
<input type="checkbox"/>			<input type="checkbox"/>
<input type="checkbox"/>			<input type="checkbox"/>

MDW

Well No.
MW-1902-150

MONITORING WELL SAMPLING LOG

Owner/Client FAI DOT&PF
 Location FAI FTP Monitoring Wells
 Sampling Personnel APW, JKR
 Weather Conditions overcast Air Temp. (°F) 22

Project No. 102519-015
 Date 1-18-2020
 Well MW-1901-15
 Time started 10:20
 Time completed 12:00

Sample No. MW-1901-15 Time 11:40
 Duplicate — Time —
 Equipment Blank — Time —

Pump Hurricane
 Purging Method portable / dedicated pump
 Pumping Start 11:10
 Purge Rate (gal./min.) .5
 Pumping End 11:40
 Pump Set Depth Below MP (ft.) 16'
 KuriTec Tubing (ft.) 24'
 TruPoly Tubing (ft.) —

Diameter and Type of Casing 2"
 Approximate Total Depth of Well Below MP (ft.) 15'
 Measured Total Depth of Well Below MP (ft.) 18.41
 Depth to Water Below MP (ft.) 9.63'
 Depth to Ice (if frozen) Below MP (ft.) —
 Feet of Water in Well 8.78
 Gallons per foot .17
 Gallons in Well 1.5
 Purge Water Volume (gal.) 15
 Purge Water Disposal 55 gal drone on site

Monument Condition good
 Casing Condition good
 Wiring Condition —
 (dedicated pumps)

Measuring Point (MP) Top of Casing (TOC)

Monument type: Stickup / Flushmount
 Measurement method: Rod & level / Tape measure

Top-of-casing to monument (ft.) .45
 Monument to ground surface (ft.) 3.08

Datalogger type n/a
 Datalogger serial # n/a
 Measured cable length (ft.) n/a

- Lock present and operational
- Well name legible on outside of well
- Evidence of frost-jacking none

Notes —

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1¼	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

MW

Well No.
MW-1901-15

MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSI B Circle one: Parameters stabilized or >3 well volumes purged ^{4.5}
Sample Observations _____
Notes _____

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [±10%]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
11:14	4.2	0.67	647	6.54	85.3	slight/turbid
11:17	4.0	0.61	641	6.53	78.9	
11:20	4.0	1.05	634	6.53	74.7	clear
11:23	4.0	1.51	629	6.54	72.5	clear
11:26	3.9	1.59	631	6.54	70.5	/
11:29	3.9	1.74	631	6.54	68.5	
11:32	3.9	1.63	633	6.55	67.0	
11:35	4.0	1.76	633	6.55	65.1	
11:38	3.9	1.75	633	6.55	64.1	
11:40	sample					

Laboratory SGS/Test America

<input checked="" type="checkbox"/>	Analysis	Sample Containers	Preservatives	Dup
<input checked="" type="checkbox"/>	VOC		HCL	<input type="checkbox"/>
<input checked="" type="checkbox"/>	DRO		HCL	<input type="checkbox"/>
<input checked="" type="checkbox"/>	PFAS		-	<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>

MDN

Well No. MW-1901-15

MONITORING WELL SAMPLING LOG

Owner/Client FAI DOT&PF
 Location FAI FTP Monitoring Wells
 Sampling Personnel APW - JKR
 Weather Conditions Overcast Air Temp. (°F) 27°

Project No. 102519-015
 Date 1-18-21
 Well MW-1902-15
 Time started 12:05
 Time completed 13:05

Sample No. MW-1902-15 Time 12:40
 Duplicate MW-2902-15 Time 12:50
 Equipment Blank ER-1902-15 Time 13:00

Pump Hartigan
 Purging Method portable / dedicated pump
 Pumping Start 12:15
 Purge Rate (gal./min.) 0.5
 Pumping End 12:50
 Pump Set Depth Below MP (ft.) 16'
 KuriTec Tubing (ft.) 36'
 TruPoly Tubing (ft.) —

Diameter and Type of Casing 2"
 Approximate Total Depth of Well Below MP (ft.) 15'
 Measured Total Depth of Well Below MP (ft.) 18.58
 Depth to Water Below MP (ft.) 8.99
 Depth to Ice (if frozen) Below MP (ft.) —
 Feet of Water in Well 10.09
 Gallons per foot .17
 Gallons in Well 1.7
 Purge Water Volume (gal.) 17.5
 Purge Water Disposal 55-gal drums on-site

Monument Condition good
 Casing Condition good
 Wiring Condition (dedicated pumps) n/a

Measuring Point (MP) Top of Casing (TOC)

Monument type: Stickup / Flushmount
 Measurement method: Rod & level / Tape measure

Top-of-casing to monument (ft.) 0.32
 Monument to ground surface (ft.) 2.43

Datalogger type n/a
 Datalogger serial # n/a
 Measured cable length (ft.) n/a

- NA Lock present and operational
- Well name legible on outside of well
- Evidence of frost-jacking none

Notes _____

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1/4	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

MDN

Well No.
MW-1902-15

MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSI B Circle one: Parameters stabilized or >3 well volumes purged ^{5.1}
 Sample Observations _____
 Notes _____

+/-0.2°C +/-0.1 **FIELD PARAMETERS [stabilization criteria]**

Time	Temp. (°C) [± 3%] ^(P)	Dissolved Oxygen (mg/L) [± 10%] ^(P)	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
12:19	8.8	0.87	287.9	7.35	-23.4	clear
12:22	3.8	0.31	300.8	7.31	-44.2	
12:25	3.8	0.22	305.9	7.28	-54.1	
12:28	3.8	0.20 0.19	312.4	7.24	-60.0	
12:31	3.9	0.14	314.1	7.24	-63.0	
12:34	3.9	0.13	315.9	7.23	-65.9	
12:37	3.9	0.12	317.1	7.22	-67.7	
12:40	Sample					

Laboratory SGS/Test America

	Analysis	Sample Containers	Preservatives	Dup
<input checked="" type="checkbox"/>	VOC		HCl	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	DRO		HCl	<input checked="" type="checkbox"/>
<input type="checkbox"/>	PFAS			<input checked="" type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>

MDN

Well No.
MW-1902-15

MONITORING WELL SAMPLING LOG

Owner/Client FAI DOT&PF
 Location FAI FTP Monitoring Wells
 Sampling Personnel APW, JKR
 Weather Conditions overcast Air Temp. (°F) 27°

Project No. 102519-015
 Date 1-18-21
 Well MW-1902-40
 Time started 13:10
 Time completed 14:25

Sample No. MW-1902-40 Time 14:13
 Duplicate — Time —
 Equipment Blank — Time —

Pump Hurricane XL
 Purging Method portable / dedicated pump
 Pumping Start 13:20
 Purge Rate (gal./min.) 0.5
 Pumping End 14:13
 Pump Set Depth Below MP (ft.) 41'
 KuriTec Tubing (ft.) 45'
 TruPoly Tubing (ft.) —

Diameter and Type of Casing 2"
 Approximate Total Depth of Well Below MP (ft.) 40'
 Measured Total Depth of Well Below MP (ft.) 43.11'
 Depth to Water Below MP (ft.) 7.88
 Depth to Ice (if frozen) Below MP (ft.) —
 Feet of Water in Well 35.23
 Gallons per foot .17
 Gallons in Well 8.7 6.0
 Purge Water Volume (gal.) ~2.5
 Purge Water Disposal 55 gal drums on site

Monument Condition good
 Casing Condition good
 Wiring Condition —
 (dedicated pumps)

Measuring Point (MP) Top of Casing (TOC)

Monument type: Stickup / Flushmount
 Measurement method: Rod & level / Tape measure

Top-of-casing to monument (ft.) 0.67
 Monument to ground surface (ft.) 3.28

Datalogger type n/a
 Datalogger serial # n/a
 Measured cable length (ft.) n/a

- Lock present and operational
- Well name legible on outside of well
- Evidence of frost-jacking none

Notes —

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1¼	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

MDN

Well No.
MW-1902-40

MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSI B Circle one: Parameters stabilized or >3 well volumes purged 18
 Sample Observations _____
 Notes _____

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [±10%]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
13:21	3.6	0.18	235.0	7.32	-22.7	clear
13:24	3.6	0.10	235.0	7.39	-45.3	1
13:27						
Pump stopped						
13:32	3.6	0.52	234.5	7.24	54.2	turbid
13:35	3.7	0.19	235.5	7.35	19.1	1
13:38	3.7	0.13	234.8	7.39	-13.7	1
13:41	3.7	0.11	234.6	7.40	-33.1	clear
13:44						
Pump stopped ... Again						
13:48	3.6	0.87	233.2	7.26	39.2	turbid
13:51	3.6	0.10	234.4	7.37	1.0	1
13:54	3.6	0.07	234.1	7.40	-25.6	clear
13:58	3.6	0.06	234.1	7.41	-36.1	1
14:00						
14:03	3.6	0.06	234.2	7.42	-56.2	1
14:06	3.6	0.06	234.4	7.43	-60.9	1
14:09	3.6	0.06	234.3	7.43	-64.0	1
14:12	sample					

Laboratory SOS/Test America

	Analysis	Sample Containers	Preservatives	Dup
<input checked="" type="checkbox"/>	<u>ARO PFAS</u>			<input type="checkbox"/>
<input type="checkbox"/>	<u>KOC</u>			<input type="checkbox"/>
<input type="checkbox"/>	<u>P</u>			<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>

MDN

Well No.
MW-1902-40

MONITORING WELL SAMPLING LOG

Owner/Client FAI DOT&PF
 Location FAI FTP Monitoring Wells
 Sampling Personnel APW, JKR
 Weather Conditions cloudy Air Temp. (°F) 27°

Project No. 102519-015
 Date 1-18-21
 Well MW-1902-80
 Time started 14:20
 Time completed 14:50

Sample No. MW-1902-80 Time 14:45
 Duplicate _____ Time _____
 Equipment Blank _____ Time _____

Pump Hurricane XL
 Purging Method portable / dedicated pump
 Pumping Start 14:32
 Purge Rate (gal./min.) 0.5
 Pumping End 14:46
 Pump Set Depth Below MP (ft.) 81'
 KuriTec Tubing (ft.) 85'
 TruPoly Tubing (ft.) —

Diameter and Type of Casing 2"
 Approximate Total Depth of Well Below MP (ft.) 80'
 Measured Total Depth of Well Below MP (ft.) 83.48
 Depth to Water Below MP (ft.) 8.22
 Depth to Ice (if frozen) Below MP (ft.) —
 Feet of Water in Well 75.26
 Gallons per foot .17
 Gallons in Well 12.8
 Purge Water Volume (gal.) 7 gal.
 Purge Water Disposal 55 gal drums on site

Monument Condition good
 Casing Condition good
 Wiring Condition _____
 (dedicated pumps) _____

Measuring Point (MP) Top of Casing (TOC) Monument type: Stickup / Flushmount
 Measurement method: Rod & level / Tape measure

Top-of-casing to monument (ft.) 0.45 Datalogger type n/a
 Monument to ground surface (ft.) 3.42 Datalogger serial # n/a
 Measured cable length (ft.) n/a

- Lock present and operational
- Well name legible on outside of well
- Evidence of frost-jacking none

Notes _____

WELL CASING VOLUMES

Diameter of Well (ID-inches)	CMT	1¼	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

MDN

Well No.
MW-1902-80

MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSI B
 Sample Observations _____
 Notes _____

38.4

Circle one: Parameters stabilized or >3 well volumes purged

76.8

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [±10%]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
14:32	3.3	0.15	211.8	7.54	-46.9	clear
14:35	3.3	0.10	211.2	7.58	-63.7	/
14:38	3.3	0.09	211.7	7.59	-70.5	
14:41	3.3	0.09	210.8	7.60	-76.3	
14:44	3.3	0.08	210.8	7.60	-79.3	
14:45	same place					

Laboratory SGS/ Test America

	Analysis	Sample Containers	Preservatives	Dup
<input checked="" type="checkbox"/>	PFAS		—	<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>

MDN

MONITORING WELL SAMPLING LOG

Owner/Client FAI DOT&PF
 Location FAI FTP Monitoring Wells
 Sampling Personnel APW, JKR
 Weather Conditions partly cloudy Air Temp. (°F) _____

Project No. 102519-015
 Date 1-18-21
 Well MW-1902-150
 Time started 14:55
 Time completed 15:30

Sample No. MW-1902-150 Time 15:22
 Duplicate _____ Time _____
 Equipment Blank _____ Time _____
Field Blank BA PB-EAT 15:45

Pump Harrison XL
 Purging Method portable / dedicated pump Diameter and Type of Casing 2"
 Pumping Start 15:09 Approximate Total Depth of Well Below MP (ft.) 150
 Purge Rate (gal./min.) 0.5 Measured Total Depth of Well Below MP (ft.) 152.53
 Pumping End 15:25 Depth to Water Below MP (ft.) 7.60
 Depth to Ice (if frozen) Below MP (ft.) _____
 Pump Set Depth Below MP (ft.) 150' Feet of Water in Well 144.93
 KuriTec Tubing (ft.) 155' Gallons per foot 0.17
 TruPoly Tubing (ft.) 155' Gallons in Well 24.6
 Purge Water Volume (gal.) 8
 Purge Water Disposal 55 gal drums on site

Monument Condition good
 Casing Condition good
 Wiring Condition _____
 (dedicated pumps) _____

Measuring Point (MP) Top of Casing (TOC) Monument type: Stickup / Flushmount
 Measurement method: Rod & level / Tape measure
 Top-of-casing to monument (ft.) 0.84 Datalogger type n/a
 Monument to ground surface (ft.) 3.34 Datalogger serial # n/a
 Measured cable length (ft.) n/a

- Lock present and operational
- Well name legible on outside of well
- Evidence of frost-jacking hole

Notes _____

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1/4	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

MDN

Well No.
MW-1902-150

MONITORING WELL SAMPLING LOG

74

Field Parameter Instrument YST B Circle one: Parameters stabilized or >3 well volumes purged
 Sample Observations smells like sulphur
 Notes _____

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [±10%]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
15:08	3.1	0.07	196.9	7.48	-86.0	turbid
15:11	3.1	0.07	196.3	7.51	-101.9	↓
15:14	3.1	0.07	195.5	7.53	-100.6	1/2 clear
15:17	3.1	0.06	195.3	7.54	-94.0	clear
15:20	3.2	0.06	195.4	7.54	-90.8	1
15:22	sample					

Laboratory SGS/ Test America

	Analysis	Sample Containers	Preservatives	Dup
<input checked="" type="checkbox"/>	PFAS			<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>

MDN

Well No.
MW-1902-150

MONITORING WELL SAMPLING LOG

Owner/Client FAI DOT&PF
 Location FAI FTP Monitoring Wells
 Sampling Personnel APW, JKR
 Weather Conditions overcast Air Temp. (°F) 16°

Project No. 102519-015
 Date 1-19-20
 Well MW-1901-40
 Time started 10:20
 Time completed 11:00

Sample No. MW-1901-40 Time 10:52
 Duplicate — Time —
 Equipment Blank — Time —

Pump Hurricane XL
 Purging Method portable / dedicated pump
 Pumping Start 10:30
 Purge Rate (gal./min.) 0.5
 Pumping End 10:53

Diameter and Type of Casing 2"
 Approximate Total Depth of Well Below MP (ft.) 40
 Measured Total Depth of Well Below MP (ft.) 43.21
 Depth to Water Below MP (ft.) 9.71
 Depth to Ice (if frozen) Below MP (ft.) —
 Feet of Water in Well 33.49
 Gallons per foot 0.17
 Gallons in Well 5.7
 Purge Water Volume (gal.) 11.5
 Purge Water Disposal 55 gal drum onsite

Pump Set Depth Below MP (ft.) 41
 KuriTec Tubing (ft.) 46 60'
 TruPoly Tubing (ft.) —

Monument Condition good

Casing Condition good

Wiring Condition —
 (dedicated pumps)

Measuring Point (MP) Top of Casing (TOC)

Monument type: Stickup / Flushmount
 Measurement method: Rod & level / Tape measure

Top-of-casing to monument (ft.) 0.55
 Monument to ground surface (ft.) 3.23

Datalogger type n/a
 Datalogger serial # n/a
 Measured cable length (ft.) n/a

- Lock present and operational
- Well name legible on outside of well
- Evidence of frost-jacking none

Notes —

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1/4"	2"	3"	4"	6"	8"
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

MDW

Well No.
MW-1901-40

MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSI B Circle one: Parameters stabilized or >3 well volumes purged
 Sample Observations _____
 Notes _____

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [±10%]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
10:30	4.2	0.92	289.1	7.03	147.0	clear
10:33	4.1	0.32	294.8	7.08	83.8	|
10:36	4.1	0.25	295.5	7.10	64.4	
10:39	4.1	0.20	296.3	7.11	50.2	
10:42	4.1	0.21	296.7	7.12	43.0	
10:45	4.1	0.21	297.8	7.12	35.3	
10:48	4.1	0.21	298.0	7.12	31.4	
10:51	4.1	0.21	298.3	7.12	28.2	
10:52	Sample					

Laboratory Test America

	Analysis	Sample Containers	Preservatives	Dup
<input checked="" type="checkbox"/>	<u>PFAS</u>			<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>

MDW

Well No.
MW-1901-40

MONITORING WELL SAMPLING LOG

Owner/Client FAI DOT&PF
 Location FAI FTP Monitoring Wells
 Sampling Personnel JKR, APW
 Weather Conditions overcast Air Temp. (°F) 16°

Project No. 102519-015
 Date 1-19-21
 Well MW-1901-80
 Time started 11:05
 Time completed 11:30

Sample No. MW-1901-80 Time 11:23
 Duplicate MW-2901-80 Time 11:13
 Equipment Blank — Time —

Pump Hurricane XL
 Purging Method portable / dedicated pump
 Pumping Start 11:08
 Purge Rate (gal./min.) 0.5
 Pumping End 11:25
 Pump Set Depth Below MP (ft.) 81
 KuriTec Tubing (ft.) 85
 TruPoly Tubing (ft.) 85

Diameter and Type of Casing 2" PVC
 Approximate Total Depth of Well Below MP (ft.) ~80
 Measured Total Depth of Well Below MP (ft.) 83.41
 Depth to Water Below MP (ft.) 9.70
 Depth to Ice (if frozen) Below MP (ft.) -
 Feet of Water in Well 73.71
 Gallons per foot 0.17
 Gallons in Well 12.5
 Purge Water Volume (gal.) 8.5
 Purge Water Disposal 55 gal drum on site

Monument Condition good
 Casing Condition good
 Wiring Condition —
 (dedicated pumps)

Measuring Point (MP) Top of Casing (TOC)

Monument type: Stickup / Flushmount
 Measurement method: Rod & level / Tape measure

Top-of-casing to monument (ft.) 0.58
 Monument to ground surface (ft.) 3.35

Datalogger type n/a
 Datalogger serial # n/a
 Measured cable length (ft.) n/a

- Lock present and operational
- Well name legible on outside of well
- Evidence of frost-jacking None

Notes —

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1/4	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

MDN

Well No.
MW-1901-80

MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSI B

Circle one: Parameters stabilized or >3 well volumes purged

Sample Observations _____

Notes _____

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [±10%]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
11:09	3.6	1.51	220.3	7.28	35.4	clear turbid
11:12	3.6	0.12	218.1	7.49	22.2	|
11:15	3.6	0.10	217.4	7.51	15.6	clear
11:18	3.6	0.09	217.1	7.51	13.6	|
11:21	3.6	0.09	217.1	7.51	12.0	|
11:23	sample					

Laboratory Test America

	Analysis	Sample Containers	Preservatives	Dup
<input checked="" type="checkbox"/>	<u>PFAS</u>			<input checked="" type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>

MDN

Well No.
MW-1901-80

MONITORING WELL SAMPLING LOG

Owner/Client FAI DOT&PF
 Location FAI FTP Monitoring Wells
 Sampling Personnel APW, SKR
 Weather Conditions Overcast Air Temp. (°F) 16°

Project No. 102519-015
 Date 1-19-21
 Well MW-1901-150
 Time started 11:35
 Time completed 11:55

Sample No. MW-1901-150 Time 11:51
 Duplicate — Time —
 Equipment Blank EB-1901-150 Time 12:00 ~~12:00~~
 Field Blank FB2-FAI Time 12:10

Pump Hurricane XL
 Purging Method portable / dedicated pump
 Pumping Start 11:36
 Purge Rate (gal./min.) 0.5
 Pumping End 11:52

Diameter and Type of Casing 2" PVC
 Approximate Total Depth of Well Below MP (ft.) ~150
 Measured Total Depth of Well Below MP (ft.) 152.76
 Depth to Water Below MP (ft.) 9.81
 Depth to Ice (if frozen) Below MP (ft.) —
 Feet of Water in Well 142.9
 Gallons per foot 0.17
 Gallons in Well 24.3
 Purge Water Volume (gal.) 8
 Purge Water Disposal 55 gal drum onsite

Pump Set Depth Below MP (ft.) 150
 KuriTec Tubing (ft.) 155
 TruPoly Tubing (ft.) 155

Monument Condition good

Casing Condition good

Wiring Condition —
 (dedicated pumps)

Measuring Point (MP) Top of Casing (TOC)

Monument type: Stickup / Flushmount
 Measurement method: Rod & level / Tape measure

Top-of-casing to monument (ft.) 0.57
 Monument to ground surface (ft.) 3.30

Datalogger type n/a
 Datalogger serial # n/a
 Measured cable length (ft.) n/a

- Lock present and operational
- Well name legible on outside of well
- Evidence of frost-jacking none

Notes FB: 12:10
FB2-FAI

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1/4	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

Well No.
MW-1901-150

MDN

MONITORING WELL SAMPLING LOG

Field Parameter Instrument Yst B Circle one: Parameters stabilized or >3 well volumes purged

Sample Observations -

Notes -

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [±10%]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
11:37	3.6	0.57	198.4	7.21	25.7	clear
11:40	3.4	0.14	198.3	7.44	22.2	turbid
11:43	3.3	0.11	197.6	7.47	19.5	clear
11:46	3.3	0.11	196.8	7.50	17.6	|
11:49	3.3	0.10	196.4	7.51	16.4	|
11:51	sample					

Laboratory Test America

	Analysis	Sample Containers	Preservatives	Dup
<input checked="" type="checkbox"/>	<u>PPAS</u>		<u>-</u>	<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>

MDN

Well No.
MW-1901-150

Water Level Datalogger Field Data Form

Monitoring Well <u>MW-1901-15</u>	Conducted By <u>ALF</u>
Logger Type RT-100 GW WL-16	Serial Number <u>339051</u>
(Circle Type) LT-500 HOBO	Data Downloaded? <u>yes / no - initial deploy</u>
<u>LT-700</u> Other _____	Time Synced? <u>yes / no</u>
Initial Visit Date <u>2-11-21</u>	Last Survey TOC _____
Initial Visit Time <u>15:30</u>	GS @ Last Survey _____
Previous Max DTW _____	Previous Min DTW _____
Does casing need to be cut: Y / <u>N</u>	If Y do not proceed until surveyor is on-site.
Is Re-Survey required Y / <u>N</u>	If Y, do not proceed until surveyor is on-site.

(ΔTOC more than 0.06' from last survey)

Non-Survey Related Data

Block 1: Non-Survey Data

Date / Time	<u>2-11-21</u> <u>15:30</u>	
GS->TOM	<u>—</u> +/- _____	estimated error, if other than +/- 0.021'
TOM->TOC	<u>0.30</u> +/- _____	estimated error, if other than +/- 0.021'
TOC Elevation	<u>—</u>	Calculated from GS, GS->TOM, and TOM->TOC
DTW from TOC	<u>11.48</u> +/- _____	estimated error, if other than +/- 0.01'
Measured Cable Length	<u>14.34</u> +/- _____	estimated error, if other than +/- 0.021'

(Required for initial installation of all DLs, otherwise every time the DL is pulled)

Block 1 Notes Deployed LT-700, set to log every 6 hrs starting 16:00 2-11-21.

Survey Related Data

Block 2: Riser Change To be completed when the length of the riser is changed, either by cut or adding casing.

Date / Time	_____	
GS->TOM	_____ +/- _____	estimated error, if other than +/- 0.021'
TOM->TOC	_____ +/- _____	estimated error, if other than +/- 0.021'
TOC Elevation	_____	Surveyed, error will be +/- 0.01'
DTW from TOC	_____ +/- _____	estimated error, if other than +/- 0.01'

Block 2 Notes _____

Block 3: Survey To be completed any time the TOC is surveyed.

Date / Time	_____	
GS->TOM	_____ +/- _____	estimated error, if other than +/- 0.021'
TOM->TOC	_____ +/- _____	estimated error, if other than +/- 0.021'
TOC Elevation	_____	Surveyed, error will be +/- 0.01'
DTW from TOC	_____ +/- _____	estimated error, if other than +/- 0.01'
Measured Cable Length	_____ +/- _____	estimated error, if other than +/- 0.021'

Block 3 Notes _____

Miscellaneous Notes: Initial TOC-TOM = 0.44 prior to wanted cap addition, DTW measured after adding wanted cap.

Historical data to be determined before arriving on-site.

MDN

Water Level Datalogger Field Data Form

Monitoring Well <u>MW-9701-12</u> Logger Type RT-100 GW WL-16 (Circle Type) LT-500 HOBO LT-700 Other <u>Subst LL</u> Initial Visit Date <u>15:10</u> Initial Visit Time <u>2-11-21</u> Previous Max DTW _____ Does casing need to be cut: <u>Y</u> / N If Y do not proceed until surveyor is on-site. Is Re-Survey required Y / <u>N</u> or Y If Y, do not proceed until surveyor is on-site. <small>(ΔTOC more than 0.06' from last survey)</small>	Conducted By <u>ALF</u> Serial Number <u>1053615</u> Data Downloaded? <u>yes</u> / no Time Synced? yes / <u>no</u> Last Survey TOC _____ GS @ Last Survey _____ Previous Min DTW _____
---	---

Non-Survey Related Data

Block 1: Non-Survey Data

Date / Time	<u>2-11-21 15:10</u>		
GS->TOM	<u>flush</u>	+/- _____	estimated error, if other than +/- 0.021'
TOM->TOC	<u>0.14</u>	+/- _____	estimated error, if other than +/- 0.021'
TOC Elevation	<u>-</u>		Calculated from GS, GS->TOM, and TOM->TOC
DTW from TOC	<u>7.95</u>	+/- _____	estimated error, if other than +/- 0.01'
Measured Cable Length	<u>-</u>	+/- _____	estimated error, if other than +/- 0.021'
(Required for initial installation of all DLs, otherwise every time the DL is pulled)			
Block 1 Notes	<u>Removed Levellogger from well.</u>		

Survey Related Data

Block 2: Riser Change To be completed when the length of the riser is changed, either by cut or adding casing.

Date / Time	_____		
GS->TOM	_____	+/- _____	estimated error, if other than +/- 0.021'
TOM->TOC	_____	+/- _____	estimated error, if other than +/- 0.021'
TOC Elevation	_____		Surveyed, error will be +/- 0.01'
DTW from TOC	_____	+/- _____	estimated error, if other than +/- 0.01'
Block 2 Notes	_____		

Block 3: Survey To be completed any time the TOC is surveyed.

Date / Time	_____		
GS->TOM	_____	+/- _____	estimated error, if other than +/- 0.021'
TOM->TOC	_____	+/- _____	estimated error, if other than +/- 0.021'
TOC Elevation	_____		Surveyed, error will be +/- 0.01'
DTW from TOC	_____	+/- _____	estimated error, if other than +/- 0.01'
Measured Cable Length	_____	+/- _____	estimated error, if other than +/- 0.021'
Block 3 Notes	_____		

Miscellaneous Notes: Also removed Barologger from MW-1901-40.

Historical data to be determined before arriving on-site.

MDN

MONITORING WELL SAMPLING LOG

Owner/Client FAI DOT&PF
 Location FTP
 Sampling Personnel MXJ
 Weather Conditions Mostly clear Air Temp. (°F) 40

Project No. 102519-015
 Date 4/13/2021
 Well MW-1901-15
 Time started 1608
 Time completed 1730

Sample No. MW-1901-15 Time 1647
 Duplicate MW-1901-115 Time 1657
 Equipment Blank EB-1901-15 Time 1710

Failed Blank FB-1901-15 Time 1621

Purging Method Hurricane pump
 Pumping Start 1614
 Purge Rate (gal./min.) 20.2-23
 Pumping End 1650
 Pump Set Depth Below MP (ft.) ~17.0
 Tubing (ft.) 23

Diameter and Type of Casing 2" PVC
 Approximate Total Depth of Well Below MP (ft.) 15'
 Measured Total Depth of Well Below MP (ft.) 18.68
 Depth to Water Below MP (ft.) 11.74
 Depth to Ice (if frozen) Below MP (ft.) ✓
 Feet of Water in Well 6.94
 Gallons per foot 0.17
 Gallons in Well 1.18
 Purge Water Volume (gal.) ~7.2
 Purge Water Disposal On-site 55-gal drum storage

Monument Condition Good

Casing Condition Good

Measuring Point (MP) Top of Casing (TOC)

Monument type: Stickup Flushmount

Top-of-casing to monument (ft.) 0.30
 Monument to ground surface (ft.) 2.92

- Lock present and operational Not required, in secure area
- Well name legible on outside of well
- Evidence of frost-jacking None

Notes Removed data logger during sampling.
Pump timed out. Replaced battery and corrected issue.

WELL CASING VOLUMES

Diameter of Well [ID-inches]	1 1/4	2	3	4	6	8
Gallons per lineal foot	0.08	0.17	0.38	0.66	1.5	2.6

MW-1901-15
Well No.

MDN

MONITORING WELL SAMPLING LOG

JRP

Field Parameter Instrument YSI pro plus *C* Circle: Parameters stabilized OR >3 well volumes purged
 Sample Observations _____
 Notes _____

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 0.2 °C]	Dissolved Oxygen (mg/L) [± 0.1 mg/L]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10mV]	Turbidity (visual)
1614	<i>started purging</i>					
1617	3.3	0.44	598	6.63	14.2	Turbid
1620	3.2	0.34	609	6.63	16.3	Light turbid
1623	3.2	0.24	615	6.44	13.6	" " "
1620						
1628	3.2	0.42	618	6.41	76.4	<i>Pump failed. New battery</i> Clear
1631	3.1	0.28	621	6.63	41.4	" "
1634	3.1	0.26	623	6.64	31.3	" "
1637	3.2	0.21	626	6.65	22.7	" "
1640	3.1	0.16	628	6.66	12.6	" "
1643	3.1	0.18	628	6.66	11.6	" "
1646	3.1	0.13	629	6.67	11.1	" "
1647	<i>collected sample</i>					

1628

Laboratory SBS / Test America

	Analysis	Sample Containers	Preservatives
<input checked="" type="checkbox"/>	PFAS EPA 537M/WS-LC-0025	2x250 mL	none
<input checked="" type="checkbox"/>	VOC EPA SW8260	3x40 mL	HCl
<input type="checkbox"/>	Metals EPA 200.8	125 mL HDPE	HNO3
<input checked="" type="checkbox"/>	DRO AK 102	2x1 L amber	HCl
<input type="checkbox"/>	RRO AK 103	2x1 L amber	HCl
<input type="checkbox"/>			

MON

MW-1901-15
Well No.

MONITORING WELL SAMPLING LOG

Owner/Client FAI DOT&PF
 Location FTP
 Sampling Personnel MxJ
 Weather Conditions Mostly clear Air Temp. (°F) 40

Project No. 102519-015
 Date 4/13/2021
 Well MW-1901-40
 Time started 1530
 Time completed 1608

Sample No. MW-1901-40 Time 1557
 Duplicate _____ Time _____
 Equipment Blank _____ Time _____

Purging Method Hurricane pump
 Pumping Start 1541
 Purge Rate (gal./min.) 20.2-0.13
 Pumping End 1509 1600 ^{St.R.}
 Pump Set Depth Below MP (ft.) ~41.0
 Tubing (ft.) ~55

Diameter and Type of Casing 2" PVC
 Approximate Total Depth of Well Below MP (ft.) ~40
 Measured Total Depth of Well Below MP (ft.) 43.35
 Depth to Water Below MP (ft.) 11.58
 Depth to Ice (if frozen) Below MP (ft.) /
 Feet of Water in Well 31.77
 Gallons per foot 0.17
 Gallons in Well 5.4
 Purge Water Volume (gal.) ~3.8
 Purge Water Disposal On-site 55-gal drum storage

Monument Condition Good
 Casing Condition Good

Measuring Point (MP) Top of Casing (TOC) Monument type: Stickup Flushmount

Top-of-casing to monument (ft.) 0.56
 Monument to ground surface (ft.) 3.22

- Lock present and operational Not required. In secure area
- Well name legible on outside of well
- Evidence of frost-jacking None

Notes None

WELL CASING VOLUMES

Diameter of Well [ID-inches]	1 1/4	2	3	4	6	8
Gallons per lineal foot	0.08	0.17	0.38	0.66	1.5	2.6

MW-1901-40
Well No.

MDN

MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSI pro plus c Circle: Parameters stabilized OR >3 well volumes purged
 Sample Observations Clear
 Notes None

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 0.2 °C]	Dissolved Oxygen (mg/L) [± 0.1 mg/L]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10mV]	Turbidity (visual)
1541	Started purging					
1544	4.8	0.16	322.8	7.06	-61.9	Light turbid
1547	4.8	0.14	324.7	7.11	-75.4	Clear
1550	4.7	0.13	326.8	7.14	-82.3	" "
1553	4.8	0.12	326.7	7.15	-85.1	" "
1554	4.8	0.10	326.7	7.15	-87.2	" "
1557	collected sample					

Laboratory Test America

Analysis	Sample Containers	Preservatives
<input checked="" type="checkbox"/> PFAS EPA 537MWS-LC-0025	2x250 mL	none
<input type="checkbox"/> VOC EPA SW8260	3x40 mL	HCl
<input type="checkbox"/> Metals EPA 200.8	125 mL HDPE	HNO3
<input type="checkbox"/> DRO AK 102	2x1 L amber	HCl
<input type="checkbox"/> RRO AK 103	2x1 L amber	HCl
<input type="checkbox"/>		

MDN

MW-1901-70
Well No.

MONITORING WELL SAMPLING LOG

Owner/Client FAI DOT&PF
 Location FTP
 Sampling Personnel NXJ
 Weather Conditions Mostly clear Air Temp. (°F) ~40

Project No. 102519-015
 Date 4/13/2021
 Well MW-1901-80
 Time started 1452
 Time completed 1530

Sample No. MW-1901-80 Time 1520
 Duplicate _____ Time _____
 Equipment Blank / Time /

Purging Method Hurricane pump
 Pumping Start 1501
 Purge Rate (gal./min.) ~0.2 - 0.3
 Pumping End 1517
 Pump Set Depth Below MP (ft.) ~80.5
 Tubing (ft.) ~95

Diameter and Type of Casing 2" PVC
 Approximate Total Depth of Well Below MP (ft.) ~80'
 Measured Total Depth of Well Below MP (ft.) 83.49
 Depth to Water Below MP (ft.) 11.57
 Depth to Ice (if frozen) Below MP (ft.) /
 Feet of Water in Well 71.92
 Gallons per foot 0.17
 Gallons in Well ~12
 Purge Water Volume (gal.) ~4.5
 Purge Water Disposal On-site 55-gal drum storage

Monument Condition Good
 Casing Condition Good

Measuring Point (MP) Top of Casing (TOC) Monument type: Stickup Flushmount

Top-of-casing to monument (ft.) 0.55
 Monument to ground surface (ft.) 3.34

- Lock present and operational No lock required. In source area
- Well name legible on outside of well
- Evidence of frost-jacking None

Notes None

WELL CASING VOLUMES

Diameter of Well [ID-inches]	1 1/4	2	3	4	6	8
Gallons per lineal foot	0.08	0.17	0.38	0.66	1.5	2.6

MW-1901-80
Well No.

MDW

MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSI pro plus C Circle: Parameters stabilized OR >3 well volumes purged
 Sample Observations _____
 Notes _____

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 0.2 °C]	Dissolved Oxygen (mg/L) [± 0.1 mg/L]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10mV]	Turbidity (visual)
1501	Started pumping					
1504	4.2	0.09	221.8	7.26	-37.1	Turbid
1507	4.1	0.08	220.3	7.41	-83.3	clear
1510	4.1	0.06	220.0	7.41	-94.0	" "
1513	4.1	0.07	219.9	7.50	-101.8	" "
1514	4.1	0.06	219.9	7.53	-106.1	" "
1519	4.1	0.06	219.8	7.54	-108.7	" "
1520	Collect samples					

Laboratory Test America

	Analysis	Sample Containers	Preservatives
<input checked="" type="checkbox"/>	PFAS EPA 537M/WS-LC-0025	2x250 mL	none
<input type="checkbox"/>	VOC EPA SW8260	3x40 mL	HCl
<input type="checkbox"/>	Metals EPA 200.8	125 mL HDPE	HNO3
<input type="checkbox"/>	DRO AK 102	2x1 L amber	HCl
<input type="checkbox"/>	RRO AK 103	2x1 L amber	HCl
<input type="checkbox"/>			
<input type="checkbox"/>			

MDN

MW-1901-80
Well No.

MONITORING WELL SAMPLING LOG

Owner/Client FAI DOT&PF
 Location FTP
 Sampling Personnel MXT
 Weather Conditions Mostly cloudy Air Temp. (°F) ~40

Project No. 102519-015
 Date 4/13/2021
 Well MW-1901-150
 Time started 1350
 Time completed 1452

Sample No. MW-1901-150 Time 1431
 Duplicate _____ Time _____
 Equipment Blank / Time /

Purging Method Hurricane pump
 Pumping Start 1415
 Purge Rate (gal./min.) ~0.2 → 0.3
 Pumping End 1430
 Pump Set Depth Below MP (ft.) ~150
 Tubing (ft.) ~175

Diameter and Type of Casing 2" PVC
 Approximate Total Depth of Well Below MP (ft.) -150'
 Measured Total Depth of Well Below MP (ft.) 152.79
 Depth to Water Below MP (ft.) 11.67
 Depth to Ice (if frozen) Below MP (ft.) /
 Feet of Water in Well 141.2
 Gallons per foot 0.17
 Gallons in Well ~4 *switch*
 Purge Water Volume (gal.) ~4

Purge Water Disposal On-site 55-gal drum storage
 Monument Condition Monument lid cracked. Functional but needs replaced
 Casing Condition Good

Measuring Point (MP) Top of Casing (TOC) Monument type: Stickup *Flushmount*

Top-of-casing to monument (ft.) 0.56
 Monument to ground surface (ft.) 3.33

- Lock present and operational No lock required. In secure area.
- Well name legible on outside of well
- Evidence of frost-jacking None

Notes None

WELL CASING VOLUMES

Diameter of Well (ID-inches)	1 1/4	2	3	4	6	8
Gallons per lineal foot	0.08	0.17	0.38	0.66	1.5	2.6

MW

MW-1901-150
Well No.

MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSI pro plus C Circle: Parameters stabilized OR >3 well volumes purged
 Sample Observations Clear
 Notes None

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 0.2 °C]	Dissolved Oxygen (mg/L) [± 0.1 mg/L]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10mV]	Turbidity (visual)
1415	<u>Started</u>	<u>pumping</u>				<u>Slightly turbid</u>
1418	<u>4.2</u>	<u>0.07</u>	<u>204.3</u>	<u>7.43</u>	<u>-80.7</u>	" " " "
1421	<u>4.1</u>	<u>0.11</u>	<u>203.4</u>	<u>7.48</u>	<u>-88.5</u>	<u>clear</u>
1424	<u>4.1</u>	<u>0.11</u>	<u>203.2</u>	<u>7.52</u>	<u>-93.7</u>	" "
1427	<u>4.0</u>	<u>0.10</u>	<u>202.9</u>	<u>7.53</u>	<u>-97.2</u>	" "
1430	<u>4.0</u>	<u>0.10</u>	<u>202.8</u>	<u>7.54</u>	<u>-99.8</u>	" "
1431	<u>Collect</u>	<u>Sample</u>				

Laboratory Test America

	Analysis	Sample Containers	Preservatives
<input checked="" type="checkbox"/>	PFAS EPA 537MWS-LC-0025	2x250 mL	none
<input type="checkbox"/>	VOC EPA SW8260	3x40 mL	HCl
<input type="checkbox"/>	Metals EPA 200.8	125 mL HDPE	HNO3
<input type="checkbox"/>	DRO AK 102	2x1 L amber	HCl
<input type="checkbox"/>	RRO AK 103	2x1 L amber	HCl
<input type="checkbox"/>			

MDN

MW-1901-150

Well No.

MONITORING WELL SAMPLING LOG

Owner/Client FAI DOT&PF
 Location FTP
 Sampling Personnel JKR/MXT
 Weather Conditions Mostly clear Air Temp. (°F) ~30°F

Project No. 102519-015
 Date 4/13/2021
 Well MW1902-15
 Time started 9:15
 Time completed 10:25

Sample No. MW-1902-15 Time 10:02
 Duplicate ~~MW-1902-115~~ (MDN) Time ~~10:12~~
 Equipment Blank — Time —

Purging Method Hurricane pump
 Pumping Start 0943
 Purge Rate (gal./min.) ~0.2-0.3
 Pumping End 1001
 Pump Set Depth Below MP (ft.) ~15.0
 Tubing (ft.) ~25'

Diameter and Type of Casing 2" PVC
 Approximate Total Depth of Well Below MP (ft.) 15'
 Measured Total Depth of Well Below MP (ft.) 18.57
 Depth to Water Below MP (ft.) 10.62
 Depth to Ice (if frozen) Below MP (ft.) 1
 Feet of Water in Well 7.95
 Gallons per foot 0.17
 Gallons in Well 1.35
 Purge Water Volume (gal.) ~4.5
 Purge Water Disposal On-site 55-gal drum storage

Monument Condition Good

Casing Condition Good

Measuring Point (MP) Top of Casing (TOC)

Monument type: Stickup Flushmount

Top-of-casing to monument (ft.) 0.31
 Monument to ground surface (ft.) 3.43

- Lock present and operational No lock required. In secure area.
- Well name legible on outside of well
- Evidence of frost-jacking None

Notes A lens of ice present but was able to deploy pump

WELL CASING VOLUMES

Diameter of Well [ID-inches]	1 1/4	2	3	4	6	8
Gallons per lineal foot	0.08	0.17	0.38	0.66	1.5	2.6

MW-1902-15

Well No.

MDN

MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSI pro plus C Circle: Parameters stabilized OR >3 well volumes purged
 Sample Observations Clear
 Notes None

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 0.2 °C]	Dissolved Oxygen (mg/L) [± 0.1 mg/L]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10mV]	Turbidity (visual)
0943	started	purging				
0946	3.2	1.83	284.5	6.83	-55.4	Light turbid
0949	3.2	0.55	237.2	6.96	-76.9	" " "
0952	3.2	0.26	294.3	7.03	-89.5	" " "
0955	3.3	0.21	297.7	7.06	-96.1	" " "
0958	3.3	0.23	298.2	7.08	-98.1	" " "
1001	3.3	0.20	299.8	7.08	-96.6	Mostly clear
1002	Sampler	collected				
1012	Duplicate	collected				

Laboratory SAS / Test America

	Analysis	Sample Containers	Preservatives
<input checked="" type="checkbox"/>	PFAS EPA 537M/WS-LC-0025	2x250 mL	none
<input checked="" type="checkbox"/>	VOC EPA SW8260	3x40 mL	HCl
<input type="checkbox"/>	Metals EPA 200.8	125 mL HDPE	HNO3
<input checked="" type="checkbox"/>	DRO AK 102	2x1 L amber	HCl
<input type="checkbox"/>	RRO AK 103	2x1 L amber	HCl
<input type="checkbox"/>			

MDW

MN-1902-85
Well No.

MONITORING WELL SAMPLING LOG

Owner/Client FAI DOT&PF
 Location FTP
 Sampling Personnel JKR/MXT
 Weather Conditions ~30 Mostly clear Air Temp. (°F) ~30°F

Project No. 102519-015
 Date 4/13/21
 Well MW-1902-40
 Time started 1025
 Time completed 1113

Sample No. MW-1902-40 Time 1055
 Duplicate / Time /
 Equipment Blank / Time /

Purging Method Hurricane pump Diameter and Type of Casing 2" PVC
 Pumping Start 10:37 Approximate Total Depth of Well Below MP (ft.) ~40
 Purge Rate (gal./min.) ~0.2-0.3 Measured Total Depth of Well Below MP (ft.) 42.11
 Pumping End 10:53 Depth to Water Below MP (ft.) 9.90
 Pump Set Depth Below MP (ft.) ~41.5 Depth to Ice (if frozen) Below MP (ft.) -
 Tubing (ft.) ~65' (had to discard some tubing due to disconnection) Feet of Water in Well 32.21
 Gallons per foot 0.17
 Gallons in Well ~5.5
 Purge Water Volume (gal.) ~4
 Purge Water Disposal On-site 55-gal drum storage

Monument Condition Good
 Casing Condition Good

Measuring Point (MP) Top of Casing (TOC) Monument type: Stickup Flushmount

Top-of-casing to monument (ft.) 0.77
 Monument to ground surface (ft.) 3.28

- Lock present and operational no lock required. In sewer area
- Well name legible on outside of well
- Evidence of frost-jacking None

Notes A lens of ice present but was able to deploy pump.

WELL CASING VOLUMES

Diameter of Well [ID-inches]	1 1/4	2	3	4	6	8
Gallons per lineal foot	0.08	0.17	0.38	0.66	1.5	2.6

MW-1902-40
Well No.

MDN

MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSI pro plus Circle: Parameters stabilized OR >3 well volumes purged
 Sample Observations Clear
 Notes None

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 0.2 °C]	Dissolved Oxygen (mg/L) [± 0.1 mg/L]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10mV]	Turbidity (visual)
1037	<i>Started</i>	<i>purging</i>				
1040	3.3	0.20	240.4	7.13	-69.4	light turbid
1043	3.3	0.17	240.9	7.17	-81.3	" " "
10:46	3.8	0.15	240.9	7.21	-82.6	" " "
10:49	3.8	0.14	241.0	7.25	-94.6	clear
10:52	3.9	0.13	241.3	7.27	-97.8	" "
10:55	<i>Sample</i>					

Laboratory Test America

	Analysis	Sample Containers	Preservatives
<input checked="" type="checkbox"/>	PFAS EPA 537MWS-LC-0025	2x250 mL	none
<input type="checkbox"/>	VOC EPA SW8260	3x40 mL	HCl
<input type="checkbox"/>	Metals EPA 200.8	125 mL HDPE	HNO3
<input type="checkbox"/>	DRO AK 102	2x1 L amber	HCl
<input type="checkbox"/>	RRO AK 103	2x1 L amber	HCl
<input type="checkbox"/>			

MDN

MW-1902-40
Well No.

MONITORING WELL SAMPLING LOG

Owner/Client FAI DOT&PF
 Location FTP
 Sampling Personnel JKR/MxJ
 Weather Conditions Mostly cloudy Air Temp. (°F) ~35

Project No. 102519-015
 Date 4/13/2021
 Well MW-1902-80
 Time started 11:13
 Time completed 11:45

Sample No. MW-1902-80 Time 1134
 Duplicate _____ Time _____
 Equipment Blank / Time /

Purging Method Hurricane pump
 Pumping Start 11:15
 Purge Rate (gal./min.) ~0.2-0.3
 Pumping End 11:33
 Pump Set Depth Below MP (ft.) ~81
 Tubing (ft.) ~90

Diameter and Type of Casing 2" PVC
 Approximate Total Depth of Well Below MP (ft.) 80'
 Measured Total Depth of Well Below MP (ft.) 83.46
 Depth to Water Below MP (ft.) ~~10.29~~ 10:20
 Depth to Ice (if frozen) Below MP (ft.) /
 Feet of Water in Well 73.16
 Gallons per foot 0.17
 Gallons in Well ~12.5
 Purge Water Volume (gal.) ~4.5
 Purge Water Disposal On-site 55-gal drum storage

Monument Condition Good

Casing Condition Good

Measuring Point (MP) Top of Casing (TOC)

Monument type: Stickup Flushmount

Top-of-casing to monument (ft.) 0.46
 Monument to ground surface (ft.) 3.42

- Lock present and operational lock not required. In secure area
- Well name legible on outside of well
- Evidence of frost-jacking None

Notes None

WELL CASING VOLUMES

Diameter of Well [ID-inches]	1 1/4	2	3	4	6	8
Gallons per lineal foot	0.08	0.17	0.38	0.66	1.5	2.6

MDN

Well No. MW-1902-80

MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSI pro plus C Circle: Parameters stabilized OR >3 well volumes purged
 Sample Observations Clear
 Notes None

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 0.2 °C]	Dissolved Oxygen (mg/L) [± 0.1 mg/L]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10mV]	Turbidity (visual)
11:16	3.5	0.54	215.1	7.17	-19.4	turbid, grey
11:19	3.5	0.13	215.3	7.27	-76.2	|
11:22	3.5	0.12	215.1	7.37	-95.2	lightly turbid
11:25	3.5	0.12	215.0	7.42	-101.9	|
11:28	3.5	0.10	214.9	7.45	-105.5	clear
11:31	3.5	0.10	214.8	7.47	-108.0	|
11:34	sample					

Laboratory Test America

	Analysis	Sample Containers	Preservatives
<input checked="" type="checkbox"/>	PFAS EPA 537MWS-LC-0025	2x250 mL	none
<input type="checkbox"/>	VOC EPA SW8260	3x40 mL	HCl
<input type="checkbox"/>	Metals EPA 200.8	125 mL HDPE	HNO3
<input type="checkbox"/>	DRO AK 102	2x1 L amber	HCl
<input type="checkbox"/>	RRO AK 103	2x1 L amber	HCl
<input type="checkbox"/>			

MDN

Well No.
MW-1902-80

MONITORING WELL SAMPLING LOG

Owner/Client FAI DOT&PF
 Location FTP
 Sampling Personnel MXJ
 Weather Conditions Mostly cloudy Air Temp. (°F) ~40

Project No. 102519-015
 Date 4/13/2021
 Well MW-1902-150
 Time started 1230
 Time completed 1345

Sample No. MW-1902-150 Time 1319
 Duplicate _____ Time _____
 Equipment Blank _____ Time _____

Purging Method Hurricane pump
 Pumping Start 1303
 Purge Rate (gal./min.) ~0.2 ~0.3
 Pumping End 1318
 Pump Set Depth Below MP (ft.) ~150
 Tubing (ft.) ~175

Diameter and Type of Casing 2" PVC
 Approximate Total Depth of Well Below MP (ft.) 150'
 Measured Total Depth of Well Below MP (ft.) ~~150~~ 152.55
 Depth to Water Below MP (ft.) 9.60
 Depth to Ice (if frozen) Below MP (ft.) /
 Feet of Water in Well 142.95
 Gallons per foot 0.17
 Gallons in Well ~24
 Purge Water Volume (gal.) ~4
 Purge Water Disposal On-site 55-gal drum storage

Monument Condition Good
 Casing Condition Good

Measuring Point (MP) Top of Casing (TOC)

Monument type: Stickup Flushmount

Top-of-casing to monument (ft.) 0.84
 Monument to ground surface (ft.) 3.34

- Lock present and operational No lock required. In secure area.
- Well name legible on outside of well
- Evidence of frost-jacking none

Notes None

WELL CASING VOLUMES

Diameter of Well [ID-inches]	1 1/4	2	3	4	6	8
Gallons per lineal foot	0.08	0.17	0.38	0.66	1.5	2.6

MDW

Well No.
MW-1902-150

MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSI pro plus C Circle: Parameters stabilized OR >3 well volumes purged
 Sample Observations clear with slight sulfur odor
 Notes None

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 0.2 °C]	Dissolved Oxygen (mg/L) [± 0.1 mg/L]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10mV]	Turbidity (visual)
1303	<i>Start purging</i>					
1306	3.4	0.14	201.3	7.78	-159.4	Light turbid
1309	3.6	0.09	200.5	7.83	-172.6	↓ clear
1312	3.6	0.09	200.4	7.81	-171.1	" "
1315	3.6	0.11	200.2	7.79	-168.1	" "
1318	3.4	0.09	200.1	7.77	-167.5	" "
1319	<i>collect sample</i>					

Laboratory Test America

	Analysis	Sample Containers	Preservatives
<input checked="" type="checkbox"/>	PFAS EPA 537MWS-LC-0025	2x250 mL	none
<input type="checkbox"/>	VOC EPA SW8260	3x40 mL	HCl
<input type="checkbox"/>	Metals EPA 200.8	125 mL HDPE	HNO3
<input type="checkbox"/>	DRO AK 102	2x1 L amber	HCl
<input type="checkbox"/>	RRO AK 103	2x1 L amber	HCl
<input type="checkbox"/>			

MUN

MN-1902-150
Well No.



FAI Fire Training Pit

Institutional Controls Checklist

Sump

- 1. Presence or absence of water in the sump: Circle one: Yes/No
- 2. How much water?
 - a. ____ inches from bottom of sump.
 - b. Did you measure from: Bottom of sump / Inside lip of sump grate / Top of sump
- 3. What was the bilge level at time of inspection?
- 4. What was the condition of the bilge level switch and alarm?

Document Signs of:

- 1. Is there any visible signs of erosion: Circle one: Yes/No
- 2. Slope Stability:
 - a. Are there visible cracks? Circle one: Yes/No
 - b. Did there appear to be moisture changes? Circle one: Yes/No
 - c. Is there leaning or turned vegetation? Circle one: Yes/No
- 3. Is there vegetation cover? Circle one: Yes/No
- 4. Are there any visible animal burrows? Circle one: Yes/No
- 5. Does the geomembrane appear to be exposed? Circle one: Yes/No
- 6. Is there exposed woody vegetation? Circle one: Yes/No
- 7. Are there any other irregularities? Circle one: Yes/No
- 8. If you answered “yes” attach photos of your observations.
- 9. Attach two photos from two different angles.

If answered “yes” to any of the above provide additional details here:

Appendix F

Analytical Results

and QA/QC Summary

CONTENTS

- Quality Assurance/Quality Control (QA/QC) Summary
- Eurofins TestAmerica Laboratories, Sacramento (TestAmerica), Vista Analytical Laboratory, and SGS North America, Inc. (SGS) Laboratory Reports
- DEC Laboratory Data Review Checklists (LDRCs)

ACRONYMS

°C	degrees Celsius
DEC	Alaska Department of Environmental Conservation
DRO	diesel range organics
EB	equipment blank
FB	field blank
IDA	isotope dilution analyte
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
LDRC	Laboratory Data Review Checklist
LOD	limit of detection
LOQ	laboratory limit of quantitation
MB	method blank
MDL	method detection limit
MS	matrix spike
MSD	matrix spike duplicate
PAH	polynuclear aromatic hydrocarbon
QA	quality assurance
QC	quality control
RL	reporting limit
RPD	relative percent difference
SGS	SGS North America, Inc.
TB	trip blank
TCLP	toxicity characteristic leaching procedure
TestAmerica	Eurofins TestAmerica Laboratories, Sacramento

QUALITY ASSURANCE (QA) / QUALITY CONTROL (QC) SUMMARY

QA/QC procedures assist in producing data of acceptable quality and reliability. We reviewed the analytical results for laboratory QC samples and conducted our own QA assessment for this project. We reviewed the chain-of-custody records and laboratory receipt forms to check custody was not breached, sample holding times were met, and the samples were properly handled from the point of collection through analysis by the laboratory. Our QA review procedures allowed us to document the accuracy and precision of the analytical data, as well as check the analyses were sufficiently sensitive to detect analytes at levels below regulatory standards.

Laboratory QC procedures included evaluating surrogate and/or isotope dilution analyte (IDA) recoveries, performing continuing calibration checks, and analyzing method blanks (MBs), laboratory control samples (LCSs), and matrix spikes (MSs) to assess accuracy and precision. LCS, LCS duplicate (LCSD), MS, and MS duplicates (MSD), and surrogate and/or IDA recovery analyses were performed to evaluate the accuracy of the analytical process. Analytical precision was assessed by comparing the results of duplicate analyses performed on duplicate-sample, LCS/LCSD, and MS/MSD pairs.

Field QC procedures included collecting field-duplicate samples, and equipment blank (EB) and field blank (FB) samples using laboratory-grade PFAS-free water. Samplers used single-use equipment where practicable to reduce the potential for sample cross-contamination. When single-use equipment was not feasible, equipment blanks were collected using laboratory-grade PFAS-free water.

The laboratory reports contain a case narrative and forms documenting sample-receipt conditions. Details regarding the results of our QA review are presented below. The Eurofins TestAmerica Laboratories, Sacramento (TestAmerica), Vista Analytical Laboratory, and SGS North America, Inc. (SGS) laboratory reports and corresponding Alaska Department of Environmental Conservation (DEC) Laboratory Data Review Checklists (LDRCs) are presented in this appendix, in numerical order. During our review we applied a standardized set of flags indicating estimated data or analytical bias for data brought into question during the review.

Please note, TestAmerica Work Order 320-65103 contains samples for other tasks. These analytical results are reported separately.

Sample Handling

Samples collected by Shannon & Wilson were shipped to TestAmerica in Sacramento, California; Vista Analytical Laboratory in El Dorado Hills, California; and SGS in Anchorage, Alaska as described in Section 2.5. The evaluation of proper sample handling procedures included verification of the following: correct chain-of-custody documentation, appropriate sample containers and preservatives, cooler temperatures maintained between 0 degrees Celsius (°C) and 6 °C, ice-free samples, and sample analyses within method-specified holding times.

The water, soil, and sediment samples were received with complete chain-of-custody information, in good condition, properly preserved, within the acceptable temperature range, and within method-specified holding times with the following notable exceptions.

- TestAmerica Work Orders 320-54558-2 and 320-54558-3: PFAS results for sample MW-9702-12 and field-duplicate pair MW-9701-12/MW-9701-112 were re-extracted grossly outside of the method specific holding time because Shannon & Wilson requested the laboratory re-analyze to include a longer analyte list. The PFAS results for these samples that were detected are flagged 'J' to indicate estimated concentrations. The PFAS results for these samples that were not detected are rejected and flagged 'R.' These results are shown in Table 3.
- TestAmerica Work Orders 320-54557 Rev1, 320-54558-2, and 320-54558-3: The sample cooler was received at the laboratory with a temperature above the acceptable temperature range. The samples associated with these work orders were sent in the same shipment. Due to the high chemical and biological stability of PFAS, it is unlikely the integrity of the project samples was adversely affected by the high cooler temperature. These results are shown in Tables 3 and 8.

For other minor sample handling discrepancies please refer to the individual LDRCs for details.

Analytical Sensitivity

The laboratory's method detection limit (MDL) is the lowest analyte concentration that can be measured. The laboratory's limit of detection (LOD) is the lowest quantity of a substance that can be distinguished from the absence of that substance (a blank value). The laboratory's limit of quantitation (LOQ) is the lowest analyte concentration that can be routinely measured in the sampled matrix with confidence, or the point at which a concentration is considered quantitative. Sample matrix, instrument performance, sample dilutions, and other factors will impact the MDL and reporting limit (RL) for each analysis. Depending on the laboratory the reporting limit references the LOD or LOQ. Analytes may be present in samples at concentrations below reporting limits.

In cases where analytes were not detected at concentrations above their MDL, the analytical results are presented in our data-summary tables with reference to their RLs. For example, a sample that does not contain an analyte at a concentration greater than its MDL and has an RL of 2.0 nanograms per liter (ng/L) would be tabulated as "<2.0 ng/L," where "<" indicates the analyte was not detected above the MDL. If the analyte is detected between the MDL and the RL, its concentration is considered an estimate; in our tables, this value is flagged with a 'J' and is applied by the laboratory. Laboratory RLs are considered adequate for report preparation and data analysis, with the following exceptions. The results are bolded as an exceedance in the analytical data table, where applicable.

- TestAmerica Work Order 320-66255: The MDL for PFOA exceeded the groundwater cleanup level due to sample dilution for sample *FTP-pre-006* in Table 1.
- SGS Work Order 1199836: The LOD for 1,2,3-trichloropropane exceeded the DEC groundwater cleanup level for sample *FTP-pre003* in Table 1.
- SGS Work Order 1209409 Rev1, 1209788, and 1210288: The LOD for 1,2,3-trichloropropane exceeded the DEC groundwater cleanup level for samples *MW-1901-15*, *MW-1902-15/MW-2002-15*, *MW-1901-15/MW-2901-15*, *MW-1902-15*, *MW-1901-15*, and *MW-1902-15/MW-2902-15* in Tables 5 through 7.
- TestAmerica Work Order 320-55123 Rev1: The MDL for PFOA exceeded the DEC soil-cleanup level due to sample dilution for sample *FTP-004* in Table 10.
- SGS Work Order 1199836: The LODs for 1,2,3-trichloropropane and 1,2-dibromoethane exceeded the DEC soil-cleanup level for samples *FTP-001*, *FTP-002/FTP-003*, *FTP-004*, and *FTP-005* in Table 10.

Laboratory MBs were analyzed in association with samples collected for this project to check for contributions to the analytical results possibly attributable to laboratory-based contamination. Project samples are only affected by the MB detections if the sample has a reported detection within ten times the MB detection in the associated preparatory batch.

MBs were analyzed for each preparatory batch, with the following exception:

- TestAmerica Work Order 320-55123 Rev1: No method blank sample was included with preparatory batch 320-331247. Project samples associated with this batch include samples *SB-1901-80* and *MW-1901-Drum* presented in Table 4. Potential cross-contamination introduced during sample preparation cannot be assessed for these samples.

The following analytes were detected in method blank samples and were also detected in the associated project samples within five times the concentration detected in the method blank. Consequently, these analytical results were qualified 'B' due to potential laboratory cross-contamination.

- SGS Work Order 1199749: benzene for sample *FTP-post002* in Table 2
- TestAmerica Work Order 320-55546: perfluorohexanesulfonic acid (PFHxS) for samples *MW-1902-150*, *MW-1902-80*, and *MW-1901-150* in Table 3
- TestAmerica Work Order 320-55123 Rev1: PFOS for sample *SB-1901-150* in Table 4
- TestAmerica Work Order 320-62395: PFHxS for samples *MW-1901-80*, *MW-1901-150*, *MW-1902-40*, *MW-1902-80*, and *MW-1902-150* in Table 5
- SGS Work Order 1209409 Rev1: diesel range organics (DRO) for samples *MW-1901-15* and field-duplicate pair *MW-1902-15/MW-2002-15* in Table 5
- SGS Work Order 1209788: DRO for samples *MW-1902-15* and *MW-1901-15/MW-2901-15* in Table 6
- SGS Work Order 1210288: DRO for samples *MW-1901-15* and *MW-1902-15/MW-2902-15* in Table 7
- SGS Work Order 1199836: toxicity characteristic leaching procedure (TCLP) barium for samples *FTP-002/FTP-003*, *FTP-004*, and *FTP-005*; TCLP chromium for samples *FTP-001*, *FTP-002/FTP-003*, *FTP-004*, and *FTP-005* in Table 10

The following analytes were detected in MB samples and were also detected in the listed associated project samples greater than five times but less than ten times the concentration detected in the method blank. Consequently, these analytical results were qualified 'JH' due to potential laboratory cross-contamination.

- TestAmerica Work Order 320-55546: PFHxS for samples *MW-1901-80* and *MW-1902-40* in Table 3
- SGS Work Order 1199836: TCLP barium for sample *FTP-001* in Table 10

For a more detailed discussion including MB detections that did not result in data qualification, please see the associated LDRCs.

Trip blank (TB) samples are used to detect and quantify potential volatile analyte cross-contamination between samples or contamination originating from an outside source. TBs are not required for PFAS samples. Field personnel transported volatile organic compound (VOC) TBs to the project site and submitted them to the laboratory in the same cooler as the project samples. The laboratory analyzed the TBs using the same analytical method as the project samples; there were no analytes detected in TB samples.

The monitoring well EB samples were submitted for each project analyte sampled using a reusable pump. The soil core liner EB sample was submitted for PFAS only. No QC flags were applied due to EB detections for this project, with the following exception.

- SGS Work Order 1211681: DRO was detected at a concentration below the LOQ in the EB sample associated with samples MW-1901-15/MW-1901-115 and MW-1902-15. These sample results are considered non-detected and flagged 'UB' at the LOQ in Table 8.

FBs are used to assess whether airborne, particulate PFAS may be contaminating water samples during collection. We collected the FBs after collecting a groundwater sample, without changing gloves, by pouring PFAS-free water into a sample jar in the same area the project sample was collected. Project analytes were not detected in the FB samples associated with this project, with the follow exception.

- TestAmerica Work Order 320-72496: PFHxA, PFBS, PFHxS, and PFOS were detected in the field blank sample. Corresponding project samples with detections of these analytes below the LOQ are flagged 'UB' at the LOQ in Table 8. Concentrations above the LOQ and less than five-times the field blank detection are considered non-detected and flagged 'UB' at the detected concentration in Table 8. Concentrations above the LOQ and within 10-times the field blank detection are considered biased high estimates and are flagged 'JH'. Concentrations greater than 10-times the field blank detection are not flagged.

Accuracy

Accuracy refers to determining the correct analyte concentration and is a comparison between the measured value and a known or expected value. Laboratory analytical accuracy may be assessed through the analyte recoveries from LCS/LCSD and/or MS/MSD analyses, and the recovery of analyte surrogates (for organic analytes) or IDAs (for PFAS samples) added to project samples. The LCS/LCSDs are spikes of known analyte concentrations added to a clean matrix; the MS/MSDs are spikes of known analyte concentrations added to project samples to address matrix interferences. Surrogates and IDAs are compounds that are similar to the analytes being evaluated by a given method, added prior to sample preparation and analysis, to evaluate matrix interferences and other inefficiencies of sample extraction.

The laboratories' LCS, LCSD, MS, MSD, and surrogate/IDA recoveries were within laboratory acceptance criteria, with the following exceptions.

- SGS Work Order 1199749: The polynuclear aromatic hydrocarbon (PAH) surrogate fluoranthene-d10 was recovered below the lower control limit in sample *FTP-pre001*. The benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo[g,h,i]perylene, benzo[k]fluoranthene, chrysene, dibenzo[a,h]anthracene, fluoranthene, indeno[1,2,3-c,d]pyrene, and pyrene results for this sample are considered estimated non-detections and have been qualified 'UJ' for reporting purposes in Table 1.
- SGS Work Orders 1199749, 1209670 and 1209789: The PAH surrogate 2-methylnaphthalene-d10 was recovered below the lower control limit in samples

FTP-pre001, FTP-pre101, FTP-post001, FTP-post002, FTP-pre-004, FTP-pre-005, and FTP-pre-006. The detected associated PAH analyte results for these samples have been qualified 'JL' and the non-detected results for these analytes have been qualified 'J' as biased low estimates in Tables 1 and 2.

- TestAmerica Work Order 320-66253: The IDAs for PFHxS and PFOS were above the laboratory's upper limit in sample *MW-1902-80*. The PFHxS and PFOS results for this sample are considered estimated and have been qualified 'J' in Table 6.
- TestAmerica Work Order 320-69099: The IDA for perfluorobutanesulfonic acid was above the laboratory's upper limit in sample *MW-2901-80*. The perfluorobutanesulfonic acid result for this sample is considered estimated and qualified 'J' in Table 7.

For other minor accuracy discrepancies please refer to the individual LDRCs for details.

Precision

Field-duplicate samples were collected at a frequency of at least 10 percent of the overall number of samples, to evaluate the precision of analytical measurements and reproducibility of the sampling technique. The relative percent difference (RPD; difference between the sample and its field-duplicate divided by the mean of the two) was calculated to evaluate the precision of the data. An RPD was evaluated only if the results of the analyses for both the primary and field-duplicate sample were detected.

Results of RPD calculations for each of these duplicate sample sets met the data quality objective of 30 percent for water samples and 50 percent for soil samples, where calculable, except for those noted below. Consequently, the field-duplicate pair results for the noted analytes are considered estimated (no direction of bias) and are flagged 'J' in the corresponding analytical tables.

- Vista Work Order 1903075: Field-duplicate pair *FTP-pre001/FTP-pre101* had an RPD failure for PFOS (Table 1).
- SGS Work Order 1199749: Field-duplicate pair *FTP-pre001/FTP-pre101* had RPD failures for o-xylene and p&m-xylenes (Table 1).
- SGS Work Order 1209670: Field-duplicate pair *FTP-pre004/FTP-pre005* had an RPD failure for o-xylene (Table 1).
- TestAmerica Work Order 320-54557 Rev1: Field-duplicate pair *EB-001/EB-101* had an RPD failure for PFOS (Table 9).

Field-duplicate pair *MW-9701-12/MW-9701-112* were submitted together but re-analyzed on separate work orders (320-54558-2 and 320-54558-3). RPDs were not calculated for this field-duplicate pair because the results are impacted by the holding time exceedance discussed above and have already been flagged, accordingly.

Laboratory analytical precision can also be assessed by comparing the results of duplicate analyses performed on LCS/LCSD, MS/MSD, and laboratory-duplicate samples, and evaluating the associated RPDs. The laboratory LCS/LCSD, MS/MSD, and laboratory-duplicate sample RPDs were within laboratory acceptance criteria.

Additional Quality Control Discrepancies

The concentrations of the following analytes associated exceeded the instrument calibration range for the following samples. The results for these samples are flagged 'J' as estimates with no direction of bias.

- TestAmerica Work Order 320-65103: PFOS and PFHxS for field-duplicate pair *FTP-pre-004/FTP-pre-005* in Table 1
- TestAmerica Work Order 320-54557 Rev1: PFOS for samples *EW-001, EW-003, and EB-001* in Table 9
- TestAmerica Work Order 320-54947 Rev1: PFHxS and PFHxA for samples *MW-1901-15/MW-1901-115* and *MW-1901-40*; PFBS for field-duplicate pair *MW-1901-15/MW-1901-115* in Table 3
- TestAmerica Work Order 320-55123 Rev1: PFOS for samples *FTP-001, FTP-002/FTP-003, and FTP-005* in Table 10

The transition mass ratio for the following analytes was outside of the established ratio limits for certain samples. Laboratory analyst judgement was used to positively identify these analytes. The qualitative identification of these analytes has some degree of uncertainty; therefore the following results have been flagged 'J'.

- TestAmerica Work Order 320-54947 Rev1: perfluorononanoic acid and PFOS for field-duplicate pair *MW-1901-15/MW-1901-115* in Table 3
- TestAmerica Work Order 320-54940 Rev1: PFHxS for sample *SB-1902-80* in Table 4
- TestAmerica Work Order 320-54557 Rev1: PFOS for sample *EW-002* in Table 9
- The results for the following monitoring well sample are considered estimated due to sample handling. The monitoring well did not meet purging criteria. The results are flagged 'J' for detected concentrations and 'UJ' for not detected concentrations.
- TestAmerica Work Order 320-66253: sample *MW-1901-150* in Table 6

Data Quality Summary

By working in general accordance with our proposed scope of services, we consider the samples we collected for this project to be representative of site conditions at the locations and times they were obtained. Based on the QA review, less than five percent of the sample results were rejected as unusable due to QC failures and our completeness goal was

surpassed. The rejected results were included TestAmerica Work Orders 320-54558-2 and 320-54558-3, which were re-extracted grossly outside of the method specific holding time to obtain a longer analyte list. In general, the quality of the analytical data for this project does not appear to have been compromised by analytical irregularities and is adequate for the purposes of our assessment.

APPENDIX F: ANALYTICAL RESULTS

Laboratory Report of Analysis

To: Shannon & Wilson-Fairbanks
2355 Hill Rd
Fairbanks, AK 99707
(907)479-0600

Report Number: **1199749**

Client Project: **102519 FAI FTP**

Dear Mary Nadel,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Jennifer at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.



Alaska Division Technical Director

Stephen C. Ede
2019.09.20
16:03:51 -08'00'

Jennifer Dawkins
Project Manager
Jennifer.Dawkins@sgs.com

Date



Case Narrative

SGS Client: Shannon & Wilson-Fairbanks

SGS Project: 1199749

Project Name/Site: 102519 FAI FTP

Refer to sample receipt form for information on sample condition.

19FAI-FTP-Pre001

1199749001 PS

8015M - Ethylene & Propylene Glycols were analyzed by Bio-Chem of Grand Rapids, MI.

8270D SIM - PAH surrogate recovery for 2-Methylnaphthalene d10 and Fluoranthene-d10 do not meet QC criteria. The sample was re-extracted past hold-time. Surrogate recovery was not within QC criteria and results are comparable. The in-hold data is reported.

19FAI-FTP-Pre101

1199749002 PS

8270D SIM - PAH surrogate recovery for 2-Methylnaphthalene d10 does not meet QC criteria. The sample was re-extracted past hold-time. Surrogate recovery was not within QC criteria and results are comparable. The in-hold data is reported.

19FAI-FTP-Post001

1199749003 PS

8270D SIM - PAH surrogate recovery for 2-Methylnaphthalene d10 does not meet QC criteria. The sample was re-extracted past hold-time. Surrogate recovery was not within QC criteria and results are comparable. The in-hold data is reported.

19FAI-FTP-Post002

1199749004 PS

8270D SIM - PAH surrogate recovery for 2-Methylnaphthalene d10 does not meet QC criteria. The sample was re-extracted past hold-time. Surrogate recovery was not within QC criteria and results are comparable. The in-hold data is reported.

* QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to the associated field samples.

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260C, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification, and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
19FAI-FTP-Pre001	1199749001	09/09/2019	09/10/2019	Water (Surface, Eff., Ground)
19FAI-FTP-Pre101	1199749002	09/09/2019	09/10/2019	Water (Surface, Eff., Ground)
19FAI-FTP-Post001	1199749003	09/09/2019	09/10/2019	Water (Surface, Eff., Ground)
19FAI-FTP-Post002	1199749004	09/10/2019	09/10/2019	Water (Surface, Eff., Ground)
Trip Blank	1199749005	09/09/2019	09/10/2019	Water (Surface, Eff., Ground)

<u>Method</u>	<u>Method Description</u>
EPA 602/624	602 Aromatics by 624 (W)
EPA 625M SIM (PAH) LV	625 PAH SIM GC/MS Low Volume
AK102	DRO/RRO Low Volume Water
AK103	DRO/RRO Low Volume Water
EP200.8	Metals in Water by 200.8 ICP-MS

Print Date: 09/20/2019 3:11:51PM

Detectable Results Summary

Client Sample ID: **19FAI-FTP-Pre001**

Lab Sample ID: 1199749001

Metals by ICP/MS

Polynuclear Aromatics GC/MS

Semivolatile Organic Fuels

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Arsenic	12.1	ug/L
Naphthalene	0.263	ug/L
Phenanthrene	0.180	ug/L
Diesel Range Organics	7.25	mg/L
Residual Range Organics	3.79	mg/L
Ethylbenzene	0.500J	ug/L
o-Xylene	1.31	ug/L
P & M -Xylene	2.53	ug/L
Toluene	0.470J	ug/L

Client Sample ID: **19FAI-FTP-Pre101**

Lab Sample ID: 1199749002

Metals by ICP/MS

Polynuclear Aromatics GC/MS

Semivolatile Organic Fuels

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Arsenic	12.0	ug/L
Naphthalene	0.245	ug/L
Phenanthrene	0.143	ug/L
Diesel Range Organics	7.41	mg/L
Residual Range Organics	3.75	mg/L
o-Xylene	0.770J	ug/L
P & M -Xylene	1.52J	ug/L
Toluene	0.380J	ug/L

Client Sample ID: **19FAI-FTP-Post001**

Lab Sample ID: 1199749003

Metals by ICP/MS

Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Arsenic	17.9	ug/L
Diesel Range Organics	0.306J	mg/L

Client Sample ID: **19FAI-FTP-Post002**

Lab Sample ID: 1199749004

Metals by ICP/MS

Semivolatile Organic Fuels

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Arsenic	21.0	ug/L
Diesel Range Organics	0.272J	mg/L
Benzene	0.280J	ug/L
o-Xylene	0.380J	ug/L
P & M -Xylene	0.790J	ug/L
Toluene	1.69	ug/L

Results of 19FAI-FTP-Pre001

Client Sample ID: **19FAI-FTP-Pre001**
 Client Project ID: **102519 FAI FTP**
 Lab Sample ID: 1199749001
 Lab Project ID: 1199749

Collection Date: 09/09/19 19:30
 Received Date: 09/10/19 16:14
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	12.1	5.00	1.50	ug/L	1		09/13/19 16:05

Batch Information

Analytical Batch: MMS10621
 Analytical Method: EP200.8
 Analyst: BMZ
 Analytical Date/Time: 09/13/19 16:05
 Container ID: 1199749001-E

Prep Batch: MXX32787
 Prep Method: E200.2
 Prep Date/Time: 09/11/19 12:38
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL



Results of 19FAI-FTP-Pre001

Client Sample ID: 19FAI-FTP-Pre001
Client Project ID: 102519 FAI FTP
Lab Sample ID: 1199749001
Lab Project ID: 1199749

Collection Date: 09/09/19 19:30
Received Date: 09/10/19 16:14
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with associated quality and detection data.

Batch Information

Analytical Batch: XMS11714
Analytical Method: EPA 625M SIM (PAH) LV
Analyst: DSD
Analytical Date/Time: 09/16/19 23:52
Container ID: 1199749001-C

Prep Batch: XXX42235
Prep Method: SW3520C
Prep Date/Time: 09/11/19 09:16
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Results of 19FAI-FTP-Pre001

Client Sample ID: **19FAI-FTP-Pre001**
 Client Project ID: **102519 FAI FTP**
 Lab Sample ID: 1199749001
 Lab Project ID: 1199749

Collection Date: 09/09/19 19:30
 Received Date: 09/10/19 16:14
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	7.25	0.556	0.167	mg/L	1		09/17/19 00:21
Surrogates							
5a Androstane (surr)	62.8	50-150		%	1		09/17/19 00:21

Batch Information

Analytical Batch: XFC15321
 Analytical Method: AK102
 Analyst: CMS
 Analytical Date/Time: 09/17/19 00:21
 Container ID: 1199749001-A

Prep Batch: XXX42245
 Prep Method: SW3520C
 Prep Date/Time: 09/12/19 08:08
 Prep Initial Wt./Vol.: 270 mL
 Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	3.79	0.463	0.139	mg/L	1		09/17/19 00:21
Surrogates							
n-Triacontane-d62 (surr)	62.5	50-150		%	1		09/17/19 00:21

Batch Information

Analytical Batch: XFC15321
 Analytical Method: AK103
 Analyst: CMS
 Analytical Date/Time: 09/17/19 00:21
 Container ID: 1199749001-A

Prep Batch: XXX42245
 Prep Method: SW3520C
 Prep Date/Time: 09/12/19 08:08
 Prep Initial Wt./Vol.: 270 mL
 Prep Extract Vol: 1 mL

Results of 19FAI-FTP-Pre001

Client Sample ID: **19FAI-FTP-Pre001**
 Client Project ID: **102519 FAI FTP**
 Lab Sample ID: 1199749001
 Lab Project ID: 1199749

Collection Date: 09/09/19 19:30
 Received Date: 09/10/19 16:14
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		09/15/19 19:05
Ethylbenzene	0.500 J	1.00	0.310	ug/L	1		09/15/19 19:05
o-Xylene	1.31	1.00	0.310	ug/L	1		09/15/19 19:05
P & M -Xylene	2.53	2.00	0.620	ug/L	1		09/15/19 19:05
Toluene	0.470 J	1.00	0.310	ug/L	1		09/15/19 19:05
Surrogates							
1,2-Dichloroethane-D4 (surr)	103	81-118		%	1		09/15/19 19:05
4-Bromofluorobenzene (surr)	99.6	85-114		%	1		09/15/19 19:05
Toluene-d8 (surr)	101	89-112		%	1		09/15/19 19:05

Batch Information

Analytical Batch: VMS19441
 Analytical Method: EPA 602/624
 Analyst: CMC
 Analytical Date/Time: 09/15/19 19:05
 Container ID: 1199749001-G

Prep Batch: VXX34879
 Prep Method: SW5030B
 Prep Date/Time: 09/15/19 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Results of 19FAI-FTP-Pre101

Client Sample ID: **19FAI-FTP-Pre101**
 Client Project ID: **102519 FAI FTP**
 Lab Sample ID: 1199749002
 Lab Project ID: 1199749

Collection Date: 09/09/19 19:20
 Received Date: 09/10/19 16:14
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	12.0	5.00	1.50	ug/L	1		09/13/19 16:11

Batch Information

Analytical Batch: MMS10621
 Analytical Method: EP200.8
 Analyst: BMZ
 Analytical Date/Time: 09/13/19 16:11
 Container ID: 1199749002-E

Prep Batch: MXX32787
 Prep Method: E200.2
 Prep Date/Time: 09/11/19 12:38
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL



Results of 19FAI-FTP-Pre101

Client Sample ID: 19FAI-FTP-Pre101
Client Project ID: 102519 FAI FTP
Lab Sample ID: 1199749002
Lab Project ID: 1199749

Collection Date: 09/09/19 19:20
Received Date: 09/10/19 16:14
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their detection results.

Batch Information

Analytical Batch: XMS11714
Analytical Method: EPA 625M SIM (PAH) LV
Analyst: DSD
Analytical Date/Time: 09/17/19 00:13
Container ID: 1199749002-C

Prep Batch: XXX42235
Prep Method: SW3520C
Prep Date/Time: 09/11/19 09:16
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL



Results of 19FAI-FTP-Pre101

Client Sample ID: 19FAI-FTP-Pre101
Client Project ID: 102519 FAI FTP
Lab Sample ID: 1199749002
Lab Project ID: 1199749

Collection Date: 09/09/19 19:20
Received Date: 09/10/19 16:14
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane).

Batch Information

Analytical Batch: XFC15321
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 09/17/19 00:31
Container ID: 1199749002-A

Prep Batch: XXX42245
Prep Method: SW3520C
Prep Date/Time: 09/12/19 08:08
Prep Initial Wt./Vol.: 270 mL
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62).

Batch Information

Analytical Batch: XFC15321
Analytical Method: AK103
Analyst: CMS
Analytical Date/Time: 09/17/19 00:31
Container ID: 1199749002-A

Prep Batch: XXX42245
Prep Method: SW3520C
Prep Date/Time: 09/12/19 08:08
Prep Initial Wt./Vol.: 270 mL
Prep Extract Vol: 1 mL

Results of 19FAI-FTP-Pre101

Client Sample ID: **19FAI-FTP-Pre101**
 Client Project ID: **102519 FAI FTP**
 Lab Sample ID: 1199749002
 Lab Project ID: 1199749

Collection Date: 09/09/19 19:20
 Received Date: 09/10/19 16:14
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		09/15/19 19:20
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/15/19 19:20
o-Xylene	0.770 J	1.00	0.310	ug/L	1		09/15/19 19:20
P & M -Xylene	1.52 J	2.00	0.620	ug/L	1		09/15/19 19:20
Toluene	0.380 J	1.00	0.310	ug/L	1		09/15/19 19:20
Surrogates							
1,2-Dichloroethane-D4 (surr)	103	81-118		%	1		09/15/19 19:20
4-Bromofluorobenzene (surr)	100	85-114		%	1		09/15/19 19:20
Toluene-d8 (surr)	100	89-112		%	1		09/15/19 19:20

Batch Information

Analytical Batch: VMS19441
 Analytical Method: EPA 602/624
 Analyst: CMC
 Analytical Date/Time: 09/15/19 19:20
 Container ID: 1199749002-G

Prep Batch: VXX34879
 Prep Method: SW5030B
 Prep Date/Time: 09/15/19 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of 19FAI-FTP-Post001

Client Sample ID: **19FAI-FTP-Post001**
Client Project ID: **102519 FAI FTP**
Lab Sample ID: 1199749003
Lab Project ID: 1199749

Collection Date: 09/09/19 20:00
Received Date: 09/10/19 16:14
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	17.9	5.00	1.50	ug/L	1		09/13/19 16:14

Batch Information

Analytical Batch: MMS10621
Analytical Method: EP200.8
Analyst: BMZ
Analytical Date/Time: 09/13/19 16:14
Container ID: 1199749003-E

Prep Batch: MXX32787
Prep Method: E200.2
Prep Date/Time: 09/11/19 12:38
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL



Results of 19FAI-FTP-Post001

Client Sample ID: 19FAI-FTP-Post001
Client Project ID: 102519 FAI FTP
Lab Sample ID: 1199749003
Lab Project ID: 1199749

Collection Date: 09/09/19 20:00
Received Date: 09/10/19 16:14
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with associated quality and detection data.

Batch Information

Analytical Batch: XMS11714
Analytical Method: EPA 625M SIM (PAH) LV
Analyst: DSD
Analytical Date/Time: 09/17/19 00:33
Container ID: 1199749003-C

Prep Batch: XXX42235
Prep Method: SW3520C
Prep Date/Time: 09/11/19 09:16
Prep Initial Wt./Vol.: 265 mL
Prep Extract Vol: 1 mL

Results of 19FAI-FTP-Post001

Client Sample ID: **19FAI-FTP-Post001**
 Client Project ID: **102519 FAI FTP**
 Lab Sample ID: 1199749003
 Lab Project ID: 1199749

Collection Date: 09/09/19 20:00
 Received Date: 09/10/19 16:14
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.306 J	0.588	0.176	mg/L	1		09/17/19 00:41
Surrogates							
5a Androstane (surr)	60.1	50-150		%	1		09/17/19 00:41

Batch Information

Analytical Batch: XFC15321
 Analytical Method: AK102
 Analyst: CMS
 Analytical Date/Time: 09/17/19 00:41
 Container ID: 1199749003-A

Prep Batch: XXX42245
 Prep Method: SW3520C
 Prep Date/Time: 09/12/19 08:08
 Prep Initial Wt./Vol.: 255 mL
 Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	0.245 U	0.490	0.147	mg/L	1		09/17/19 00:41
Surrogates							
n-Triacontane-d62 (surr)	60.1	50-150		%	1		09/17/19 00:41

Batch Information

Analytical Batch: XFC15321
 Analytical Method: AK103
 Analyst: CMS
 Analytical Date/Time: 09/17/19 00:41
 Container ID: 1199749003-A

Prep Batch: XXX42245
 Prep Method: SW3520C
 Prep Date/Time: 09/12/19 08:08
 Prep Initial Wt./Vol.: 255 mL
 Prep Extract Vol: 1 mL

Results of 19FAI-FTP-Post001

Client Sample ID: **19FAI-FTP-Post001**
 Client Project ID: **102519 FAI FTP**
 Lab Sample ID: 1199749003
 Lab Project ID: 1199749

Collection Date: 09/09/19 20:00
 Received Date: 09/10/19 16:14
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		09/15/19 19:35
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/15/19 19:35
o-Xylene	0.500 U	1.00	0.310	ug/L	1		09/15/19 19:35
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		09/15/19 19:35
Toluene	0.500 U	1.00	0.310	ug/L	1		09/15/19 19:35
Surrogates							
1,2-Dichloroethane-D4 (surr)	105	81-118		%	1		09/15/19 19:35
4-Bromofluorobenzene (surr)	100	85-114		%	1		09/15/19 19:35
Toluene-d8 (surr)	98.8	89-112		%	1		09/15/19 19:35

Batch Information

Analytical Batch: VMS19441
 Analytical Method: EPA 602/624
 Analyst: CMC
 Analytical Date/Time: 09/15/19 19:35
 Container ID: 1199749003-G

Prep Batch: VXX34879
 Prep Method: SW5030B
 Prep Date/Time: 09/15/19 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Results of 19FAI-FTP-Post002

Client Sample ID: **19FAI-FTP-Post002**
 Client Project ID: **102519 FAI FTP**
 Lab Sample ID: 1199749004
 Lab Project ID: 1199749

Collection Date: 09/10/19 11:00
 Received Date: 09/10/19 16:14
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	21.0	5.00	1.50	ug/L	1		09/13/19 16:16

Batch Information

Analytical Batch: MMS10621
 Analytical Method: EP200.8
 Analyst: BMZ
 Analytical Date/Time: 09/13/19 16:16
 Container ID: 1199749004-E

Prep Batch: MXX32787
 Prep Method: E200.2
 Prep Date/Time: 09/11/19 12:38
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL



Results of 19FAI-FTP-Post002

Client Sample ID: 19FAI-FTP-Post002
Client Project ID: 102519 FAI FTP
Lab Sample ID: 1199749004
Lab Project ID: 1199749

Collection Date: 09/10/19 11:00
Received Date: 09/10/19 16:14
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with associated quality and detection data.

Batch Information

Analytical Batch: XMS11714
Analytical Method: EPA 625M SIM (PAH) LV
Analyst: DSD
Analytical Date/Time: 09/17/19 00:54
Container ID: 1199749004-C

Prep Batch: XXX42235
Prep Method: SW3520C
Prep Date/Time: 09/11/19 09:16
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Results of 19FAI-FTP-Post002

Client Sample ID: **19FAI-FTP-Post002**
 Client Project ID: **102519 FAI FTP**
 Lab Sample ID: 1199749004
 Lab Project ID: 1199749

Collection Date: 09/10/19 11:00
 Received Date: 09/10/19 16:14
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.272 J	0.588	0.176	mg/L	1		09/17/19 00:52

Surrogates

5a Androstane (surr)	63.3	50-150		%	1		09/17/19 00:52
----------------------	------	--------	--	---	---	--	----------------

Batch Information

Analytical Batch: XFC15321
 Analytical Method: AK102
 Analyst: CMS
 Analytical Date/Time: 09/17/19 00:52
 Container ID: 1199749004-A

Prep Batch: XXX42245
 Prep Method: SW3520C
 Prep Date/Time: 09/12/19 08:08
 Prep Initial Wt./Vol.: 255 mL
 Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	0.245 U	0.490	0.147	mg/L	1		09/17/19 00:52

Surrogates

n-Triacontane-d62 (surr)	62.4	50-150		%	1		09/17/19 00:52
--------------------------	------	--------	--	---	---	--	----------------

Batch Information

Analytical Batch: XFC15321
 Analytical Method: AK103
 Analyst: CMS
 Analytical Date/Time: 09/17/19 00:52
 Container ID: 1199749004-A

Prep Batch: XXX42245
 Prep Method: SW3520C
 Prep Date/Time: 09/12/19 08:08
 Prep Initial Wt./Vol.: 255 mL
 Prep Extract Vol: 1 mL

Results of 19FAI-FTP-Post002

Client Sample ID: **19FAI-FTP-Post002**
 Client Project ID: **102519 FAI FTP**
 Lab Sample ID: 1199749004
 Lab Project ID: 1199749

Collection Date: 09/10/19 11:00
 Received Date: 09/10/19 16:14
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.280 J	0.400	0.120	ug/L	1		09/15/19 19:51
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/15/19 19:51
o-Xylene	0.380 J	1.00	0.310	ug/L	1		09/15/19 19:51
P & M -Xylene	0.790 J	2.00	0.620	ug/L	1		09/15/19 19:51
Toluene	1.69	1.00	0.310	ug/L	1		09/15/19 19:51
Surrogates							
1,2-Dichloroethane-D4 (surr)	104	81-118		%	1		09/15/19 19:51
4-Bromofluorobenzene (surr)	98	85-114		%	1		09/15/19 19:51
Toluene-d8 (surr)	99.6	89-112		%	1		09/15/19 19:51

Batch Information

Analytical Batch: VMS19441
 Analytical Method: EPA 602/624
 Analyst: CMC
 Analytical Date/Time: 09/15/19 19:51
 Container ID: 1199749004-G

Prep Batch: VXX34879
 Prep Method: SW5030B
 Prep Date/Time: 09/15/19 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Results of Trip Blank

Client Sample ID: **Trip Blank**
 Client Project ID: **102519 FAI FTP**
 Lab Sample ID: 1199749005
 Lab Project ID: 1199749

Collection Date: 09/09/19 19:20
 Received Date: 09/10/19 16:14
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		09/15/19 01:35
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/15/19 01:35
o-Xylene	0.500 U	1.00	0.310	ug/L	1		09/15/19 01:35
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		09/15/19 01:35
Toluene	0.500 U	1.00	0.310	ug/L	1		09/15/19 01:35
Surrogates							
1,2-Dichloroethane-D4 (surr)	107	81-118		%	1		09/15/19 01:35
4-Bromofluorobenzene (surr)	97.8	85-114		%	1		09/15/19 01:35
Toluene-d8 (surr)	98.9	89-112		%	1		09/15/19 01:35

Batch Information

Analytical Batch: VMS19439
 Analytical Method: EPA 602/624
 Analyst: CMC
 Analytical Date/Time: 09/15/19 01:35
 Container ID: 1199749005-A

Prep Batch: VXX34878
 Prep Method: SW5030B
 Prep Date/Time: 09/14/19 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1799276 [MXX/32787]
Blank Lab ID: 1531220

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1199749001, 1199749002, 1199749003, 1199749004

Results by EP200.8

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Arsenic	2.50U	5.00	1.50	ug/L

Batch Information

Analytical Batch: MMS10621
Analytical Method: EP200.8
Instrument: Perkin Elmer Nexlon P5
Analyst: BMZ
Analytical Date/Time: 9/13/2019 3:59:11PM

Prep Batch: MXX32787
Prep Method: E200.2
Prep Date/Time: 9/11/2019 12:38:01PM
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 09/20/2019 3:11:55PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199749 [MXX32787]

Blank Spike Lab ID: 1531221

Date Analyzed: 09/13/2019 16:02

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1199749001, 1199749002, 1199749003, 1199749004

Results by EP200.8

Parameter	Blank Spike (ug/L)			CL
	Spike	Result	Rec (%)	
Arsenic	1000	1010	101	(85-115)

Batch Information

Analytical Batch: **MMS10621**

Analytical Method: **EP200.8**

Instrument: **Perkin Elmer Nexlon P5**

Analyst: **BMZ**

Prep Batch: **MXX32787**

Prep Method: **E200.2**

Prep Date/Time: **09/11/2019 12:38**

Spike Init Wt./Vol.: 1000 ug/L Extract Vol: 50 mL

Dupe Init Wt./Vol.: Extract Vol:

Matrix Spike Summary

Original Sample ID: 1531223
 MS Sample ID: 1531224 MS
 MSD Sample ID:

Analysis Date: 09/13/2019 16:31
 Analysis Date: 09/13/2019 16:34
 Analysis Date:
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1199749001

Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Arsenic	12.5U	1000	1060	106				70-130		

Batch Information

Analytical Batch: MMS10621
 Analytical Method: EP200.8
 Instrument: Perkin Elmer Nexlon P5
 Analyst: BMZ
 Analytical Date/Time: 9/13/2019 4:34:54PM

Prep Batch: MXX32787
 Prep Method: DW Digest for Metals on ICP-MS
 Prep Date/Time: 9/11/2019 12:38:01PM
 Prep Initial Wt./Vol.: 20.00mL
 Prep Extract Vol: 50.00mL

Matrix Spike Summary

Original Sample ID: 1531225
 MS Sample ID: 1531226 MS
 MSD Sample ID:

Analysis Date: 09/13/2019 16:05
 Analysis Date: 09/13/2019 16:08
 Analysis Date:
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1199749001, 1199749002, 1199749003, 1199749004

Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Arsenic	12.1	1000	1020	100				70-130		

Batch Information

Analytical Batch: MMS10621
 Analytical Method: EP200.8
 Instrument: Perkin Elmer Nexlon P5
 Analyst: BMZ
 Analytical Date/Time: 9/13/2019 4:08:05PM

Prep Batch: MXX32787
 Prep Method: DW Digest for Metals on ICP-MS
 Prep Date/Time: 9/11/2019 12:38:01PM
 Prep Initial Wt./Vol.: 20.00mL
 Prep Extract Vol: 50.00mL

Method Blank

Blank ID: MB for HBN 1799459 [VXX/34878]
 Blank Lab ID: 1531987

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1199749005

Results by EPA 602/624

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Benzene	0.200U	0.400	0.120	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
Toluene	0.500U	1.00	0.310	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	108	81-118		%
4-Bromofluorobenzene (surr)	99.5	85-114		%
Toluene-d8 (surr)	99.8	89-112		%

Batch Information

Analytical Batch: VMS19439
 Analytical Method: EPA 602/624
 Instrument: Agilent 7890-75MS
 Analyst: CMC
 Analytical Date/Time: 9/15/2019 12:13:00AM

Prep Batch: VXX34878
 Prep Method: SW5030B
 Prep Date/Time: 9/14/2019 6:00:00AM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199749 [VXX34878]
 Blank Spike Lab ID: 1531988
 Date Analyzed: 09/15/2019 00:28

Spike Duplicate ID: LCSD for HBN 1199749 [VXX34878]
 Spike Duplicate Lab ID: 1531989
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1199749005

Results by EPA 602/624

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	30	29.7	99	30	29.9	100	(79-120)	0.71	(< 20)
Ethylbenzene	30	29.7	99	30	30.3	101	(79-121)	1.90	(< 20)
o-Xylene	30	29.8	99	30	29.5	98	(78-122)	1.00	(< 20)
P & M -Xylene	60	60.3	101	60	60.3	100	(80-121)	0.13	(< 20)
Toluene	30	28.2	94	30	28.8	96	(80-121)	2.20	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30	103	103	30	103	103	(81-118)	0.26	
4-Bromofluorobenzene (surr)	30	99.7	100	30	102	102	(85-114)	2.70	
Toluene-d8 (surr)	30	98.4	98	30	98.9	99	(89-112)	0.54	

Batch Information

Analytical Batch: **VMS19439**
 Analytical Method: **EPA 602/624**
 Instrument: **Agilent 7890-75MS**
 Analyst: **CMC**

Prep Batch: **VXX34878**
 Prep Method: **SW5030B**
 Prep Date/Time: **09/14/2019 06:00**
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1799471 [VXX/34879]
 Blank Lab ID: 1532017

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1199749001, 1199749002, 1199749003, 1199749004

Results by EPA 602/624

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Benzene	0.120J	0.400	0.120	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
Toluene	0.500U	1.00	0.310	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	102	81-118		%
4-Bromofluorobenzene (surr)	99.6	85-114		%
Toluene-d8 (surr)	99.1	89-112		%

Batch Information

Analytical Batch: VMS19441
 Analytical Method: EPA 602/624
 Instrument: Agilent 7890-75MS
 Analyst: CMC
 Analytical Date/Time: 9/15/2019 1:16:00PM

Prep Batch: VXX34879
 Prep Method: SW5030B
 Prep Date/Time: 9/15/2019 6:00:00AM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199749 [VXX34879]
 Blank Spike Lab ID: 153t A18
 Date z nald0e/ : A92152 A19 13:31

Spike Duplicaye ID: LCSD for HBN 1199749
 [VXX34879]
 Spike Duplicaye Lab ID: 153t A19
 Mayrix: Wayer (Surface, Eff., Groun/)

QC for Samples: 1199749AA1, 1199749AA4 , 1199749AA3, 1199749AA4

Resulys bd EPA 602/624

Parameyer	Blank Spike (ug2L)			Spike Duplicaye (ug2L)			CL	RPD (%)	RPD CL
	Spike	Resuly	Rec (%)	Spike	Resuly	Rec (%)			
Ben0ene	3A	31.h	1A5	3A	t 9.8	99	(79-1t A)	5.8A	(< t A)
Ey&dlben0ene	3A	3t .8	1A9	3A	31.5	1A5	(79-1t 1)	4.AA	(< t A)
o-Xdlene	3A	3t .t	1A7	3A	31.3	1A4	(78-1t t)	t .8A	(< t A)
P 6 M -Xdlene	hA	h7.9	113	hA	hh.A	11A	(8A-1t 1)	t .8A	(< t A)
Toluene	3A	3A.t	1A1	3A	t 9.A	97	(8A-1t 1)	4.3A	(< t A)
Surrogates									
1,t -Dic&loroey&ane-D4 (surr)	3A	97.8	98	3A	97.4	97	(81-118)	A48	
4-Bromofluoroben0ene (surr)	3A	99.8	1AA	3A	1A1	1A1	(85-114)	1.hA	
Toluene-/ 8 (surr)	3A	99.1	99	3A	98.4	98	(89-11t)	A71	

Batch Information

z naldjcal Bayc&: VMS19441
 z naldjcal Mey&o/ : EPA 602/624
 Insyrumeny Agilent 379083- MS
 z naldsy: 5 M5

Prep Bayc&: VCCX4739
 Prep Mey&o/ : SW- 0X0B
 Prep Daye2Time: 09/1-/2019 06:00
 Spike IniyWy2/ol.: 3A ug2L ExyacyVol: 5 mL
 Dupe IniyWy2/ol.: 3A ug2L ExyacyVol: 5 mL

PrinyDaye: A92 A2 A19 3:1t :A3PM

Method Blank

Blank ID: MB for HBN 1799246 [XXX/42235]
 Blank Lab ID: 1531090

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1199749001, 1199749002, 1199749003, 1199749004

Results by EPA 625M SIM (PAH) LV

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Acenaphthene	0.0250U	0.0500	0.0150	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	ug/L
Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0100U	0.0200	0.00620	ug/L
Benzo[b]Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	ug/L
Chrysene	0.0250U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0100U	0.0200	0.00620	ug/L
Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Fluorene	0.0250U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	ug/L
Naphthalene	0.0500U	0.100	0.0310	ug/L
Phenanthrene	0.0250U	0.0500	0.0150	ug/L
Pyrene	0.0250U	0.0500	0.0150	ug/L
Surrogates				
2-Methylnaphthalene-d10 (surr)	66.8	47-106		%
Fluoranthene-d10 (surr)	76.6	24-116		%

Batch Information

Analytical Batch: XMS11714
 Analytical Method: EPA 625M SIM (PAH) LV
 Instrument: Agilent GC 7890B/5977A SWA
 Analyst: DSD
 Analytical Date/Time: 9/16/2019 7:25:00PM

Prep Batch: XXX42235
 Prep Method: SW3520C
 Prep Date/Time: 9/11/2019 9:16:18AM
 Prep Initial Wt./Vol.: 250 mL
 Prep Extract Vol: 1 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199749 [XXX42235]

Blank Spike Lab ID: 1531091

Date Analyzed: 09/16/2019 19:46

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1199749001, 1199749002, 1199749003, 1199749004

Results by EPA 625M SIM (PAH) LV

Blank Spike (ug/L)

Parameter	Spike	Result	Rec (%)	CL
Acenaphthene	2	1.63	81	(48-114)
Acenaphthylene	2	1.75	87	(35-121)
Anthracene	2	1.86	93	(53-119)
Benzo(a)Anthracene	2	1.74	87	(59-120)
Benzo[a]pyrene	2	1.53	77	(53-120)
Benzo[b]Fluoranthene	2	1.72	86	(53-126)
Benzo[g,h,i]perylene	2	1.37	69	(44-128)
Benzo[k]fluoranthene	2	1.61	80	(54-125)
Chrysene	2	1.77	89	(57-120)
Dibenzo[a,h]anthracene	2	1.25	62	(44-131)
Fluoranthene	2	1.92	96	(58-120)
Fluorene	2	1.82	91	(50-118)
Indeno[1,2,3-c,d] pyrene	2	1.44	72	(48-130)
Naphthalene	2	1.45	72	(43-114)
Phenanthrene	2	1.81	91	(53-115)
Pyrene	2	1.97	98	(53-121)

Surrogates

2-Methylnaphthalene-d10 (surr)	2	70.5	71	(47-106)
Fluoranthene-d10 (surr)	2	86.3	86	(24-116)

Batch Information

Analytical Batch: XMS11714

Analytical Method: EPA 625M SIM (PAH) LV

Instrument: Agilent GC 7890B/5977A SWA

Analyst: DSD

Prep Batch: XXX42235

Prep Method: SW3520C

Prep Date/Time: 09/11/2019 09:16

Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

Dupe Init Wt./Vol.: Extract Vol:

Matrix Spike Summary

Original Sample ID: 1195266001
 MS Sample ID: 1531094 MS
 MSD Sample ID: 1531095 MSD

Analysis Date: 09/17/2019 1:14
 Analysis Date: 09/17/2019 1:35
 Analysis Date: 09/17/2019 1:55
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1199749001, 1199749002, 1199749003, 1199749004

Results by EPA 625M SIM (PAH) LV

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	0.0232U	1.85	1.43	77	1.85	1.16	63	48-114	21.10	* (< 20)
Acenaphthylene	0.0232U	1.85	1.54	83	1.85	1.24	67	35-121	21.70	* (< 20)
Anthracene	0.0232U	1.85	1.61	87	1.85	1.29	70	53-119	22.30	* (< 20)
Benzo(a)Anthracene	0.0232U	1.85	1.5	81	1.85	1.20	65	59-120	22.10	* (< 20)
Benzo[a]pyrene	0.00925U	1.85	1.4	76	1.85	1.10	60	53-120	23.50	* (< 20)
Benzo[b]Fluoranthene	0.0232U	1.85	1.45	78	1.85	1.17	63	53-126	21.40	* (< 20)
Benzo[g,h,i]perylene	0.0232U	1.85	1.28	69	1.85	1.02	55	44-128	22.70	* (< 20)
Benzo[k]fluoranthene	0.0232U	1.85	1.47	79	1.85	1.17	63	54-125	22.80	* (< 20)
Chrysene	0.0232U	1.85	1.52	82	1.85	1.21	65	57-120	22.70	* (< 20)
Dibenzo[a,h]anthracene	0.00925U	1.85	1.2	65	1.85	0.948	51	44-131	23.70	* (< 20)
Fluoranthene	0.0232U	1.85	1.65	89	1.85	1.31	71	58-120	22.70	* (< 20)
Fluorene	0.0232U	1.85	1.58	85	1.85	1.28	69	50-118	20.90	* (< 20)
Indeno[1,2,3-c,d] pyrene	0.0232U	1.85	1.36	73	1.85	1.07	58	48-130	23.60	* (< 20)
Naphthalene	0.0369J	1.85	1.3	68	1.85	1.06	55	43-114	20.50	* (< 20)
Phenanthrene	0.0193J	1.85	1.56	83	1.85	1.25	67	53-115	22.20	* (< 20)
Pyrene	0.0232U	1.85	1.69	91	1.85	1.36	73	53-121	21.90	* (< 20)
Surrogates										
2-Methylnaphthalene-d10 (surr)		1.85	1.24	67	1.85	1.00	54	47-106	21.70	
Fluoranthene-d10 (surr)		1.85	1.48	80	1.85	1.18	64	24-116	22.60	

Batch Information

Analytical Batch: XMS11714
 Analytical Method: EPA 625M SIM (PAH) LV
 Instrument: Agilent GC 7890B/5977A SWA
 Analyst: DSD
 Analytical Date/Time: 9/17/2019 1:35:00AM

Prep Batch: XXX42235
 Prep Method: 3520 Liq/Liq Ext for 8270 PAH SIM LV
 Prep Date/Time: 9/11/2019 9:16:18AM
 Prep Initial Wt./Vol.: 270.00mL
 Prep Extract Vol: 1.00mL

Method Blank

Blank ID: MB for HBN 1799308 [XXX/42245]
 Blank Lab ID: 1531343

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1199749001, 1199749002, 1199749003, 1199749004

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	0.300U	0.600	0.180	mg/L
Surrogates				
5a Androstane (surr)	75.9	60-120		%

Batch Information

Analytical Batch: XFC15321
 Analytical Method: AK102
 Instrument: Agilent 7890B R
 Analyst: CMS
 Analytical Date/Time: 9/16/2019 7:48:00PM

Prep Batch: XXX42245
 Prep Method: SW3520C
 Prep Date/Time: 9/12/2019 8:08:56AM
 Prep Initial Wt./Vol.: 250 mL
 Prep Extract Vol: 1 mL

Print Date: 09/20/2019 3:12:09PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199749 [XXX42245]
 Blank Spike Lab ID: 1531344
 Date Analyzed: 09/16/2019 20:29

Spike Duplicate ID: LCSD for HBN 1199749
 [XXX42245]
 Spike Duplicate Lab ID: 1531345
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1199749001, 1199749002, 1199749003, 1199749004

Results by AK102

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	20	17.5	88	20	16.6	83	(75-125)	5.30	(< 20)

Surrogates

5a Androstane (surr)	0.4	85.6	86	0.4	83.7	84	(60-120)	2.20	
----------------------	-----	------	----	-----	------	----	------------	------	--

Batch Information

Analytical Batch: **XFC15321**
 Analytical Method: **AK102**
 Instrument: **Agilent 7890B R**
 Analyst: **CMS**

Prep Batch: **XXX42245**
 Prep Method: **SW3520C**
 Prep Date/Time: **09/12/2019 08:08**
 Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

Method Blank

Blank ID: MB for HBN 1799308 [XXX/42245]
 Blank Lab ID: 1531343

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1199749001, 1199749002, 1199749003, 1199749004

Results by AK103

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Residual Range Organics	0.250U	0.500	0.150	mg/L
Surrogates				
n6Ariacontane&l- 2 (surr)	73.2	- 06120		%

Batch Information

h nalytical BatcF: XKC15321
 h nalytical MetFod: h T103
 Instrument: h gilent 7890B R
 h nalyt: CMS
 h nalytical Date/Aime: 9/1- /2019 7:48:00PM

Prep BatcF: XXX42245
 Prep MetFod: SW3520C
 Prep Date/Aime: 9/12/2019 8:08:5- hM
 Prep Initial Wt./Vol.: 250 mL
 Prep Extract Vol: 1 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199749 [XXX42245]
 Blank Spike Lab ID: 1531344
 Date Analyzed: 09/16/2019 20:29

Spike Duplicate ID: LCSD for HBN 1199749 [XXX42245]
 Spike Duplicate Lab ID: 1531345
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1199749001, 1199749002, 1199749003, 1199749004

Results by AK102

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Residual Range Organics	20	16.3	82	20	15.3	77	(60-120)	6.30	(< 20)

Surrogates

n-hriacontane-d62 (surr)	0.4	82	82	0.4	79.1	79	(60-120)	3.60	
--------------------------	-----	----	----	-----	------	----	------------	------	--

Batch Information

Analytical BatcT: **XFC15231**
 Analytical MetTod: **AK102**
 Instrument: **Agilent 7890B R**
 Analyst: **CMS**

Prep BatcT: **XXX43345**
 Prep MetTod: **SW2530C**
 Prep Date/time: **09/13/2019 08:08**
 Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

1199749



CHAIN-C

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

2355 Hill Road
Fairbanks, AK 99708
(907) 479-0600
www.shannonwilson.com

ECORD

Laboratory SGS Page 1 of 1
Attn: Jan Dawkins

Analytical Methods (include preservative if used)

DRD AK 102	X	X	X	X	X	9	Water Grab Sample
RRO AK 103	X	X	X	X	X	9	
TAQH EPA 625 SIM	X	X	X	X	X	9	
TAH EPA 624	X	X	X	X	X	9	
TAH EPA 200.8	X	X	X	X	X	9	
Asaric EPA 200.8							Laboratory supplied
Glycol SW 8015M							
Ethylene and Glycol							
Total Number of Containers							

Quote No: _____

J-Flags: Yes No

Turn Around Time:

Normal Rush

As fast as possible
Please Specify

Sample Identity	Lab No.	Time	Date Sampled
19 FAI - FTP - Pre 001	1 AI	19:30	9/9/19
19 FAI - FTP - Pre 101	2 AI	19:20	9/9/19
19 FAI - FTP - Post 001	3 AI	20:00	9/9/19
19 FAI - FTP - Post 002	4 AI	11:00	9/10/19
Trip Blank	5 AF		

Project Information

Number: 102519

Name: FAI FTP

Contact: MDN

Ongoing Project? Yes No

Sampler: APW

Sample Receipt

Total No. of Containers: 39

COC Seals/Intact? Y/M/N/A

Received Good Cond./Cold

Temp: 5.9

Delivery Method: Hand

Relinquished By: 1.

Signature: Adam Wyborny

Printed Name: Adam Wyborny

Date: 9/10/19

Company: Shannon & Wilson, Inc.

Relinquished By: 2.

Signature: [Signature]

Printed Name: [Name]

Date: [Date]

Company: [Company]

Relinquished By: 3.

Signature: _____

Printed Name: _____

Date: _____

Company: _____

Notes:

5-day Rush Approved

Distribution: White - w/shipment returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

Received By: 1.

Signature: [Signature]

Printed Name: Jan Dawkins

Date: 9/10/19

Company: SGS

Received By: 2.

Signature: _____

Printed Name: _____

Date: _____

Company: _____

Received By: 3.

Signature: [Signature]


Printed Name: MORENO

Date: 9/10/19

Company: [Company]

350732 JKJ

No. 36128

Shipper's Name and Address SGS CT and ENVIRONM 200 W Potter Drive Anchorage, AK 99518 USA Tel: 907-562-2343	Shipper's Account Number 27400215947 Customer's ID Number 9069	Not Negotiable Air Waybill Issued By  P.O. BOX 68900 SEATTLE, WA 98168 800-225-2752 ALASKACARGO.COM
---	---	--

Consignee's Name and Address SGS CT and ENVIRONM 200 W Potter Drive Anchorage, AK 99518 USA Tel: 907-562-2343	Consignee's Account Number 27400215947	Also notify a/o Tel:
---	--	------------------------------------

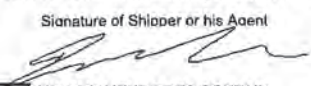
Issuing Carrier's Agent and City Agent's IATA Code Account No.	Accounting Information SGS CT and ENVIRONMENTAL SVS 200 W Potter Drive Anchorage, AK 99518 USA GoldStreak	9069
Airport of Departure (Addr. of First Carrier) and Requested Routing Fairbanks		
To By First Carrier ANC Alaska Airlines	To / By	To / By
Airport of Destination Anchorage	Flight/Date AS 055/10	Flight/Date
Currency USD	WT/VAL PP X	Other X
Declared Value For Carriage NVD		Declared Value For Customs NCV
Amount of Insurance XXX		

Handling Information

SCI

No of Pieces	Gross Weight	kg lb	Commodity Item No.	Chargeable Weight	Rate / Charge	Total	Nature and Quantity of Goods (Incl. Dimensions or Volume)
1	42.0	L		42.0		AS AGREED	WATER SAMPLES NONHAZ
1	42.0					AS AGREED	GSX COL Volume:0.000

Prepaid AS AGREED	Weight Charge Collect XBC 10.00
Valuation Charge	
Tax	

Total Other Charges Due Agent	Shipper certifies that the particulars on the face hereof are correct and that insofar as any part of the consignment contains dangerous goods, such part is properly described by name and is in proper condition for carriage by air according to the applicable Dangerous Goods Regulations. I consent to the inspection of this cargo.
Total Other Charges Due Carrier	For: SGS CT and ENVIRONMENTAL SVS Signature of Shipper or his Agent 
Total Prepaid AS AGREED	Total Collect <input checked="" type="checkbox"/> THIS SHIPMENT DOES NOT CONTAIN DANGEROUS GOODS <input type="checkbox"/> THIS SHIPMENT DOES CONTAIN DANGEROUS GOODS

Executed On (Date) 10 Sep 2019 12:05	at (Place) Fairbanks	Signature of Issuing Carrier or its Agent Alaska Airlines
027-2827 9801		

#397184

Alert Expeditors Inc.

Citywide Delivery • 440-3351
8421 Flamingo Drive • Anchorage, Alaska 99502

Date 9/10/17
From SGS
To SGS

Collect Prepay Advance Charges
Account
Job # BAI PO# AS 2827 9801

Samples

[Signature]

Shipped Signature

Total Charge

Received By: _____



SGS Workorder #:

1199749



1 1 9 9 7 4 9

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements		N/A Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	Yes	1F 1B
COC accompanied samples?	Yes	
DOD: Were samples received in COC corresponding coolers?		
<input type="checkbox"/> **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	Yes	Cooler ID: 1 @ 4.8 °C Therm. ID: D30
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
*If >6°C, were samples collected <8 hours ago?	N/A	
If <0°C, were sample containers ice free?	N/A	
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.
Were samples received within holding time?	Yes	
Do samples match COC** (i.e., sample IDs, dates/times collected)?	Yes	
**Note: If times differ <1hr, record details & login per COC.		
***Note: If sample information on containers differs from COC, SGS will default to COC information		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)	Yes	
Were proper containers (type/mass/volume/preservative***) used?	Yes	***Exemption permitted for metals (e.g.200.8/6020A).
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	Yes	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	Yes	
Were all soil VOAs field extracted with MeOH+BFB?	N/A	
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		



e-Sample Receipt Form FBK

SGS Workorder #:

1199749

1199749

Review Criteria		Condition (Yes, No, N/A)	Exceptions Noted below	
Chain of Custody / Temperature Requirements			Yes	Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location		N/A		
COC accompanied samples?		Yes		
DOD: Were samples received in COC corresponding coolers?		N/A		
<input type="checkbox"/> **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required				
Temperature blank compliant* (i.e., 0-6 °C after CF)?		Yes	Cooler ID: 1 @ 5.9 °C	Therm. ID: D23
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.			Cooler ID: @	°C Therm. ID:
			Cooler ID: @	°C Therm. ID:
			Cooler ID: @	°C Therm. ID:
			Cooler ID: @	°C Therm. ID:
*If >6°C, were samples collected <8 hours ago?				
If <0°C, were sample containers ice free?				
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.				
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.		
Do samples match COC** (i.e., sample IDs, dates/times collected)?		N/C		
**Note: If times differ <1hr, record details & login per COC.				
***Note: If sample information on containers differs from COC, SGS will default to COC information				
Were samples in good condition (no leaks/cracks/breakage)?		Yes		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)		Yes		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?		Yes		
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?		N/C		
Were all soil VOAs field extracted with MeOH+BFB?		N/A		
For Rush/Short Hold Time, was RUSH/Short HT email sent?		Yes	Rush Approved: 9/17/19	
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.				
Additional notes (if applicable):				
SGS Profile #	350732		350732	



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1199749001-A	HCL to pH < 2	OK			
1199749001-B	HCL to pH < 2	OK			
1199749001-C	No Preservative Required	OK			
1199749001-D	No Preservative Required	OK			
1199749001-E	HNO3 to pH < 2	OK			
1199749001-F	No Preservative Required	OK			
1199749001-G	HCL to pH < 2	OK			
1199749001-H	HCL to pH < 2	OK			
1199749001-I	HCL to pH < 2	OK			
1199749002-A	HCL to pH < 2	OK			
1199749002-B	HCL to pH < 2	OK			
1199749002-C	No Preservative Required	OK			
1199749002-D	No Preservative Required	OK			
1199749002-E	HNO3 to pH < 2	OK			
1199749002-F	No Preservative Required	OK			
1199749002-G	HCL to pH < 2	OK			
1199749002-H	HCL to pH < 2	OK			
1199749002-I	HCL to pH < 2	OK			
1199749003-A	HCL to pH < 2	OK			
1199749003-B	HCL to pH < 2	OK			
1199749003-C	No Preservative Required	OK			
1199749003-D	No Preservative Required	OK			
1199749003-E	HNO3 to pH < 2	OK			
1199749003-F	No Preservative Required	OK			
1199749003-G	HCL to pH < 2	OK			
1199749003-H	HCL to pH < 2	OK			
1199749003-I	HCL to pH < 2	OK			
1199749004-A	HCL to pH < 2	OK			
1199749004-B	HCL to pH < 2	OK			
1199749004-C	No Preservative Required	OK			
1199749004-D	No Preservative Required	OK			
1199749004-E	HNO3 to pH < 2	OK			
1199749004-F	No Preservative Required	OK			
1199749004-G	HCL to pH < 2	OK			
1199749004-H	HCL to pH < 2	OK			
1199749004-I	HCL to pH < 2	OK			
1199749005-A	HCL to pH < 2	OK			
1199749005-B	HCL to pH < 2	OK			
1199749005-C	HCL to pH < 2	OK			
1199749005-D	HCL to pH < 2	OK			
1199749005-E	HCL to pH < 2	OK			
1199749005-F	HCL to pH < 2	OK			

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
---------------------	---------------------	----------------------------	---------------------	---------------------	----------------------------

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.



1049 - 28th Street SE
Grand Rapids, MI 49508
Ph: 616/248-4900
Toll Free: 800/362-LABS
Fax: 616/248-4904

September 16, 2019

Julie Shumway
SGS North America Inc
200 W. Potter Drive
Anchorage, AK 99518

TEL: (907) 562-2343
FAX (907) 561-5301
RE: 1199749

Dear Julie Shumway:

Order No.: 1909058

BIO-CHEM Laboratories, Inc. received 4 samples on 9/12/2019 for the analyses presented in the following report.

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative.

If you have any questions regarding these tests results, please feel free to call.

Please note that unless otherwise instructed, residual samples will be held for sixty (60) days from the original report date. At that time, all non-hazardous samples will be disposed of in accordance with federal, state and local regulations and ordinances, and hazardous samples shall be returned to you. Please contact the laboratory within thirty (30) days if other arrangements for sample retention need to be made.

Sincerely,

Cindy Euwema
Office Manager

1909058

Locations Nationwide
Alaska
New Jersey
Texas
Virginia
Florida
Colorado
North Carolina
Louisiana
www.us.sgs.com



SGS North America Inc.
CHAIN OF CUSTODY RECORD

CLIENT: SGS North America Inc. - Alaska Division		SGS Reference:		Bio-Chem		Page 1 of 1													
CONTACT: Julie Shumway		PHONE NO: (907) 562-2343		Additional Comments: All soils report out in dry weight unless															
PROJECT NAME: 1199749		PWSID#: NPD#: E-MAIL: Julie.Shumway@sgs.com		Preservative Used: NONE															
REPORTS TO: Julie Shumway		Env.Alaska.RefLabTeam@sgs.com		Ethylene Glycol 8015M															
INVOICE TO: SGS - Alaska		QUOTE #: P.O. #: 1199749		Propylene Glycol 8015M															
RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HHMM	MATRIX CODE	#	C	O	N	T	A	I	N	E	R	S	MS	MSD	SGS lab #	Location ID
	19FAI-FTP-Pre001	09/09/2019	19:30:00	Water	1	X	X	X	X	X	X	X	X	X	X			1199749001	
	19FAI-FTP-Pre101	09/09/2019	19:20:00	Water	1	X	X	X	X	X	X	X	X	X	X			1199749002	
	19FAI-FTP-Post001	09/09/2019	20:00:00	Water	1	X	X	X	X	X	X	X	X	X	X			1199749003	
	19FAI-FTP-Post002	09/10/2019	11:00:00	Water	1	X	X	X	X	X	X	X	X	X	X			1199749004	
Relinquished By: (1)		Date	Time	Received By:	DOD Project?		Report to DL (J Flags)?		Data Deliverable Requirements:		NO								
Relinquished By: (2)		Date	Time	Received By:	Cooler ID:		Requested Turnaround Time and-or Special Instructions:		Rush 2 Day TAT										
Relinquished By: (3)		Date	Time	Received By:	Temp Blank °C:		Chain of Custody Seal: (Circle)		INTACT										
Relinquished By: (4)		Date	Time	Received By:	or Ambient []		BROKEN		ABSENT										

http://www.sgs.com/terms and conditions.htm

Received For Laboratory By: *Cindy Ewert*
9-12-19 10:30
[X] 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
[] 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

CLIENT: SGS North America Inc
Project: 1199749
Lab Order: 1909058

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received
1909058-01A	19FAI-FTP-Pre001	Water	9/9/2019	9/12/2019
1909058-02A	19FAI-FTP-Pre101	Water	9/9/2019	9/12/2019
1909058-03A	19FAI-FTP-Post001	Water	9/9/2019	9/12/2019
1909058-04A	19FAI-FTP-Post002	Water	9/10/2019	9/12/2019

CLIENT: SGS North America Inc
Project: 1199749
Lab Order: 1909058

CASE NARRATIVE

Samples are routinely analyzed using methods outlined in the following references:

- (SW) Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Ed.
- (E) Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020.
- (A) Standard Methods for the Examination of Water and Wastewater, APHA, 18th Ed.
- (D) Annual Book of ASTM Standards.

Specific methods utilized for this project are provided in the analytical report and are identified by the reference document abbreviation () followed by the method number.

All QA/QC and sample analyses met method, laboratory and/or regulatory data quality objectives unless otherwise specified below.

No data qualifications required and there no "J" flags to report.

CLIENT: SGS North America Inc

Project Number: 1199749

Lab Order: 1909058

Client Sample ID: 19FAI-FTP-Pre001

Project: 1199749

Collection Date: 9/9/2019

Lab Sample ID: 1909058-01A

Matrix: WATER

Analyses	Method Ref.	Result	Q	PQL	Units	DF	Analyst	Date
Alcohols by GC/FID								
1. Ethylene Glycol	SW8015B	< 10		10	mg/L	1	LEB	9/12/2019
2. Propylene Glycol	SW8015B	< 10		10	mg/L	1	LEB	9/12/2019

Definitions: PQL - Practical Quantitation Limit
 DF - Dilution Factor

Qualifiers (Q): J - Detected below PQL but above MDL: Estimated
 S - Spike Recovery Outside Acceptance Limits
 B - Analyte detected in associated Method Blank
 N - See case narrative for explanation

CLIENT: SGS North America Inc

Project Number: 1199749

Lab Order: 1909058

Client Sample ID: 19FAI-FTP-Pre101

Project: 1199749

Collection Date: 9/9/2019

Lab Sample ID: 1909058-02A

Matrix: WATER

Analyses	Method Ref.	Result	Q	PQL	Units	DF	Analyst	Date
Alcohols by GC/FID								
1. Ethylene Glycol	SW8015B	< 10		10	mg/L	1	LEB	9/12/2019
2. Propylene Glycol	SW8015B	< 10		10	mg/L	1	LEB	9/12/2019

Definitions: PQL - Practical Quantitation Limit
DF - Dilution Factor

Qualifiers (Q): J - Detected below PQL but above MDL: Estimated
S - Spike Recovery Outside Acceptance Limits
B - Analyte detected in associated Method Blank
N - See case narrative for explanation

CLIENT: SGS North America Inc

Project Number: 1199749

Lab Order: 1909058

Client Sample ID: 19FAI-FTP-Post001

Project: 1199749

Collection Date: 9/9/2019

Lab Sample ID: 1909058-03A

Matrix: WATER

Analyses	Method Ref.	Result	Q	PQL	Units	DF	Analyst	Date
Alcohols by GC/FID								
1. Ethylene Glycol	SW8015B	< 10		10	mg/L	1	LEB	9/12/2019
2. Propylene Glycol	SW8015B	< 10		10	mg/L	1	LEB	9/12/2019

Definitions: PQL - Practical Quantitation Limit
DF - Dilution Factor

Qualifiers (Q): J - Detected below PQL but above MDL: Estimated
S - Spike Recovery Outside Acceptance Limits
B - Analyte detected in associated Method Blank
N - See case narrative for explanation

CLIENT: SGS North America Inc
Lab Order: 1909058
Project: 1199749
Lab Sample ID: 1909058-04A

Project Number: 1199749
Client Sample ID: 19FAI-FTP-Post002
Collection Date: 9/10/2019
Matrix: WATER

Analyses	Method Ref.	Result	Q	PQL	Units	DF	Analyst	Date
Alcohols by GC/FID								
1. Ethylene Glycol	SW8015B	< 10		10	mg/L	1	LEB	9/12/2019
2. Propylene Glycol	SW8015B	< 10		10	mg/L	1	LEB	9/12/2019

Definitions: PQL - Practical Quantitation Limit
 DF - Dilution Factor

Qualifiers (Q): J - Detected below PQL but above MDL: Estimated
 S - Spike Recovery Outside Acceptance Limits
 B - Analyte detected in associated Method Blank
 N - See case narrative for explanation

Lab Order: 1909058

Client: SGS North America Inc

Project: 1199749

ANALYTICAL DETAIL REPORT

Sample ID	Client Sample ID	Matrix	Test Name	Date Sampled	TCLP/SPLP Date	Prep Date	QC Batch	Analysis Date	Analytical Batch
1909058-01A	19FAL-FTP-Pre001	Water	Alcohols by GC/FID	9/9/2019		9/12/2019	44086	9/12/2019	GC_B_FID_190912C
1909058-02A	19FAL-FTP-Pre101	Water	Alcohols by GC/FID	9/9/2019		9/12/2019	44086	9/12/2019	GC_B_FID_190912C
1909058-03A	19FAL-FTP-Post001	Water	Alcohols by GC/FID	9/9/2019		9/12/2019	44086	9/12/2019	GC_B_FID_190912C
1909058-04A	19FAL-FTP-Post002	Water	Alcohols by GC/FID	9/10/2019		9/12/2019	44086	9/12/2019	GC_B_FID_190912C

CLIENT: SGS North America Inc
 Work Order: 1909058
 Project: 1199749

ANALYTICAL QC SUMMARY REPORT

TestCode: ALCOHOL_W

Sample ID: MB-44086	SampType: MBLK	TestCode: ALCOHOL_W	Units: mg/L	Prep Date: 9/12/2019	Run ID: GC_B_FID_190912C						
Client ID: ZZZZZ	Batch ID: 44086	TestNo: SW8015B	(SW8015B)	Analysis Date: 9/12/2019	SeqNo: 1103952						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethylene Glycol	< 10	10									
Propylene Glycol	< 10	10									

Sample ID: LCS-44086	SampType: LCS	TestCode: ALCOHOL_W	Units: mg/L	Prep Date: 9/12/2019	Run ID: GC_B_FID_190912C						
Client ID: ZZZZZ	Batch ID: 44086	TestNo: SW8015B	(SW8015B)	Analysis Date: 9/12/2019	SeqNo: 1103953						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethylene Glycol	57.29	10	50	0	115	73.3	129	0	0		
Propylene Glycol	57.04	10	50	0	114	70	129	0	0		

Sample ID: 1909058-04Ams	SampType: MS	TestCode: ALCOHOL_W	Units: mg/L	Prep Date: 9/12/2019	Run ID: GC_B_FID_190912C						
Client ID: 19FAI-FTP-Post002	Batch ID: 44086	TestNo: SW8015B	(SW8015B)	Analysis Date: 9/12/2019	SeqNo: 1103959						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethylene Glycol	456.6	10	500	0	91.3	46	148	0	0		
Propylene Glycol	464.5	10	500	0	92.9	52.8	140	0	0		

Sample ID: 1909058-04Amsd	SampType: MSD	TestCode: ALCOHOL_W	Units: mg/L	Prep Date: 9/12/2019	Run ID: GC_B_FID_190912C						
Client ID: 19FAI-FTP-Post002	Batch ID: 44086	TestNo: SW8015B	(SW8015B)	Analysis Date: 9/12/2019	SeqNo: 1103960						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethylene Glycol	459.7	10	500	0	91.9	46	148	456.6	0.671	20	
Propylene Glycol	443.4	10	500	0	88.7	52.8	140	464.5	4.65	20	

Qualifiers: ND - Not Detected at the Reporting Limit
 S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits
 B - Analyte detected in the associated Method Blank
 J - Analyte detected below quantitation limits

Laboratory Data Review Checklist

Completed By:

Ashley Jaramillo

Title:

Chemist

Date:

September 23, 2019

CS Report Name:

Fairbanks International Airport (FAI)

Report Date:

September 20, 2019

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

SGS North America, Inc.

Laboratory Report Number:

1199749

ADEC File Number:

100.38.070

Hazard Identification Number:

1071

1. Laboratory

- a. Did an ADEC CS approved laboratory receive and
- perform
- all of the submitted sample analyses?

 Yes No

Comments:

DRO, RRO, BTEX, PAH, and metals analyses were all performed by the SGS laboratory in Anchorage, AK. The laboratory is certified by the ADEC CSP for these requested analyses.

Propylene and ethylene glycol analysis by 8015B was subcontracted to Bio-Chem of Grand Rapids, Michigan. Bio-chem is not an ADEC CSP approved lab for the requested analysis.

- b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

 Yes No

Comments:

See 1a above.

2. Chain of Custody (CoC)

- a. CoC information completed, signed, and dated (including released/received by)?

 Yes No

Comments:

- b. Correct Analyses requested?

 Yes No

Comments:

3. Laboratory Sample Receipt Documentation

- a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

 Yes No

Comments:

- b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

 Yes No

Comments:

- c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

 Yes No

Comments:

The sample receipt form notes that the samples arrived in good condition.

- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes No

Comments:

Not applicable, no discrepancies were noted upon sample login.

- e. Data quality or usability affected?

Comments:

Data quality and/or usability was not affected; see above

4. Case Narrative

- a. Present and understandable?

Yes No

Comments:

- b. Discrepancies, errors, or QC failures identified by the lab?

Yes No

Comments:

The case narrative notes the ethylene and propylene glycols analyses by 8015M were conducted by Bio-Chem of Grand Rapids, Michigan.

The case narrative notes that the SW8270D SIM surrogates fluoranthene-d10 and/or 2-methylnaphthalene d10 were recovered outside of laboratory control limits in the project samples associated with this work order.

- c. Were all corrective actions documented?

Yes No

Comments:

The project samples were re-extracted past hold-time due to the SW8270D SIM surrogate recovery failures. Surrogate recovery in the re-extracted batch was not within QC criteria, however the results were comparable. The in-hold data is used for reporting purposes. For further discussion of the surrogate recovery failures see section 6c.

- d. What is the effect on data quality/usability according to the case narrative?

Comments:

Case narrative does not specify an effect on data quality, it only discusses discrepancies and what was done in light of them. Any notable data quality issues mentioned in the case narrative are discussed above in 4b or elsewhere within this ADEC checklist.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes No

Comments:

b. All applicable holding times met?

Yes No

Comments:

The SW8270D SIM analysis was re-run outside of the method required holding time to confirm the sample results. However, the results of the initial analysis are used for reporting purposes.

c. All soils reported on a dry weight basis?

Yes No

Comments:

Not applicable, no soil samples were submitted with this work order.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes No

Comments:

The LODs of all requested analytes met applicable ADEC groundwater cleanup levels for non-detect results.

e. Data quality or usability affected?

Yes No

Comments:

Data quality and/or usability are not affected.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes No

Comments:

ii. All method blank results less than limit of quantitation (LOQ)?

Yes No

Comments:

No analytes were detected in method blanks at concentrations exceeding the LOQ; however, benzene was detected at a concentration below the LOQ.

iii. If above LOQ, what samples are affected?

Comments:

Benzene was detected in associated sample *19FAI-FTP-Post002* at a concentration less than five-times that of the concentration detected in the method blank sample.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No

Comments:

The benzene result for sample *19FAI-FTP-Post002* was qualified (B*) at the LOQ due to potential laboratory cross-contamination. Impact to the data is negligible as the affected result is an order of magnitude less than the respective ADEC groundwater cleanup level.

v. Data quality or usability affected?

Comments:

The data quality was affected; see above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes No

Comments:

An LCS/LCSD was performed for BTEX, DRO, and RRO analyses in each sample batch.

An MS/MSD and LCS were performed for PAH and Glycol analyses in each sample batch.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No

Comments:

An LCS and MS samples were analyzed for the metals batch. We have no measure of analytical precision for this analysis.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No

Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No

Comments:

The MS/MSD samples associated with preparation batch XXX42235 exhibited precision failures for all PAH analytes.

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

The MS/MSD samples associated with preparation batch XXX42235 were performed on a parent sample that is not associated with this work order. Therefore, there is no impact to data quality or usability due to the RPD failures.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No

Comments:

Qualification was not required; see 6biv above.

- vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability is not affected; see above.

c. Surrogates – Organics Only

- i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

Yes No

Comments:

- ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

Yes No

Comments:

The PAH surrogate 2-methylnaphthalene-d10 was recovered below the lower control limit in samples *19FAI-FTP-Pre001*, *19FAI-FTP-Pre101*, *19FAI-FTP-Post001*, and *19FAI-FTP-Post002*.

The PAH surrogate fluoranthene-d10 was recovered below the lower control limit in sample *19FAI-FTP-Pre001*.

- iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

Yes No

Comments:

The detected acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene, and phenanthrene results of the samples associated with this work order have been qualified 'JL' and the non-detected results for these analytes have been qualified 'UJ' as biased low estimates.

The benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo[g,h,i]perylene, benzo[k]fluoranthene, chrysene, dibenzo[a,h]anthracene, fluoranthene, indeno[1,2,3-c,d]pyrene, and pyrene results of the sample *19FAI-FTP-Pre001* are considered estimated non-detections and have been qualified 'UJ' for reporting purposes.

iv. Data quality or usability affected?

Comments:

Impact to data is minor as the LODs of the non-detect results are all at least an order of magnitude lower than the associated ADEC groundwater cleanup level.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

- i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples?
(If not, enter explanation below.)

Yes No

Comments:

- ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes No

Comments:

- iii. All results less than LOQ?

Yes No

Comments:

- iv. If above LOQ, what samples are affected?

Comments:

Not applicable, target analytes were not detected in the trip blank sample.

v. Data quality or usability affected?

Comments:

The data quality and/or usability are not affected; see above.

e. Field Duplicate

- i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No

Comments:

- ii. Submitted blind to lab?

Yes No

Comments:

Sample *19FAI-FTP-Pre101* was a field duplicate of *19FAI-FTP-Pre001*.

- iii. Precision – All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Yes No

Comments:

The relative precision demonstrated between the detected results of the field-duplicate samples was within the recommended DQO of 30%, where calculable, except for o-xylene and P&M-xylenes.

- iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The o-xylene and P&M-xylenes results for samples *19FAI-FTP-Pre001* and *19FAI-FTP-Pre101* are considered estimated and have been flagged 'J' in the analytical results table.

- f. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below).

Yes No Not Applicable

The samples were collected without the use of reusable sampling equipment.

- i. All results less than LOQ?

Yes No

Comments:

Not applicable, an equipment-blank sample was not collected.

- ii. If above LOQ, what samples are affected?

Comments:

Not applicable, an equipment-blank sample was not collected.

- iii. Data quality or usability affected?

Comments:

Data quality and/or usability are not affected.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

- a. Defined and appropriate?

Yes No

Comments:

There were no additional flags/qualifiers required for this work order.



Laboratory Report of Analysis

To: Shannon & Wilson-Fairbanks
2355 Hill Rd
Fairbanks, AK 99707
(907)479-0600

Report Number: **1199836**

Client Project: **102519-010 Fire Training Pit**

Dear Mary Nadel,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Jennifer at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Stephen Ede

2019.10.24

11:00:55 -08'00'

Jennifer Dawkins
Project Manager
Jennifer.Dawkins@sgs.com

Date



Case Narrative

SGS Client: Shannon & Wilson-Fairbanks

SGS Project: 1199836

Project Name/Site: 102519-010 Fire Training Pit

Refer to sample receipt form for information on sample condition.

FTP-001

1199836001 PS

8260C - Recovery for 4-bromofluorobenzene does not meet QC criteria because sample was not preserved with SGS BFB methanol.

FTP-001 MS

1199836002 BMS

8260C - BMS recovery for hexachlorobutadiene does not meet QC criteria. This analyte was not detected above the LOQ in the associated parent sample.

8260C - Recovery for 4-bromofluorobenzene does not meet QC criteria because sample was not preserved with SGS BFB methanol.

AK102/103 - BMS recovery for DRO does not meet QC criteria. Refer to the LCS/LCSD for accuracy requirements.

FTP-001 MSD

1199836003 BMSD

8260C - MSD recoveries for hexachlorobutadiene and vinyl acetate do not meet QC criteria. These analytes were not detected above the LOQ in the associated parent sample.

8260C - Recovery for 4-bromofluorobenzene does not meet QC criteria because sample was not preserved with SGS BFB methanol.

AK102/103 - BMSD recovery for DRO does not meet QC criteria. Refer to the LCS/LCSD for accuracy requirements.

FTP-002

1199836004 PS

8260C - Recovery for 4-bromofluorobenzene does not meet QC criteria because sample was not preserved with SGS BFB methanol.

FTP-003

1199836005 PS

8260C - Recovery for 4-bromofluorobenzene does not meet QC criteria because sample was not preserved with SGS BFB methanol.

FTP-004

1199836006 PS

8260C - Recovery for 4-bromofluorobenzene does not meet QC criteria because the sample was not preserved with SGS BFB methanol.

FTP-005

1199836007 PS

8260C - Recovery for 4-bromofluorobenzene does not meet QC criteria because the sample was not preserved with SGS BFB methanol.

FTP-pre003

1199836008 PS

8270D SIM - PAH surrogate recovery for 2-Methylnaphthalene d10 does not meet QC criteria. The sample was re-extracted past hold time. Surrogate Recovery was not within QC criteria and results are comparable. The in-hold data is reported.

* QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to the associated field samples.



Case Narrative

SGS Client: Shannon & Wilson-Fairbanks

SGS Project: 1199836

Project Name/Site: 102519-010 Fire Training Pit

Trip Blank 1

1199836009 TB

8260C - Recovery for 4-bromofluorobenzene does not meet QC criteria because sample was not preserved with SGS BFB methanol.

VXX/35072

1538110 LCS

8260C - LCS recovery for chloroethane does not meet QC criteria. This analyte was not detected above the LOQ in the associated samples.

1538406MS

1538407 MS

8260C - Recovery for 4-bromofluorobenzene does not meet QC criteria because the sample was not preserved with SGS BFB methanol.

8260C- MS recovery for hexachlorobutadiene does not meet QC criteria. This analyte was not detected above the LOQ in the associated parent sample.

1538406MSD

1538408 MSD

8260C - Recovery for 4-bromofluorobenzene does not meet QC criteria because the sample was not preserved with SGS BFB methanol.

8260C- MSD recovery for hexachlorobutadiene does not meet QC criteria. This analyte was not detected above the LOQ in the associated parent sample.

1199836001MS

1538944 MS

8260C - MS recovery for hexachlorobutadiene does not meet QC criteria. This analyte was not detected above the LOQ in the associated parent sample.

8260C - Recovery for 4-bromofluorobenzene does not meet QC criteria because sample was not preserved with SGS BFB methanol.

1199836001MSD

1538945 MSD

8260C - MSD recoveries for hexachlorobutadiene and vinyl acetate do not meet QC criteria. These analytes were not detected above the LOQ in the associated parent sample.

8260C - Recovery for 4-bromofluorobenzene does not meet QC criteria because sample was not preserved with SGS BFB methanol.

* QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to the associated field samples.

Report of Manual Integrations

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Analytical Batch</u>	<u>Analyte</u>	<u>Reason</u>
SW8260C				
1199836001	FTP-001	VMS19575	4-Isopropyltoluene	SP
1199836001	FTP-001	VMS19575	Naphthalene	SP
1199836004	FTP-002	VMS19575	Naphthalene	SP
1199836005	FTP-003	VMS19575	Naphthalene	SP
1199836007	FTP-005	VMS19564	Naphthalene	RP

Manual Integration Reason Code Descriptions

Code	Description
O	Original Chromatogram
M	Modified Chromatogram
SS	Skimmed surrogate
BLG	Closed baseline gap
RP	Reassign peak name
PIR	Pattern integration required
IT	Included tail
SP	Split peak
RSP	Removed split peak
FPS	Forced peak start/stop
BLC	Baseline correction
PNF	Peak not found by software

All DRO/RRO analysis are integrated per SOP.

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260C, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
FTP-001	1199836001	10/01/2019	10/04/2019	Soil/Solid (dry weight)
FTP-001 MS	1199836002	10/01/2019	10/04/2019	Soil/Solid (dry weight)
FTP-001 MSD	1199836003	10/01/2019	10/04/2019	Soil/Solid (dry weight)
FTP-002	1199836004	10/01/2019	10/04/2019	Soil/Solid (dry weight)
FTP-003	1199836005	10/01/2019	10/04/2019	Soil/Solid (dry weight)
FTP-004	1199836006	10/01/2019	10/04/2019	Soil/Solid (dry weight)
FTP-005	1199836007	10/01/2019	10/04/2019	Soil/Solid (dry weight)
FTP-pre003	1199836008	09/30/2019	10/04/2019	Water (Surface, Eff., Ground)
Trip Blank 1	1199836009	09/30/2019	10/04/2019	Soil/Solid (dry weight)
Trip Blank 2	1199836010	09/30/2019	10/04/2019	Water (Surface, Eff., Ground)

<u>Method</u>	<u>Method Description</u>
EPA 625M SIM (PAH) LV	625 PAH SIM GC/MS Low Volume
AK102	Diesel/Residual Range Organics
AK103	Diesel/Residual Range Organics
AK102	DRO/RRO Low Volume Water
AK103	DRO/RRO Low Volume Water
SW6020A TCLP	Metals by ICP-MS
EP200.8	Metals in Water by 200.8 ICP-MS
SM21 2540G	Percent Solids SM2540G
SW8260C	VOC 8260 (S) Field Extracted
SW8260C	Volatile Organic Compounds (W) FULL

Print Date: 10/24/2019 10:24:07AM

Detectable Results Summary

Client Sample ID: **FTP-001**
 Lab Sample ID: 1199836001
Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	5180	mg/Kg
Residual Range Organics	1170	mg/Kg

TCLP Constituents Metals

Barium	0.464	mg/L
Chromium	0.137J	mg/L
Lead	0.0396J	mg/L

Volatile GC/MS

1,2,4-Trimethylbenzene	0.142	mg/Kg
1,3,5-Trimethylbenzene	0.0939	mg/Kg
2-Butanone (MEK)	0.142J	mg/Kg
Benzene	0.00665J	mg/Kg
Ethylbenzene	0.0494	mg/Kg
Isopropylbenzene (Cumene)	0.0199J	mg/Kg
Naphthalene	0.106	mg/Kg
n-Propylbenzene	0.0336J	mg/Kg
o-Xylene	0.159	mg/Kg
P & M -Xylene	0.262	mg/Kg
sec-Butylbenzene	0.0137J	mg/Kg
Toluene	0.0411J	mg/Kg
Xylenes (total)	0.421	mg/Kg

Client Sample ID: **FTP-002**
 Lab Sample ID: 1199836004
Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	5510	mg/Kg
Residual Range Organics	3000	mg/Kg

TCLP Constituents Metals

Arsenic	0.0846J	mg/L
Barium	0.263J	mg/L
Chromium	0.164J	mg/L
Lead	0.0320J	mg/L

Volatile GC/MS

1,2,4-Trimethylbenzene	0.0397J	mg/Kg
1,3,5-Trimethylbenzene	0.0171J	mg/Kg
Ethylbenzene	0.0242J	mg/Kg
Naphthalene	0.0627	mg/Kg
o-Xylene	0.0904	mg/Kg
P & M -Xylene	0.134	mg/Kg
Toluene	0.0267J	mg/Kg
Xylenes (total)	0.224	mg/Kg

Detectable Results Summary

Client Sample ID: **FTP-003**
 Lab Sample ID: 1199836005
Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	5500	mg/Kg
Residual Range Organics	2850	mg/Kg

TCLP Constituents Metals

Barium	0.285J	mg/L
Chromium	0.177J	mg/L
Lead	0.0325J	mg/L

Volatile GC/MS

1,2,4-Trimethylbenzene	0.0399J	mg/Kg
1,3,5-Trimethylbenzene	0.0166J	mg/Kg
Ethylbenzene	0.0250J	mg/Kg
Naphthalene	0.0526	mg/Kg
o-Xylene	0.0973	mg/Kg
P & M -Xylene	0.143	mg/Kg
Toluene	0.0273J	mg/Kg
Xylenes (total)	0.240	mg/Kg

Client Sample ID: **FTP-004**
 Lab Sample ID: 1199836006
Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	1170	mg/Kg
Residual Range Organics	160	mg/Kg

TCLP Constituents Metals

Barium	0.268J	mg/L
Chromium	0.176J	mg/L
Benzene	0.00586J	mg/Kg
Toluene	0.0117J	mg/Kg

Volatile GC/MS

Client Sample ID: **FTP-005**
 Lab Sample ID: 1199836007
Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	8220	mg/Kg
Residual Range Organics	762	mg/Kg

TCLP Constituents Metals

Barium	0.339	mg/L
Chromium	0.177J	mg/L
Lead	0.0371J	mg/L

Volatile GC/MS

1,2,4-Trimethylbenzene	0.0271J	mg/Kg
1,3,5-Trimethylbenzene	0.0145J	mg/Kg
Naphthalene	0.0215J	mg/Kg
o-Xylene	0.0186J	mg/Kg
P & M -Xylene	0.0293J	mg/Kg
Xylenes (total)	0.0480J	mg/Kg

Detectable Results Summary

Client Sample ID: **FTP-pre003**

Lab Sample ID: 1199836008

Metals by ICP/MS

Polynuclear Aromatics GC/MS

Semivolatile Organic Fuels

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Arsenic	37.0	ug/L
Fluoranthene	0.481	ug/L
Fluorene	1.45	ug/L
Naphthalene	5.06	ug/L
Phenanthrene	1.37	ug/L
Pyrene	0.522	ug/L
Diesel Range Organics	33.1	mg/L
Residual Range Organics	6.92	mg/L
1,2,4-Trimethylbenzene	25.1	ug/L
1,3,5-Trimethylbenzene	11.2	ug/L
2-Butanone (MEK)	7.52J	ug/L
4-Isopropyltoluene	4.05	ug/L
Benzene	5.40	ug/L
Ethylbenzene	12.1	ug/L
Isopropylbenzene (Cumene)	2.92	ug/L
Naphthalene	14.1	ug/L
n-Propylbenzene	3.64	ug/L
o-Xylene	40.4	ug/L
P & M -Xylene	62.8	ug/L
sec-Butylbenzene	0.824J	ug/L
Toluene	15.6	ug/L
Xylenes (total)	103	ug/L



Results of FTP-001

Client Sample ID: FTP-001
Client Project ID: 102519-010 Fire Training Pit
Lab Sample ID: 1199836001
Lab Project ID: 1199836

Collection Date: 10/01/19 11:25
Received Date: 10/04/19 09:55
Matrix: Soil/Solid (dry weight)
Solids (%):89.4
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Diesel Range Organics, 5180, 89.2, 27.6, mg/Kg, 4, 10/22/19 21:20

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 5a Androstane (surr), 83.8, 50-150, %, 4, 10/22/19 21:20

Batch Information

Analytical Batch: XFC15433
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 10/22/19 21:20
Container ID: 1199836001-A

Prep Batch: XXX42435
Prep Method: SW3550C
Prep Date/Time: 10/10/19 11:20
Prep Initial Wt./Vol.: 30.114 g
Prep Extract Vol: 5 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Residual Range Organics, 1170, 22.3, 6.91, mg/Kg, 1, 10/10/19 21:39

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: n-Triacontane-d62 (surr), 83.1, 50-150, %, 1, 10/10/19 21:39

Batch Information

Analytical Batch: XFC15390
Analytical Method: AK103
Analyst: CMS
Analytical Date/Time: 10/10/19 21:39
Container ID: 1199836001-A

Prep Batch: XXX42435
Prep Method: SW3550C
Prep Date/Time: 10/10/19 11:20
Prep Initial Wt./Vol.: 30.114 g
Prep Extract Vol: 5 mL



Results of FTP-001

Client Sample ID: **FTP-001**
Client Project ID: **102519-010 Fire Training Pit**
Lab Sample ID: 1199836001
Lab Project ID: 1199836

Collection Date: 10/01/19 11:25
Received Date: 10/04/19 09:55
Matrix: Soil/Solid (dry weight)
Solids (%):89.4
Location:

Results by TCLP Constituents Metals

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	0.125 U	0.250	0.0750	mg/L	25	(<5)	10/11/19 15:38
Barium	0.464	0.300	0.0750	mg/L	25	(<100)	10/11/19 15:38
Cadmium	0.0500 U	0.100	0.0310	mg/L	25	(<1)	10/11/19 15:38
Chromium	0.137 J	0.200	0.0650	mg/L	25	(<5)	10/11/19 15:38
Lead	0.0396 J	0.100	0.0250	mg/L	25	(<5)	10/11/19 15:38
Mercury	0.00500 U	0.0100	0.00310	mg/L	25	(<0.2)	10/11/19 15:38
Selenium	0.500 U	1.00	0.310	mg/L	25	(<1)	10/11/19 15:38
Silver	0.0500 U	0.100	0.0310	mg/L	25	(<5)	10/11/19 15:38

Batch Information

Analytical Batch: MMS10648
Analytical Method: SW6020A TCLP
Analyst: DMM
Analytical Date/Time: 10/11/19 15:38
Container ID: 1199836001-C

Prep Batch: MXT5874
Prep Method: SW3010A
Prep Date/Time: 10/10/19 13:35
Prep Initial Wt./Vol.: 2.5 mL
Prep Extract Vol: 25 mL



Results of FTP-001

Client Sample ID: FTP-001
Client Project ID: 102519-010 Fire Training Pit
Lab Sample ID: 1199836001
Lab Project ID: 1199836

Collection Date: 10/01/19 11:25
Received Date: 10/04/19 09:55
Matrix: Soil/Solid (dry weight)
Solids (%):89.4
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of FTP-001

Client Sample ID: **FTP-001**
 Client Project ID: **102519-010 Fire Training Pit**
 Lab Sample ID: 1199836001
 Lab Project ID: 1199836

Collection Date: 10/01/19 11:25
 Received Date: 10/04/19 09:55
 Matrix: Soil/Solid (dry weight)
 Solids (%):89.4
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroethane	0.166 U	0.332	0.103	mg/Kg	1		10/15/19 12:01
Chloroform	0.00166 U	0.00332	0.00103	mg/Kg	1		10/15/19 12:01
Chloromethane	0.0208 U	0.0415	0.0130	mg/Kg	1		10/15/19 12:01
cis-1,2-Dichloroethene	0.0208 U	0.0415	0.0130	mg/Kg	1		10/15/19 12:01
cis-1,3-Dichloropropene	0.0104 U	0.0208	0.00648	mg/Kg	1		10/15/19 12:01
Dibromochloromethane	0.00166 U	0.00332	0.00103	mg/Kg	1		10/15/19 12:01
Dibromomethane	0.0208 U	0.0415	0.0130	mg/Kg	1		10/15/19 12:01
Dichlorodifluoromethane	0.0415 U	0.0831	0.0249	mg/Kg	1		10/15/19 12:01
Ethylbenzene	0.0494	0.0415	0.0130	mg/Kg	1		10/15/19 12:01
Freon-113	0.0830 U	0.166	0.0515	mg/Kg	1		10/15/19 12:01
Hexachlorobutadiene	0.0166 U	0.0332	0.0103	mg/Kg	1		10/15/19 12:01
Isopropylbenzene (Cumene)	0.0199 J	0.0415	0.0130	mg/Kg	1		10/15/19 12:01
Methylene chloride	0.0830 U	0.166	0.0515	mg/Kg	1		10/15/19 12:01
Methyl-t-butyl ether	0.0830 U	0.166	0.0515	mg/Kg	1		10/15/19 12:01
Naphthalene	0.106	0.0415	0.0130	mg/Kg	1		10/15/19 12:01
n-Butylbenzene	0.0208 U	0.0415	0.0130	mg/Kg	1		10/15/19 12:01
n-Propylbenzene	0.0336 J	0.0415	0.0130	mg/Kg	1		10/15/19 12:01
o-Xylene	0.159	0.0415	0.0130	mg/Kg	1		10/15/19 12:01
P & M -Xylene	0.262	0.0831	0.0249	mg/Kg	1		10/15/19 12:01
sec-Butylbenzene	0.0137 J	0.0415	0.0130	mg/Kg	1		10/15/19 12:01
Styrene	0.0208 U	0.0415	0.0130	mg/Kg	1		10/15/19 12:01
tert-Butylbenzene	0.0208 U	0.0415	0.0130	mg/Kg	1		10/15/19 12:01
Tetrachloroethene	0.0104 U	0.0208	0.00648	mg/Kg	1		10/15/19 12:01
Toluene	0.0411 J	0.0415	0.0130	mg/Kg	1		10/15/19 12:01
trans-1,2-Dichloroethene	0.0208 U	0.0415	0.0130	mg/Kg	1		10/15/19 12:01
trans-1,3-Dichloropropene	0.0104 U	0.0208	0.00648	mg/Kg	1		10/15/19 12:01
Trichloroethene	0.00415 U	0.00831	0.00249	mg/Kg	1		10/15/19 12:01
Trichlorofluoromethane	0.0415 U	0.0831	0.0249	mg/Kg	1		10/15/19 12:01
Vinyl acetate	0.0830 U	0.166	0.0515	mg/Kg	1		10/15/19 12:01
Vinyl chloride	0.000665 U	0.00133	0.000415	mg/Kg	1		10/15/19 12:01
Xylenes (total)	0.421	0.125	0.0379	mg/Kg	1		10/15/19 12:01
Surrogates							
1,2-Dichloroethane-D4 (surr)	114	71-136		%	1		10/15/19 12:01
4-Bromofluorobenzene (surr)	8.8 *	55-151		%	1		10/15/19 12:01
Toluene-d8 (surr)	99.2	85-116		%	1		10/15/19 12:01

Results of FTP-001

Client Sample ID: **FTP-001**
Client Project ID: **102519-010 Fire Training Pit**
Lab Sample ID: 1199836001
Lab Project ID: 1199836

Collection Date: 10/01/19 11:25
Received Date: 10/04/19 09:55
Matrix: Soil/Solid (dry weight)
Solids (%):89.4
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS19575
Analytical Method: SW8260C
Analyst: KAJ
Analytical Date/Time: 10/15/19 12:01
Container ID: 1199836001-E

Prep Batch: VXX35102
Prep Method: SW5035A
Prep Date/Time: 10/01/19 11:25
Prep Initial Wt./Vol.: 39.292 g
Prep Extract Vol: 29.1736 mL



Results of FTP-002

Client Sample ID: FTP-002
Client Project ID: 102519-010 Fire Training Pit
Lab Sample ID: 1199836004
Lab Project ID: 1199836

Collection Date: 10/01/19 12:10
Received Date: 10/04/19 09:55
Matrix: Soil/Solid (dry weight)
Solids (%):91.1
Location:

Results by Semivolatile Organic Fuels

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	5510	109	33.9	mg/Kg	5		10/22/19 21:50

Surrogates

5a Androstane (surr)	90.5	50-150		%	5		10/22/19 21:50
----------------------	------	--------	--	---	---	--	----------------

Batch Information

Analytical Batch: XFC15433
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 10/22/19 21:50
Container ID: 1199836004-A

Prep Batch: XXX42435
Prep Method: SW3550C
Prep Date/Time: 10/10/19 11:20
Prep Initial Wt./Vol.: 30.151 g
Prep Extract Vol: 5 mL

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	3000	21.8	6.77	mg/Kg	1		10/10/19 22:08

Surrogates

n-Triacontane-d62 (surr)	89.8	50-150		%	1		10/10/19 22:08
--------------------------	------	--------	--	---	---	--	----------------

Batch Information

Analytical Batch: XFC15390
Analytical Method: AK103
Analyst: CMS
Analytical Date/Time: 10/10/19 22:08
Container ID: 1199836004-A

Prep Batch: XXX42435
Prep Method: SW3550C
Prep Date/Time: 10/10/19 11:20
Prep Initial Wt./Vol.: 30.151 g
Prep Extract Vol: 5 mL



Results of FTP-002

Client Sample ID: **FTP-002**
Client Project ID: **102519-010 Fire Training Pit**
Lab Sample ID: 1199836004
Lab Project ID: 1199836

Collection Date: 10/01/19 12:10
Received Date: 10/04/19 09:55
Matrix: Soil/Solid (dry weight)
Solids (%):91.1
Location:

Results by TCLP Constituents Metals

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	0.0846 J	0.250	0.0750	mg/L	25	(<5)	10/11/19 16:30
Barium	0.263 J	0.300	0.0750	mg/L	25	(<100)	10/11/19 16:30
Cadmium	0.0500 U	0.100	0.0310	mg/L	25	(<1)	10/11/19 16:30
Chromium	0.164 J	0.200	0.0650	mg/L	25	(<5)	10/11/19 16:30
Lead	0.0320 J	0.100	0.0250	mg/L	25	(<5)	10/11/19 16:30
Mercury	0.00500 U	0.0100	0.00310	mg/L	25	(<0.2)	10/11/19 16:30
Selenium	0.500 U	1.00	0.310	mg/L	25	(<1)	10/11/19 16:30
Silver	0.0500 U	0.100	0.0310	mg/L	25	(<5)	10/11/19 16:30

Batch Information

Analytical Batch: MMS10648
Analytical Method: SW6020A TCLP
Analyst: DMM
Analytical Date/Time: 10/11/19 16:30
Container ID: 1199836004-B

Prep Batch: MXT5874
Prep Method: SW3010A
Prep Date/Time: 10/10/19 13:35
Prep Initial Wt./Vol.: 2.5 mL
Prep Extract Vol: 25 mL



Results of FTP-002

Client Sample ID: FTP-002
Client Project ID: 102519-010 Fire Training Pit
Lab Sample ID: 1199836004
Lab Project ID: 1199836

Collection Date: 10/01/19 12:10
Received Date: 10/04/19 09:55
Matrix: Soil/Solid (dry weight)
Solids (%):91.1
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of FTP-002

Client Sample ID: **FTP-002**
 Client Project ID: **102519-010 Fire Training Pit**
 Lab Sample ID: 1199836004
 Lab Project ID: 1199836

Collection Date: 10/01/19 12:10
 Received Date: 10/04/19 09:55
 Matrix: Soil/Solid (dry weight)
 Solids (%):91.1
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroethane	0.124 U	0.248	0.0770	mg/Kg	1		10/15/19 12:17
Chloroform	0.00124 U	0.00248	0.000770	mg/Kg	1		10/15/19 12:17
Chloromethane	0.0156 U	0.0311	0.00969	mg/Kg	1		10/15/19 12:17
cis-1,2-Dichloroethene	0.0156 U	0.0311	0.00969	mg/Kg	1		10/15/19 12:17
cis-1,3-Dichloropropene	0.00775 U	0.0155	0.00484	mg/Kg	1		10/15/19 12:17
Dibromochloromethane	0.00124 U	0.00248	0.000770	mg/Kg	1		10/15/19 12:17
Dibromomethane	0.0156 U	0.0311	0.00969	mg/Kg	1		10/15/19 12:17
Dichlorodifluoromethane	0.0311 U	0.0621	0.0186	mg/Kg	1		10/15/19 12:17
Ethylbenzene	0.0242 J	0.0311	0.00969	mg/Kg	1		10/15/19 12:17
Freon-113	0.0620 U	0.124	0.0385	mg/Kg	1		10/15/19 12:17
Hexachlorobutadiene	0.0124 U	0.0248	0.00770	mg/Kg	1		10/15/19 12:17
Isopropylbenzene (Cumene)	0.0156 U	0.0311	0.00969	mg/Kg	1		10/15/19 12:17
Methylene chloride	0.0620 U	0.124	0.0385	mg/Kg	1		10/15/19 12:17
Methyl-t-butyl ether	0.0620 U	0.124	0.0385	mg/Kg	1		10/15/19 12:17
Naphthalene	0.0627	0.0311	0.00969	mg/Kg	1		10/15/19 12:17
n-Butylbenzene	0.0156 U	0.0311	0.00969	mg/Kg	1		10/15/19 12:17
n-Propylbenzene	0.0156 U	0.0311	0.00969	mg/Kg	1		10/15/19 12:17
o-Xylene	0.0904	0.0311	0.00969	mg/Kg	1		10/15/19 12:17
P & M -Xylene	0.134	0.0621	0.0186	mg/Kg	1		10/15/19 12:17
sec-Butylbenzene	0.0156 U	0.0311	0.00969	mg/Kg	1		10/15/19 12:17
Styrene	0.0156 U	0.0311	0.00969	mg/Kg	1		10/15/19 12:17
tert-Butylbenzene	0.0156 U	0.0311	0.00969	mg/Kg	1		10/15/19 12:17
Tetrachloroethene	0.00775 U	0.0155	0.00484	mg/Kg	1		10/15/19 12:17
Toluene	0.0267 J	0.0311	0.00969	mg/Kg	1		10/15/19 12:17
trans-1,2-Dichloroethene	0.0156 U	0.0311	0.00969	mg/Kg	1		10/15/19 12:17
trans-1,3-Dichloropropene	0.00775 U	0.0155	0.00484	mg/Kg	1		10/15/19 12:17
Trichloroethene	0.00311 U	0.00621	0.00186	mg/Kg	1		10/15/19 12:17
Trichlorofluoromethane	0.0311 U	0.0621	0.0186	mg/Kg	1		10/15/19 12:17
Vinyl acetate	0.0620 U	0.124	0.0385	mg/Kg	1		10/15/19 12:17
Vinyl chloride	0.000497 U	0.000994	0.000311	mg/Kg	1		10/15/19 12:17
Xylenes (total)	0.224	0.0932	0.0283	mg/Kg	1		10/15/19 12:17

Surrogates

1,2-Dichloroethane-D4 (surr)	120		71-136	%	1		10/15/19 12:17
4-Bromofluorobenzene (surr)	5.1	*	55-151	%	1		10/15/19 12:17
Toluene-d8 (surr)	101		85-116	%	1		10/15/19 12:17

Results of FTP-002

Client Sample ID: **FTP-002**
Client Project ID: **102519-010 Fire Training Pit**
Lab Sample ID: 1199836004
Lab Project ID: 1199836

Collection Date: 10/01/19 12:10
Received Date: 10/04/19 09:55
Matrix: Soil/Solid (dry weight)
Solids (%):91.1
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS19575
Analytical Method: SW8260C
Analyst: KAJ
Analytical Date/Time: 10/15/19 12:17
Container ID: 1199836004-C

Prep Batch: VXX35102
Prep Method: SW5035A
Prep Date/Time: 10/01/19 12:10
Prep Initial Wt./Vol.: 52.44 g
Prep Extract Vol: 29.6686 mL



Results of FTP-003

Client Sample ID: FTP-003
Client Project ID: 102519-010 Fire Training Pit
Lab Sample ID: 1199836005
Lab Project ID: 1199836

Collection Date: 10/01/19 12:00
Received Date: 10/04/19 09:55
Matrix: Soil/Solid (dry weight)
Solids (%):91.1
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row 1: Diesel Range Organics, 5500, 109, 33.8, mg/Kg, 5, 10/22/19 22:00

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row 1: 5a Androstane (surr), 83.2, 50-150, %, 5, 10/22/19 22:00

Batch Information

Analytical Batch: XFC15433
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 10/22/19 22:00
Container ID: 1199836005-A

Prep Batch: XXX42435
Prep Method: SW3550C
Prep Date/Time: 10/10/19 11:20
Prep Initial Wt./Vol.: 30.239 g
Prep Extract Vol: 5 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row 1: Residual Range Organics, 2850, 21.8, 6.75, mg/Kg, 1, 10/10/19 22:18

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row 1: n-Triacontane-d62 (surr), 85.4, 50-150, %, 1, 10/10/19 22:18

Batch Information

Analytical Batch: XFC15390
Analytical Method: AK103
Analyst: CMS
Analytical Date/Time: 10/10/19 22:18
Container ID: 1199836005-A

Prep Batch: XXX42435
Prep Method: SW3550C
Prep Date/Time: 10/10/19 11:20
Prep Initial Wt./Vol.: 30.239 g
Prep Extract Vol: 5 mL

Results of FTP-003

Client Sample ID: **FTP-003**
 Client Project ID: **102519-010 Fire Training Pit**
 Lab Sample ID: 1199836005
 Lab Project ID: 1199836

Collection Date: 10/01/19 12:00
 Received Date: 10/04/19 09:55
 Matrix: Soil/Solid (dry weight)
 Solids (%):91.1
 Location:

Results by TCLP Constituents Metals

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	0.125 U	0.250	0.0750	mg/L	25	(<5)	10/11/19 16:35
Barium	0.285 J	0.300	0.0750	mg/L	25	(<100)	10/11/19 16:35
Cadmium	0.0500 U	0.100	0.0310	mg/L	25	(<1)	10/11/19 16:35
Chromium	0.177 J	0.200	0.0650	mg/L	25	(<5)	10/11/19 16:35
Lead	0.0325 J	0.100	0.0250	mg/L	25	(<5)	10/11/19 16:35
Mercury	0.00500 U	0.0100	0.00310	mg/L	25	(<0.2)	10/11/19 16:35
Selenium	0.500 U	1.00	0.310	mg/L	25	(<1)	10/11/19 16:35
Silver	0.0500 U	0.100	0.0310	mg/L	25	(<5)	10/11/19 16:35

Batch Information

Analytical Batch: MMS10648
 Analytical Method: SW6020A TCLP
 Analyst: DMM
 Analytical Date/Time: 10/11/19 16:35
 Container ID: 1199836005-B

Prep Batch: MXT5874
 Prep Method: SW3010A
 Prep Date/Time: 10/10/19 13:35
 Prep Initial Wt./Vol.: 2.5 mL
 Prep Extract Vol: 25 mL



Results of FTP-003

Client Sample ID: FTP-003
Client Project ID: 102519-010 Fire Training Pit
Lab Sample ID: 1199836005
Lab Project ID: 1199836

Collection Date: 10/01/19 12:00
Received Date: 10/04/19 09:55
Matrix: Soil/Solid (dry weight)
Solids (%):91.1
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of FTP-003

Client Sample ID: FTP-003
Client Project ID: 102519-010 Fire Training Pit
Lab Sample ID: 1199836005
Lab Project ID: 1199836

Collection Date: 10/01/19 12:00
Received Date: 10/04/19 09:55
Matrix: Soil/Solid (dry weight)
Solids (%):91.1
Location:

Results by Volatile GC/MS

Table with columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Results of FTP-003

Client Sample ID: **FTP-003**
Client Project ID: **102519-010 Fire Training Pit**
Lab Sample ID: 1199836005
Lab Project ID: 1199836

Collection Date: 10/01/19 12:00
Received Date: 10/04/19 09:55
Matrix: Soil/Solid (dry weight)
Solids (%):91.1
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS19575
Analytical Method: SW8260C
Analyst: KAJ
Analytical Date/Time: 10/15/19 12:49
Container ID: 1199836005-C

Prep Batch: VXX35102
Prep Method: SW5035A
Prep Date/Time: 10/01/19 12:00
Prep Initial Wt./Vol.: 59.104 g
Prep Extract Vol: 30.2829 mL



Results of FTP-004

Client Sample ID: FTP-004
Client Project ID: 102519-010 Fire Training Pit
Lab Sample ID: 1199836006
Lab Project ID: 1199836

Collection Date: 10/01/19 12:40
Received Date: 10/04/19 09:55
Matrix: Soil/Solid (dry weight)
Solids (%):91.1
Location:

Results by Semivolatile Organic Fuels

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	1170	21.7	6.73	mg/Kg	1		10/10/19 22:27

Surrogates

5a Androstane (surr)	109	50-150		%	1		10/10/19 22:27
----------------------	-----	--------	--	---	---	--	----------------

Batch Information

Analytical Batch: XFC15390
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 10/10/19 22:27
Container ID: 1199836006-A

Prep Batch: XXX42435
Prep Method: SW3550C
Prep Date/Time: 10/10/19 11:20
Prep Initial Wt./Vol.: 30.328 g
Prep Extract Vol: 5 mL

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	160	21.7	6.73	mg/Kg	1		10/10/19 22:27

Surrogates

n-Triacontane-d62 (surr)	90.4	50-150		%	1		10/10/19 22:27
--------------------------	------	--------	--	---	---	--	----------------

Batch Information

Analytical Batch: XFC15390
Analytical Method: AK103
Analyst: CMS
Analytical Date/Time: 10/10/19 22:27
Container ID: 1199836006-A

Prep Batch: XXX42435
Prep Method: SW3550C
Prep Date/Time: 10/10/19 11:20
Prep Initial Wt./Vol.: 30.328 g
Prep Extract Vol: 5 mL



Results of FTP-004

Client Sample ID: **FTP-004**
Client Project ID: **102519-010 Fire Training Pit**
Lab Sample ID: 1199836006
Lab Project ID: 1199836

Collection Date: 10/01/19 12:40
Received Date: 10/04/19 09:55
Matrix: Soil/Solid (dry weight)
Solids (%):91.1
Location:

Results by TCLP Constituents Metals

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	0.125 U	0.250	0.0750	mg/L	25	(<5)	10/11/19 16:39
Barium	0.268 J	0.300	0.0750	mg/L	25	(<100)	10/11/19 16:39
Cadmium	0.0500 U	0.100	0.0310	mg/L	25	(<1)	10/11/19 16:39
Chromium	0.176 J	0.200	0.0650	mg/L	25	(<5)	10/11/19 16:39
Lead	0.0500 U	0.100	0.0250	mg/L	25	(<5)	10/11/19 16:39
Mercury	0.00500 U	0.0100	0.00310	mg/L	25	(<0.2)	10/11/19 16:39
Selenium	0.500 U	1.00	0.310	mg/L	25	(<1)	10/11/19 16:39
Silver	0.0500 U	0.100	0.0310	mg/L	25	(<5)	10/11/19 16:39

Batch Information

Analytical Batch: MMS10648
Analytical Method: SW6020A TCLP
Analyst: DMM
Analytical Date/Time: 10/11/19 16:39
Container ID: 1199836006-B

Prep Batch: MXT5874
Prep Method: SW3010A
Prep Date/Time: 10/10/19 13:35
Prep Initial Wt./Vol.: 2.5 mL
Prep Extract Vol: 25 mL



Results of FTP-004

Client Sample ID: FTP-004
Client Project ID: 102519-010 Fire Training Pit
Lab Sample ID: 1199836006
Lab Project ID: 1199836

Collection Date: 10/01/19 12:40
Received Date: 10/04/19 09:55
Matrix: Soil/Solid (dry weight)
Solids (%):91.1
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of FTP-004

Client Sample ID: **FTP-004**

Client Project ID: **102519-010 Fire Training Pit**

Lab Sample ID: 1199836006

Lab Project ID: 1199836

Collection Date: 10/01/19 12:40

Received Date: 10/04/19 09:55

Matrix: Soil/Solid (dry weight)

Solids (%):91.1

Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroethane	0.124 U	0.247	0.0764	mg/Kg	1		10/11/19 19:52
Chloroform	0.00124 U	0.00247	0.000764	mg/Kg	1		10/11/19 19:52
Chloromethane	0.0154 U	0.0308	0.00962	mg/Kg	1		10/11/19 19:52
cis-1,2-Dichloroethene	0.0154 U	0.0308	0.00962	mg/Kg	1		10/11/19 19:52
cis-1,3-Dichloropropene	0.00770 U	0.0154	0.00481	mg/Kg	1		10/11/19 19:52
Dibromochloromethane	0.00124 U	0.00247	0.000764	mg/Kg	1		10/11/19 19:52
Dibromomethane	0.0154 U	0.0308	0.00962	mg/Kg	1		10/11/19 19:52
Dichlorodifluoromethane	0.0308 U	0.0616	0.0185	mg/Kg	1		10/11/19 19:52
Ethylbenzene	0.0154 U	0.0308	0.00962	mg/Kg	1		10/11/19 19:52
Freon-113	0.0615 U	0.123	0.0382	mg/Kg	1		10/11/19 19:52
Hexachlorobutadiene	0.0124 U	0.0247	0.00764	mg/Kg	1		10/11/19 19:52
Isopropylbenzene (Cumene)	0.0154 U	0.0308	0.00962	mg/Kg	1		10/11/19 19:52
Methylene chloride	0.0615 U	0.123	0.0382	mg/Kg	1		10/11/19 19:52
Methyl-t-butyl ether	0.0615 U	0.123	0.0382	mg/Kg	1		10/11/19 19:52
Naphthalene	0.0154 U	0.0308	0.00962	mg/Kg	1		10/11/19 19:52
n-Butylbenzene	0.0154 U	0.0308	0.00962	mg/Kg	1		10/11/19 19:52
n-Propylbenzene	0.0154 U	0.0308	0.00962	mg/Kg	1		10/11/19 19:52
o-Xylene	0.0154 U	0.0308	0.00962	mg/Kg	1		10/11/19 19:52
P & M -Xylene	0.0308 U	0.0616	0.0185	mg/Kg	1		10/11/19 19:52
sec-Butylbenzene	0.0154 U	0.0308	0.00962	mg/Kg	1		10/11/19 19:52
Styrene	0.0154 U	0.0308	0.00962	mg/Kg	1		10/11/19 19:52
tert-Butylbenzene	0.0154 U	0.0308	0.00962	mg/Kg	1		10/11/19 19:52
Tetrachloroethene	0.00770 U	0.0154	0.00481	mg/Kg	1		10/11/19 19:52
Toluene	0.0117 J	0.0308	0.00962	mg/Kg	1		10/11/19 19:52
trans-1,2-Dichloroethene	0.0154 U	0.0308	0.00962	mg/Kg	1		10/11/19 19:52
trans-1,3-Dichloropropene	0.00770 U	0.0154	0.00481	mg/Kg	1		10/11/19 19:52
Trichloroethene	0.00308 U	0.00616	0.00185	mg/Kg	1		10/11/19 19:52
Trichlorofluoromethane	0.0308 U	0.0616	0.0185	mg/Kg	1		10/11/19 19:52
Vinyl acetate	0.0615 U	0.123	0.0382	mg/Kg	1		10/11/19 19:52
Vinyl chloride	0.000493 U	0.000986	0.000308	mg/Kg	1		10/11/19 19:52
Xylenes (total)	0.0462 U	0.0925	0.0281	mg/Kg	1		10/11/19 19:52

Surrogates

1,2-Dichloroethane-D4 (surr)	106	71-136	%	1		10/11/19 19:52
4-Bromofluorobenzene (surr)	.55	* 55-151	%	1		10/11/19 19:52
Toluene-d8 (surr)	101	85-116	%	1		10/11/19 19:52

Results of FTP-004

Client Sample ID: **FTP-004**
Client Project ID: **102519-010 Fire Training Pit**
Lab Sample ID: 1199836006
Lab Project ID: 1199836

Collection Date: 10/01/19 12:40
Received Date: 10/04/19 09:55
Matrix: Soil/Solid (dry weight)
Solids (%):91.1
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS19564
Analytical Method: SW8260C
Analyst: KAJ
Analytical Date/Time: 10/11/19 19:52
Container ID: 1199836006-C

Prep Batch: VXX35085
Prep Method: SW5035A
Prep Date/Time: 10/01/19 12:40
Prep Initial Wt./Vol.: 52.897 g
Prep Extract Vol: 29.7078 mL



Results of FTP-005

Client Sample ID: FTP-005
Client Project ID: 102519-010 Fire Training Pit
Lab Sample ID: 1199836007
Lab Project ID: 1199836

Collection Date: 10/01/19 12:55
Received Date: 10/04/19 09:55
Matrix: Soil/Solid (dry weight)
Solids (%):93.0
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row 1: Diesel Range Organics, 8220, 213, 66.0, mg/Kg, 10, 10/22/19 22:10

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row 1: 5a Androstane (surr), 134, 50-150, %, 10, 10/22/19 22:10

Batch Information

Analytical Batch: XFC15433
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 10/22/19 22:10
Container ID: 1199836007-A

Prep Batch: XXX42435
Prep Method: SW3550C
Prep Date/Time: 10/10/19 11:20
Prep Initial Wt./Vol.: 30.304 g
Prep Extract Vol: 5 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row 1: Residual Range Organics, 762, 21.3, 6.60, mg/Kg, 1, 10/10/19 22:37

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row 1: n-Triacontane-d62 (surr), 93.3, 50-150, %, 1, 10/10/19 22:37

Batch Information

Analytical Batch: XFC15390
Analytical Method: AK103
Analyst: CMS
Analytical Date/Time: 10/10/19 22:37
Container ID: 1199836007-A

Prep Batch: XXX42435
Prep Method: SW3550C
Prep Date/Time: 10/10/19 11:20
Prep Initial Wt./Vol.: 30.304 g
Prep Extract Vol: 5 mL



Results of FTP-005

Client Sample ID: **FTP-005**
Client Project ID: **102519-010 Fire Training Pit**
Lab Sample ID: 1199836007
Lab Project ID: 1199836

Collection Date: 10/01/19 12:55
Received Date: 10/04/19 09:55
Matrix: Soil/Solid (dry weight)
Solids (%):93.0
Location:

Results by TCLP Constituents Metals

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	0.125 U	0.250	0.0750	mg/L	25	(<5)	10/11/19 16:44
Barium	0.339	0.300	0.0750	mg/L	25	(<100)	10/11/19 16:44
Cadmium	0.0500 U	0.100	0.0310	mg/L	25	(<1)	10/11/19 16:44
Chromium	0.177 J	0.200	0.0650	mg/L	25	(<5)	10/11/19 16:44
Lead	0.0371 J	0.100	0.0250	mg/L	25	(<5)	10/11/19 16:44
Mercury	0.00500 U	0.0100	0.00310	mg/L	25	(<0.2)	10/11/19 16:44
Selenium	0.500 U	1.00	0.310	mg/L	25	(<1)	10/11/19 16:44
Silver	0.0500 U	0.100	0.0310	mg/L	25	(<5)	10/11/19 16:44

Batch Information

Analytical Batch: MMS10648
Analytical Method: SW6020A TCLP
Analyst: DMM
Analytical Date/Time: 10/11/19 16:44
Container ID: 1199836007-B

Prep Batch: MXT5874
Prep Method: SW3010A
Prep Date/Time: 10/10/19 13:35
Prep Initial Wt./Vol.: 2.5 mL
Prep Extract Vol: 25 mL



Results of FTP-005

Client Sample ID: FTP-005
Client Project ID: 102519-010 Fire Training Pit
Lab Sample ID: 1199836007
Lab Project ID: 1199836

Collection Date: 10/01/19 12:55
Received Date: 10/04/19 09:55
Matrix: Soil/Solid (dry weight)
Solids (%):93.0
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of FTP-005

Client Sample ID: **FTP-005**
 Client Project ID: **102519-010 Fire Training Pit**
 Lab Sample ID: 1199836007
 Lab Project ID: 1199836

Collection Date: 10/01/19 12:55
 Received Date: 10/04/19 09:55
 Matrix: Soil/Solid (dry weight)
 Solids (%):93.0
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroethane	0.126 U	0.252	0.0783	mg/Kg	1		10/11/19 20:09
Chloroform	0.00126 U	0.00252	0.000783	mg/Kg	1		10/11/19 20:09
Chloromethane	0.0158 U	0.0316	0.00985	mg/Kg	1		10/11/19 20:09
cis-1,2-Dichloroethene	0.0158 U	0.0316	0.00985	mg/Kg	1		10/11/19 20:09
cis-1,3-Dichloropropene	0.00790 U	0.0158	0.00492	mg/Kg	1		10/11/19 20:09
Dibromochloromethane	0.00126 U	0.00252	0.000783	mg/Kg	1		10/11/19 20:09
Dibromomethane	0.0158 U	0.0316	0.00985	mg/Kg	1		10/11/19 20:09
Dichlorodifluoromethane	0.0316 U	0.0631	0.0189	mg/Kg	1		10/11/19 20:09
Ethylbenzene	0.0158 U	0.0316	0.00985	mg/Kg	1		10/11/19 20:09
Freon-113	0.0630 U	0.126	0.0391	mg/Kg	1		10/11/19 20:09
Hexachlorobutadiene	0.0126 U	0.0252	0.00783	mg/Kg	1		10/11/19 20:09
Isopropylbenzene (Cumene)	0.0158 U	0.0316	0.00985	mg/Kg	1		10/11/19 20:09
Methylene chloride	0.0630 U	0.126	0.0391	mg/Kg	1		10/11/19 20:09
Methyl-t-butyl ether	0.0630 U	0.126	0.0391	mg/Kg	1		10/11/19 20:09
Naphthalene	0.0215 J	0.0316	0.00985	mg/Kg	1		10/11/19 20:09
n-Butylbenzene	0.0158 U	0.0316	0.00985	mg/Kg	1		10/11/19 20:09
n-Propylbenzene	0.0158 U	0.0316	0.00985	mg/Kg	1		10/11/19 20:09
o-Xylene	0.0186 J	0.0316	0.00985	mg/Kg	1		10/11/19 20:09
P & M -Xylene	0.0293 J	0.0631	0.0189	mg/Kg	1		10/11/19 20:09
sec-Butylbenzene	0.0158 U	0.0316	0.00985	mg/Kg	1		10/11/19 20:09
Styrene	0.0158 U	0.0316	0.00985	mg/Kg	1		10/11/19 20:09
tert-Butylbenzene	0.0158 U	0.0316	0.00985	mg/Kg	1		10/11/19 20:09
Tetrachloroethene	0.00790 U	0.0158	0.00492	mg/Kg	1		10/11/19 20:09
Toluene	0.0158 U	0.0316	0.00985	mg/Kg	1		10/11/19 20:09
trans-1,2-Dichloroethene	0.0158 U	0.0316	0.00985	mg/Kg	1		10/11/19 20:09
trans-1,3-Dichloropropene	0.00790 U	0.0158	0.00492	mg/Kg	1		10/11/19 20:09
Trichloroethene	0.00315 U	0.00631	0.00189	mg/Kg	1		10/11/19 20:09
Trichlorofluoromethane	0.0316 U	0.0631	0.0189	mg/Kg	1		10/11/19 20:09
Vinyl acetate	0.0630 U	0.126	0.0391	mg/Kg	1		10/11/19 20:09
Vinyl chloride	0.000505 U	0.00101	0.000316	mg/Kg	1		10/11/19 20:09
Xylenes (total)	0.0480 J	0.0947	0.0288	mg/Kg	1		10/11/19 20:09
Surrogates							
1,2-Dichloroethane-D4 (surr)	112	71-136		%	1		10/11/19 20:09
4-Bromofluorobenzene (surr)	5.3 *	55-151		%	1		10/11/19 20:09
Toluene-d8 (surr)	99.9	85-116		%	1		10/11/19 20:09

Results of FTP-005

Client Sample ID: **FTP-005**
Client Project ID: **102519-010 Fire Training Pit**
Lab Sample ID: 1199836007
Lab Project ID: 1199836

Collection Date: 10/01/19 12:55
Received Date: 10/04/19 09:55
Matrix: Soil/Solid (dry weight)
Solids (%):93.0
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS19564
Analytical Method: SW8260C
Analyst: KAJ
Analytical Date/Time: 10/11/19 20:09
Container ID: 1199836007-C

Prep Batch: VXX35085
Prep Method: SW5035A
Prep Date/Time: 10/01/19 12:55
Prep Initial Wt./Vol.: 48.395 g
Prep Extract Vol: 28.3992 mL



Results of FTP-pre003

Client Sample ID: **FTP-pre003**
Client Project ID: **102519-010 Fire Training Pit**
Lab Sample ID: 1199836008
Lab Project ID: 1199836

Collection Date: 09/30/19 17:40
Received Date: 10/04/19 09:55
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	37.0	5.00	1.50	ug/L	1		10/14/19 11:54

Batch Information

Analytical Batch: MMS10646
Analytical Method: EP200.8
Analyst: BMZ
Analytical Date/Time: 10/14/19 11:54
Container ID: 1199836008-A

Prep Batch: MXX32893
Prep Method: E200.2
Prep Date/Time: 10/11/19 10:18
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL



Results of FTP-pre003

Client Sample ID: **FTP-pre003**
 Client Project ID: **102519-010 Fire Training Pit**
 Lab Sample ID: 1199836008
 Lab Project ID: 1199836

Collection Date: 09/30/19 17:40
 Received Date: 10/04/19 09:55
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.130 U	0.260	0.0781	ug/L	5		10/16/19 17:54
Acenaphthylene	0.130 U	0.260	0.0781	ug/L	5		10/16/19 17:54
Anthracene	0.130 U	0.260	0.0781	ug/L	5		10/16/19 17:54
Benzo(a)Anthracene	0.130 U	0.260	0.0781	ug/L	5		10/16/19 17:54
Benzo[a]pyrene	0.0520 U	0.104	0.0323	ug/L	5		10/16/19 17:54
Benzo[b]Fluoranthene	0.130 U	0.260	0.0781	ug/L	5		10/16/19 17:54
Benzo[g,h,i]perylene	0.130 U	0.260	0.0781	ug/L	5		10/16/19 17:54
Benzo[k]fluoranthene	0.130 U	0.260	0.0781	ug/L	5		10/16/19 17:54
Chrysene	0.130 U	0.260	0.0781	ug/L	5		10/16/19 17:54
Dibenzo[a,h]anthracene	0.0520 U	0.104	0.0323	ug/L	5		10/16/19 17:54
Fluoranthene	0.481	0.260	0.0781	ug/L	5		10/16/19 17:54
Fluorene	1.45	0.260	0.0781	ug/L	5		10/16/19 17:54
Indeno[1,2,3-c,d] pyrene	0.130 U	0.260	0.0781	ug/L	5		10/16/19 17:54
Naphthalene	5.06	0.521	0.161	ug/L	5		10/16/19 17:54
Phenanthrene	1.37	0.260	0.0781	ug/L	5		10/16/19 17:54
Pyrene	0.522	0.260	0.0781	ug/L	5		10/16/19 17:54
Surrogates							
2-Methylnaphthalene-d10 (surr)	54.8		47-106	%	5		10/16/19 17:54
Fluoranthene-d10 (surr)	23	*	24-116	%	5		10/16/19 17:54

Batch Information

Analytical Batch: XMS11802
 Analytical Method: EPA 625M SIM (PAH) LV
 Analyst: DSD
 Analytical Date/Time: 10/16/19 17:54
 Container ID: 1199836008-D

Prep Batch: XXX42406
 Prep Method: SW3520C
 Prep Date/Time: 10/06/19 09:45
 Prep Initial Wt./Vol.: 240 mL
 Prep Extract Vol: 1 mL



Results of FTP-pre003

Client Sample ID: FTP-pre003
Client Project ID: 102519-010 Fire Training Pit
Lab Sample ID: 1199836008
Lab Project ID: 1199836

Collection Date: 09/30/19 17:40
Received Date: 10/04/19 09:55
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Diesel Range Organics, 33.1, 0.588, 0.176, mg/L, 1, 10/15/19 06:30

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 5a Androstane (surr), 88.3, 50-150, %, 1, 10/15/19 06:30

Batch Information

Analytical Batch: XFC15404
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 10/15/19 06:30
Container ID: 1199836008-B

Prep Batch: XXX42415
Prep Method: SW3520C
Prep Date/Time: 10/08/19 08:20
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Residual Range Organics, 6.92, 0.490, 0.147, mg/L, 1, 10/15/19 06:30

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: n-Triacontane-d62 (surr), 82.9, 50-150, %, 1, 10/15/19 06:30

Batch Information

Analytical Batch: XFC15404
Analytical Method: AK103
Analyst: CMS
Analytical Date/Time: 10/15/19 06:30
Container ID: 1199836008-B

Prep Batch: XXX42415
Prep Method: SW3520C
Prep Date/Time: 10/08/19 08:20
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL



Results of FTP-pre003

Client Sample ID: FTP-pre003
Client Project ID: 102519-010 Fire Training Pit
Lab Sample ID: 1199836008
Lab Project ID: 1199836

Collection Date: 09/30/19 17:40
Received Date: 10/04/19 09:55
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of FTP-pre003

Client Sample ID: FTP-pre003
Client Project ID: 102519-010 Fire Training Pit
Lab Sample ID: 1199836008
Lab Project ID: 1199836

Collection Date: 09/30/19 17:40
Received Date: 10/04/19 09:55
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical parameters like Chloroform, Benzene, and Toluene with their respective results and limits.

Results of FTP-pre003

Client Sample ID: **FTP-pre003**
Client Project ID: **102519-010 Fire Training Pit**
Lab Sample ID: 1199836008
Lab Project ID: 1199836

Collection Date: 09/30/19 17:40
Received Date: 10/04/19 09:55
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS19558
Analytical Method: SW8260C
Analyst: NRB
Analytical Date/Time: 10/13/19 00:09
Container ID: 1199836008-F

Prep Batch: VXX35072
Prep Method: SW5030B
Prep Date/Time: 10/12/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS19561
Analytical Method: SW8260C
Analyst: NRB
Analytical Date/Time: 10/13/19 22:22
Container ID: 1199836008-G

Prep Batch: VXX35075
Prep Method: SW5030B
Prep Date/Time: 10/13/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of Trip Blank 1

Client Sample ID: Trip Blank 1
Client Project ID: 102519-010 Fire Training Pit
Lab Sample ID: 1199836009
Lab Project ID: 1199836

Collection Date: 09/30/19 17:40
Received Date: 10/04/19 09:55
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of Trip Blank 1

Client Sample ID: **Trip Blank 1**
 Client Project ID: **102519-010 Fire Training Pit**
 Lab Sample ID: 1199836009
 Lab Project ID: 1199836

Collection Date: 09/30/19 17:40
 Received Date: 10/04/19 09:55
 Matrix: Soil/Solid (dry weight)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroethane	0.100 U	0.200	0.0620	mg/Kg	1		10/10/19 21:20
Chloroform	0.00100 U	0.00200	0.000620	mg/Kg	1		10/10/19 21:20
Chloromethane	0.0125 U	0.0250	0.00780	mg/Kg	1		10/10/19 21:20
cis-1,2-Dichloroethene	0.0125 U	0.0250	0.00780	mg/Kg	1		10/10/19 21:20
cis-1,3-Dichloropropene	0.00625 U	0.0125	0.00390	mg/Kg	1		10/10/19 21:20
Dibromochloromethane	0.00100 U	0.00200	0.000620	mg/Kg	1		10/10/19 21:20
Dibromomethane	0.0125 U	0.0250	0.00780	mg/Kg	1		10/10/19 21:20
Dichlorodifluoromethane	0.0250 U	0.0500	0.0150	mg/Kg	1		10/10/19 21:20
Ethylbenzene	0.0125 U	0.0250	0.00780	mg/Kg	1		10/10/19 21:20
Freon-113	0.0500 U	0.100	0.0310	mg/Kg	1		10/10/19 21:20
Hexachlorobutadiene	0.0100 U	0.0200	0.00620	mg/Kg	1		10/10/19 21:20
Isopropylbenzene (Cumene)	0.0125 U	0.0250	0.00780	mg/Kg	1		10/10/19 21:20
Methylene chloride	0.0500 U	0.100	0.0310	mg/Kg	1		10/10/19 21:20
Methyl-t-butyl ether	0.0500 U	0.100	0.0310	mg/Kg	1		10/10/19 21:20
Naphthalene	0.0125 U	0.0250	0.00780	mg/Kg	1		10/10/19 21:20
n-Butylbenzene	0.0125 U	0.0250	0.00780	mg/Kg	1		10/10/19 21:20
n-Propylbenzene	0.0125 U	0.0250	0.00780	mg/Kg	1		10/10/19 21:20
o-Xylene	0.0125 U	0.0250	0.00780	mg/Kg	1		10/10/19 21:20
P & M -Xylene	0.0250 U	0.0500	0.0150	mg/Kg	1		10/10/19 21:20
sec-Butylbenzene	0.0125 U	0.0250	0.00780	mg/Kg	1		10/10/19 21:20
Styrene	0.0125 U	0.0250	0.00780	mg/Kg	1		10/10/19 21:20
tert-Butylbenzene	0.0125 U	0.0250	0.00780	mg/Kg	1		10/10/19 21:20
Tetrachloroethene	0.00625 U	0.0125	0.00390	mg/Kg	1		10/10/19 21:20
Toluene	0.0125 U	0.0250	0.00780	mg/Kg	1		10/10/19 21:20
trans-1,2-Dichloroethene	0.0125 U	0.0250	0.00780	mg/Kg	1		10/10/19 21:20
trans-1,3-Dichloropropene	0.00625 U	0.0125	0.00390	mg/Kg	1		10/10/19 21:20
Trichloroethene	0.00250 U	0.00500	0.00150	mg/Kg	1		10/10/19 21:20
Trichlorofluoromethane	0.0250 U	0.0500	0.0150	mg/Kg	1		10/10/19 21:20
Vinyl acetate	0.0500 U	0.100	0.0310	mg/Kg	1		10/10/19 21:20
Vinyl chloride	0.000400 U	0.000800	0.000250	mg/Kg	1		10/10/19 21:20
Xylenes (total)	0.0375 U	0.0750	0.0228	mg/Kg	1		10/10/19 21:20
Surrogates							
1,2-Dichloroethane-D4 (surr)	103	71-136		%	1		10/10/19 21:20
4-Bromofluorobenzene (surr)	.38 *	55-151		%	1		10/10/19 21:20
Toluene-d8 (surr)	104	85-116		%	1		10/10/19 21:20

Results of Trip Blank 1

Client Sample ID: **Trip Blank 1**
Client Project ID: **102519-010 Fire Training Pit**
Lab Sample ID: 1199836009
Lab Project ID: 1199836

Collection Date: 09/30/19 17:40
Received Date: 10/04/19 09:55
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS19562
Analytical Method: SW8260C
Analyst: KAJ
Analytical Date/Time: 10/10/19 21:20
Container ID: 1199836009-A

Prep Batch: VXX35083
Prep Method: SW5035A
Prep Date/Time: 09/30/19 17:40
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL



Results of Trip Blank 2

Client Sample ID: **Trip Blank 2**
 Client Project ID: **102519-010 Fire Training Pit**
 Lab Sample ID: 1199836010
 Lab Project ID: 1199836

Collection Date: 09/30/19 17:40
 Received Date: 10/04/19 09:55
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,1,1,2-Tetrachloroethane	0.250 U	0.500	0.150	ug/L	1		10/12/19 19:59
1,1,1-Trichloroethane	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
1,1,2,2-Tetrachloroethane	0.250 U	0.500	0.150	ug/L	1		10/12/19 19:59
1,1,2-Trichloroethane	0.200 U	0.400	0.120	ug/L	1		10/12/19 19:59
1,1-Dichloroethane	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
1,1-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
1,1-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
1,2,3-Trichlorobenzene	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
1,2,3-Trichloropropane	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
1,2,4-Trichlorobenzene	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
1,2,4-Trimethylbenzene	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
1,2-Dibromo-3-chloropropane	5.00 U	10.0	3.10	ug/L	1		10/12/19 19:59
1,2-Dibromoethane	0.0375 U	0.0750	0.0180	ug/L	1		10/14/19 06:31
1,2-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
1,2-Dichloroethane	0.250 U	0.500	0.150	ug/L	1		10/12/19 19:59
1,2-Dichloropropane	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
1,3,5-Trimethylbenzene	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
1,3-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
1,3-Dichloropropane	0.250 U	0.500	0.150	ug/L	1		10/12/19 19:59
1,4-Dichlorobenzene	0.250 U	0.500	0.150	ug/L	1		10/12/19 19:59
2,2-Dichloropropane	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
2-Butanone (MEK)	5.00 U	10.0	3.10	ug/L	1		10/12/19 19:59
2-Chlorotoluene	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
2-Hexanone	5.00 U	10.0	3.10	ug/L	1		10/12/19 19:59
4-Chlorotoluene	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
4-Isopropyltoluene	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
4-Methyl-2-pentanone (MIBK)	5.00 U	10.0	3.10	ug/L	1		10/12/19 19:59
Benzene	0.200 U	0.400	0.120	ug/L	1		10/12/19 19:59
Bromobenzene	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
Bromochloromethane	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
Bromodichloromethane	0.250 U	0.500	0.150	ug/L	1		10/12/19 19:59
Bromoform	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
Bromomethane	2.50 U	5.00	1.50	ug/L	1		10/12/19 19:59
Carbon disulfide	5.00 U	10.0	3.10	ug/L	1		10/12/19 19:59
Carbon tetrachloride	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
Chlorobenzene	0.250 U	0.500	0.150	ug/L	1		10/12/19 19:59
Chloroethane	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59



Results of Trip Blank 2

Client Sample ID: **Trip Blank 2**
 Client Project ID: **102519-010 Fire Training Pit**
 Lab Sample ID: 1199836010
 Lab Project ID: 1199836

Collection Date: 09/30/19 17:40
 Received Date: 10/04/19 09:55
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroform	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
Chloromethane	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
cis-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
cis-1,3-Dichloropropene	0.250 U	0.500	0.150	ug/L	1		10/12/19 19:59
Dibromochloromethane	0.250 U	0.500	0.150	ug/L	1		10/12/19 19:59
Dibromomethane	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
Dichlorodifluoromethane	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
Freon-113	5.00 U	10.0	3.10	ug/L	1		10/12/19 19:59
Hexachlorobutadiene	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
Isopropylbenzene (Cumene)	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
Methylene chloride	2.50 U	5.00	1.00	ug/L	1		10/12/19 19:59
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		10/12/19 19:59
Naphthalene	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
n-Propylbenzene	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
o-Xylene	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		10/12/19 19:59
sec-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
Styrene	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
Tetrachloroethene	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
Toluene	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
trans-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
trans-1,3-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
Trichloroethene	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
Trichlorofluoromethane	0.500 U	1.00	0.310	ug/L	1		10/12/19 19:59
Vinyl acetate	5.00 U	10.0	3.10	ug/L	1		10/12/19 19:59
Vinyl chloride	0.0750 U	0.150	0.0500	ug/L	1		10/12/19 19:59
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		10/12/19 19:59
Surrogates							
1,2-Dichloroethane-D4 (surr)	109	81-118		%	1		10/12/19 19:59
4-Bromofluorobenzene (surr)	103	85-114		%	1		10/12/19 19:59
Toluene-d8 (surr)	101	89-112		%	1		10/12/19 19:59

Print Date: 10/24/2019 10:24:08AM

J flagging is activated

Results of Trip Blank 2

Client Sample ID: **Trip Blank 2**
Client Project ID: **102519-010 Fire Training Pit**
Lab Sample ID: 1199836010
Lab Project ID: 1199836

Collection Date: 09/30/19 17:40
Received Date: 10/04/19 09:55
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS19563
Analytical Method: SW8260C
Analyst: NRB
Analytical Date/Time: 10/14/19 06:31
Container ID: 1199836010-B

Prep Batch: VXX35084
Prep Method: SW5030B
Prep Date/Time: 10/13/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS19558
Analytical Method: SW8260C
Analyst: NRB
Analytical Date/Time: 10/12/19 19:59
Container ID: 1199836010-A

Prep Batch: VXX35072
Prep Method: SW5030B
Prep Date/Time: 10/12/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Method Blank

Blank ID: LB1 for HBN 1800694 [TCLP/1029]
 Blank Lab ID: 1537519

Matrix: Solid/Soil (Wet Weight)

QC for Samples:
 1199836001, 1199836004, 1199836005, 1199836006, 1199836007

Results by SW6020A TCLP

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Arsenic	0.125U	0.250	0.0750	mg/L
Barium	0.0792J	0.300	0.0750	mg/L
Cadmium	0.0500U	0.100	0.0310	mg/L
Chromium	0.138J	0.200	0.0650	mg/L
Lead	0.0500U	0.100	0.0250	mg/L
Mercury	0.00500U	0.0100	0.00310	mg/L
Selenium	0.500U	1.00	0.310	mg/L
Silver	0.0500U	0.100	0.0310	mg/L

Batch Information

Analytical Batch: MMS10648
 Analytical Method: SW6020A TCLP
 Instrument: Perkin Elmer Nexlon P5
 Analyst: DMM
 Analytical Date/Time: 10/11/2019 3:24:49PM

Prep Batch: MXT5874
 Prep Method: SW3010A
 Prep Date/Time: 10/10/2019 1:35:10PM
 Prep Initial Wt./Vol.: 2.5 mL
 Prep Extract Vol: 25 mL

Print Date: 10/24/2019 10:24:10AM

Method Blank

Blank ID: MB for HBN 1800704 [MXT/5874]
 Blank Lab ID: 1537572

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1199836001, 1199836004, 1199836005, 1199836006, 1199836007

Results by SW6020A TCLP

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Arsenic	0.0125U	0.0250	0.00750	mg/L
Barium	0.00750U	0.0150	0.00470	mg/L
Cadmium	0.00500U	0.0100	0.00300	mg/L
Chromium	0.00818J	0.0200	0.00650	mg/L
Lead	0.00250U	0.00500	0.00155	mg/L
Mercury	0.000500U	0.00100	0.000310	mg/L
Selenium	0.0500U	0.100	0.0310	mg/L
Silver	0.00500U	0.0100	0.00310	mg/L

Batch Information

Analytical Batch: MMS10648
 Analytical Method: SW6020A TCLP
 Instrument: Perkin Elmer Nexlon P5
 Analyst: DMM
 Analytical Date/Time: 10/11/2019 3:29:30PM

Prep Batch: MXT5874
 Prep Method: SW3010A
 Prep Date/Time: 10/10/2019 1:35:10PM
 Prep Initial Wt./Vol.: 25 mL
 Prep Extract Vol: 25 mL

Print Date: 10/24/2019 10:24:10AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199836 [MXT5874]

Blank Spike Lab ID: 1537573

Date Analyzed: 10/11/2019 15:34

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1199836001, 1199836004, 1199836005, 1199836006, 1199836007

Results by SW6020A TCLP

Blank Spike (mg/L)

Parameter	Spike	Result	Rec (%)	CL
Arsenic	1	0.947	95	(84-116)
Barium	1	0.923	92	(86-114)
Cadmium	0.1	0.0941	94	(87-115)
Chromium	0.4	0.406	102	(85-116)
Lead	1	0.961	96	(88-115)
Mercury	0.01	0.00982	98	(70-124)
Selenium	1	0.952	95	(80-120)
Silver	0.1	0.103	103	(85-116)

Batch Information

Analytical Batch: **MMS10648**

Analytical Method: **SW6020A TCLP**

Instrument: **Perkin Elmer Nexlon P5**

Analyst: **DMM**

Prep Batch: **MXT5874**

Prep Method: **SW3010A**

Prep Date/Time: **10/10/2019 13:35**

Spike Init Wt./Vol.: 1 mg/L Extract Vol: 25 mL

Dupe Init Wt./Vol.: Extract Vol:

Matrix Spike Summary

Original Sample ID: 1537592
 MS Sample ID: 1537594 MS
 MSD Sample ID: 1537595 MSD

Analysis Date: 10/11/2019 15:38
 Analysis Date: 10/11/2019 15:43
 Analysis Date: 10/11/2019 15:48
 Matrix: Solid/Soil (Wet Weight)

QC for Samples: 1199836001, 1199836004, 1199836005, 1199836006, 1199836007

Results by SW6020A TCLP

Parameter	Sample	Matrix Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Arsenic	0.125U	10.0	9.66	97	10.0	9.83	98	84-116	1.70	(< 20)
Barium	0.464	10.0	9.46	90	10.0	10.0	95	86-114	5.53	(< 20)
Cadmium	0.0500U	1.00	.928	93	1.00	0.972	97	87-115	4.65	(< 20)
Chromium	0.137J	4.00	3.9	94	4.00	4.03	97	85-116	3.08	(< 20)
Lead	0.0396J	10.0	9.58	95	10.0	9.82	98	88-115	2.49	(< 20)
Mercury	0.00500U	0.100	.0913	91	0.100	0.100	100	70-124	9.33	(< 20)
Selenium	0.500U	10.0	9.69	97	10.0	9.71	97	80-120	0.20	(< 20)
Silver	0.0500U	1.00	1.03	103	1.00	1.06	106	85-116	2.73	(< 20)

Batch Information

Analytical Batch: MMS10648
 Analytical Method: SW6020A TCLP
 Instrument: Perkin Elmer NexIon P5
 Analyst: DMM
 Analytical Date/Time: 10/11/2019 3:43:34PM

Prep Batch: MXT5874
 Prep Method: Waters Digest for Metals by ICP-MS(TCLP)
 Prep Date/Time: 10/10/2019 1:35:10PM
 Prep Initial Wt./Vol.: 2.50mL
 Prep Extract Vol: 25.00mL

Billable Matrix Spike Summary

Original Sample ID: 1199836001
 MS Sample ID: 1199836002 BMS
 MSD Sample ID: 1199836003 BMSD

Analysis Date: 10/11/2019 15:38
 Analysis Date: 10/11/2019 15:43
 Analysis Date: 10/11/2019 15:48
 Matrix: Soil/Solid (dry weight)

QC for Samples:

Results by SW6020A TCLP

Parameter	Sample	Matrix Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Arsenic	0.125U	11.2	10.8	97	11.2	11.0	98	84-116	1.70	(< 20)
Barium	0.464	11.2	10.6	90	11.2	11.2	95	86-114	5.53	(< 20)
Cadmium	0.0500U	1.12	1.04	93	1.12	1.09	97	87-115	4.65	(< 20)
Chromium	0.137J	4.47	4.36	94	4.47	4.51	97	85-116	3.08	(< 20)
Lead	0.0396J	11.2	10.7	95	11.2	11.0	98	88-115	2.49	(< 20)
Mercury	0.00500U	0.112	0.102	91	0.112	0.112	100	70-124	9.33	(< 20)
Selenium	0.500U	11.2	10.8	97	11.2	10.9	97	80-120	0.20	(< 20)
Silver	0.0500U	1.12	1.15	103	1.12	1.19	106	85-116	2.73	(< 20)

Batch Information

Analytical Batch: MMS10648
 Analytical Method: SW6020A TCLP
 Instrument: Perkin Elmer NexIon P5
 Analyst: DMM
 Analytical Date/Time: 10/11/2019 3:43:34PM

Prep Batch: MXT5874
 Prep Method: Waters Digest for Metals by ICP-MS(TCLP)
 Prep Date/Time: 10/10/2019 1:35:10PM
 Prep Initial Wt./Vol.: 2.50mL
 Prep Extract Vol: 25.00mL

Method Blank

Blank ID: MB for HBN 1800767 [MXX/32893]
Blank Lab ID: 1537925

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1199836008

Results by EP200.8

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Arsenic	2.50U	5.00	1.50	ug/L

Batch Information

Analytical Batch: MMS10646
Analytical Method: EP200.8
Instrument: Perkin Elmer Nexlon P5
Analyst: BMZ
Analytical Date/Time: 10/14/2019 10:28:06AM

Prep Batch: MXX32893
Prep Method: E200.2
Prep Date/Time: 10/11/2019 10:18:05AM
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 10/24/2019 10:24:13AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199836 [MXX3T8935]
 Blank Spike La7 ID: 143] 9T6
 Date t nalAyez: 1d0l/ 0Td19 1d:31

Matriu: x ater Wsrfa(ec, ffe. rosanzG

g C for SaP pleR 1199836dd8

2 eRsIbR7A EP200.8

Blank Spike W%LG

araP eter	Spike	2 eRsIb	2 e(W%G	CL
t rReni(	1ddd	1d] d	1d]	W84Q 14 G

Batch Information

t nalAb(al Bat - : MMS10646	) rep Bat - : MXX32893
t nalAb(al Meb oz: EP200.8	) rep Meb oz: E200.2
InRsP enb Perkin Elmer Nexlon P5	) rep DatehiP e: 10/11/2019 10:18
t nalARb BMZ	Spike Inibx t b olE 1ddd s%L , ultra(bv ol: 4d P L
	Dspe Inibx t b olE , ultra(bv ol:

) rinbDate: 1d0l/ 0Td19 1d:T/ :14t M

Matrix Spike Summary

Original Sample ID: 1537934
 MS Sample ID: 1537935 MS
 MSD Sample ID:

Analysis Date: 10/14/2019 10:48
 Analysis Date: 10/14/2019 10:51
 Analysis Date:
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1199836008

Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Arsenic	15.3	1000	1070	105				70-130		

Batch Information

Analytical Batch: MMS10646
 Analytical Method: EP200.8
 Instrument: Perkin Elmer Nexlon P5
 Analyst: BMZ
 Analytical Date/Time: 10/14/2019 10:51:55AM

Prep Batch: MXX32893
 Prep Method: DW Digest for Metals on ICP-MS
 Prep Date/Time: 10/11/2019 10:18:05AM
 Prep Initial Wt./Vol.: 20.00mL
 Prep Extract Vol: 50.00mL

Print Date: 10/24/2019 10:24:16AM

Method Blank

Blank ID: MB for HBN 1800519 [SPT/10903]
Blank Lab ID: 1536908

Matrix: Soil/Solid (dry weight)

QC for Samples:
1199836001, 1199836004, 1199836005, 1199836006, 1199836007

Results by SM21 2540G

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Solids	100			%

Batch Information

Analytical Batch: SPT10903
Analytical Method: SM21 2540G
Instrument:
Analyst: MER
Analytical Date/Time: 10/7/2019 5:42:00PM

Print Date: 10/24/2019 10:24:17AM

Duplicate Sample Summary

Original Sample ID: 1195958001
 Duplicate Sample ID: 1536910
 QC for Samples:

Analysis Date: 10/07/2019 17:42
 Matrix: Soil/Solid (dry weight)

Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	94.3	93.7	%	0.64	(< 15)

Batch Information

Analytical Batch: SPT10903
 Analytical Method: SM21 2540G
 Instrument:
 Analyst: MER

Duplicate Sample Summary

Original Sample ID: 1195958008

Duplicate Sample ID: 1536911

QC for Samples:

1199836001, 1199836004, 1199836005, 1199836006

Analysis Date: 10/07/2019 17:42

Matrix: Soil/Solid (dry weight)

Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	83.5	83.9	%	0.44	(< 15)

Batch Information

Analytical Batch: SPT10903

Analytical Method: SM21 2540G

Instrument:

Analyst: MER

Print Date: 10/24/2019 10:24:18AM

Duplicate Sample Summary

Original Sample ID: 1199836006

Duplicate Sample ID: 1536912

QC for Samples:

1199836001, 1199836004, 1199836005, 1199836006, 1199836007

Analysis Date: 10/07/2019 17:42

Matrix: Soil/Solid (dry weight)

Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	91.1	92.4	%	1.40	(< 15)

Batch Information

Analytical Batch: SPT10903

Analytical Method: SM21 2540G

Instrument:

Analyst: MER

Print Date: 10/24/2019 10:24:18AM



Method Blank

Blank ID: MB for HBN 1800862 [VXX/35072]

Blank Lab ID: 1538109

QC for Samples:

1199836008, 1199836010

Matrix: Water (Surface, Eff., Ground)

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,1,1,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,1-Trichloroethane	0.500U	1.00	0.310	ug/L
1,1,2,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,2-Trichloroethane	0.200U	0.400	0.120	ug/L
1,1-Dichloroethane	0.500U	1.00	0.310	ug/L
1,1-Dichloroethene	0.500U	1.00	0.310	ug/L
1,1-Dichloropropene	0.500U	1.00	0.310	ug/L
1,2,3-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,3-Trichloropropane	0.500U	1.00	0.310	ug/L
1,2,4-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,2-Dibromo-3-chloropropane	5.00U	10.0	3.10	ug/L
1,2-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,2-Dichloroethane	0.250U	0.500	0.150	ug/L
1,2-Dichloropropane	0.500U	1.00	0.310	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,3-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,3-Dichloropropane	0.250U	0.500	0.150	ug/L
1,4-Dichlorobenzene	0.250U	0.500	0.150	ug/L
2,2-Dichloropropane	0.500U	1.00	0.310	ug/L
2-Butanone (MEK)	5.00U	10.0	3.10	ug/L
2-Chlorotoluene	0.500U	1.00	0.310	ug/L
2-Hexanone	5.00U	10.0	3.10	ug/L
4-Chlorotoluene	0.500U	1.00	0.310	ug/L
4-Isopropyltoluene	0.500U	1.00	0.310	ug/L
4-Methyl-2-pentanone (MIBK)	5.00U	10.0	3.10	ug/L
Benzene	0.200U	0.400	0.120	ug/L
Bromobenzene	0.500U	1.00	0.310	ug/L
Bromochloromethane	0.500U	1.00	0.310	ug/L
Bromodichloromethane	0.250U	0.500	0.150	ug/L
Bromoform	0.500U	1.00	0.310	ug/L
Bromomethane	2.50U	5.00	1.50	ug/L
Carbon disulfide	5.00U	10.0	3.10	ug/L
Carbon tetrachloride	0.500U	1.00	0.310	ug/L
Chlorobenzene	0.250U	0.500	0.150	ug/L
Chloroethane	0.500U	1.00	0.310	ug/L
Chloroform	0.500U	1.00	0.310	ug/L
Chloromethane	0.500U	1.00	0.310	ug/L

Print Date: 10/24/2019 10:24:20AM

Method Blank

Blank ID: MB for HBN 1800862 [VXX/35072]

Blank Lab ID: 1538109

QC for Samples:

1199836008, 1199836010

Matrix: Water (Surface, Eff., Ground)

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
cis-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
cis-1,3-Dichloropropene	0.250U	0.500	0.150	ug/L
Dibromochloromethane	0.250U	0.500	0.150	ug/L
Dibromomethane	0.500U	1.00	0.310	ug/L
Dichlorodifluoromethane	0.500U	1.00	0.310	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
Freon-113	5.00U	10.0	3.10	ug/L
Hexachlorobutadiene	0.500U	1.00	0.310	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	ug/L
Methylene chloride	2.50U	5.00	1.00	ug/L
Methyl-t-butyl ether	5.00U	10.0	3.10	ug/L
Naphthalene	0.500U	1.00	0.310	ug/L
n-Butylbenzene	0.500U	1.00	0.310	ug/L
n-Propylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
sec-Butylbenzene	0.500U	1.00	0.310	ug/L
Styrene	0.500U	1.00	0.310	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	ug/L
Tetrachloroethene	0.500U	1.00	0.310	ug/L
Toluene	0.500U	1.00	0.310	ug/L
trans-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
trans-1,3-Dichloropropene	0.500U	1.00	0.310	ug/L
Trichloroethene	0.500U	1.00	0.310	ug/L
Trichlorofluoromethane	0.500U	1.00	0.310	ug/L
Vinyl acetate	5.00U	10.0	3.10	ug/L
Vinyl chloride	0.0750U	0.150	0.0500	ug/L
Xylenes (total)	1.50U	3.00	1.00	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	116	81-118		%
4-Bromofluorobenzene (surr)	103	85-114		%
Toluene-d8 (surr)	102	89-112		%

Method Blank

Blank ID: MB for HBN 1800862 [VXX/35072]

Blank Lab ID: 1538109

QC for Samples:

1199836008, 1199836010

Matrix: Water (Surface, Eff., Ground)

Results by SW8260C

Parameter

Results

LOQ/CL

DL

Units

Batch Information

Analytical Batch: VMS19558

Analytical Method: SW8260C

Instrument: VPA 780/5975 GC/MS

Analyst: NRB

Analytical Date/Time: 10/12/2019 4:39:00PM

Prep Batch: VXX35072

Prep Method: SW5030B

Prep Date/Time: 10/12/2019 6:00:00AM

Prep Initial Wt./Vol.: 5 mL

Prep Extract Vol: 5 mL

Print Date: 10/24/2019 10:24:20AM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1199836 [VXX35072]
 Blank Spike Lab ID: 1538110
 Date Analyzed: 10/12/2019 16:53

Spike Duplicate ID: LCSD for HBN 1199836 [VXX35072]
 Spike Duplicate Lab ID: 1538111
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1199836008, 1199836010

Results by SW8260C

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1,1,2-Tetrachloroethane	30	32.6	109	30	30.8	103	(78-124)	5.50	(< 20)
1,1,1-Trichloroethane	30	30.1	100	30	31.4	105	(74-131)	4.10	(< 20)
1,1,2,2-Tetrachloroethane	30	29.1	97	30	30.2	101	(71-121)	3.70	(< 20)
1,1,2-Trichloroethane	30	31.5	105	30	30.7	102	(80-119)	2.40	(< 20)
1,1-Dichloroethane	30	27.7	92	30	29.0	97	(77-125)	4.60	(< 20)
1,1-Dichloroethene	30	34.7	116	30	36.9	123	(71-131)	5.90	(< 20)
1,1-Dichloropropene	30	29.7	99	30	31.1	104	(79-125)	4.50	(< 20)
1,2,3-Trichlorobenzene	30	29.0	97	30	30.6	102	(69-129)	5.20	(< 20)
1,2,3-Trichloropropane	30	30.2	101	30	30.3	101	(73-122)	0.61	(< 20)
1,2,4-Trichlorobenzene	30	30.0	100	30	30.8	103	(69-130)	2.60	(< 20)
1,2,4-Trimethylbenzene	30	30.9	103	30	31.0	103	(79-124)	0.31	(< 20)
1,2-Dibromo-3-chloropropane	30	32.3	108	30	32.4	108	(62-128)	0.13	(< 20)
1,2-Dichlorobenzene	30	29.4	98	30	29.9	100	(80-119)	1.60	(< 20)
1,2-Dichloroethane	30	28.4	95	30	29.2	97	(73-128)	2.90	(< 20)
1,2-Dichloropropane	30	28.7	96	30	30.1	100	(78-122)	4.80	(< 20)
1,3,5-Trimethylbenzene	30	30.3	101	30	30.9	103	(75-124)	1.90	(< 20)
1,3-Dichlorobenzene	30	29.8	99	30	30.0	100	(80-119)	0.87	(< 20)
1,3-Dichloropropane	30	31.6	105	30	30.9	103	(80-119)	2.40	(< 20)
1,4-Dichlorobenzene	30	29.5	98	30	30.1	100	(79-118)	2.10	(< 20)
2,2-Dichloropropane	30	29.2	97	30	30.2	101	(60-139)	3.60	(< 20)
2-Butanone (MEK)	90	89.5	99	90	96.6	107	(56-143)	7.70	(< 20)
2-Chlorotoluene	30	30.0	100	30	30.3	101	(79-122)	0.93	(< 20)
2-Hexanone	90	88.2	98	90	89.4	99	(57-139)	1.40	(< 20)
4-Chlorotoluene	30	30.1	100	30	30.7	102	(78-122)	2.00	(< 20)
4-Isopropyltoluene	30	30.8	103	30	30.8	103	(77-127)	0.03	(< 20)
4-Methyl-2-pentanone (MIBK)	90	89.4	99	90	91.5	102	(67-130)	2.30	(< 20)
Benzene	30	28.8	96	30	29.7	99	(79-120)	3.00	(< 20)
Bromobenzene	30	29.7	99	30	30.0	100	(80-120)	0.92	(< 20)
Bromochloromethane	30	27.4	91	30	28.8	96	(78-123)	4.80	(< 20)
Bromodichloromethane	30	31.4	105	30	32.4	108	(79-125)	3.20	(< 20)
Bromoform	30	33.9	113	30	32.2	107	(66-130)	4.90	(< 20)
Bromomethane	30	33.7	112	30	32.8	109	(53-141)	2.70	(< 20)
Carbon disulfide	45	52.8	117	45	55.5	123	(64-133)	4.90	(< 20)
Carbon tetrachloride	30	31.3	104	30	32.3	108	(72-136)	3.00	(< 20)

Print Date: 10/24/2019 10:24:21AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199836 [VXX35072]
 Blank Spike Lab ID: 1538110
 Date Analyzed: 10/12/2019 16:53

Spike Duplicate ID: LCSD for HBN 1199836 [VXX35072]
 Spike Duplicate Lab ID: 1538111
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1199836008, 1199836010

Results by SW8260C

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Chlorobenzene	30	28.9	96	30	29.1	97	(82-118)	0.75	(< 20)
Chloroethane	30	45.0	150	* 30	40.4	135	(60-138)	10.90	(< 20)
Chloroform	30	28.7	96	30	30.1	100	(79-124)	4.80	(< 20)
Chloromethane	30	35.6	119	30	39.7	132	(50-139)	11.00	(< 20)
cis-1,2-Dichloroethene	30	27.7	92	30	29.1	97	(78-123)	5.00	(< 20)
cis-1,3-Dichloropropene	30	31.4	105	30	32.3	108	(75-124)	2.80	(< 20)
Dibromochloromethane	30	32.3	108	30	31.2	104	(74-126)	3.30	(< 20)
Dibromomethane	30	29.1	97	30	29.9	100	(79-123)	2.70	(< 20)
Dichlorodifluoromethane	30	34.0	113	30	35.0	117	(32-152)	2.80	(< 20)
Ethylbenzene	30	30.5	102	30	30.8	103	(79-121)	0.82	(< 20)
Freon-113	45	53.1	118	45	55.9	124	(70-136)	5.20	(< 20)
Hexachlorobutadiene	30	30.7	102	30	31.6	105	(66-134)	2.80	(< 20)
Isopropylbenzene (Cumene)	30	30.6	102	30	31.1	104	(72-131)	1.60	(< 20)
Methylene chloride	30	34.5	115	30	36.5	122	(74-124)	5.50	(< 20)
Methyl-t-butyl ether	45	50.3	112	45	46.5	103	(71-124)	7.90	(< 20)
Naphthalene	30	29.3	98	30	30.6	102	(61-128)	4.40	(< 20)
n-Butylbenzene	30	30.8	103	30	30.8	103	(75-128)	0.26	(< 20)
n-Propylbenzene	30	30.4	101	30	31.2	104	(76-126)	2.40	(< 20)
o-Xylene	30	30.1	100	30	30.3	101	(78-122)	0.75	(< 20)
P & M -Xylene	60	60.5	101	60	61.8	103	(80-121)	2.20	(< 20)
sec-Butylbenzene	30	30.2	101	30	30.7	102	(77-126)	1.40	(< 20)
Styrene	30	30.4	101	30	31.1	104	(78-123)	2.30	(< 20)
tert-Butylbenzene	30	30.0	100	30	31.4	105	(78-124)	4.60	(< 20)
Tetrachloroethene	30	30.7	102	30	29.9	100	(74-129)	2.60	(< 20)
Toluene	30	28.7	96	30	28.6	96	(80-121)	0.27	(< 20)
trans-1,2-Dichloroethene	30	33.0	110	30	32.9	110	(75-124)	0.33	(< 20)
trans-1,3-Dichloropropene	30	30.3	101	30	29.5	98	(73-127)	2.90	(< 20)
Trichloroethene	30	29.7	99	30	30.7	102	(79-123)	3.10	(< 20)
Trichlorofluoromethane	30	41.4	138	30	38.5	128	(65-141)	7.10	(< 20)
Vinyl acetate	30	31.5	105	30	32.4	108	(54-146)	3.00	(< 20)
Vinyl chloride	30	37.9	126	30	40.1	134	(58-137)	5.60	(< 20)
Xylenes (total)	90	90.6	101	90	92.1	102	(79-121)	1.70	(< 20)

Surrogates

Print Date: 10/24/2019 10:24:21AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199836 [VXX35072]
 Blank Spike Lab ID: 1538110
 Date Analyzed: 10/12/2019 16:53

Spike Duplicate ID: LCSD for HBN 1199836 [VXX35072]
 Spike Duplicate Lab ID: 1538111
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1199836008, 1199836010

Results by SW8260C

Parameter	Blank Spike (%)			Spike Duplicate (%)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,2-Dichloroethane-D4 (surr)	30	101	101	30	104	104	(81-118)	2.50	
4-Bromofluorobenzene (surr)	30	96.8	97	30	98.5	99	(85-114)	1.80	
Toluene-d8 (surr)	30	101	101	30	100	100	(89-112)	0.28	

Batch Information

Analytical Batch: **VMS19558**
 Analytical Method: **SW8260C**
 Instrument: **VPA 780/5975 GC/MS**
 Analyst: **NRB**

Prep Batch: **VXX35072**
 Prep Method: **SW5030B**
 Prep Date/Time: **10/12/2019 06:00**
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 10/24/2019 10:24:21AM

Method Blank

Blank ID: MB for HBN 1800869 [VXX/35075]
 Blank Lab ID: 1538128

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1199836008

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,2-Dibromoethane	0.0375U	0.0750	0.0180	ug/L
2-Butanone (MEK)	5.00U	10.0	3.10	ug/L
Benzene	0.200U	0.400	0.120	ug/L
Sf uor ateg				
1,2-Dichloroethane-D4 (surr)	99.9	81-118		%
4-Bromofluorobenzene (surr)	99.5	85-114		%
Toluene-d8 (surr)	99.1	89-112		%

Batch Information

Analytical Batch: VMS19561
 Analytical Method: SW8260C
 Instrument: Agilent 7890-75MS
 Analyst: NRB
 Analytical Date/Time: 10/13/2019 8:11:00PM

Prep Batch: VXX35075
 Prep Method: SW5030B
 Prep Date/Time: 10/13/2019 6:00:00AM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 10/24/2019 10:24:22AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199836 [VXX35075]
 Blank Spike Lab ID: 1538129
 Date Analyzed: 10/13/2019 20:26

Spike Duplicate ID: LCSD for HBN 1199836 [VXX35075]
 Spike Duplicate Lab ID: 1538130
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1199836008

Results by SW8260C

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,2-Dibromoethane	30	29.6	99	30	30.9	103	(77-121)	4.00	(< 20)
2-Butanone (MEK)	90	94.1	105	90	99.4	110	(56-143)	5.50	(< 20)
Benzene	30	30.5	102	30	30.6	102	(79-120)	0.42	(< 20)

Surrogates

1,2-Dichloroethane-D4 (surr)	30	99.3	99	30	99.8	100	(81-118)	0.43	
4-Bromofluorobenzene (surr)	30	98.9	99	30	98.1	98	(85-114)	0.86	
Toluene-d8 (surr)	30	99.2	99	30	100	100	(89-112)	1.30	

Batch Information

Analytical Batch: **VMS19561**
 Analytical Method: **SW8260C**
 Instrument: **Agilent 7890-75MS**
 Analyst: **NRB**

Prep Batch: **VXX35075**
 Prep Method: **SW5030B**
 Prep Date/Time: **10/13/2019 06:00**
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1800895 [VXX/35083]
Blank Lab ID: 1538255

Matrix: Soil/Solid (dry weight)

QC for Samples:
1199836009

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,1,1,2-Tetrachloroethane	0.0100U	0.0200	0.00620	mg/Kg
1,1,1-Trichloroethane	0.0125U	0.0250	0.00780	mg/Kg
1,1,2,2-Tetrachloroethane	0.00100U	0.00200	0.000620	mg/Kg
1,1,2-Trichloroethane	0.000400U	0.000800	0.000250	mg/Kg
1,1-Dichloroethane	0.0125U	0.0250	0.00780	mg/Kg
1,1-Dichloroethene	0.0125U	0.0250	0.00780	mg/Kg
1,1-Dichloropropene	0.0125U	0.0250	0.00780	mg/Kg
1,2,3-Trichlorobenzene	0.0250U	0.0500	0.0150	mg/Kg
1,2,3-Trichloropropane	0.000500U	0.00100	0.000310	mg/Kg
1,2,4-Trichlorobenzene	0.0125U	0.0250	0.00780	mg/Kg
1,2,4-Trimethylbenzene	0.0250U	0.0500	0.0150	mg/Kg
1,2-Dibromo-3-chloropropane	0.0500U	0.100	0.0310	mg/Kg
1,2-Dibromoethane	0.000500U	0.00100	0.000310	mg/Kg
1,2-Dichlorobenzene	0.0125U	0.0250	0.00780	mg/Kg
1,2-Dichloroethane	0.00100U	0.00200	0.000620	mg/Kg
1,2-Dichloropropane	0.00500U	0.0100	0.00310	mg/Kg
1,3,5-Trimethylbenzene	0.0125U	0.0250	0.00780	mg/Kg
1,3-Dichlorobenzene	0.0125U	0.0250	0.00780	mg/Kg
1,3-Dichloropropane	0.00500U	0.0100	0.00310	mg/Kg
1,4-Dichlorobenzene	0.0125U	0.0250	0.00780	mg/Kg
2,2-Dichloropropane	0.0125U	0.0250	0.00780	mg/Kg
2-Butanone (MEK)	0.125U	0.250	0.0780	mg/Kg
2-Chlorotoluene	0.0125U	0.0250	0.00780	mg/Kg
2-Hexanone	0.0500U	0.100	0.0310	mg/Kg
4-Chlorotoluene	0.0125U	0.0250	0.00780	mg/Kg
4-Isopropyltoluene	0.0500U	0.100	0.0250	mg/Kg
4-Methyl-2-pentanone (MIBK)	0.125U	0.250	0.0780	mg/Kg
Acetone	0.125U	0.250	0.0780	mg/Kg
Benzene	0.00625U	0.0125	0.00390	mg/Kg
Bromobenzene	0.0125U	0.0250	0.00780	mg/Kg
Bromochloromethane	0.0125U	0.0250	0.00780	mg/Kg
Bromodichloromethane	0.00100U	0.00200	0.000620	mg/Kg
Bromoform	0.0125U	0.0250	0.00780	mg/Kg
Bromomethane	0.0100U	0.0200	0.00620	mg/Kg
Carbon disulfide	0.0500U	0.100	0.0310	mg/Kg
Carbon tetrachloride	0.00625U	0.0125	0.00390	mg/Kg
Chlorobenzene	0.0125U	0.0250	0.00780	mg/Kg
Chloroethane	0.100U	0.200	0.0620	mg/Kg

Print Date: 10/24/2019 10:24:24AM

Method Blank

Blank ID: MB for HBN 1800895 [VXX/35083]

Blank Lab ID: 1538255

QC for Samples:

1199836009

Matrix: Soil/Solid (dry weight)

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Chloroform	0.00100U	0.00200	0.000620	mg/Kg
Chloromethane	0.0125U	0.0250	0.00780	mg/Kg
cis-1,2-Dichloroethene	0.0125U	0.0250	0.00780	mg/Kg
cis-1,3-Dichloropropene	0.00625U	0.0125	0.00390	mg/Kg
Dibromochloromethane	0.00100U	0.00200	0.000620	mg/Kg
Dibromomethane	0.0125U	0.0250	0.00780	mg/Kg
Dichlorodifluoromethane	0.0250U	0.0500	0.0150	mg/Kg
Ethylbenzene	0.0125U	0.0250	0.00780	mg/Kg
Freon-113	0.0500U	0.100	0.0310	mg/Kg
Hexachlorobutadiene	0.0100U	0.0200	0.00620	mg/Kg
Isopropylbenzene (Cumene)	0.0125U	0.0250	0.00780	mg/Kg
Methylene chloride	0.0388J	0.100	0.0310	mg/Kg
Methyl-t-butyl ether	0.0500U	0.100	0.0310	mg/Kg
Naphthalene	0.0125U	0.0250	0.00780	mg/Kg
n-Butylbenzene	0.0125U	0.0250	0.00780	mg/Kg
n-Propylbenzene	0.0125U	0.0250	0.00780	mg/Kg
o-Xylene	0.0125U	0.0250	0.00780	mg/Kg
P & M -Xylene	0.0250U	0.0500	0.0150	mg/Kg
sec-Butylbenzene	0.0125U	0.0250	0.00780	mg/Kg
Styrene	0.0125U	0.0250	0.00780	mg/Kg
tert-Butylbenzene	0.0125U	0.0250	0.00780	mg/Kg
Tetrachloroethene	0.00625U	0.0125	0.00390	mg/Kg
Toluene	0.0125U	0.0250	0.00780	mg/Kg
trans-1,2-Dichloroethene	0.0125U	0.0250	0.00780	mg/Kg
trans-1,3-Dichloropropene	0.00625U	0.0125	0.00390	mg/Kg
Trichloroethene	0.00250U	0.00500	0.00150	mg/Kg
Trichlorofluoromethane	0.0250U	0.0500	0.0150	mg/Kg
Vinyl acetate	0.0500U	0.100	0.0310	mg/Kg
Vinyl chloride	0.000400U	0.000800	0.000250	mg/Kg
Xylenes (total)	0.0375U	0.0750	0.0228	mg/Kg
Surrogates				
1,2-Dichloroethane-D4 (surr)	107	71-136		%
4-Bromofluorobenzene (surr)	98.1	55-151		%
Toluene-d8 (surr)	103	85-116		%

Print Date: 10/24/2019 10:24:24AM

Method Blank

Blank ID: MB for HBN 1800895 [VXX/35083]
Blank Lab ID: 1538255

Matrix: Soil/Solid (dry weight)

QC for Samples:
1199836009

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
------------------	----------------	---------------	-----------	--------------

Batch Information

Analytical Batch: VMS19562
Analytical Method: SW8260C
Instrument: VQA 7890/5975 GC/MS
Analyst: KAJ
Analytical Date/Time: 10/10/2019 6:49:00PM

Prep Batch: VXX35083
Prep Method: SW5035A
Prep Date/Time: 10/10/2019 6:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Print Date: 10/24/2019 10:24:24AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199836 [VXX35083]

Blank Spike Lab ID: 1538256

Date Analyzed: 10/10/2019 19:05

Matrix: Soil/Solid (dry weight)

QC for Samples: 1199836009

Results by SW8260C

Parameter	Blank Spike (mg/Kg)			CL
	Spike	Result	Rec (%)	
1,1,1,2-Tetrachloroethane	0.750	0.734	98	(78-125)
1,1,1-Trichloroethane	0.750	0.757	101	(73-130)
1,1,2,2-Tetrachloroethane	0.750	0.726	97	(70-124)
1,1,2-Trichloroethane	0.750	0.734	98	(78-121)
1,1-Dichloroethane	0.750	0.696	93	(76-125)
1,1-Dichloroethene	0.750	0.829	111	(70-131)
1,1-Dichloropropene	0.750	0.776	103	(76-125)
1,2,3-Trichlorobenzene	0.750	0.722	96	(66-130)
1,2,3-Trichloropropane	0.750	0.731	98	(73-125)
1,2,4-Trichlorobenzene	0.750	0.746	99	(67-129)
1,2,4-Trimethylbenzene	0.750	0.715	95	(75-123)
1,2-Dibromo-3-chloropropane	0.750	0.727	97	(61-132)
1,2-Dibromoethane	0.750	0.756	101	(78-122)
1,2-Dichlorobenzene	0.750	0.719	96	(78-121)
1,2-Dichloroethane	0.750	0.687	92	(73-128)
1,2-Dichloropropane	0.750	0.715	95	(76-123)
1,3,5-Trimethylbenzene	0.750	0.744	99	(73-124)
1,3-Dichlorobenzene	0.750	0.743	99	(77-121)
1,3-Dichloropropane	0.750	0.768	102	(77-121)
1,4-Dichlorobenzene	0.750	0.756	101	(75-120)
2,2-Dichloropropane	0.750	0.799	107	(67-133)
2-Butanone (MEK)	2.25	2.10	93	(51-148)
2-Chlorotoluene	0.750	0.754	101	(75-122)
2-Hexanone	2.25	2.28	101	(53-145)
4-Chlorotoluene	0.750	0.752	100	(72-124)
4-Isopropyltoluene	0.750	0.750	100	(73-127)
4-Methyl-2-pentanone (MIBK)	2.25	2.06	92	(65-135)
Acetone	2.25	2.16	96	(36-164)
Benzene	0.750	0.709	95	(77-121)
Bromobenzene	0.750	0.752	100	(78-121)
Bromochloromethane	0.750	0.642	86	(78-125)
Bromodichloromethane	0.750	0.675	90	(75-127)
Bromoform	0.750	0.755	101	(67-132)
Bromomethane	0.750	0.690	92	(53-143)

Print Date: 10/24/2019 10:24:25AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199836 [VXX35083]

Blank Spike Lab ID: 1538256

Date Analyzed: 10/10/2019 19:05

Matrix: Soil/Solid (dry weight)

QC for Samples: 1199836009

Results by SW8260C

Parameter	Blank Spike (mg/Kg)			CL
	Spike	Result	Rec (%)	
Carbon disulfide	1.13	1.07	95	(63-132)
Carbon tetrachloride	0.750	0.749	100	(70-135)
Chlorobenzene	0.750	0.712	95	(79-120)
Chloroethane	0.750	0.645	86	(59-139)
Chloroform	0.750	0.612	82	(78-123)
Chloromethane	0.750	0.604	81	(50-136)
cis-1,2-Dichloroethene	0.750	0.685	91	(77-123)
cis-1,3-Dichloropropene	0.750	0.751	100	(74-126)
Dibromochloromethane	0.750	0.796	106	(74-126)
Dibromomethane	0.750	0.656	87	(78-125)
Dichlorodifluoromethane	0.750	0.614	82	(29-149)
Ethylbenzene	0.750	0.684	91	(76-122)
Freon-113	1.13	1.15	103	(66-136)
Hexachlorobutadiene	0.750	0.771	103	(61-135)
Isopropylbenzene (Cumene)	0.750	0.735	98	(68-134)
Methylene chloride	0.750	0.765	102	(70-128)
Methyl-t-butyl ether	1.13	1.08	96	(73-125)
Naphthalene	0.750	0.730	97	(62-129)
n-Butylbenzene	0.750	0.806	107	(70-128)
n-Propylbenzene	0.750	0.777	104	(73-125)
o-Xylene	0.750	0.658	88	(77-123)
P & M -Xylene	1.50	1.32	88	(77-124)
sec-Butylbenzene	0.750	0.753	100	(73-126)
Styrene	0.750	0.734	98	(76-124)
tert-Butylbenzene	0.750	0.752	100	(73-125)
Tetrachloroethene	0.750	0.804	107	(73-128)
Toluene	0.750	0.658	88	(77-121)
trans-1,2-Dichloroethene	0.750	0.767	102	(74-125)
trans-1,3-Dichloropropene	0.750	0.730	97	(71-130)
Trichloroethene	0.750	0.750	100	(77-123)
Trichlorofluoromethane	0.750	0.747	100	(62-140)
Vinyl acetate	0.750	0.839	112	(50-151)
Vinyl chloride	0.750	0.646	86	(56-135)
Xylenes (total)	2.25	1.98	88	(78-124)

Print Date: 10/24/2019 10:24:25AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199836 [VXX35083]
 Blank Spike Lab ID: 1538256
 Date Analyzed: 10/10/2019 19:05

Matrix: Soil/Solid (dry weight)

QC for Samples: 1199836009

Results by SW8260C

Parameter	Blank Spike (mg/Kg)			CL
	Spike	Result	Rec (%)	
Surrogates				
1,2-Dichloroethane-D4 (surr)	0.750	95.1	95	(71-136)
4-Bromofluorobenzene (surr)	0.750	103	103	(55-151)
Toluene-d8 (surr)	0.750	102	102	(85-116)

Batch Information

Analytical Batch: **VMS19562**
 Analytical Method: **SW8260C**
 Instrument: **VQA 7890/5975 GC/MS**
 Analyst: **KAJ**

Prep Batch: **VXX35083**
 Prep Method: **SW5035A**
 Prep Date/Time: **10/10/2019 06:00**
 Spike Init Wt./Vol.: 0.750 mg/Kg Extract Vol: 25 mL
 Dupe Init Wt./Vol.: Extract Vol:

Matrix Spike Summary

Original Sample ID: 1199851007
 MS Sample ID: 1538257 MS
 MSD Sample ID: 1538258 MSD

Analysis Date: 10/10/2019 21:53
 Analysis Date: 10/10/2019 19:58
 Analysis Date: 10/10/2019 20:14
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1199836009

Results by SW8260C

Parameter	Sample	Matrix Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1,1,2-Tetrachloroethane	0.0278U	0.567	0.503	89	0.567	0.553	98	78-125	9.50	(< 20)
1,1,1-Trichloroethane	0.0347U	0.567	0.578	102	0.567	0.570	101	73-130	1.30	(< 20)
1,1,2,2-Tetrachloroethane	0.00278U	0.567	0.518	91	0.567	0.552	98	70-124	6.40	(< 20)
1,1,2-Trichloroethane	0.00111U	0.567	0.503	89	0.567	0.545	96	78-121	8.10	(< 20)
1,1-Dichloroethane	0.0347U	0.567	0.524	93	0.567	0.522	92	76-125	0.40	(< 20)
1,1-Dichloroethene	0.0347U	0.567	0.652	115	0.567	0.623	110	70-131	4.40	(< 20)
1,1-Dichloropropene	0.0347U	0.567	0.588	104	0.567	0.585	103	76-125	0.55	(< 20)
1,2,3-Trichlorobenzene	0.0694U	0.567	0.544	96	0.567	0.592	105	66-130	8.50	(< 20)
1,2,3-Trichloropropane	0.00139U	0.567	0.523	92	0.567	0.556	98	73-125	6.10	(< 20)
1,2,4-Trichlorobenzene	0.0347U	0.567	0.559	99	0.567	0.597	105	67-129	6.60	(< 20)
1,2,4-Trimethylbenzene	0.0694U	0.567	0.516	91	0.567	0.531	94	75-123	2.90	(< 20)
1,2-Dibromo-3-chloropropane	0.139U	0.567	0.534	94	0.567	0.551	97	61-132	3.20	(< 20)
1,2-Dibromoethane	0.00139U	0.567	0.523	92	0.567	0.564	100	78-122	7.60	(< 20)
1,2-Dichlorobenzene	0.0347U	0.567	0.520	92	0.567	0.542	96	78-121	3.70	(< 20)
1,2-Dichloroethane	0.00278U	0.567	0.516	91	0.567	0.520	92	73-128	0.73	(< 20)
1,2-Dichloropropane	0.0139U	0.567	0.531	94	0.567	0.535	94	76-123	0.71	(< 20)
1,3,5-Trimethylbenzene	0.0347U	0.567	0.523	92	0.567	0.555	98	73-124	6.00	(< 20)
1,3-Dichlorobenzene	0.0347U	0.567	0.540	96	0.567	0.555	98	77-121	2.40	(< 20)
1,3-Dichloropropane	0.0139U	0.567	0.532	94	0.567	0.576	102	77-121	7.80	(< 20)
1,4-Dichlorobenzene	0.0347U	0.567	0.539	95	0.567	0.561	99	75-120	4.10	(< 20)
2,2-Dichloropropane	0.0347U	0.567	0.669	118	0.567	0.661	117	67-133	1.20	(< 20)
2-Butanone (MEK)	0.347U	1.70	1.50	88	1.70	1.59	94	51-148	6.20	(< 20)
2-Chlorotoluene	0.0347U	0.567	0.540	95	0.567	0.560	99	75-122	3.60	(< 20)
2-Hexanone	0.139U	1.70	1.59	94	1.70	1.74	102	53-145	8.30	(< 20)
4-Chlorotoluene	0.0347U	0.567	0.545	96	0.567	0.565	100	72-124	3.60	(< 20)
4-Isopropyltoluene	0.139U	0.567	0.528	93	0.567	0.567	100	73-127	7.10	(< 20)
4-Methyl-2-pentanone (MIBK)	0.347U	1.70	1.50	88	1.70	1.55	92	65-135	3.90	(< 20)
Acetone	0.347U	1.70	1.53	90	1.70	1.65	97	36-164	7.10	(< 20)
Benzene	0.0174U	0.567	0.524	93	0.567	0.527	93	77-121	0.61	(< 20)
Bromobenzene	0.0347U	0.567	0.547	97	0.567	0.555	98	78-121	1.40	(< 20)
Bromochloromethane	0.0347U	0.567	0.490	87	0.567	0.482	85	78-125	1.60	(< 20)
Bromodichloromethane	0.00278U	0.567	0.510	90	0.567	0.511	90	75-127	0.30	(< 20)
Bromoform	0.0347U	0.567	0.522	92	0.567	0.572	101	67-132	9.00	(< 20)
Bromomethane	0.0278U	0.567	0.548	97	0.567	0.532	94	53-143	3.00	(< 20)
Carbon disulfide	0.139U	0.850	0.856	101	0.850	0.798	94	63-132	7.00	(< 20)
Carbon tetrachloride	0.0174U	0.567	0.577	102	0.567	0.570	101	70-135	1.30	(< 20)
Chlorobenzene	0.0347U	0.567	0.505	89	0.567	0.527	93	79-120	4.40	(< 20)

Print Date: 10/24/2019 10:24:26AM

Matrix Spike Summary

Original Sample ID: 1199851007
 MS Sample ID: 1538257 MS
 MSD Sample ID: 1538258 MSD

Analysis Date: 10/10/2019 21:53
 Analysis Date: 10/10/2019 19:58
 Analysis Date: 10/10/2019 20:14
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1199836009

Results by SW8260C

Parameter	Sample	Matrix Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Chloroethane	0.278U	0.567	0.515	91	0.567	0.480	85	59-139	7.10	(< 20)
Chloroform	0.00278U	0.567	0.464	82	0.567	0.458	81	78-123	1.20	(< 20)
Chloromethane	0.0347U	0.567	0.458	81	0.567	0.447	79	50-136	2.50	(< 20)
cis-1,2-Dichloroethene	0.0347U	0.567	0.527	93	0.567	0.505	89	77-123	4.20	(< 20)
cis-1,3-Dichloropropene	0.0174U	0.567	0.570	101	0.567	0.572	101	74-126	0.26	(< 20)
Dibromochloromethane	0.00278U	0.567	0.557	98	0.567	0.596	105	74-126	6.60	(< 20)
Dibromomethane	0.0347U	0.567	0.493	87	0.567	0.491	87	78-125	0.38	(< 20)
Dichlorodifluoromethane	0.0694U	0.567	0.503	89	0.567	0.470	83	29-149	6.70	(< 20)
Ethylbenzene	0.0347U	0.567	0.485	86	0.567	0.511	90	76-122	5.50	(< 20)
Freon-113	0.139U	0.850	0.909	107	0.850	0.883	104	66-136	3.00	(< 20)
Hexachlorobutadiene	0.0278U	0.567	0.697	123	0.567	0.668	118	61-135	4.30	(< 20)
Isopropylbenzene (Cumene)	0.0347U	0.567	0.518	92	0.567	0.544	96	68-134	4.80	(< 20)
Methylene chloride	0.139U	0.567	0.553	98	0.567	0.539	95	70-128	2.70	(< 20)
Methyl-t-butyl ether	0.139U	0.850	0.784	92	0.850	0.804	95	73-125	2.50	(< 20)
Naphthalene	0.0347U	0.567	0.535	94	0.567	0.574	102	62-129	7.40	(< 20)
n-Butylbenzene	0.0347U	0.567	0.573	101	0.567	0.599	106	70-128	4.40	(< 20)
n-Propylbenzene	0.0347U	0.567	0.551	97	0.567	0.584	103	73-125	6.00	(< 20)
o-Xylene	0.0347U	0.567	0.474	84	0.567	0.490	87	77-123	3.20	(< 20)
P & M -Xylene	0.0694U	1.13	0.943	83	1.13	0.983	87	77-124	4.10	(< 20)
sec-Butylbenzene	0.0347U	0.567	0.514	91	0.567	0.559	99	73-126	8.40	(< 20)
Styrene	0.0347U	0.567	0.528	93	0.567	0.549	97	76-124	3.90	(< 20)
tert-Butylbenzene	0.0347U	0.567	0.519	92	0.567	0.549	97	73-125	5.80	(< 20)
Tetrachloroethene	0.0174U	0.567	0.551	97	0.567	0.609	107	73-128	10.00	(< 20)
Toluene	0.0347U	0.567	0.455	80	0.567	0.485	86	77-121	6.60	(< 20)
trans-1,2-Dichloroethene	0.0347U	0.567	0.588	104	0.567	0.572	101	74-125	2.50	(< 20)
trans-1,3-Dichloropropene	0.0174U	0.567	0.518	91	0.567	0.560	99	71-130	7.90	(< 20)
Trichloroethene	0.00694U	0.567	0.556	98	0.567	0.559	99	77-123	0.64	(< 20)
Trichlorofluoromethane	0.0694U	0.567	0.606	107	0.567	0.573	101	62-140	5.50	(< 20)
Vinyl acetate	0.139U	0.567	0.643	113	0.567	0.656	116	50-151	2.00	(< 20)
Vinyl chloride	0.00111U	0.567	0.503	89	0.567	0.478	85	56-135	5.10	(< 20)
Xylenes (total)	0.104U	1.70	1.42	84	1.70	1.48	87	78-124	3.80	(< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		0.567	0.557	99	0.567	0.555	98	71-136	0.68	
4-Bromofluorobenzene (surr)		0.943	0.830	88	0.943	0.843	89	55-151	1.50	
Toluene-d8 (surr)		0.567	0.557	98	0.567	0.585	103	85-116	4.80	

Print Date: 10/24/2019 10:24:26AM

Matrix Spike Summary

Original Sample ID: 1199851007
 MS Sample ID: 1538257 MS
 MSD Sample ID: 1538258 MSD

Analysis Date:
 Analysis Date: 10/10/2019 19:58
 Analysis Date: 10/10/2019 20:14
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1199836009

Results by SW8260C

Parameter	Sample	Matrix Spike (%)			Spike Duplicate (%)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			

Batch Information

Analytical Batch: VMS19562
 Analytical Method: SW8260C
 Instrument: VQA 7890/5975 GC/MS
 Analyst: KAJ
 Analytical Date/Time: 10/10/2019 7:58:00PM

Prep Batch: VXX35083
 Prep Method: Vol. Extraction SW8260 Field Extracted L
 Prep Date/Time: 10/10/2019 6:00:00AM
 Prep Initial Wt./Vol.: 87.23g
 Prep Extract Vol: 25.00mL

Print Date: 10/24/2019 10:24:26AM

Method Blank

Blank ID: MB for HBN 1800691 [VXX/35087]
 Blank Lab ID: 153832Q

MairW(a isr umrfa, sE. ffEd rocn) R

CS for map elst :
 1166832010

yst clit bUSW8260C

<u>- arap sirs</u>	<u>yst clit</u>	<u>LPC/SL</u>	<u>DL</u>	<u>Onxt</u>
1BHDx brop osigans	003050	0050	00180	cK/L
Sf uor ateg				
1BHDx glorosigansHD7 ut crrR	66Q	81h18		z
7fBrop oflcorobsn4sns ut crrR	62Q	85h17		z
%lcsnsh) 8 ut crrR	100	86h19		z

Batch information

TnalUx al Bai, g: VMm16523
 TnalUx al Msigo): m(8920S
 Int ircp sni: TKXsni Q360hQ5Mm
 TnalU i: Ny B
 TnalUx al Dais/%p s: 10/17/9016 7:77:00TM

- rse Bai, g: VXX35087
 - rse Msigo): m(5030B
 - rse Dais/%p s: 10/13/9016 2:00:00TM
 - rse Inxal (iQVolG 5 p L
 - rse . Vifa, i Vol: 5 p L

- rni Dais: 10/97/9016 10:97:9QTM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199836 [VXX35087]
 Blank Spike Lab ID: 1538368
 Date Printed: 10/17/2019 07:59

Spike Duplicate ID: LCSD for HBN 1199836 [VXX35087]
 Spike Duplicate Lab ID: 1538369
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1199836010

Results for SW8260C

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1-Dibromoethane	30	31.3	108	30	31.9	106	(<<-1/1)	1.30	(4/0)
Surrogates									
1,1-Dichloroethane-D7 (surr)	30	99.<	100	30	99.1	99	(81-118)	0.61	
7-Bromofluorobenzene (surr)	30	96.1	96	30	9.<	9.<	(85-117)	0.93	
Koluene-z8 (surr)	30	99.9	100	30	101	101	(89-11/)	1.30	

Batch Information

Internal Batch: VMS19563
 Internal Method: SW8260C
 Instrument: Agilent 7890-75MS
 Internal: NRB

Prep Batch: VXX35084
 Prep Method: SW5030B
 Prep Date/Time: 10/13/2019 06:00
 Spike Inj Vol.: 30 ug/L Extraction Vol: 5 mL
 Duplicate Inj Vol.: 30 ug/L Extraction Vol: 5 mL

Method Blank

Blank ID: MB for HBN 180095[\ / 3 L08Lb
Blank 2aQID: 1L] 8] 91

Maxrd : mod3moldy wyrghsd Røu

CS for map els6:
11998] t 00t i 11998] t 00[

Us6Qx6 Qj SW8260C

<u>- arap sxsr</u>	<u>Us6Qx6</u>	<u>2. C3S2</u>	<u>D2</u>	<u>Pnd6</u>
1i1i1i5Tcsxa. RlorosxRans	0K0100P	0K0500	0K00t 50	p) 3)
1i1i1Tcrd RlorosxRans	0K015LP	0K05L0	0K00[80	p) 3)
1i1i5i5Tcsxa. RlorosxRans	0K00100P	0K00500	0K000t 50	p) 3)
1i1i5Tcrd RlorosxRans	0K000400P	0K000800	0K0005L0	p) 3)
1i1Tdd RlorosxRans	0K015LP	0K05L0	0K00[80	p) 3)
1i1Tdd RlorosxRans	0K015LP	0K05L0	0K00[80	p) 3)
1i1Tdd Rloroeroesns	0K015LP	0K05L0	0K00[80	p) 3)
1i5i] Tcrd RloroQsnzns	0K05L0P	0K0L00	0K01L0	p) 3)
1i5i] Tcrd Rloroeroeans	0K000L00P	0K00100	0K000] 10	p) 3)
1i5i4Tcrd RloroQsnzns	0K015LP	0K05L0	0K00[80	p) 3)
1i5i4Tcrd sRglQsnzns	0K05L0P	0K0L00	0K01L0	p) 3)
1i5Tddrop oT] T. Rloroeroeans	0K0L00P	0K0100	0K0] 10	p) 3)
1i5Tddrop osxRans	0K000L00P	0K00100	0K000] 10	p) 3)
1i5Tdd RloroQsnzns	0K015LP	0K05L0	0K00[80	p) 3)
1i5Tdd RlorosxRans	0K00100P	0K00500	0K000t 50	p) 3)
1i5Tdd Rloroeroeans	0K00L00P	0K0100	0K00] 10	p) 3)
1i] iL Tcrd sRglQsnzns	0K015LP	0K05L0	0K00[80	p) 3)
1i] Tdd RloroQsnzns	0K015LP	0K05L0	0K00[80	p) 3)
1i] Tdd Rloroeroeans	0K00L00P	0K0100	0K00] 10	p) 3)
1i4Tdd RloroQsnzns	0K015LP	0K05L0	0K00[80	p) 3)
5i5Tdd Rloroeroeans	0K015LP	0K05L0	0K00[80	p) 3)
5TBOanons vME7u	0K05LP	0K05L0	0K0[80	p) 3)
5TSRloroxlQsnzns	0K015LP	0K05L0	0K00[80	p) 3)
5THs(anons	0K0L00P	0K0100	0K0] 10	p) 3)
4TSRloroxlQsnzns	0K015LP	0K05L0	0K00[80	p) 3)
4T6oeroeglxlQsnzns	0K0L00P	0K0100	0K05L0	p) 3)
4TMsRglTsnxanons vMIB7u	0K05LP	0K05L0	0K0[80	p) 3)
A. sxsns	0K05LP	0K05L0	0K0[80	p) 3)
Bsnzns	0K00t 5LP	0K015L	0K00] 90	p) 3)
Brop oQsnzns	0K015LP	0K05L0	0K00[80	p) 3)
Brop o. Rlorop sRans	0K015LP	0K05L0	0K00[80	p) 3)
Brop oyd Rlorop sRans	0K00100P	0K00500	0K000t 50	p) 3)
Brop oforp	0K015LP	0K05L0	0K00[80	p) 3)
Brop op sRans	0K0100P	0K0500	0K00t 50	p) 3)
SarQn y6Qfys	0K0L00P	0K0100	0K0] 10	p) 3)
SarQn xsxa. Rlorofys	0K00t 5LP	0K015L	0K00] 90	p) 3)
SFRoroQsnzns	0K015LP	0K05L0	0K00[80	p) 3)
SFRorosxRans	0K0100P	0K0500	0K0t 50	p) 3)

- rdxDaxs : 103543019 10:54:] 0AM

Method Blank

Blank ID: MB for HBN 180095 [V/ / 3 L08Lb
Blank 2aQID: 1L] 8] 91

Maxrd : mod3moldy wyrgh sd Røu

CS for map els6:
11998] t 00t i 11998] t 00[

Us6Qx6 Qg SW8260C

<u>- arap sxsr</u>	<u>Us6Qx6</u>	<u>2. C3S2</u>	<u>D2</u>	<u>Pnd6</u>
SFloroforp	0K00100P	0K00500	0K000t 50	p) 3)
SFlorop sxFans	0K015LP	0K05L0	0K00[80	p) 3)
. 6Ti i5TDd RlorosxFns	0K015LP	0K05L0	0K00[80	p) 3)
. 6Ti j TDd Rloroeroesns	0K00t 5LP	0K015L	0K00] 90	p) 3)
DdQrop o. Rlorop sxFans	0K00100P	0K00500	0K000t 50	p) 3)
DdQrop op sxFans	0K015LP	0K05L0	0K00[80	p) 3)
Dd Rloroyd lCdrop sxFans	0K05L0P	0K0L00	0K01L0	p) 3)
ExRglQnszns	0K015LP	0K05L0	0K00[80	p) 3)
FrsonT1j]	0K0L00P	0K00	0K0] 10	p) 3)
Hs(a. RloroQayd ns	0K0100P	0K0500	0K00t 50	p) 3)
l6eroeglQnszns v6Qp snsu	0K015LP	0K05L0	0K00[80	p) 3)
MsxRglsns . Rloroys	0K0L00P	0K00	0K0] 10	p) 3)
MsxRgl TlQgl sxFsr	0K0L00P	0K00	0K0] 10	p) 3)
NaeRwalsns	0K015LP	0K05L0	0K00[80	p) 3)
nTBOglQnszns	0K015LP	0K05L0	0K00[80	p) 3)
nT roeglQnszns	0K015LP	0K05L0	0K00[80	p) 3)
oT glsns	0K015LP	0K05L0	0K00[80	p) 3)
- J M T glsns	0K05L0P	0K0L00	0K01L0	p) 3)
6s. TBOglQnszns	0K015LP	0K05L0	0K00[80	p) 3)
mgrsns	0K015LP	0K05L0	0K00[80	p) 3)
xrxTBOglQnszns	0K015LP	0K05L0	0K00[80	p) 3)
csxa. RlorosxFns	0K00t 5LP	0K015L	0K00] 90	p) 3)
colQns	0K015LP	0K05L0	0K00[80	p) 3)
xan6Ti i5TDd RlorosxFns	0K015LP	0K05L0	0K00[80	p) 3)
xan6Ti j TDd Rloroeroesns	0K00t 5LP	0K015L	0K00] 90	p) 3)
crd RlorosxFns	0K005L0P	0K00L00	0K001L0	p) 3)
crd RloroflCdrop sxFans	0K05L0P	0K0L00	0K01L0	p) 3)
Xdgl a. sxs	0K0L00P	0K00	0K0] 10	p) 3)
Xdgl . Rloroys	0K00400P	0K000800	0K0005L0	p) 3)
/ glsns6 woxalu	0K0] [LP	0K0] L0	0K0558	p) 3)

Surrogates

1i5TDd RlorosxFns TD4 v6Qru	10]	[1T1] t	&
4TBrop oflCdroQnszns v6Qru	111	LLT1L1	&
colQns Ty8 v6Qru	10]	8LT1t	&

Method Blank

Blank ID: MB for HBN 180095 [X/ / 3 L08Lb
Blank 2aQID: 1L] 8] 91

Maxrd : mod3moldy wrg h sd Ru

CS for map els6:
11998] t 00t i 11998] t 00[

Us6Qx6 Qg SW8260C

- arap sxsr

Us6Qx6

2. C32

D2

Pnd6

Batch Information

Analgd al Bax R: XMm19Lt 4
Analgd al MsxRby: mW85t 0S
In6xQp snx XCA [8903.9] L GS3Mm
Anal6x 7A%
Analgd al Dax3:φ s: 1031135019 11:L5:00AM

- rse Bax R: X/ / j L08L
- rse MsxRby: mWLO] LA
- rse Dax3:φ s: 1031135019 t:00:00AM
- rse Indal Wx3:ok L0)
- rse E(xa. xXol: 5L p 2

- rdxDax: 103435019 10:54:] 0AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199836 [VXX35085]

Blank Spike Lab ID: 1538392

Date Analyzed: 10/11/2019 1RR3

x atri(: Soil/Solid wdry g eih) tP

, C for Sac pleu: 1199836006- 119983600T

s euMtu by SW8260C

Blank Spike w h/QhP

marac eter	Spike	s euMt	s e%wK P	CL
1-1-1-2.7etra% loroet) ane	04F50	04693	92	wT8.125 P
1-1-1.7ri% loroet) ane	04F50	04T6R	102	wT3.130 P
1-1-2-2.7etra% loroet) ane	04F50	04T1	89	wT0.12R P
1-1-2.7ri% loroet) ane	04F50	04683	91	wT8.121 P
1-1.Di% loroet) ane	04F50	04T02	9R	wT6.125 P
1-1.Di% loroet) ene	04F50	04682	118	wT0.131 P
1-1.Di% loropropene	04F50	04T6	10R	wT6.125 P
1-2-3.7ri% lorobenzene	04F50	04632	8R	w66.130 P
1-2-3.7ri% loropropane	04F50	04693	92	wT3.125 P
1-2-R7ri% lorobenzene	04F50	04T0	89	w6T.129 P
1-2-R7ric et) ylbenzene	04F50	04669	89	wT5.123 P
1-2.Dibroc o.3.% loropropane	04F50	04669	89	w61.132 P
1-2.Dibroc oet) ane	04F50	04T12	95	wT8.122 P
1-2.Di% lorobenzene	04F50	04T8	90	wT8.121 P
1-2.Di% loroet) ane	04F50	04688	92	wT3.128 P
1-2.Di% loropropane	04F50	04T05	9R	wT6.123 P
1-3-5.7ric et) ylbenzene	04F50	04682	91	wT3.12R P
1-3.Di% lorobenzene	04F50	04699	93	wTT.121 P
1-3.Di% loropropane	04F50	04T29	9T	wTT.121 P
1-R.Di% lorobenzene	04F50	04T03	9R	wT5.120 P
2-2.Di% loropropane	04F50	0469T	120	w6T.133 P
2.BManone w EQP	2425	1465	8T	w51.1R8 P
2.C) lorotolMene	04F50	04T01	9R	wT5.122 P
2.He(anone	2425	2408	93	w53.1R5 P
R C) lorotolMene	04F50	04T12	95	wT2.12R P
R luopropyltolMene	04F50	04682	91	wT3.12T P
R x et) yl.2.pentanone w IBQP	2425	140R	86	w65.135 P
A%etone	2425	240R	91	w36.16R P
Benzene	04F50	04690	92	wTT.121 P
Broc obenzene	04F50	04698	93	wT8.121 P
Broc o% loroc et) ane	04F50	04655	8T	wT8.125 P
Broc odi% loroc et) ane	04F50	046TR	90	wT5.12T P
Broc oforc	04F50	04T2R	9T	w6T.132 P
Broc oc et) ane	04F50	04T12	95	w53.1R3 P

Print Date: 10/2R/2019 10:2R31Ax

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199836 [VXX35085]

Blank Spike Lab ID: 1538392

Date Analyzed: 10/11/2019 1RR3

x atri(: Soil/Solid wdry g eih) tP

, C for Sac pleu: 1199836006- 119983600T

s euMtu by SW8260C

Blank Spike w h/QhP

marac eter	Spike	s euMt	s e%wK P	CL
Carbon diuMfide	1413	1418	105	w63.132 P
Carbon tetra% lorida	04T50	04T62	102	wT0.135 P
C) lorobenzene	04T50	046TR	90	wT9.120 P
C) loraet) ane	04T50	04682	91	w59.139 P
C) loraforc	04T50	04611	82	wT8.123 P
C) loraoc et) ane	04T50	04698	80	w50.136 P
%u.1-2.Di% loraet) ene	04T50	04T15	95	wTT.123 P
%u.1-3.Di% loraopropene	04T50	04T6T	102	wTR.126 P
Dibroc o% loraoc et) ane	04T50	04T6T	102	wTR.126 P
Dibroc oc et) ane	04T50	0465R	8T	wT8.125 P
Di% loraodiflMbroc et) ane	04T50	046T0	89	w29.1R9 P
Et) ylbenzene	04T50	0463T	85	wT6.122 P
Freon.113	1413	1423	109	w66.136 P
He(a% loraobMadiene	04T50	04612	108	w61.135 P
Iuopropylbenzene vCM: eneP	04T50	046TR	90	w68.13R P
x et) ylene % lorida	04T50	04T56	101	wT0.128 P
x et) yl.t.bMyl et) er	1413	1405	93	wT3.125 P
Nap) t) alene	04T50	04655	8T	w62.129 P
n.BMylbenzene	04T50	04TR1	99	wT0.128 P
n.mropropylbenzene	04T50	04T16	96	wT3.125 P
o.Xylene	04T50	04620	83	wTT.123 P
m & x .Xylene	1450	142R	82	wTT.12R P
ue%BMylbenzene	04T50	046T1	89	wT3.126 P
Styrene	04T50	04T21	96	wT6.12R P
tert.BMylbenzene	04T50	04669	89	wT3.125 P
7etra% loraet) ene	04T50	04TR9	100	wT3.128 P
7oIMene	04T50	04620	83	wTT.121 P
tranu.1-2.Di% loraet) ene	04T50	04T66	102	wTR.125 P
tranu.1-3.Di% loraopropene	04T50	04T26	9T	wT1.130 P
7ri% loraet) ene	04T50	04T31	98	wTT.123 P
7ri% loraoflMbroc et) ane	04T50	04TR2	106	w62.1R0 P
Vinyl a%etate	04T50	04653	11R	w50.151 P
Vinyl % lorida	04T50	04635	85	w56.135 P
Xyleneu wtotalP	2425	1466	83	wT8.12R P

Print Date: 10/2R/2019 10:2R:31Ax

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199836 [VXX35085]
 Blank Spike Lab ID: 1538392
 Date Analyzed: 10/11/2019 1RR3

x atri(: Soil/Solid wdry g eih) tP

, C for Sac pleu: 1199836006- 119983600T

seuMtu by SW8260C

Blank Spike w h/QhP

marac eter	Spike	seuMt	se%KP	CL
Surrogates				
1-2.Di(oroet) ane.DRwMrP	04T50	9T48	98	wT1.136 P
R.Broc oflMrobenzene wMrP	04T50	102	102	w55.151 P
7oIMene.d8 wMrP	04T50	102	102	w85.116 P

Batch Information

Analyti%al Bat%: VMS19564
 Analyti%al x et) od: SW8260C
 InutrMc ent: VQA 7890/5975 GC/MS
 Analyut: KAJ

mrep Bat%: VXX35085
 mrep x et) od: SW5035A
 mrep Date/7ic e: 10/11/2019 06:00
 Spike Init Wt4Vol4 04T50 c h/Qh E(tra% Vol: 25 c L
 DIMpe Init Wt4Vol4 E(tra% Vol:

Print Date: 10/2R/2019 10:2R31Ax

Matrix Spike Summary

Original Sample ID: 1538406
 MS Sample ID: 1538407 MS
 MSD Sample ID: 1538408 MSD

Analysis Date: 10/11/2019 17:58
 Analysis Date: 10/11/2019 16:20
 Analysis Date: 10/11/2019 16:36
 Matrix: Solid/Soil (Wet Weight)

QC for Samples: 1199836006, 1199836007

Results by SW8260C

Parameter	Sample	Matrix Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1,1,2-Tetrachloroethane	0.0635U	4.77	4.62	97	4.77	4.75	100	78-125	2.90	(< 20)
1,1,1-Trichloroethane	0.0795U	4.77	5.12	107	4.77	5.24	110	73-130	2.40	(< 20)
1,1,2,2-Tetrachloroethane	0.00635U	4.77	4.98	104	4.77	5.04	106	70-124	1.10	(< 20)
1,1,2-Trichloroethane	0.00255U	4.77	4.82	101	4.77	4.96	104	78-121	3.00	(< 20)
1,1-Dichloroethane	0.0795U	4.77	4.72	99	4.77	4.84	101	76-125	2.50	(< 20)
1,1-Dichloroethene	0.0795U	4.77	6.00	126	4.77	6.00	126	70-131	0.11	(< 20)
1,1-Dichloropropene	0.0795U	4.77	5.17	108	4.77	5.34	112	76-125	3.40	(< 20)
1,2,3-Trichlorobenzene	0.159U	4.77	4.35	91	4.77	4.40	92	66-130	1.20	(< 20)
1,2,3-Trichloropropane	0.00318U	4.77	5.00	105	4.77	5.03	105	73-125	0.51	(< 20)
1,2,4-Trichlorobenzene	0.0795U	4.77	4.46	94	4.77	4.42	93	67-129	0.93	(< 20)
1,2,4-Trimethylbenzene	0.118J	4.77	4.43	90	4.77	4.63	95	75-123	4.40	(< 20)
1,2-Dibromo-3-chloropropane	0.318U	4.77	4.75	100	4.77	4.75	100	61-132	0.07	(< 20)
1,2-Dibromoethane	0.00318U	4.77	5.08	106	4.77	5.14	108	78-122	1.20	(< 20)
1,2-Dichlorobenzene	0.0795U	4.77	4.55	95	4.77	4.60	96	78-121	1.10	(< 20)
1,2-Dichloroethane	0.00635U	4.77	4.78	100	4.77	4.84	101	73-128	1.20	(< 20)
1,2-Dichloropropane	0.0318U	4.77	4.73	99	4.77	4.86	102	76-123	2.60	(< 20)
1,3,5-Trimethylbenzene	0.0779J	4.77	4.51	93	4.77	4.67	96	73-124	3.50	(< 20)
1,3-Dichlorobenzene	0.0795U	4.77	4.60	97	4.77	4.61	97	77-121	0.24	(< 20)
1,3-Dichloropropane	0.0318U	4.77	5.01	105	4.77	5.17	108	77-121	3.00	(< 20)
1,4-Dichlorobenzene	0.0795U	4.77	4.61	97	4.77	4.70	99	75-120	2.00	(< 20)
2,2-Dichloropropane	0.0795U	4.77	6.07	127	4.77	6.18	130	67-133	1.90	(< 20)
2-Butanone (MEK)	0.795U	14.3	13.6	95	14.3	14.0	98	51-148	2.80	(< 20)
2-Chlorotoluene	0.0795U	4.77	4.52	95	4.77	4.75	100	75-122	5.00	(< 20)
2-Hexanone	0.318U	14.3	15.4	108	14.3	16.1	113	53-145	4.50	(< 20)
4-Chlorotoluene	0.0795U	4.77	4.67	98	4.77	4.81	101	72-124	2.90	(< 20)
4-Isopropyltoluene	0.318U	4.77	4.55	95	4.77	4.67	98	73-127	2.60	(< 20)
4-Methyl-2-pentanone (MIBK)	0.795U	14.3	14.2	99	14.3	14.8	103	65-135	3.90	(< 20)
Acetone	0.795U	14.3	14.5	101	14.3	13.9	97	36-164	4.40	(< 20)
Benzene	0.0398U	4.77	4.63	97	4.77	4.80	101	77-121	3.50	(< 20)
Bromobenzene	0.0795U	4.77	4.72	99	4.77	4.87	102	78-121	3.10	(< 20)
Bromochloromethane	0.0795U	4.77	4.52	95	4.77	4.57	96	78-125	1.10	(< 20)
Bromodichloromethane	0.00635U	4.77	4.60	97	4.77	4.67	98	75-127	1.50	(< 20)
Bromoform	0.0795U	4.77	5.24	110	4.77	5.28	111	67-132	0.79	(< 20)
Bromomethane	0.0635U	4.77	4.82	101	4.77	4.85	102	53-143	0.62	(< 20)
Carbon disulfide	0.318U	7.16	8.01	112	7.16	7.78	109	63-132	2.80	(< 20)
Carbon tetrachloride	0.0398U	4.77	5.15	108	4.77	5.28	111	70-135	2.50	(< 20)
Chlorobenzene	0.0795U	4.77	4.53	95	4.77	4.65	98	79-120	2.70	(< 20)

Print Date: 10/24/2019 10:24:32AM

Matrix Spike Summary

Original Sample ID: 1538406
 MS Sample ID: 1538407 MS
 MSD Sample ID: 1538408 MSD

Analysis Date: 10/11/2019 17:58
 Analysis Date: 10/11/2019 16:20
 Analysis Date: 10/11/2019 16:36
 Matrix: Solid/Soil (Wet Weight)

QC for Samples: 1199836006, 1199836007

Results by SW8260C

Parameter	Sample	Matrix Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Chloroethane	0.635U	4.77	4.64	97	4.77	4.68	98	59-139	0.89	(< 20)
Chloroform	0.00635U	4.77	4.10	86	4.77	4.19	88	78-123	2.30	(< 20)
Chloromethane	0.0795U	4.77	4.17	87	4.77	4.15	87	50-136	0.38	(< 20)
cis-1,2-Dichloroethene	0.0795U	4.77	4.68	98	4.77	4.68	98	77-123	0.00	(< 20)
cis-1,3-Dichloropropene	0.0398U	4.77	5.23	110	4.77	5.34	112	74-126	2.10	(< 20)
Dibromochloromethane	0.00635U	4.77	5.35	112	4.77	5.41	113	74-126	1.20	(< 20)
Dibromomethane	0.0795U	4.77	4.60	96	4.77	4.62	97	78-125	0.41	(< 20)
Dichlorodifluoromethane	0.159U	4.77	4.24	89	4.77	4.08	85	29-149	3.90	(< 20)
Ethylbenzene	0.0795U	4.77	4.27	90	4.77	4.47	94	76-122	4.50	(< 20)
Freon-113	0.318U	7.16	8.16	114	7.16	8.26	115	66-136	1.20	(< 20)
Hexachlorobutadiene	0.0635U	4.77	7.60	159 *	4.77	7.30	153 *	61-135	4.00	(< 20)
Isopropylbenzene (Cumene)	0.0795U	4.77	4.46	93	4.77	4.79	100	68-134	7.10	(< 20)
Methylene chloride	0.318U	4.77	4.92	103	4.77	4.97	104	70-128	0.96	(< 20)
Methyl-t-butyl ether	0.318U	7.16	7.28	102	7.16	7.53	105	73-125	3.40	(< 20)
Naphthalene	0.0970J	4.77	4.74	97	4.77	4.74	97	62-129	0.03	(< 20)
n-Butylbenzene	0.0795U	4.77	4.97	104	4.77	5.13	107	70-128	3.10	(< 20)
n-Propylbenzene	0.0795U	4.77	4.64	97	4.77	4.94	104	73-125	6.40	(< 20)
o-Xylene	0.0795U	4.77	4.24	89	4.77	4.43	93	77-123	4.40	(< 20)
P & M -Xylene	0.159U	9.54	8.43	88	9.54	8.80	92	77-124	4.30	(< 20)
sec-Butylbenzene	0.0795U	4.77	4.36	91	4.77	4.62	97	73-126	5.80	(< 20)
Styrene	0.0795U	4.77	4.70	99	4.77	4.88	102	76-124	3.80	(< 20)
tert-Butylbenzene	0.0795U	4.77	4.28	90	4.77	4.60	97	73-125	7.20	(< 20)
Tetrachloroethene	0.0398U	4.77	4.94	104	4.77	5.23	110	73-128	5.60	(< 20)
Toluene	0.0795U	4.77	4.15	87	4.77	4.27	90	77-121	2.90	(< 20)
trans-1,2-Dichloroethene	0.0795U	4.77	5.27	110	4.77	5.36	112	74-125	1.70	(< 20)
trans-1,3-Dichloropropene	0.0398U	4.77	5.02	105	4.77	5.14	108	71-130	2.30	(< 20)
Trichloroethene	0.0159U	4.77	4.88	102	4.77	5.08	107	77-123	4.10	(< 20)
Trichlorofluoromethane	0.159U	4.77	5.37	112	4.77	5.34	112	62-140	0.45	(< 20)
Vinyl acetate	0.318U	4.77	5.98	125	4.77	6.11	128	50-151	2.20	(< 20)
Vinyl chloride	0.00255U	4.77	4.51	95	4.77	4.46	93	56-135	1.20	(< 20)
Xylenes (total)	0.238U	14.3	12.7	89	14.3	13.2	93	78-124	4.30	(< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		4.77	5.01	105	4.77	4.91	103	71-136	2.10	
4-Bromofluorobenzene (surr)		1.59	0.0986	6 *	1.59	0.126	8 *	55-151	24.10	
Toluene-d8 (surr)		4.77	4.88	102	4.77	4.83	101	85-116	1.00	

Print Date: 10/24/2019 10:24:32AM

Matrix Spike Summary

Original Sample ID: 1538406
 MS Sample ID: 1538407 MS
 MSD Sample ID: 1538408 MSD

Analysis Date:
 Analysis Date: 10/11/2019 16:20
 Analysis Date: 10/11/2019 16:36
 Matrix: Solid/Soil (Wet Weight)

QC for Samples: 1199836006, 1199836007

Results by SW8260C

Parameter	Sample	Matrix Spike (%)			Spike Duplicate (%)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			

Batch Information

Analytical Batch: VMS19564
 Analytical Method: SW8260C
 Instrument: VQA 7890/5975 GC/MS
 Analyst: KAJ
 Analytical Date/Time: 10/11/2019 4:20:01PM

Prep Batch: VXX35085
 Prep Method: Vol. Extraction SW8260 Field Extracted L
 Prep Date/Time: 10/11/2019 6:00:00AM
 Prep Initial Wt./Vol.: 39.29g
 Prep Extract Vol: 25.00mL

Print Date: 10/24/2019 10:24:32AM

Method Blank

Blank ID: MB for HBN 1801095 [VXX/3] 10Lb
Blank 2aQID: 1] 3895L

Maxrd : mod/moldy wrg h sq Røu

CS for map els6:
119983t 001i 119983t 005i 119983t 00j

Us6Qx6 Qg SW8260C

<u>- arap sxsr</u>	<u>Us6Qx6</u>	<u>2. C/S2</u>	<u>D2</u>	<u>Pnd6</u>
1i1i1iL Tcsxa. RlorosxRans	0K0100P	0K0L00	0K00t L0	p)/7)
1i1i1 Tcrd RlorosxRans	0K01L] P	0K0L] 0	0K00480	p)/7)
1i1iLiL Tcsxa. RlorosxRans	0K00100P	0K00L00	0K000t L0	p)/7)
1i1iL Tcrd RlorosxRans	0K000500P	0K000800	0K000L] 0	p)/7)
1i1TDd RlorosxRans	0K01L] P	0K0L] 0	0K00480	p)/7)
1i1TDd RlorosxRans	0K01L] P	0K0L] 0	0K00480	p)/7)
1i1TDd Rloroeroeans	0K01L] P	0K0L] 0	0K00480	p)/7)
1iLi3Tcrd RloroCsnzns	0K0L] 0P	0K0] 00	0K01] 0	p)/7)
1iLi3Tcrd Rloroeroeans	0K00] 00P	0K00100	0K000310	p)/7)
1iLi5Tcrd RloroCsnzns	0K01L] P	0K0L] 0	0K00480	p)/7)
1iLi5Tcrd sRgCsnzns	0K0L] 0P	0K0] 00	0K01] 0	p)/7)
1iLTDrop oT. Rloroeroeans	0K0] 00P	0K000	0K0310	p)/7)
1iLTDrop osxRans	0K00] 00P	0K00100	0K000310	p)/7)
1iLTDd RloroCsnzns	0K01L] P	0K0L] 0	0K00480	p)/7)
1iLTDd RlorosxRans	0K00100P	0K00L00	0K000t L0	p)/7)
1iLTDd Rloroeroeans	0K00] 00P	0K0100	0K00310	p)/7)
1i3j] Tcrd sRgCsnzns	0K01L] P	0K0L] 0	0K00480	p)/7)
1i3TDd RloroCsnzns	0K01L] P	0K0L] 0	0K00480	p)/7)
1i3TDd Rloroeroeans	0K00] 00P	0K0100	0K00310	p)/7)
1i5TDd RloroCsnzns	0K01L] P	0K0L] 0	0K00480	p)/7)
LiLTDd Rloroeroeans	0K01L] P	0K0L] 0	0K00480	p)/7)
LTBQanons vME7u	0K1L] P	0K] 0	0K0480	p)/7)
LTSRloroxlCns	0K01L] P	0K0L] 0	0K00480	p)/7)
LTHs(anons	0K0] 00P	0K000	0K0310	p)/7)
5TSRloroxlCns	0K01L] P	0K0L] 0	0K00480	p)/7)
5T6oeroeglxlCns	0K0] 00P	0K000	0K0L] 0	p)/7)
5TMsRgLTesnanons vMIB7u	0K1L] P	0K] 0	0K0480	p)/7)
A. sxsns	0K1L] P	0K] 0	0K0480	p)/7)
Bsnzns	0K00t L] P	0K01L]	0K00390	p)/7)
Brop oCsnzns	0K01L] P	0K0L] 0	0K00480	p)/7)
Brop o. Rlorop sRans	0K01L] P	0K0L] 0	0K00480	p)/7)
Brop oyd Rlorop sRans	0K00100P	0K00L00	0K000t L0	p)/7)
Brop oforp	0K01L] P	0K0L] 0	0K00480	p)/7)
Brop op sRans	0K0100P	0K0L00	0K00t L0	p)/7)
SarQn y6Cfys	0K0] 00P	0K000	0K0310	p)/7)
SarQn xsxa. RlorosxRans	0K00t L] P	0K01L]	0K00390	p)/7)
SFRoroCsnzns	0K01L] P	0K0L] 0	0K00480	p)/7)
SFRorosxRans	0K000P	0K000	0K0t L0	p)/7)

- rdxDaxs : 10/L5/L019 10:L5:33AM

Method Blank

Blank ID: MB for HBN 1801095 [VXX/3] 10Lb
 Blank 2aQID: 1] 3895L

Maxrd : mod/moldy wyrq h sq Røu

CS for map els6:
 119983t 001i 119983t 005i 119983t 00j

Us6Qx6 Qg SW8260C

<u>- arap sxsr</u>	<u>Us6Qx6</u>	<u>2. C/S2</u>	<u>D2</u>	<u>Pnd6</u>
SFloroforp	0K00100P	0K00L00	0K000t L0	p)/7)
SFlorop sxFans	0K01L] P	0K0L] 0	0K00480	p)/7)
. 6Ti iLTDd RlorosxFns	0K01L] P	0K0L] 0	0K00480	p)/7)
. 6Ti i3TDd Rloroeroesns	0K00t L] P	0K01L]	0K00390	p)/7)
DdQrop o. Rlorop sxFans	0K00100P	0K00L00	0K000t L0	p)/7)
DdQrop op sxFans	0K01L] P	0K0L] 0	0K00480	p)/7)
Dd RloroydCdrop sxFans	0K0L] 0P	0K0] 00	0K01] 0	p)/7)
ExRglQsnzns	0K01L] P	0K0L] 0	0K00480	p)/7)
FrsonT113	0K0] 00P	0K00	0K0310	p)/7)
Hs(a. RloroQaydns	0K0100P	0K0L00	0K00t L0	p)/7)
I6oeroeglQsnzns v6Qp snsu	0K01L] P	0K0L] 0	0K00480	p)/7)
MsxRglns . RlorQs	0K0] 00P	0K00	0K0310	p)/7)
MsxRglTQOgl sxFsr	0K0] 00P	0K00	0K0310	p)/7)
NaeRfalsns	0K01L] P	0K0L] 0	0K00480	p)/7)
nTBOglQsnzns	0K01L] P	0K0L] 0	0K00480	p)/7)
nT roeglQsnzns	0K01L] P	0K0L] 0	0K00480	p)/7)
oTXglns	0K01L] P	0K0L] 0	0K00480	p)/7)
- J M TXglns	0K0L] 0P	0K0] 00	0K01] 0	p)/7)
6s. TBOglQsnzns	0K01L] P	0K0L] 0	0K00480	p)/7)
mgrsns	0K01L] P	0K0L] 0	0K00480	p)/7)
xrxTBOglQsnzns	0K01L] P	0K0L] 0	0K00480	p)/7)
csxa. RlorosxFns	0K00t L] P	0K01L]	0K00390	p)/7)
colQns	0K01L] P	0K0L] 0	0K00480	p)/7)
xan6Ti iLTDd RlorosxFns	0K01L] P	0K0L] 0	0K00480	p)/7)
xan6Ti i3TDd Rloroeroesns	0K00t L] P	0K01L]	0K00390	p)/7)
crd RlorosxFns	0K00L] 0P	0K00] 00	0K001] 0	p)/7)
crd RlorofCdrop sxFans	0K0L] 0P	0K0] 00	0K01] 0	p)/7)
Vdgl a. sxs	0K0] 00P	0K00	0K0310	p)/7)
Vdgl . RlorQs	0K00500P	0K000800	0K000L] 0	p)/7)
Xglns6 woxalu	0K034] P	0K04] 0	0K0LL8	p)/7)

Surrogates

1iLTDd RlorosxFns TD5 v6Qru	105	41T13t	&
5TBrop oflCdroQsnzns v6Qru	85t8	] ] T1] 1	&
colQns Ty8 v6Qru	101	8] T11t	&

Method Blank

Blank ID: MB for HBN 1801095 [VXX/3] 10Lb
Blank 2aQID: 1] 3895L

Maxrd : mod/moldj wyrgh sd Rø

CS for map els6:
119983t 001i 119983t 005i 119983t 00j

Us6Qx6 Qj SW8260C

- arap sxsr

Us6Qx6

2. C/S2

D2

Pnd6

Batch Information

Analgd al Bax R VMm19] 4]
Analgd al MsxRby: mW8Lt 0S
In6xQp snx VCA 4890/] 94] GS/Mm
Anal6x 7A%
Analgd al Dax/cφ s: 10/1] /L019 4:] t:00AM

- rse Bax R VXX3] 10L
- rse MsxRby: mW] 03] A
- rse Dax/cφ s: 10/1] /L019 t:00:00AM
- rse In6xQp snx VCA 4890/] 94]
- rse E(xa. xVol: L] p 2

- rdxDaxs: 10/L5/L019 10:L5:33AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199836 [VXX3510] b
 Blank Spike La2 ID: 15389t 3
 Date ynalzde/ : 10R5R019 08:1]

x aAi(: SoilFoli/ w rz geih) A

, C for Sac pleu: 1199836001- 119983600t - 1199836005

s euMAi Zz SW8260C

Blank Spike w hRChP

marac eAer	Spike	s euMA	s e%wK P	CL
1-1-1-] T. eAa% loroeA ane	07450	074t 9	100	w48T1] 5 P
1-1-1T. ri% loroeA ane	07450	07804	108	w43T1]30 P
1-1-] -] T. eAa% loroeA ane	07450	074t 1	99	w40T1] t P
1-1-] T. ri% loroeA ane	07450	074]]	96	w48T1] 1 P
1-1TDi% loroeA ane	07450	074] 5	94	w46T1] 5 P
1-1TDi% loroeA ene	07450	07908	1] 1	w40T1]31 P
1-1TDi% loropropene	07450	07814	109	w46T1] 5 P
1-]-3T. ri% loro2endene	07450	0741t	95	w66T1]30 P
1-]-3T. ri% loropropane	07450	07431	94	w43T1] 5 P
1-]-t T. ri% loro2endene	07450	07458	101	w64T1] 9 P
1-]-t T. ric eA z]2endene	07450	07433	98	w45T1] 3 P
1-] TDi2roc oT3T% loropropane	07450	074] 3	96	w61T1]3] P
1-] TDi2roc oeA ane	07450	07450	100	w48T1]] P
1-] TDi% loro2endene	07450	07434	98	w48T1] 1 P
1-] TDi% loroeA ane	07450	074] t	94	w43T1] 8 P
1-] TDi% loropropane	07450	07434	98	w46T1] 3 P
1-3-5T. ric eA z]2endene	07450	07454	101	w43T1] t P
1-3TDi% loro2endene	07450	07459	101	w44T1] 1 P
1-3TDi% loropropane	07450	0744t	103	w44T1] 1 P
1-t TDi% loro2endene	07450	0745]]	100	w45T1] 0 P
] -] TDi% loropropane	07450	07934	1] 5	w64T1]33 P
] TBManone w EQP	] 7] 5	] 701	90	w51T1]t 8 P
] TC) loroAlMene	07450	07460	101	w45T1]] P
] THe(anone	] 7] 5	] 719	94	w53T1]t 5 P
t TC) loroAlMene	07450	0744]]	103	w4] T1] t P
t Tuopropz]AlMene	07450	07480	10t	w43T1] 4 P
t T x eA z]T] TpenAnone w IBQP	] 7] 5	] 70t	91	w65T1]35 P
y%eAne	] 7] 5	] 70]]	90	w36T1]6t P
Bendene	07450	0743t	98	w44T1] 1 P
Broc o2endene	07450	07469	10]]	w48T1] 1 P
Broc o% loroc eA ane	07450	07688	9]]	w48T1] 5 P
Broc o/ i% loroc eA ane	07450	07410	95	w45T1] 4 P
Broc oforc	07450	07445	103	w64T1]3] P
Broc oc eA ane	07450	0744t	103	w53T1]t 3 P

minADaAe: 10Rt R019 10:] t :3t yx

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199836 [VXX3510] b

Blank Spike La2 ID: 15389t 3

Da y nalzde/ : 10R5R019 08:1]

x aAi(: SoilSoli/ w rz geih) A

, C for Sac pleu: 1199836001- 119983600t - 1199836005

s euMAi Zz SW8260C

Blank Spike w hRChP

marac eAer	Spike	s euMA	s e%K P	CL
Car2on / iuMfi/ e	1713	1718	105	w63T13] P
Car2on Aa% lori/ e	07450	07818	109	w40T135 P
C) loro2endene	07450	07419	96	w49T1] 0 P
C) loroA ane	07450	074] 9	94	w59T139 P
C) loroforc	07450	076t 6	86	w48T1] 3 P
C) loroc eA ane	07450	07410	95	w50T136 P
%uT1-] TDi% loroA ene	07450	074] 0	96	w44T1] 3 P
%uT1-3TDi% loropropene	07450	0780]	104	w4t T1] 6 P
Di2roc o% loroc eA ane	07450	07814	109	w4t T1] 6 P
Di2roc oc eA ane	07450	0768]	91	w48T1] 5 P
Di% loro/ iflMbroc eA ane	07450	07864	116	w] 9T1t 9 P
EAzl2endene	07450	07690	9]	w46T1]] P
FreonT113	1713	17] 9	11t	w66T136 P
He(a% loro2MA/ iene	07450	0783]	111	w61T135 P
Iuopropzl2endene vCM: eneP	07450	07439	99	w68T13t P
x eA zlene % lori/ e	07450	07445	103	w40T1] 8 P
x eA zITAZMxl eA er	1713	1710	98	w43T1] 5 P
Nap) A alene	07450	0741t	95	w6] T1] 9 P
nTBMxl2endene	07450	07850	113	w40T1] 8 P
nTropzl2endene	07450	07498	106	w43T1] 5 P
oTXzene	07450	07664	89	w44T1] 3 P
m & x TXzene	1750	1733	89	w44T1] t P
ue%TBMxl2endene	07450	0748]	10t	w43T1] 6 P
SAzrene	07450	07438	98	w46T1] t P
AerTBMxl2endene	07450	07465	10]	w43T1] 5 P
. eAa% loroA ene	07450	07818	109	w43T1] 8 P
. oIMene	07450	07661	88	w44T1] 1 P
AanuT1-] TDi% loroA ene	07450	078] 3	110	w4t T1] 5 P
AanuT1-3TDi% loropropene	07450	0746t	10]	w41T130 P
. ri% loroA ene	07450	07490	105	w44T1] 3 P
. ri% loroflMbroc eA ane	07450	07834	11]	w6] T1t 0 P
Vinzl a%eAe	07450	07936	1] 5	w50T151 P
Vinzl % lori/ e	07450	074t 3	99	w56T135 P
Xzleneu vAaIP	] 7] 5	1799	89	w48T1] t P

minADaAe: 10Rt R019 10:] t :3t yx

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199836 [VXX3510] b
 Blank Spike La2 ID: 15389t 3
 Date ynalzde/ : 10R5R019 08:1]

x aAi(: Soil/Soli/ w rz geih) P

, C for Sac pleu: 1199836001- 119983600t - 1199836005

seuMA 2z SW8260C

Blank Spike w hRChP

marac eAr	Spike	seuMA	se%K P	CL
Surrogates				
1-] Di% loroeA aneTDt wMrP	07450	9871	98	w41T136 P
t Broc oflMbro2endene wMrP	07450	9673	96	w55T151 P
. olVene7 8 wMrP	07450	10]	10]	w85T116 P

Batch Information

y nalzA%al BaA% : VMS195Q5
 y nalzA%al x eA o/ : SW8260C
 InuAMc enA VA7 Q890/59Q5 GC/MS
 y nalzuA K7 J

mrep BaA% : VXX35102
 mrep x eA o/ : SW50357
 mrep DaAr ic e: 10/15/2019 06:00
 Spike IniAWAVol: 07450 c hRCh E(Aa%AVol:] 5 c L
 DIMpe IniAWAVol: E(Aa%AVol:

Billable Matrix Spike Summary

Original Sample ID: 1155384001
 6 S Sample ID: 115538400M76 S
 6 SD Sample ID: 1155384008 76 SD

Analysis Date: 10/12/2015 1M01
 Analysis Date: 10/12/2015 10:85
 Analysis Date: 10/12/2015 10:22
 6 atri9: Sxil/Sxlio dby (eigW h

c Q & r Samples:

) esRts uy SW8260C

f arameter	Sample	6 atri9 Spibe dng/kg h			Spibe DRplike dng/kg h			Q%	) f D dP h	) f D Q%
		Spibe	) esRt	) eKdP h	Spibe	) esRt	) eKdP h			
1L1L1M- etrakVkrxetVane	0T0144.	1TV2	1T1<	5U	1TV2	1TV8	10M	<3,1M2	<50	d M h
1L1L1,- rikVkrxetVane	0T0M3.	1TV2	1B1	102	1TV2	1B3	110	<8,180	2T0	d M h
1L1L1M- etrakVkrxetVane	0T00144.	1TV2	1B1	10U	1TV2	1T1	118	<0,1MU	<T0	d M h
1L1L1M- rikVkrxetVane	0T000442.	1TV2	1B4	105	1TV2	1T5	115	<3,1M1	3T0	d M h
1L1,DiKvkrxetVane	0T0M3.	1TV2	1T1	5<	1TV2	1T4	101	<4,1M2	U00	d M h
1L1,DiKvkrxetVane	0T0M3.	1TV2	1T5	1M4	1TV2	1B0	1M8	<0,181	1T0	d M h
1L1,DiKvkrxprxpene	0T0M3.	1TV2	1B1M	102	1TV2	1T0	11M	<4,1M2	4T0	d M h
1LM8,- rikVkrxuenJene	0T0U12.	1TV2	0B32	<5	1TV2	1T0	30	44,180	1T0	d M h
1LM8,- rikVkrxprxpene	0T000380.	1TV2	1T5	5U	1TV2	1B4	105	<8,1M2	1UB0	d M h
1MLU,- rikVkrxuenJene	0T0M3.	1TV2	1T1	31	1TV2	1T1	31	4<,1M5	0T1	d M h
1MLU,- rimetVyluenJene	0T1UM	1TV2	1T5	3U	1TV2	1TV8	3<	<2,1M8	8T0	d M h
1MDiurxmx,8,Kvkrxprxpene	0T0380.	1TV2	1T1U	51	1TV2	1B4	105	41,18M	1<50	d M h
1MDiurxmxetVane	0T000380.	1TV2	1B8	10<	1TV2	1T2	114	<3,1MM	3T0	d M h
1MDiKvkrxuenJene	0T0M3.	1TV2	1T3	34	1TV2	1T0	33	<3,1M1	M10	d M h
1MDiKvkrxetVane	0T00144.	1TV2	1TV8	10M	1TV2	1BU	10<	<8,1M8	2T0	d M h
1MDiKvkrxprxpene	0T00380.	1TV2	1T1	54	1TV2	1TV8	10M	<4,1M8	2T0	d M h
1B12,- rimetVyluenJene	0T0585	1TV2	1T0	33	1TV2	1TU	5M	<8,1MU	8T0	d M h
1B,DiKvkrxuenJene	0T0M3.	1TV2	1T5	3<	1TV2	1T1M	35	<<,1M1	M40	d M h
1B,DiKvkrxprxpene	0T00380.	1TV2	1B1M	102	1TV2	1T8	112	<<,1M1	3T0	d M h
1U,DiKvkrxuenJene	0T0M3.	1TV2	1T0	33	1TV2	1T1U	51	<2,1M0	8T0	d M h
MMDiKvkrxprxpene	0T0M3.	1TV2	1T2	1MU	1TV2	1B1M	1M5	4<,188	U10	d M h
M7Rtanxne d Bk h	0T1UME	8T4	8T1	52	8T4	UTU	105	21,1U3	18T0	d M h
MQVkrxtxIRene	0T0M3.	1TV2	1T1	33	1TV2	1T1M	50	<2,1MM	1T0	d M h
MHe9anxne	0T0380.	8T4	UDU	103	8T4	UT5	1MM	28,1U2	1M<0	d M h
U,QVkrxtxIRene	0T0M3.	1TV2	1T1M	50	1TV2	1T2	5M	<M1MU	M40	d M h
U,IsxprxpytxIRene	0T0380.	1TV2	1TV8	53	1TV2	1T1M	5<	<8,1M<	0T3	d M h
U,6 etVyl,Mpentanxne d l7 k h	0T0<.	8T4	8T1	55	8T4	UTM	11M	42,182	1M40	d M h
AKetxne	0T0<.	8T4	8T2	102	8T4	UT4	115	84,14U	1MM0	d M h
7enJene	0T0442E	1TV2	1T1<	58	1TV2	1TV2	55	<<,1M1	4T<0	d M h
7rxmxuenJene	0T0M3.	1TV2	1T1M	35	1TV2	1T4	58	<3,1M1	8T<0	d M h
7rxmxKvkrxmetVane	0T0M3.	1TV2	1T1	5<	1TV2	1T4	100	<3,1M2	8T0	d M h
7rxmxoikVkrxmetVane	0T00144.	1TV2	1T1	54	1TV2	1TV2	100	<2,1M<	UD0	d M h
7rxmxQrm	0T0M3.	1TV2	1B5	111	1TV2	1T5	115	4<,18M	<T0	d M h
7rxmxmetVane	0T0144.	1TV2	1T0	11M	1TV2	1T1	118	28,1U8	0T5U	d M h
Qaruxn oisRibe	0T0380.	1B3	M1<	114	1B3	M1U	118	48,18M	1T0	d M h
Qaruxn tetraKvkrrio	0T010U.	1TV2	1B8	104	1TV2	1T0	111	<0,182	U50	d M h
QVkrxuenJene	0T0M3.	1TV2	1T1U	51	1TV2	1T1	54	<5,1M0	2T0	d M h

Print Date: 10/12/2015 10:12:26

Billable Matrix Spike Summary

Original Sample ID: 1155384001
 6 S Sample ID: 115538400M76 S
 6 SD Sample ID: 1155384008 76 SD

Analysis Date: 10/12/2015 1M01
 Analysis Date: 10/12/2015 10:85
 Analysis Date: 10/12/2015 10:22
 6 atri9: Sxil/Sxlio dby (eigVWh

c Q & r Samples:

esRts uy SW8260C

f arameter	Sample	6 atri9 Spibe dng/kg h			Spibe DRplIKate dng/kg h			Q%	) f D dP h	) f D Q%
		Spibe	) esRt	) eKdP h	Spibe	) esRt	) eKdP h			
QWrxetVane	0T144.	1TV2	1B1	10U	1TV2	1TV5	108	25,185	1T20	d M h
QWrxQrm	0T0144.	1TV2	1D4	32	1TV2	1T11	33	<3,1M8	UT10	d M h
QWrxmetVane	0TDM3.	1TV2	1B0	108	1TV2	1B0	10U	20,184	0TM5	d M h
Ks, 1IMDiK/WrxetVane	0TDM3.	1TV2	1TV8	53	1TV2	1TV2	100	<<,1M8	M00	d M h
Ks, 1I8, DiK/Wrxprxpene	0T010U.	1TV2	1BU	103	1TV2	1TUM	118	<U,1M4	2TU0	d M h
DiurmxK/WrxmetVane	0T0144.	1TV2	1TU0	11M	1TV2	1T20	115	<U,1M4	4T-0	d M h
DiurmxmetVane	0TDM3.	1TV2	1TUJ	55	1TV2	1B0	108	<3,1M2	UTU0	d M h
DiK/WrxoiD/RrxmetVane	0T0U12.	1TV2	1T23	1M4	1TV2	1T2U	1M8	M5,1U5	M80	d M h
BtVyluenJene	0T0U5U	1TV2	1T10	3U	1TV2	1T14	35	<4,1MM	2T40	d M h
Frexn, 118	0T0380.	1T33	M1U	11U	1T33	M13	114	44,184	M10	d M h
He9aK/WrxuRtaoiene	0T0144.	1TV2	M1M	1<< *	1TV2	M1U	1<0 *	41,182	8T50	d M h
IsxprpxyluenJene dRmeneh	0T0155E	1TV2	1T18	35	1TV2	1T1<	58	43,18U	UTM0	d M h
6 etVylene K/Wxrioe	0T0380.	1TV2	1B4	105	1TV2	1TU0	11M	<0,1M8	M<0	d M h
6 etVyl, t, uRyl etVr	0T0380.	1T33	1T3<	100	1T33	M02	105	<8,1M2	3T40	d M h
NapVWValene	0T104	1TV2	1T11	30	1TV2	1T15	34	4M1M5	4T30	d M h
n, 7RyluenJene	0TDM3.	1TV2	1B4	105	1TV2	1B1	102	<0,1M8	UTM0	d M h
n, f rxpyluenJene	0T0884E	1TV2	1T18	33	1TV2	1T14	50	<8,1M2	M20	d M h
x, Xylene	0T125	1TV2	1TM	32	1TV2	1TV2	33	<<,1M8	8T80	d M h
f & 6 , Xylene	0TM4M	M21	M88	38	M21	MU4	33	<<,1MU	2T40	d M h
seK, 7RyluenJene	0T018<E	1TV2	1T1M	33	1TV2	1D5	34	<8,1M4	M40	d M h
Styrene	0TDM3.	1TV2	1TM	5<	1TV2	1TM4	101	<4,1MU	8T30	d M h
tert, 7RyluenJene	0TDM3.	1TV2	1DM	3M	1TV2	1D8	3M	<8,1M2	0TU0	d M h
- etraK/WrxetVane	0T010U.	1TV2	1TM	53	1TV2	1BU	103	<8,1M8	5T30	d M h
- xIRene	0T0U11E	1TV2	1D4	3M	1TV2	1TU	33	<<,1M1	4T30	d M h
trans, 1IMDiK/WrxetVane	0TDM3.	1TV2	1B3	105	1TV2	1TUM	118	<U,1M2	8TU0	d M h
trans, 1I8, DiK/Wrxprxpene	0T010U.	1TV2	1B1	102	1TV2	1B5	111	<1,180	4T10	d M h
- riK/WrxetVane	0T0U12.	1TV2	1TV8	55	1TV2	1BM	102	<<,1M8	4T20	d M h
- riK/WrxD/RrxmetVane	0T0U12.	1TV2	1TU5	115	1TV2	1TU5	115	4M1U0	0T11	d M h
Vinyl aKetate	0T0380.	1TV2	1T4	1U0	1TV2	1T50	12M *	20,121	3T80	d M h
Vinyl K/Wxrioe	0T00442.	1TV2	1B3	105	1TV2	1B4	105	24,182	0T13	d M h
Xylenes dxtalh	0TUM	8T4	8T2	38	8T4	8TM	33	<3,1MU	U30	d M h
Surrogates										
1IMDiK/WrxetVane, DU dRrh		1TV2	1B4	105	1TV2	1B3	110	<1,184	0T3	
U, 7rxmxD/RrxuenJene dRrh		1T3	0T141	5 *	1T3	0T0U42	8 *	22,121	110T00	
- xIRene, o3 dRrh		1TV2	1TV2	100	1TV2	1TV2	100	32,114	0TM8	

Print Date: 10/MJ/2015 10:MU:82A6

Billable Matrix Spike Summary

Original Sample ID: 1155384001
6 S Sample ID: 115538400M76 S
6 SD Sample ID: 1155384008 76 SD

Analysis Date:
Analysis Date: 10/12/2015 10:85
Analysis Date: 10/12/2015 10:22
6 atri9: Sxil/Sxlio cby (eigWWh

c Q &r Samples:

) esRts uy **SW8260C**

	6 atri9 Spibe dP h	Spibe DRplliKate dP h								
<u>f arameter</u>	<u>Sample</u>	<u>Spibe</u>	<u>) esRt</u>	<u>) eKdP h</u>	<u>Spibe</u>	<u>) esRt</u>	<u>) eKdP h</u>	<u>Q%</u>	<u>) f D dP h</u>	<u>) f D Q%</u>

Batch Information

AnalytiKal 7 atkW V6 S152<2
AnalytiKal 6 etVko: Sv 3M#0Q
InstrRment: Vc A <350/25<2 GQ/6 S
Analyst: kAE
AnalytiKal Date/- ime: 10/12/2015 10:85:00A6

f rep 7 atkW VXX8210M
f rep 6 etVko: VxITB9traKixn Sv 3M#0 Fielo B9traKteo %
f rep Date/- ime: 10/11/2015 11:M2:00A6
f rep Initial v tTVxlT 85TV5g
f rep B9traK Vxl: M5Tl<m%

f rint Date: 10/MJ/2015 10:MJ:82A6

Method Blank

Blank ID: MB for HBN 1800450 [XXX/42406]
 Blank Lab ID: 1536504

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1199836008

Results by EPA 625M SIM (PAH) LV

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Acenaphthene	0.0250U	0.0500	0.0150	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	ug/L
Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0100U	0.0200	0.00620	ug/L
Benzo[b]Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	ug/L
Chrysene	0.0250U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0100U	0.0200	0.00620	ug/L
Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Fluorene	0.0250U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	ug/L
Naphthalene	0.0500U	0.100	0.0310	ug/L
Phenanthrene	0.0250U	0.0500	0.0150	ug/L
Pyrene	0.0250U	0.0500	0.0150	ug/L
Surrogates				
2-Methylnaphthalene-d10 (surr)	55.1	47-106		%
Fluoranthene-d10 (surr)	61.4	24-116		%

Batch Information

Analytical Batch: XMS11793
 Analytical Method: EPA 625M SIM (PAH) LV
 Instrument: Agilent GC 7890B/5977A SWA
 Analyst: DSD
 Analytical Date/Time: 10/10/2019 5:22:00PM

Prep Batch: XXX42406
 Prep Method: SW3520C
 Prep Date/Time: 10/6/2019 9:45:29AM
 Prep Initial Wt./Vol.: 250 mL
 Prep Extract Vol: 1 mL



Blank Spike Summary

Blank Spike ID: LCS for HBN 1199836 [XXX42406]
 Blank Spike Lab ID: 1536505
 Date Analyzed: 10/10/2019 17:42

Spike Duplicate ID: LCSD for HBN 1199836
 [XXX42406]
 Spike Duplicate Lab ID: 1536506
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1199836008

Results by EPA 625M SIM (PAH) LV

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	2	1.46	73	2	1.33	66	(48-114)	9.30	(< 20)
Acenaphthylene	2	1.57	79	2	1.39	70	(35-121)	11.80	(< 20)
Anthracene	2	1.63	82	2	1.49	75	(53-119)	9.20	(< 20)
Benzo(a)Anthracene	2	1.56	78	2	1.40	70	(59-120)	10.70	(< 20)
Benzo[a]pyrene	2	1.50	75	2	1.33	66	(53-120)	12.60	(< 20)
Benzo[b]Fluoranthene	2	1.55	77	2	1.39	70	(53-126)	10.50	(< 20)
Benzo[g,h,i]perylene	2	1.44	72	2	1.27	64	(44-128)	12.60	(< 20)
Benzo[k]fluoranthene	2	1.60	80	2	1.44	72	(54-125)	10.20	(< 20)
Chrysene	2	1.60	80	2	1.42	71	(57-120)	11.80	(< 20)
Dibenzo[a,h]anthracene	2	1.37	69	2	1.18	59	(44-131)	15.00	(< 20)
Fluoranthene	2	1.55	78	2	1.37	68	(58-120)	12.50	(< 20)
Fluorene	2	1.60	80	2	1.44	72	(50-118)	10.70	(< 20)
Indeno[1,2,3-c,d] pyrene	2	1.55	78	2	1.37	68	(48-130)	12.50	(< 20)
Naphthalene	2	1.29	65	2	1.15	58	(43-114)	11.70	(< 20)
Phenanthrene	2	1.63	81	2	1.44	72	(53-115)	12.20	(< 20)
Pyrene	2	1.63	82	2	1.43	72	(53-121)	13.00	(< 20)
Surrogates									
2-Methylnaphthalene-d10 (surr)	2	69.1	69	2	63.3	63	(47-106)	8.80	
Fluoranthene-d10 (surr)	2	79	79	2	69.9	70	(24-116)	12.30	

Batch Information

Analytical Batch: XMS11793
 Analytical Method: EPA 625M SIM (PAH) LV
 Instrument: Agilent GC 7890B/5977A SWA
 Analyst: DSD

Prep Batch: XXX42406
 Prep Method: SW3520C
 Prep Date/Time: 10/06/2019 09:45
 Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

Print Date: 10/24/2019 10:24:37AM

Method Blank

Blank ID: MB for HBN 1800515 [XXX/42415]

Blank Lab ID: 1536893

QC for Samples:

1199836008

Matrix: Water (Surface, Eff., Ground)

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	0.225J	0.600	0.180	mg/L
Surrogates				
5a Androstane (surr)	96.1	60-120		%

Batch Information

Analytical Batch: XFC15404

Analytical Method: AK102

Instrument: Agilent 7890B F

Analyst: CMS

Analytical Date/Time: 10/14/2019 9:57:00PM

Prep Batch: XXX42415

Prep Method: SW3520C

Prep Date/Time: 10/8/2019 8:20:17AM

Prep Initial Wt./Vol.: 250 mL

Prep Extract Vol: 1 mL

Print Date: 10/24/2019 10:24:38AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199836 [XXX42415]
 Blank Spike Lab ID: 1536894
 Date Analyzed: 10/14/2019 22:36

Spike Duplicate ID: LCSD for HBN 1199836
 [XXX42415]
 Spike Duplicate Lab ID: 1536895
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1199836008

Results by AK102

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	20	19.4	97	20	19.2	96	(75-125)	1.00	(< 20)

Surrogates

5a Androstane (surr)	0.4	111	111	0.4	111	111	(60-120)	0.73	
----------------------	-----	-----	-----	-----	-----	-----	------------	------	--

Batch Information

Analytical Batch: **XFC15404**
 Analytical Method: **AK102**
 Instrument: **Agilent 7890B F**
 Analyst: **CMS**

Prep Batch: **XXX42415**
 Prep Method: **SW3520C**
 Prep Date/Time: **10/08/2019 08:20**
 Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

Method Blank

Blank ID: MB for HBN 1800515 [XXX/42415]

Blank Lab ID: 1536893

QC for Samples:

1199836008

Matrix: Water (Surface, Eff., Ground)

Results by AK103

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Residual Range Organics	0.250U	0.500	0.150	mg/L
Surrogates				
n-Triacontane-d62 (surr)	99.6	60-120		%

Batch Information

Analytical Batch: XFC15404

Analytical Method: AK103

Instrument: Agilent 7890B F

Analyst: CMS

Analytical Date/Time: 10/14/2019 9:57:00PM

Prep Batch: XXX42415

Prep Method: SW3520C

Prep Date/Time: 10/8/2019 8:20:17AM

Prep Initial Wt./Vol.: 250 mL

Prep Extract Vol: 1 mL

Print Date: 10/24/2019 10:24:40AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199836 [XXX42415]
 Blank Spike Lab ID: 1536894
 Date Analyzed: 10/14/2019 22:36

Spike Duplicate ID: LCSD for HBN 1199836 [XXX42415]
 Spike Duplicate Lab ID: 1536895
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1199836008

Results by AK102

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Residual Range Organics	20	18.4	92	20	18.2	91	(607120)	1.10	(- 20)

Surrogates

n7<riacontane7d62 (surr)	0.4	102	102	0.4	98.8	99	(607120)	2.90	
--------------------------	-----	-----	-----	-----	------	----	------------	------	--

Batch Information

Analytical Batch: **XFC15404**
 Analytical Method: **AK102**
 Instrument: **Agilent 7890B F**
 Analyst: **CMS**

Prep Batch: **XXX4W15**
 Prep Method: **S3 25VOC**
 Prep Date/Time: **10/08/2019 08:00**
 Spike Init Wt./Tol.: 20 mg/L Extract Tol: 1 mL
 Dupe Init Wt./Tol.: 20 mg/L Extract Tol: 1 mL

Method Blank

Blank ID: MB for HBN 18005[X/444 L] b36
Blank 9aQID: 13bX3] 5

MaxW. moVWmIWcur, EsWGd

CS for map elst:

11[[8b5001i 11[[8b500] i 11[[8b5003i 11[[8b5005i 11[[8b500X

) st Rxt Q AK102

<u>Qarap sxsr</u>	<u>) st Rxt</u>	<u>9UC29</u>	<u>D9</u>	<u>ynW</u>
DWt sl) an. s Ur. anVt	10gy	L0g	5d.0	p . 2 .
Surrogates				
3a Tnurot xans d Rrd	[3	50%L0		A

Batch Information

Tnal, xRal BaxPG 4hS13b[0

Tnal, xRal MsxGou: T- 10L

Int xRp snx T. WnX8[0B)

Tnal, tx SMm

Tnal, xRal Dax2Fws: 102102.01[5:33:00OM

Orse BaxPG 444] L] b3

Orse MsxGou: mK b330S

Orse Dax2Fws: 102102.01[11:L0:b] TM

Orse InWm K x27 olg b0 .

Orse V(xaPx7ol: 3 p 9

OrWxDax: 102] 2.01[10:L:] LTM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199836 [XXX42435]
 Blank Spike Lab ID: 153t 54t
 Date ynalzde0: 1/ u/ 19 19:24

Spike DcpliRaE ID: LCSD for HBN 1199836
 [XXX42435]
 Spike DcpliRaE Lab ID: 153t 548
 x aAiW SoiluSoli0 (Orz , eIE. AG

g C for SaP pleM 1199836/ / 1Q1199836/ / 4Q1199836/ / 5Q1199836/ / 6Q1199836/ / t

seMIA/bz AK102

) araPeAr	Blank Spike (P EU/EG			Spike DcpliRaE (P EU/EG			CL	s) D (mG	s) D CL
	Spike	seMIA	seR(mG	Spike	seMIA	seR(mG			
DieMl s anEe OrEaniRM	833	84t	1/ 2	833	831	1/ /	(t 57125 G	24 /	(- 2/ G
Surrogates									
5a yn0roMane (MrrG	164	1/ 4	1/ 4	164	1/ 2	1/ 2	(6/ 712/ G	24 /	

Batch Information

y nalzARal BaAR : XFC15390
 y nalzARal x eA o0: AK102
 InMkP enA Agilent 7890B R
 y nalzMA CMS

) rep BaAR : XXX42435
) rep x eA o0: SW3550C
) rep DaA thiP e: 10/10/2019 11:20
 Spike IniAT AcVol< 833 P EU/E v VkaRAVol: 5 P L
 Dcpe IniAT AcVol< 833 P EU/E v VkaRAVol: 5 P L

) rinADaAe: 1/ u24u/ 19 1/ :24:43yx

Billable Matrix Spike Summary

Original Sample ID: 1199836001
 MS Sample ID: 1199836002 BMS
 MSD Sample ID: 1199836003 BMSD

Analysis Date: 10/22/2019 21:20
 Analysis Date: 10/22/2019 21:30
 Analysis Date: 10/22/2019 21:40
 Matrix: Soil/Solid (dry weight)

QC for Samples:

Results by AK102

Parameter	Sample	Matrix Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	5180	932	6745	168 *	930	7058	202 *	60-140	4.50	(< 50)
Surrogates										
5a Androstane (surr)		18.7	20.4	109	18.6	19.1	103	50-150	5.80	

Batch Information

Analytical Batch: XFC15433
 Analytical Method: AK102
 Instrument: Agilent 7890B R
 Analyst: CMS
 Analytical Date/Time: 10/22/2019 9:30:00PM

Prep Batch: XXX42435
 Prep Method: Sonication Extraction Soil AK102
 Prep Date/Time: 10/10/2019 11:20:34AM
 Prep Initial Wt./Vol.: 30.02g
 Prep Extract Vol: 5.00mL

Print Date: 10/24/2019 10:24:44AM

Method Blank

Blank ID: MB for HBN 18005[X/444 L] b36
Blank 9aQID: 13bX3] 5

MaxW. moVWmIw cur, EsWGd

CS for map elst:

11[[8b5001i 11[[8b500] i 11[[8b5003i 11[[8b5005i 11[[8b500X

) st Rxt Q AK103

<u>Qarap sxsr</u>	<u>) st Rxt</u>	<u>9UC29</u>	<u>D9</u>	<u>ynW</u>
) st WRal) an. s Ur. anVR	10gy	L0g	5d.0	p . 2 .
Surrogates				
nT%APOnxansTu5L d Rrd	[Ld.	50TIL0		A

Batch Information

hnal, xRal BaxPG 4FS13b[0

hnal, xRal MsxGou: h- 10b

Int xRp snx h. VsnxX8[0B)

hnal, tx SMm

hnal, xRal Dax2As: 102102.01[5:33:00OM

Orse BaxPG 444] L] b3

Orse MsxGou: mK b330S

Orse Dax2As: 102102.01[11:L0:b] hM

Orse InVAM K x27 olg b0 .

Orse V(xaPx7ol: 3 p 9

OrWxDax: 102] 2.01[10:L:] :3hM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199836 [XXX42435]
 Blank Spike Lab ID: 153t 54t
 Date ynalzde0: 1/ u/ 19 19:24

Spike DcpliRa ID: LCSD for HBN 1199836
 [XXX42435]
 Spike DcpliRa Lab ID: 153t 548
 x aAiW SoiluSoli0 (Orz , eiE. AG

g C for SaP pleM 1199836/ / 1Q1199836/ / 4Q1199836/ / 5Q1199836/ / 6Q1199836/ / t

seMIA/bz AK102

) araPeAr	Blank Spike (P EU/EG			Spike DcpliRa (P EU/EG			CL	s) D (mG	s) D CL
	Spike	seMIA	seR(mG	Spike	seMIA	seR(mG			
seMocal sanEe OrEaniRM	833	t 88	95	833	tt 5	93	(6/ 712/ G	14 /	(- 2/ G

Surrogates

n7riaFonAne7062 (MrrG	164	91-9	92	164	924	93	(6/ 712/ G	/ 8/	
-----------------------	-----	------	----	-----	-----	----	-------------	------	--

Batch Information

y nalzARal BaAR : XFC15230
 y nalzARal x eA o0: AK102
 InMackPenA Agilent 9730B 8
 y nalzMA CRS

) rep BaAR : XXXMM25
) rep x eA o0: SW2550C
) rep DaAhiPe: 10/10/4013 11:40
 Spike IniAT AcVol< 833 P EU/E v VkaRAVol: 5 P L
 Dcpe IniAT AcVol< 833 P EU/E v VkaRAVol: 5 P L

) rinADaA: 1/ u24u/ 19 1/ :24:46yx

Billable Matrix Spike Summary

Original Sample ID: 1199836001
 MS Sample ID: 1199836002 BMS
 MSD Sample ID: 1199836003 BMSD

Analysis Date: 10/10/2019 21:39
 Analysis Date: 10/10/2019 21:49
 Analysis Date: 10/10/2019 21:x8
 Matrix: Sdil/Sdli(wry heig) tR

Cf Rlr Samples:

u esblts ky AK103

Parameter	Sample	Matrix Spike wng/cgR			Spike Duplicate wng/cgR					
		Spike	u esblt	u eQw R	Spike	u esblt	u eQw R	f 5	u %D w R	u %D f 5
uesi(bal u ange Organics	11-0	932	1902	-9	930	2036	93	60.140	6-60	w x0 R
Surrogates										
n.XriaQ	antane.(62 wbrR	18<	16<	90	18-6	16-2	8-	x0.1x0	3-30	

Batch Information

Analytical Batch: EFF 1x390
 Analytical Method: Ac103
 Instrument: Agilent - 890B u
 Analyst: f MS
 Analytical Date/Time: 10/10/2019 9:49:00AM

%rep Batch: EEE4243x
 %rep Method: Sdil/Sdli(wry heig) tR
 %rep Date/Time: 10/10/2019 11:20:34AM
 %rep Initial Weight: 30.02g
 %rep Total Volume: x0.0m5

Print Date: 10/24/2019 10:24:4- AM

1199836



CHAIN-C

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

2355 Hill Road
Fairbanks, AK 99709
(907) 479-0800
www.shannonwilson.com

Profile: 350732

Turn Around Time:
 Normal Rush
 Please Specify _____

Quote No.: _____

J-Flags: Yes No

ECORD

Laboratory Page 1 of 1
 Attn: J. Dawkins

Analytical Methods (include preservative if used)

ASAC 8260	SW 0311	
TRAP EPA 625M -	AK 02	
ASAC EPA 200.8	AK 03	

Sample ID	Lab No.	Time	Date Sampled	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
FTP-001	1-3AF	11:25 AM	10-1-19	6	SOIL, EXTRA VOL. FOR MS/MSD
FTP-002	4AC	12:10 PM	10-1-19	3	SOIL
FTP-003	5AC	12:00 PM		3	SOIL
FTP-004	6AC	12:40 PM		3	SOIL
FTP-005	7AC	12:55 PM		3	SOIL
FTP-pre003	8AH	5:40 PM	9-30-19	8	groundwater
	9A				
	10AC				

Project Information	Sample Receipt	Relinquished By: 1	Relinquished By: 2	Relinquished By: 3
Number: 102519-000 Name: Fire Training Pit Contact: MDN Ongoing Project? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Sampler: MDN, AEF	Total No. of Containers: COC Seals/Intact? Y/N/A Received Good Cond./Cold Temp: 49 Delivery Method:	Signature: <i>Andrew Forth</i> Printed Name: Andrew Forth Company: SWF Time: 10-1-19 Date: 10-1-19	Signature: <i>J. Dawkins</i> Printed Name: J. Dawkins Company: SWS Time: 10-3-19 Date: 10-3-19	Signature: <i>Michelle Alvarado</i> Printed Name: Michelle Alvarado Company: SWS Time: 09-55 Date: 10/4/19
Notes:		Received By: 1	Received By: 2	Received By: 3
		Signature: <i>J. Dawkins</i> Printed Name: J. Dawkins Company: SWS Time: 10-3-19	Signature: _____ Printed Name: _____ Company: _____ Time: _____	Signature: _____ Printed Name: _____ Company: _____ Time: _____

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
 Yellow - w/shipment - for consignee files
 Pink - Shannon & Wilson - job file

No. 411517



Returned Bottles Inventory

Name of individual returning bottles:

Shannon & Wilson - Fairbanks

Date Received:

10.4.19

Client Name:

Mary Nadel

Received by:

Michelle Albarran

Project Name:

102519-010 Fire Training Pit

SGS PM:

Jennifer Dawkins

HDPE/Nalgene:	1-L	
	500-ml	
	250-ml or 8-oz	
	125-ml or 4-oz	
	60-ml or 2-oz	
	other	
amber glass:	1-L	
	500-ml	
	250-ml or 8-oz	
	125-ml or 4-oz with or without septa	5
	40-ml VOA vial	
	other	
Subtotal:		

Note: Returned bottles (regardless of size/pres.) are billed back at \$4/bottle **unless otherwise quoted.**

Amount to Invoice Client \$:

20

WO#:

1199836



e-Sample Receipt Form

SGS Workorder #:

1199836



1 1 9 9 8 3 6

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements		
Were Custody Seals intact? Note # & location	Yes	1F,1B
COC accompanied samples?	Yes	
DOD: Were samples received in COC corresponding coolers?	N/A	
N/A **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	Yes	Cooler ID: 1 @ 2.0 °C Therm. ID: D59
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
*If >6°C, were samples collected <8 hours ago?	N/A	
If <0°C, were sample containers ice free?	N/A	
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Holding Time / Documentation / Sample Condition Requirements		
Note: Refer to form F-083 "Sample Guide" for specific holding times.		
Were samples received within holding time?	Yes	
Do samples match COC** (i.e., sample IDs, dates/times collected)?	Yes	
**Note: If times differ <1hr, record details & login per COC.		
***Note: If sample information on containers differs from COC, SGS will default to COC information		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals))	Yes	
N/A ***Exemption permitted for metals (e.g,200.8/6020A).		
Were proper containers (type/mass/volume/preservative***)used?	No	All samples 1A-D & 2-5 A-B were received in septa jars.
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	Yes	Trip blank 9A is preserved in Non-SGS methanol with no BFB.
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	No	Sample 8H has headspace greater than 6mm.
Were all soil VOAs field extracted with MeOH+BFB?	No	
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		



e-Sample Receipt Form FBK

SGS Workorder #:

1199836

1199836

Review Criteria		Condition (Yes, No, N/A)	Exceptions Noted below	
Chain of Custody / Temperature Requirements			Yes	Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location		N/A		
COC accompanied samples?		Yes		
DOD: Were samples received in COC corresponding coolers?		N/A		
<input type="checkbox"/> **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required				
Temperature blank compliant* (i.e., 0-6 °C after CF)?		Yes	Cooler ID: 1 @ 4.9 °C	Therm. ID: D23
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.			Cooler ID: @	°C Therm. ID:
			Cooler ID: @	°C Therm. ID:
			Cooler ID: @	°C Therm. ID:
			Cooler ID: @	°C Therm. ID:
*If >6°C, were samples collected <8 hours ago?				
If <0°C, were sample containers ice free?				
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.				
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.		
Do samples match COC** (i.e., sample IDs, dates/times collected)?		N/C		
**Note: If times differ <1hr, record details & login per COC.				
***Note: If sample information on containers differs from COC, SGS will default to COC information				
Were samples in good condition (no leaks/cracks/breakage)?		Yes	TCLP RCRA Metals for clarification, per client.	
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)		No		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?		Yes	Non SGS methanol was used, so BFB is not present. The client was notified and would like to proceed with analysis.	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?		N/A		
Were all soil VOAs field extracted with MeOH+BFB?		N/C		
For Rush/Short Hold Time, was RUSH/Short HT email sent?		N/A		
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.				
Additional notes (if applicable):				
SGS Profile #	350732		350732	



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1199836001-A	No Preservative Required	OK			
1199836001-B	No Preservative Required	OK			
1199836001-C	No Preservative Required	OK			
1199836001-D	No Preservative Required	OK			
1199836001-E	Methanol field pres. 4 C	OK			
1199836001-F	Methanol field pres. 4 C	OK			
1199836002-A	No Preservative Required	OK			
1199836002-B	No Preservative Required	OK			
1199836002-C	No Preservative Required	OK			
1199836002-D	No Preservative Required	OK			
1199836002-E	Methanol field pres. 4 C	OK			
1199836002-F	Methanol field pres. 4 C	OK			
1199836003-A	No Preservative Required	OK			
1199836003-B	No Preservative Required	OK			
1199836003-C	No Preservative Required	OK			
1199836003-D	No Preservative Required	OK			
1199836003-E	Methanol field pres. 4 C	OK			
1199836003-F	Methanol field pres. 4 C	OK			
1199836004-A	No Preservative Required	OK			
1199836004-B	No Preservative Required	OK			
1199836004-C	Methanol field pres. 4 C	OK			
1199836005-A	No Preservative Required	OK			
1199836005-B	No Preservative Required	OK			
1199836005-C	Methanol field pres. 4 C	OK			
1199836006-A	No Preservative Required	OK			
1199836006-B	No Preservative Required	OK			
1199836006-C	Methanol field pres. 4 C	OK			
1199836007-A	No Preservative Required	OK			
1199836007-B	No Preservative Required	OK			
1199836007-C	Methanol field pres. 4 C	OK			
1199836008-A	HNO3 to pH < 2	OK			
1199836008-B	HCL to pH < 2	OK			
1199836008-C	HCL to pH < 2	OK			
1199836008-D	No Preservative Required	OK			
1199836008-E	No Preservative Required	OK			
1199836008-F	HCL to pH < 2	OK			
1199836008-G	HCL to pH < 2	OK			
1199836008-H	HCL to pH < 2	BU			
1199836009-A	Methanol field pres. 4 C	OK			
1199836010-A	HCL to pH < 2	OK			
1199836010-B	HCL to pH < 2	OK			
1199836010-C	HCL to pH < 2	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates that an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.

Laboratory Data Review Checklist

Completed By:

Brittany Blood

Title:

Environmental Professional I

Date:

January 23, 2020

Consultant Firm:

Shannon and Wilson, Inc.

Laboratory Name:

SGS North America, Inc.

Laboratory Report Number:

1199836

Laboratory Report Date:

October 24, 2019

CS Site Name:

FIA – Fire Training Pit

ADEC File Number:

100.38.070

Hazard Identification Number:

1071

1199836

Laboratory Report Date:

October 24, 2019

CS Site Name:

FIA – Fire Training Pit

Note: Any N/A or No box checked must have an explanation in the comments box.

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes No N/A Comments:

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes No N/A Comments:

Samples were not transferred to another laboratory.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes No N/A Comments:

Trip blank sample was not included on the COC. The laboratory logged and analyzed the trip blank samples, as required. The sample results are not affected by this omission.

b. Correct analyses requested?

Yes No N/A Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes No N/A Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes No N/A Comments:

1199836

Laboratory Report Date:

October 24, 2019

CS Site Name:

FIA – Fire Training Pit

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes No N/A Comments:

The container 8H for project sample *FTP-pre003* had head space greater than 6mm. This sample container was not used to prepare the sample for the requested analysis. The sample results are not affected by the sample handling anomaly.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes No N/A Comments:

The sample receipt notes that *Trip Blank and project samples* were not preserved in SGS methanol with no BFB.

Requested analyte list was not included for TCLP analysis. The Shannon & Wilson PM confirmed the requested analysis.

Septa jars were used for DRO/RRO and TCLP samples. These analyses do not require use of septa jars but the use of these jars does not affect the analytical results.

e. Data quality or usability affected?

Comments:

Data quality and/or usability was not affected; see above.

4. Case Narrative

a. Present and understandable?

Yes No N/A Comments:

1199836

Laboratory Report Date:

October 24, 2019

CS Site Name:

FIA – Fire Training Pit

b. Discrepancies, errors, or QC failures identified by the lab?

Yes No N/A Comments:

The recovery of 4-bromofluorobenzene (BFB) does not meet QC criteria for project soil samples, matrix spike (MS), and matrix spike duplicate (MSD) samples for volatile organic compound (VOC) analysis. These samples were preserved in the field with methanol from another project that did not contain BFB.

The VOC MS and MSD associated with preparatory batches VXX35085 and VXX35102 had recoveries for hexachlorobutadiene that do not meet QC criteria. This analyte was not detected above the LOQ in the associated parent samples.

The VOC MSD associated with preparatory batch VXX35102 had a recovery for vinyl acetate that does not meet QC criteria. This analyte was not detected above the LOQ in the associated parent sample, *FTP-001*.

The diesel range organics (DRO) MS and MSD associated with preparatory batch XXX42432 had recoveries for DRO that do not meet QC criteria. This analyte was not detected above the LOQ in the associated parent sample, *FTP-001*. Refer to the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for accuracy requirements.

The polynuclear aromatic hydrocarbon (PAH) surrogate 2-methylnaphthalene-d10 did not meet QC criteria for project sample *FTP-pre003*. The sample was re-extracted past hold time with surrogate recovery that did not meet QC criteria. The initial results were comparable; the in-hold data is reported.

The VOC LCS associated with preparatory batch VXX35072 had a recovery for chloroethane that does not meet QC criteria. The analyte was not detected in the associated samples above the limit of quantitation (LOQ).

c. Were all corrective actions documented?

Yes No N/A Comments:

The sample *FTP-pre003* was re-extracted past hold time with surrogate recovery that did not meet QC criteria. The initial results were comparable; the in-hold data is reported.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The laboratory does not specify an effect on the data quality and/or usability; refer to subsequent sections for further assessment.

1199836

Laboratory Report Date:

October 24, 2019

CS Site Name:

FIA – Fire Training Pit

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes No N/A Comments:

b. All applicable holding times met?

Yes No N/A Comments:

All accurate hold times are met on reported samples; see section 4b for detail.

c. All soils reported on a dry weight basis?

Yes No N/A Comments:

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes No N/A Comments:

The LODs of requested analytes met applicable ADEC cleanup levels for non-detect results, with the following exceptions. The LOD for 1,2,3-trichloropropane in sample *FTP-Pre003* was above the DEC groundwater cleanup level. The LODs for 1,2,3-Trichloropropane and 1,2-Dibromoethane in samples *FTP-001* through *FTP-005* were above the DEC soil-cleanup levels for these analytes. We cannot assess if these analytes are present at a concentration greater than the project limits. The results are therefore identified (bolded) in the analytical table.

e. Data quality or usability affected?

See above.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

1199836

Laboratory Report Date:

October 24, 2019

CS Site Name:

FIA – Fire Training Pit

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes No N/A Comments:

All method blank and leaching blank results were less than the limit quantitation. However, the following analytes had detections in the method blank and leaching blank samples at estimated concentrations less than the LOQ but greater than the detection limit.

- DRO was detected in the method blank 1536893 associated with preparatory batch XXX42415.
- TCLP chromium was detected in the method blank 1537572 associated with preparatory batch MTX5874.
- TCLP barium and TCLP chromium were detected in the leaching blank 1537519 associated with preparatory batch MXT5874.
- Methylene chloride was detected in method blank 1538255 associated with preparatory batch XXX35083.

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

Project samples are affected by blank detections if the sample is in the same preparatory batch and has a detection for the corresponding analyte at a concentration less than ten times the blank detection.

The project samples *FTP-001*, *FTP-002*, *FTP-003*, *FTP-004*, and *FTP-005* are affected by the leaching blank detections for TCLP barium and TCLP chromium.

The remaining analytes were not affected by the blank detections.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

The project sample *FTP-001* had a concentration for TCLP barium that was less than ten times but greater than five times the leaching blank detection. The sample result is estimated, biased high, and is flagged 'JH' in the analytical database.

The project samples *FTP-002*, *FTP-003*, *FTP-004*, and *FTP-005* had detections for TCLP barium less than five times the leaching blank detection. The sample results are considered non-detect and are flagged 'UB' in the analytical database at the detected result or the LOQ, whichever value is greater.

The project samples *FTP-001*, *FTP-002*, *FTP-003*, *FTP-004*, and *FTP-005* had detections for TCLP chromium less than five times the leaching blank detection. The sample results are considered non-detect and are flagged 'UB' in the analytical database at the detected result or the LOQ, whichever value is greater.

1199836

Laboratory Report Date:

October 24, 2019

CS Site Name:

FIA – Fire Training Pit

v. Data quality or usability affected?

Comments:

Yes; see above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes No N/A Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

The VOC LCS 1538110 associated with preparatory batch VXX35072 had a high recovery failure for chloroethane.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Chloroethane was not detected in the associated project sample, *FTP-pre003*. The sample result is not affected by the high LCS recovery failure for this analyte.

1199836

Laboratory Report Date:

October 24, 2019

CS Site Name:

FIA – Fire Training Pit

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

Not applicable, see above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability were not affected; see above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Note: Leave blank if not required for project

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

The MS and MSD samples associated with preparatory batches VXX35085 and VXX35102 had high recovery failures for hexachlorobutadiene.

The MSD 1199836-003 associated with preparatory batch VXX35102 had a high recovery failure for vinyl acetate.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

1199836

Laboratory Report Date:

October 24, 2019

CS Site Name:

FIA – Fire Training Pit

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

The parent samples associated with the high MS and MSD recovery failures did not have detections for hexachlorobutadiene and vinyl acetate. The parent samples are not affected by the high recovery failures.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Data quality and/or usability were not affected; see above.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes No N/A Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

Yes No N/A Comments:

The VOC surrogate recoveries for 4-bromoflourobenzene were below laboratory limits for the MS, MSD, and project samples.

The PAH surrogate recovery for 2-methylnaphthalene did not meet QC criteria (biased low) for project sample *FTP-pre003*.

1199836

Laboratory Report Date:

October 24, 2019

CS Site Name:

FIA – Fire Training Pit

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

4- Bromoflourobenzene was not added to the volatile soil sample analysis. We are unable to measure the accuracy of the associated analytes using the surrogate recovery information. For these analyses we refer to the LCS and MS recovery information in sections 6c and 6b.

The PAH results for project sample *FTP-pre003* was analyzed at a dilution due to target analyte concentrations. The sample results are not affected by surrogate recovery failures associated with sample dilution.

iv. Data quality or usability affected?

Comments:

The data quality and usability were not affected; see above.

e. Trip Blanks

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes No N/A Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes No N/A Comments:

The trip blank was not listed on the COC. The methanol preservative in the trip blank did not contain 4-bromoflourobenzene, resulting in low surrogate recoveries. Please see sections 4b, 6b, and 6c for \ details.

iii. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

No project samples were affected.

1199836

Laboratory Report Date:

October 24, 2019

CS Site Name:

FIA – Fire Training Pit

v. Data quality or usability affected?

Comments:

Data quality and usability were not affected; see above.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No N/A Comments:

Field duplicate pair *FTP-002* and *FTP-003* were submitted as a part of this work order.

ii. Submitted blind to lab?

Yes No N/A Comments:

iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water, 50% soil)

$$RPD (\%) = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2) / 2)} \times 100$$

Where R_1 = Sample Concentration
 R_2 = Field Duplicate Concentration

Yes No N/A Comments:

The RPDs are less than the specific project objectives, where calculable.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Data quality and/or usability were not affected.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes No N/A Comments:

Reusable equipment was not used for the collection of samples in this work order.

1199836

Laboratory Report Date:

October 24, 2019

CS Site Name:

FIA – Fire Training Pit

i. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

No samples were affected; see above.

iii. Data quality or usability affected?

Comments:

Data quality and/or usability were not affected; see above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes No N/A Comments:

Additional qualification was not necessary for this work order.



Laboratory Report of Analysis

To: Shannon & Wilson-Fairbanks
2355 Hill Rd
Fairbanks, AK 99707
(907)479-0600

Report Number: **1209409**

Client Project: **102519-013 FAI Burn Pit**

Dear Mary Nadel,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Jennifer at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Stephen C. Ede

2020.07.22

11:38:23 -08'00'

Jennifer Dawkins
Project Manager
Jennifer.Dawkins@sgs.com

Date

Case Narrative

SGS Client: **Shannon & Wilson-Fairbanks**
SGS Project: **1209409**
Project Name/Site: **102519-013 FAI Burn Pit**
Project Contact: **Mary Nadel**

Refer to sample receipt form for information on sample condition.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 07/22/2020 10:47:21AM

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
MW-1901-15	1209409001	06/25/2020	06/30/2020	Water (Surface, Eff., Ground)
MW-1902-15	1209409002	06/26/2020	06/30/2020	Water (Surface, Eff., Ground)
MW-2002-15	1209409003	06/26/2020	06/30/2020	Water (Surface, Eff., Ground)
EB-1902-15	1209409004	06/26/2020	06/30/2020	Water (Surface, Eff., Ground)
Trip Blank	1209409005	06/25/2020	06/30/2020	Water (Surface, Eff., Ground)

<u>Method</u>	<u>Method Description</u>
AK102	DRO Low Volume (W)
SW8260D	Volatile Organic Compounds (W) FULL

Print Date: 07/22/2020 10:47:25AM

Detectable Results Summary

Client Sample ID: **MW-1901-15**

Lab Sample ID: 1209409001

Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.448J	mg/L

Client Sample ID: **MW-1902-15**

Lab Sample ID: 1209409002

Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.409J	mg/L

Client Sample ID: **MW-2002-15**

Lab Sample ID: 1209409003

Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.377J	mg/L

Client Sample ID: **EB-1902-15**

Lab Sample ID: 1209409004

Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.471J	mg/L

Results of MW-1901-15

Client Sample ID: **MW-1901-15**
 Client Project ID: **102519-013 FAI Burn Pit**
 Lab Sample ID: 1209409001
 Lab Project ID: 1209409

Collection Date: 06/25/20 15:02
 Received Date: 06/30/20 08:20
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.448 J	0.556	0.167	mg/L	1		07/09/20 05:30
Surrogates							
5a Androstane (surr)	92	50-150		%	1		07/09/20 05:30

Batch Information

Analytical Batch: XFC15644
 Analytical Method: AK102
 Analyst: CDM
 Analytical Date/Time: 07/09/20 05:30
 Container ID: 1209409001-A

Prep Batch: XXX43392
 Prep Method: SW3520C
 Prep Date/Time: 07/02/20 16:30
 Prep Initial Wt./Vol.: 270 mL
 Prep Extract Vol: 1 mL



Results of MW-1901-15

Client Sample ID: MW-1901-15
Client Project ID: 102519-013 FAI Burn Pit
Lab Sample ID: 1209409001
Lab Project ID: 1209409

Collection Date: 06/25/20 15:02
Received Date: 06/30/20 08:20
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Print Date: 07/22/2020 10:47:29AM

J flagging is activated



Results of MW-1901-15

Client Sample ID: MW-1901-15
Client Project ID: 102519-013 FAI Burn Pit
Lab Sample ID: 1209409001
Lab Project ID: 1209409

Collection Date: 06/25/20 15:02
Received Date: 06/30/20 08:20
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Results of MW-1901-15

Client Sample ID: **MW-1901-15**
Client Project ID: **102519-013 FAI Burn Pit**
Lab Sample ID: 1209409001
Lab Project ID: 1209409

Collection Date: 06/25/20 15:02
Received Date: 06/30/20 08:20
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS20059
Analytical Method: SW8260D
Analyst: NRB
Analytical Date/Time: 07/01/20 19:19
Container ID: 1209409001-C

Prep Batch: VXX35877
Prep Method: SW5030B
Prep Date/Time: 07/01/20 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of MW-1902-15

Client Sample ID: MW-1902-15
Client Project ID: 102519-013 FAI Burn Pit
Lab Sample ID: 1209409002
Lab Project ID: 1209409

Collection Date: 06/26/20 15:20
Received Date: 06/30/20 08:20
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane).

Batch Information

Analytical Batch: XFC15644
Analytical Method: AK102
Analyst: CDM
Analytical Date/Time: 07/09/20 05:40
Container ID: 1209409002-A

Prep Batch: XXX43392
Prep Method: SW3520C
Prep Date/Time: 07/02/20 16:30
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL



Results of MW-1902-15

Client Sample ID: MW-1902-15
Client Project ID: 102519-013 FAI Burn Pit
Lab Sample ID: 1209409002
Lab Project ID: 1209409

Collection Date: 06/26/20 15:20
Received Date: 06/30/20 08:20
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Print Date: 07/22/2020 10:47:29AM

J flagging is activated



Results of MW-1902-15

Client Sample ID: MW-1902-15
Client Project ID: 102519-013 FAI Burn Pit
Lab Sample ID: 1209409002
Lab Project ID: 1209409

Collection Date: 06/26/20 15:20
Received Date: 06/30/20 08:20
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Results of MW-1902-15

Client Sample ID: **MW-1902-15**
Client Project ID: **102519-013 FAI Burn Pit**
Lab Sample ID: 1209409002
Lab Project ID: 1209409

Collection Date: 06/26/20 15:20
Received Date: 06/30/20 08:20
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS20059
Analytical Method: SW8260D
Analyst: NRB
Analytical Date/Time: 07/01/20 19:34
Container ID: 1209409002-C

Prep Batch: VXX35877
Prep Method: SW5030B
Prep Date/Time: 07/01/20 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of MW-2002-15

Client Sample ID: MW-2002-15
Client Project ID: 102519-013 FAI Burn Pit
Lab Sample ID: 1209409003
Lab Project ID: 1209409

Collection Date: 06/26/20 15:10
Received Date: 06/30/20 08:20
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane).

Batch Information

Analytical Batch: XFC15644
Analytical Method: AK102
Analyst: CDM
Analytical Date/Time: 07/09/20 05:50
Container ID: 1209409003-A

Prep Batch: XXX43392
Prep Method: SW3520C
Prep Date/Time: 07/02/20 16:30
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL



Results of MW-2002-15

Client Sample ID: MW-2002-15
Client Project ID: 102519-013 FAI Burn Pit
Lab Sample ID: 1209409003
Lab Project ID: 1209409

Collection Date: 06/26/20 15:10
Received Date: 06/30/20 08:20
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of MW-2002-15

Client Sample ID: MW-2002-15
Client Project ID: 102519-013 FAI Burn Pit
Lab Sample ID: 1209409003
Lab Project ID: 1209409

Collection Date: 06/26/20 15:10
Received Date: 06/30/20 08:20
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Results of MW-2002-15

Client Sample ID: **MW-2002-15**
Client Project ID: **102519-013 FAI Burn Pit**
Lab Sample ID: 1209409003
Lab Project ID: 1209409

Collection Date: 06/26/20 15:10
Received Date: 06/30/20 08:20
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS20059
Analytical Method: SW8260D
Analyst: NRB
Analytical Date/Time: 07/01/20 19:50
Container ID: 1209409003-C

Prep Batch: VXX35877
Prep Method: SW5030B
Prep Date/Time: 07/01/20 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of EB-1902-15

Client Sample ID: **EB-1902-15**
 Client Project ID: **102519-013 FAI Burn Pit**
 Lab Sample ID: 1209409004
 Lab Project ID: 1209409

Collection Date: 06/26/20 15:30
 Received Date: 06/30/20 08:20
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.471 J	0.556	0.167	mg/L	1		07/09/20 06:00
Surrogates							
5a Androstane (surr)	92.7	50-150		%	1		07/09/20 06:00

Batch Information

Analytical Batch: XFC15644
 Analytical Method: AK102
 Analyst: CDM
 Analytical Date/Time: 07/09/20 06:00
 Container ID: 1209409004-A

Prep Batch: XXX43392
 Prep Method: SW3520C
 Prep Date/Time: 07/02/20 16:30
 Prep Initial Wt./Vol.: 270 mL
 Prep Extract Vol: 1 mL



Results of EB-1902-15

Client Sample ID: EB-1902-15
Client Project ID: 102519-013 FAI Burn Pit
Lab Sample ID: 1209409004
Lab Project ID: 1209409

Collection Date: 06/26/20 15:30
Received Date: 06/30/20 08:20
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Print Date: 07/22/2020 10:47:29AM

J flagging is activated



Results of **EB-1902-15**

Client Sample ID: **EB-1902-15**
Client Project ID: **102519-013 FAI Burn Pit**
Lab Sample ID: 1209409004
Lab Project ID: 1209409

Collection Date: 06/26/20 15:30
Received Date: 06/30/20 08:20
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroform	0.500 U	1.00	0.310	ug/L	1		07/01/20 20:05
Chloromethane	0.500 U	1.00	0.310	ug/L	1		07/01/20 20:05
cis-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		07/01/20 20:05
cis-1,3-Dichloropropene	0.250 U	0.500	0.150	ug/L	1		07/01/20 20:05
Dibromochloromethane	0.250 U	0.500	0.150	ug/L	1		07/01/20 20:05
Dibromomethane	0.500 U	1.00	0.310	ug/L	1		07/01/20 20:05
Dichlorodifluoromethane	0.500 U	1.00	0.310	ug/L	1		07/01/20 20:05
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		07/01/20 20:05
Freon-113	5.00 U	10.0	3.10	ug/L	1		07/01/20 20:05
Hexachlorobutadiene	0.500 U	1.00	0.310	ug/L	1		07/01/20 20:05
Isopropylbenzene (Cumene)	0.500 U	1.00	0.310	ug/L	1		07/01/20 20:05
Methylene chloride	5.00 U	10.0	3.10	ug/L	1		07/01/20 20:05
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		07/01/20 20:05
Naphthalene	0.500 U	1.00	0.310	ug/L	1		07/01/20 20:05
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		07/01/20 20:05
n-Propylbenzene	0.500 U	1.00	0.310	ug/L	1		07/01/20 20:05
o-Xylene	0.500 U	1.00	0.310	ug/L	1		07/01/20 20:05
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		07/01/20 20:05
sec-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		07/01/20 20:05
Styrene	0.500 U	1.00	0.310	ug/L	1		07/01/20 20:05
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		07/01/20 20:05
Tetrachloroethene	0.500 U	1.00	0.310	ug/L	1		07/01/20 20:05
Toluene	0.500 U	1.00	0.310	ug/L	1		07/01/20 20:05
trans-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		07/01/20 20:05
trans-1,3-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		07/01/20 20:05
Trichloroethene	0.500 U	1.00	0.310	ug/L	1		07/01/20 20:05
Trichlorofluoromethane	0.500 U	1.00	0.310	ug/L	1		07/01/20 20:05
Vinyl acetate	5.00 U	10.0	3.10	ug/L	1		07/01/20 20:05
Vinyl chloride	0.0750 U	0.150	0.0500	ug/L	1		07/01/20 20:05
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		07/01/20 20:05
Surrogates							
1,2-Dichloroethane-D4 (surr)	105	81-118		%	1		07/01/20 20:05
4-Bromofluorobenzene (surr)	107	85-114		%	1		07/01/20 20:05
Toluene-d8 (surr)	98.8	89-112		%	1		07/01/20 20:05

Results of EB-1902-15

Client Sample ID: **EB-1902-15**
Client Project ID: **102519-013 FAI Burn Pit**
Lab Sample ID: 1209409004
Lab Project ID: 1209409

Collection Date: 06/26/20 15:30
Received Date: 06/30/20 08:20
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS20059
Analytical Method: SW8260D
Analyst: NRB
Analytical Date/Time: 07/01/20 20:05
Container ID: 1209409004-C

Prep Batch: VXX35877
Prep Method: SW5030B
Prep Date/Time: 07/01/20 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of Trip Blank

Client Sample ID: **Trip Blank**
 Client Project ID: **102519-013 FAI Burn Pit**
 Lab Sample ID: 1209409005
 Lab Project ID: 1209409

Collection Date: 06/25/20 15:02
 Received Date: 06/30/20 08:20
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,1,1,2-Tetrachloroethane	0.250 U	0.500	0.150	ug/L	1		07/01/20 18:48
1,1,1-Trichloroethane	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
1,1,2,2-Tetrachloroethane	0.250 U	0.500	0.150	ug/L	1		07/01/20 18:48
1,1,2-Trichloroethane	0.200 U	0.400	0.120	ug/L	1		07/01/20 18:48
1,1-Dichloroethane	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
1,1-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
1,1-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
1,2,3-Trichlorobenzene	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
1,2,3-Trichloropropane	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
1,2,4-Trichlorobenzene	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
1,2,4-Trimethylbenzene	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
1,2-Dibromo-3-chloropropane	5.00 U	10.0	3.10	ug/L	1		07/01/20 18:48
1,2-Dibromoethane	0.0375 U	0.0750	0.0180	ug/L	1		07/01/20 18:48
1,2-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
1,2-Dichloroethane	0.250 U	0.500	0.150	ug/L	1		07/01/20 18:48
1,2-Dichloropropane	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
1,3,5-Trimethylbenzene	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
1,3-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
1,3-Dichloropropane	0.250 U	0.500	0.150	ug/L	1		07/01/20 18:48
1,4-Dichlorobenzene	0.250 U	0.500	0.150	ug/L	1		07/01/20 18:48
2,2-Dichloropropane	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
2-Butanone (MEK)	5.00 U	10.0	3.10	ug/L	1		07/01/20 18:48
2-Chlorotoluene	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
2-Hexanone	5.00 U	10.0	3.10	ug/L	1		07/01/20 18:48
4-Chlorotoluene	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
4-Isopropyltoluene	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
4-Methyl-2-pentanone (MIBK)	5.00 U	10.0	3.10	ug/L	1		07/01/20 18:48
Benzene	0.200 U	0.400	0.120	ug/L	1		07/01/20 18:48
Bromobenzene	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
Bromochloromethane	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
Bromodichloromethane	0.250 U	0.500	0.150	ug/L	1		07/01/20 18:48
Bromoform	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
Bromomethane	2.50 U	5.00	2.00	ug/L	1		07/01/20 18:48
Carbon disulfide	5.00 U	10.0	3.10	ug/L	1		07/01/20 18:48
Carbon tetrachloride	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
Chlorobenzene	0.250 U	0.500	0.150	ug/L	1		07/01/20 18:48
Chloroethane	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48

Print Date: 07/22/2020 10:47:29AM

J flagging is activated



Results of Trip Blank

Client Sample ID: **Trip Blank**
 Client Project ID: **102519-013 FAI Burn Pit**
 Lab Sample ID: 1209409005
 Lab Project ID: 1209409

Collection Date: 06/25/20 15:02
 Received Date: 06/30/20 08:20
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroform	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
Chloromethane	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
cis-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
cis-1,3-Dichloropropene	0.250 U	0.500	0.150	ug/L	1		07/01/20 18:48
Dibromochloromethane	0.250 U	0.500	0.150	ug/L	1		07/01/20 18:48
Dibromomethane	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
Dichlorodifluoromethane	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
Freon-113	5.00 U	10.0	3.10	ug/L	1		07/01/20 18:48
Hexachlorobutadiene	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
Isopropylbenzene (Cumene)	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
Methylene chloride	5.00 U	10.0	3.10	ug/L	1		07/01/20 18:48
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		07/01/20 18:48
Naphthalene	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
n-Propylbenzene	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
o-Xylene	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		07/01/20 18:48
sec-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
Styrene	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
Tetrachloroethene	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
Toluene	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
trans-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
trans-1,3-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
Trichloroethene	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
Trichlorofluoromethane	0.500 U	1.00	0.310	ug/L	1		07/01/20 18:48
Vinyl acetate	5.00 U	10.0	3.10	ug/L	1		07/01/20 18:48
Vinyl chloride	0.0750 U	0.150	0.0500	ug/L	1		07/01/20 18:48
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		07/01/20 18:48
Surrogates							
1,2-Dichloroethane-D4 (surr)	103	81-118		%	1		07/01/20 18:48
4-Bromofluorobenzene (surr)	104	85-114		%	1		07/01/20 18:48
Toluene-d8 (surr)	99.6	89-112		%	1		07/01/20 18:48

Results of Trip Blank

Client Sample ID: **Trip Blank**
Client Project ID: **102519-013 FAI Burn Pit**
Lab Sample ID: 1209409005
Lab Project ID: 1209409

Collection Date: 06/25/20 15:02
Received Date: 06/30/20 08:20
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS20059
Analytical Method: SW8260D
Analyst: NRB
Analytical Date/Time: 07/01/20 18:48
Container ID: 1209409005-A

Prep Batch: VXX35877
Prep Method: SW5030B
Prep Date/Time: 07/01/20 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Method Blank

Blank ID: MB for HBN 1808403 [VXX/35877]
Blank Lab ID: 1567023

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1209409001, 1209409002, 1209409003, 1209409004, 1209409005

Results by SW8260D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,1,1,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,1-Trichloroethane	0.500U	1.00	0.310	ug/L
1,1,2,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,2-Trichloroethane	0.200U	0.400	0.120	ug/L
1,1-Dichloroethane	0.500U	1.00	0.310	ug/L
1,1-Dichloroethene	0.500U	1.00	0.310	ug/L
1,1-Dichloropropene	0.500U	1.00	0.310	ug/L
1,2,3-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,3-Trichloropropane	0.500U	1.00	0.310	ug/L
1,2,4-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,2-Dibromo-3-chloropropane	5.00U	10.0	3.10	ug/L
1,2-Dibromoethane	0.0375U	0.0750	0.0180	ug/L
1,2-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,2-Dichloroethane	0.250U	0.500	0.150	ug/L
1,2-Dichloropropane	0.500U	1.00	0.310	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,3-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,3-Dichloropropane	0.250U	0.500	0.150	ug/L
1,4-Dichlorobenzene	0.250U	0.500	0.150	ug/L
2,2-Dichloropropane	0.500U	1.00	0.310	ug/L
2-Butanone (MEK)	5.00U	10.0	3.10	ug/L
2-Chlorotoluene	0.500U	1.00	0.310	ug/L
2-Hexanone	5.00U	10.0	3.10	ug/L
4-Chlorotoluene	0.500U	1.00	0.310	ug/L
4-Isopropyltoluene	0.500U	1.00	0.310	ug/L
4-Methyl-2-pentanone (MIBK)	5.00U	10.0	3.10	ug/L
Benzene	0.200U	0.400	0.120	ug/L
Bromobenzene	0.500U	1.00	0.310	ug/L
Bromochloromethane	0.500U	1.00	0.310	ug/L
Bromodichloromethane	0.250U	0.500	0.150	ug/L
Bromoform	0.500U	1.00	0.310	ug/L
Bromomethane	2.50U	5.00	2.00	ug/L
Carbon disulfide	5.00U	10.0	3.10	ug/L
Carbon tetrachloride	0.500U	1.00	0.310	ug/L
Chlorobenzene	0.250U	0.500	0.150	ug/L
Chloroethane	0.500U	1.00	0.310	ug/L
Chloroform	0.500U	1.00	0.310	ug/L

Print Date: 07/22/2020 10:47:31AM

Method Blank

Blank ID: MB for HBN 1808403 [VXX/35877]
 Blank Lab ID: 1567023

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1209409001, 1209409002, 1209409003, 1209409004, 1209409005

Results by SW8260D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Chloromethane	0.500U	1.00	0.310	ug/L
cis-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
cis-1,3-Dichloropropene	0.250U	0.500	0.150	ug/L
Dibromochloromethane	0.250U	0.500	0.150	ug/L
Dibromomethane	0.500U	1.00	0.310	ug/L
Dichlorodifluoromethane	0.500U	1.00	0.310	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
Freon-113	5.00U	10.0	3.10	ug/L
Hexachlorobutadiene	0.500U	1.00	0.310	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	ug/L
Methylene chloride	5.00U	10.0	3.10	ug/L
Methyl-t-butyl ether	5.00U	10.0	3.10	ug/L
Naphthalene	0.500U	1.00	0.310	ug/L
n-Butylbenzene	0.500U	1.00	0.310	ug/L
n-Propylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
sec-Butylbenzene	0.500U	1.00	0.310	ug/L
Styrene	0.500U	1.00	0.310	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	ug/L
Tetrachloroethene	0.500U	1.00	0.310	ug/L
Toluene	0.500U	1.00	0.310	ug/L
trans-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
trans-1,3-Dichloropropene	0.500U	1.00	0.310	ug/L
Trichloroethene	0.500U	1.00	0.310	ug/L
Trichlorofluoromethane	0.500U	1.00	0.310	ug/L
Vinyl acetate	5.00U	10.0	3.10	ug/L
Vinyl chloride	0.0750U	0.150	0.0500	ug/L
Xylenes (total)	1.50U	3.00	1.00	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	105	81-118		%
4-Bromofluorobenzene (surr)	105	85-114		%
Toluene-d8 (surr)	98.8	89-112		%



Method Blank

Blank ID: MB for HBN 1808403 [VXX/35877]
Blank Lab ID: 1567023

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1209409001, 1209409002, 1209409003, 1209409004, 1209409005

Results by SW8260D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
------------------	----------------	---------------	-----------	--------------

Batch Information

Analytical Batch: VMS20059
Analytical Method: SW8260D
Instrument: Agilent 7890-75MS
Analyst: NRB
Analytical Date/Time: 7/1/2020 2:18:00PM

Prep Batch: VXX35877
Prep Method: SW5030B
Prep Date/Time: 7/1/2020 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 07/22/2020 10:47:31AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1209409 [VXX35877]
 Blank Spike Lab ID: 1567024
 Date Analyzed: 07/01/2020 14:33

Spike Duplicate ID: LCSD for HBN 1209409 [VXX35877]
 Spike Duplicate Lab ID: 1567025
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1209409001, 1209409002, 1209409003, 1209409004, 1209409005

Results by SW8260D

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1,1,2-Tetrachloroethane	30	30.5	102	30	30.9	103	(78-124)	1.20	(< 20)
1,1,1-Trichloroethane	30	29.8	99	30	30.5	102	(74-131)	2.20	(< 20)
1,1,2,2-Tetrachloroethane	30	29.3	98	30	29.7	99	(71-121)	1.40	(< 20)
1,1,2-Trichloroethane	30	30.2	101	30	30.5	102	(80-119)	1.10	(< 20)
1,1-Dichloroethane	30	29.1	97	30	29.2	98	(77-125)	0.59	(< 20)
1,1-Dichloroethene	30	28.1	94	30	28.7	96	(71-131)	2.00	(< 20)
1,1-Dichloropropene	30	29.6	99	30	29.7	99	(79-125)	0.46	(< 20)
1,2,3-Trichlorobenzene	30	29.4	98	30	30.7	102	(69-129)	4.30	(< 20)
1,2,3-Trichloropropane	30	28.6	95	30	28.9	96	(73-122)	1.10	(< 20)
1,2,4-Trichlorobenzene	30	30.6	102	30	31.0	103	(69-130)	1.40	(< 20)
1,2,4-Trimethylbenzene	30	29.5	98	30	29.5	98	(79-124)	0.11	(< 20)
1,2-Dibromo-3-chloropropane	30	28.0	93	30	28.7	96	(62-128)	2.50	(< 20)
1,2-Dibromoethane	30	30.7	102	30	31.0	103	(77-121)	1.10	(< 20)
1,2-Dichlorobenzene	30	29.3	98	30	29.6	99	(80-119)	0.91	(< 20)
1,2-Dichloroethane	30	28.5	95	30	28.9	96	(73-128)	1.50	(< 20)
1,2-Dichloropropane	30	29.9	100	30	29.8	99	(78-122)	0.34	(< 20)
1,3,5-Trimethylbenzene	30	29.3	98	30	29.7	99	(75-124)	1.20	(< 20)
1,3-Dichlorobenzene	30	30.0	100	30	29.9	100	(80-119)	0.41	(< 20)
1,3-Dichloropropane	30	30.0	100	30	30.0	100	(80-119)	0.09	(< 20)
1,4-Dichlorobenzene	30	30.5	102	30	30.4	101	(79-118)	0.48	(< 20)
2,2-Dichloropropane	30	32.0	107	30	32.7	109	(60-139)	2.10	(< 20)
2-Butanone (MEK)	90	83.8	93	90	84.6	94	(56-143)	0.97	(< 20)
2-Chlorotoluene	30	29.2	97	30	29.5	98	(79-122)	1.20	(< 20)
2-Hexanone	90	87.6	97	90	87.7	98	(57-139)	0.13	(< 20)
4-Chlorotoluene	30	29.2	97	30	29.5	98	(78-122)	0.87	(< 20)
4-Isopropyltoluene	30	30.0	100	30	30.2	101	(77-127)	0.55	(< 20)
4-Methyl-2-pentanone (MIBK)	90	84.7	94	90	85.6	95	(67-130)	1.10	(< 20)
Benzene	30	29.4	98	30	29.4	98	(79-120)	0.16	(< 20)
Bromobenzene	30	30.3	101	30	30.4	101	(80-120)	0.46	(< 20)
Bromochloromethane	30	28.6	95	30	29.3	98	(78-123)	2.40	(< 20)
Bromodichloromethane	30	29.9	100	30	30.2	101	(79-125)	0.85	(< 20)
Bromoform	30	30.3	101	30	30.8	103	(66-130)	1.50	(< 20)
Bromomethane	30	34.0	113	30	36.5	122	(53-141)	7.00	(< 20)
Carbon disulfide	45	41.9	93	45	42.4	94	(64-133)	1.30	(< 20)

Print Date: 07/22/2020 10:47:33AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1209409 [VXX35877]
 Blank Spike Lab ID: 1567024
 Date Analyzed: 07/01/2020 14:33

Spike Duplicate ID: LCSD for HBN 1209409 [VXX35877]
 Spike Duplicate Lab ID: 1567025
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1209409001, 1209409002, 1209409003, 1209409004, 1209409005

Results by SW8260D

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Carbon tetrachloride	30	29.5	98	30	30.3	101	(72-136)	2.50	(< 20)
Chlorobenzene	30	28.4	95	30	28.6	95	(82-118)	0.65	(< 20)
Chloroethane	30	24.8	83	30	29.8	99	(60-138)	18.30	(< 20)
Chloroform	30	28.6	95	30	29.2	97	(79-124)	1.90	(< 20)
Chloromethane	30	33.3	111	30	33.6	112	(50-139)	0.85	(< 20)
cis-1,2-Dichloroethene	30	28.7	96	30	29.4	98	(78-123)	2.30	(< 20)
cis-1,3-Dichloropropene	30	30.7	102	30	31.1	104	(75-124)	1.40	(< 20)
Dibromochloromethane	30	30.5	102	30	30.7	102	(74-126)	0.68	(< 20)
Dibromomethane	30	29.4	98	30	29.9	100	(79-123)	1.80	(< 20)
Dichlorodifluoromethane	30	31.4	105	30	31.3	104	(32-152)	0.25	(< 20)
Ethylbenzene	30	29.2	97	30	29.4	98	(79-121)	0.94	(< 20)
Freon-113	45	42.1	94	45	42.9	95	(70-136)	1.90	(< 20)
Hexachlorobutadiene	30	30.8	103	30	30.9	103	(66-134)	0.20	(< 20)
Isopropylbenzene (Cumene)	30	29.7	99	30	29.8	99	(72-131)	0.33	(< 20)
Methylene chloride	30	28.8	96	30	29.7	99	(74-124)	2.80	(< 20)
Methyl-t-butyl ether	45	43.7	97	45	44.7	99	(71-124)	2.10	(< 20)
Naphthalene	30	24.9	83	30	25.9	86	(61-128)	4.10	(< 20)
n-Butylbenzene	30	29.6	99	30	30.5	102	(75-128)	2.90	(< 20)
n-Propylbenzene	30	30.0	100	30	30.0	100	(76-126)	0.09	(< 20)
o-Xylene	30	29.0	97	30	29.2	97	(78-122)	0.61	(< 20)
P & M -Xylene	60	57.9	97	60	58.6	98	(80-121)	1.20	(< 20)
sec-Butylbenzene	30	29.8	100	30	30.2	101	(77-126)	1.10	(< 20)
Styrene	30	28.8	96	30	30.0	100	(78-123)	3.90	(< 20)
tert-Butylbenzene	30	29.3	98	30	29.9	100	(78-124)	2.00	(< 20)
Tetrachloroethene	30	30.3	101	30	30.3	101	(74-129)	0.06	(< 20)
Toluene	30	28.5	95	30	28.6	95	(80-121)	0.37	(< 20)
trans-1,2-Dichloroethene	30	28.3	94	30	28.9	96	(75-124)	2.10	(< 20)
trans-1,3-Dichloropropene	30	32.4	108	30	32.5	108	(73-127)	0.27	(< 20)
Trichloroethene	30	29.6	99	30	29.9	100	(79-123)	1.20	(< 20)
Trichlorofluoromethane	30	30.7	102	30	32.6	109	(65-141)	6.10	(< 20)
Vinyl acetate	30	37.2	124	30	38.1	127	(54-146)	2.40	(< 20)
Vinyl chloride	30	32.4	108	30	32.2	107	(58-137)	0.79	(< 20)
Xylenes (total)	90	86.9	97	90	87.7	98	(79-121)	0.98	(< 20)

Print Date: 07/22/2020 10:47:33AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1209409 [VXX35877]
 Blank Spike Lab ID: 1567024
 Date Analyzed: 07/01/2020 14:33

Spike Duplicate ID: LCSD for HBN 1209409 [VXX35877]
 Spike Duplicate Lab ID: 1567025
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1209409001, 1209409002, 1209409003, 1209409004, 1209409005

Results by SW8260D

Parameter	Blank Spike (%)			Spike Duplicate (%)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Surrogates									
1,2-Dichloroethane-D4 (surr)	30	101	101	30	101	101	(81-118)	0.35	
4-Bromofluorobenzene (surr)	30	98.9	99	30	97.7	98	(85-114)	1.20	
Toluene-d8 (surr)	30	99.4	99	30	100	100	(89-112)	0.79	

Batch Information

Analytical Batch: **VMS20059**
 Analytical Method: **SW8260D**
 Instrument: **Agilent 7890-75MS**
 Analyst: **NRB**

Prep Batch: **VXX35877**
 Prep Method: **SW5030B**
 Prep Date/Time: **07/01/2020 06:00**
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1808427 [XXX/43392]
Blank Lab ID: 1567099

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1209409001, 1209409002, 1209409003, 1209409004

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	0.442J	0.600	0.180	mg/L
Surrogates				
5a Androstane (surr)	99.2	60-120		%

Batch Information

Analytical Batch: XFC15644
Analytical Method: AK102
Instrument: Agilent 7890B F
Analyst: CDM
Analytical Date/Time: 7/9/2020 2:51:01AM

Prep Batch: XXX43392
Prep Method: SW3520C
Prep Date/Time: 7/2/2020 4:30:52PM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 07/22/2020 10:47:35AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1209409 [XXX43392]
 Blank Spike Lab ID: 1567100
 Date Analyzed: 07/09/2020 03:01

Spike Duplicate ID: LCSD for HBN 1209409 [XXX43392]
 Spike Duplicate Lab ID: 1567101
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1209409001, 1209409002, 1209409003, 1209409004

Results by AK102

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	20	19.4	97	20	19.2	96	(75-125)	1.00	(< 20)

Surrogates

5a Androstane (surr)	0.4	101	101	0.4	103	103	(60-120)	1.50	
----------------------	-----	-----	-----	-----	-----	-----	------------	------	--

Batch Information

Analytical Batch: **XFC15644**
 Analytical Method: **AK102**
 Instrument: **Agilent 7890B F**
 Analyst: **CDM**

Prep Batch: **XXX43392**
 Prep Method: **SW3520C**
 Prep Date/Time: **07/02/2020 16:30**
 Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

1209409



Laboratory SGS Page 1 of 1
Attn: _____

CHAIN-OF-CUSTODY



2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600
www.shannonwilson.com

Analytical Methods (include preservative if used)

Profile: 350732

Quote No: _____

J-Flags: Yes No

Turn Around Time: _____

Normal Rush

Please Specify _____

Sample Identity	Lab No.	Time	Date Sampled	Total Number of Containers		Remarks/Matrix Composition/Grab? Sample Containers
				DRG (HCL)	VOCs (B260)	
MW-1901-15	(1AE)	1502	6/25/20	X	5	Groundwater
MW-1902-15	(2AE)	1520	6/26/20	X	5	Groundwater
MW-2002-15	(3AE)	1510	6/26/20	X	5	Groundwater
EB-1902-15	(4AE) (SAC)	1530	6/26/20	X	5	Groundwater

Project Information	Sample Receipt	Relinquished By:		
		1.	2.	3.
Number: 102519-0013	Total No. of Containers: 1/1A	Signature: _____	Signature: _____	Signature: _____
Name: FAT Bdr, P+T	COC Seals/Intact? Y/N/NA	Time: 12:41	Time: 15:00	Time: 08:20
Contact: MDN	Received Good Cond./Cold	Date: 6/24/20	Date: 6/25/20	Date: 6/30/20
Ongoing Project? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Temp: 3 C	Printed Name: A Masters	Printed Name: Cassie KURS	Printed Name: Michelle Alvarado
Sampler: CAB/ARM	Delivery Method: HAND	Company: Shannon Wilson, Inc.	Company: SGS	Company: SGS
Notes:		Received By: 1. _____ 2. _____ 3. _____		

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
 Yellow - w/shipment - for consignee files
 Pink - Shannon & Wilson - job file

No. 36255



e-Sample Receipt Form

SGS Workorder #:

1209409



1 2 0 9 4 0 9

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements		
Were Custody Seals intact? Note # & location	Yes	1F, 1B
COC accompanied samples?	Yes	
DOD: Were samples received in COC corresponding coolers?	N/A	
N/A **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	Yes	Cooler ID: 1 @ 0.8 °C Therm. ID: D44
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
*If >6°C, were samples collected <8 hours ago?	N/A	
If <0°C, were sample containers ice free?	N/A	
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Holding Time / Documentation / Sample Condition Requirements		
Note: Refer to form F-083 "Sample Guide" for specific holding times.		
Were samples received within holding time?	Yes	
Do samples match COC** (i.e., sample IDs, dates/times collected)?	No	sample 4 was mislabeled on COC. Proceeded with name on container.
**Note: If times differ <1hr, record details & login per COC.		
***Note: If sample information on containers differs from COC, SGS will default to COC information		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)	Yes	
N/A ***Exemption permitted for metals (e.g.200.8/6020A).		
Were proper containers (type/mass/volume/preservative***)used?	Yes	
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	Yes	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	Yes	
Were all soil VOAs field extracted with MeOH+BFB?	N/A	
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		



e-Sample Receipt Form FBK

SGS Workorder #:

1209409

1209409

Review Criteria		Condition (Yes, No, N/A)	Exceptions Noted below	
Chain of Custody / Temperature Requirements			Yes	Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location		N/A		
COC accompanied samples?		Yes		
DOD: Were samples received in COC corresponding coolers?		N/A		
<input type="checkbox"/> **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required				
Temperature blank compliant* (i.e., 0-6 °C after CF)?		Yes	Cooler ID: 1 @ 3.0 °C	Therm. ID: D21
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.			Cooler ID: @	°C Therm. ID:
			Cooler ID: @	°C Therm. ID:
			Cooler ID: @	°C Therm. ID:
			Cooler ID: @	°C Therm. ID:
*If >6°C, were samples collected <8 hours ago?				
If <0°C, were sample containers ice free?				
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.				
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.		
Do samples match COC** (i.e., sample IDs, dates/times collected)?		N/C		
Note: If times differ <1hr, record details & login per COC. *Note: If sample information on containers differs from COC, SGS will default to COC information				
Were samples in good condition (no leaks/cracks/breakage)?		Yes		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals))		Yes		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?		Yes		
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?		N/C		
Were all soil VOAs field extracted with MeOH+BFB?		N/A		
For Rush/Short Hold Time, was RUSH/Short HT email sent?		N/A		
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.				
Additional notes (if applicable):				
SGS Profile #	350732		350732	



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1209409001-A	HCL to pH < 2	OK			
1209409001-B	HCL to pH < 2	OK			
1209409001-C	HCL to pH < 2	OK			
1209409001-D	HCL to pH < 2	OK			
1209409001-E	HCL to pH < 2	OK			
1209409002-A	HCL to pH < 2	OK			
1209409002-B	HCL to pH < 2	OK			
1209409002-C	HCL to pH < 2	OK			
1209409002-D	HCL to pH < 2	OK			
1209409002-E	HCL to pH < 2	OK			
1209409003-A	HCL to pH < 2	OK			
1209409003-B	HCL to pH < 2	OK			
1209409003-C	HCL to pH < 2	OK			
1209409003-D	HCL to pH < 2	OK			
1209409003-E	HCL to pH < 2	OK			
1209409004-A	HCL to pH < 2	OK			
1209409004-B	HCL to pH < 2	OK			
1209409004-C	HCL to pH < 2	OK			
1209409004-D	HCL to pH < 2	OK			
1209409004-E	HCL to pH < 2	OK			
1209409005-A	HCL to pH < 2	OK			
1209409005-B	HCL to pH < 2	OK			
1209409005-C	HCL to pH < 2	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.

Laboratory Data Review Checklist

Completed By:

Marcy Nadel

Title:

Geologist

Date:

July 31, 2020

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

SGS North America, Inc.

Laboratory Report Number:

1209409 Rev1

Laboratory Report Date:

July 22, 2020

CS Site Name:

FAI Statewide PFAS

ADEC File Number:

100.38.277

Hazard Identification Number:

26816

Laboratory Report Date:

July 22, 2020

CS Site Name:

FAI Statewide PFAS

Note: Any N/A or No box checked must have an explanation in the comments box.

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes No N/A Comments:

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes No N/A Comments:

Analyses were performed by SGS North America, Inc. in Anchorage, Alaska.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes No N/A Comments:

b. Correct analyses requested?

Yes No N/A Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes No N/A Comments:

The temperature blank was measured within the acceptable temperature range of 0 °C to 6 °C upon arrival at the laboratory.

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes No N/A Comments:

Laboratory Report Date:

July 22, 2020

CS Site Name:

FAI Statewide PFAS

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes No N/A Comments:

The laboratory notes the samples were received in acceptable condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes No N/A Comments:

The laboratory notes that sample 004, *EB-1902-15*, was mislabeled on the COC. However, the sample name on the COC appears to be correct and matches the laboratory report. Sample results are not affected by this anomaly.

e. Data quality or usability affected?

Comments:

Data quality and/or usability are not affected; see above.

4. Case Narrative

a. Present and understandable?

Yes No N/A Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

Yes No N/A Comments:

The case narrative does not list any discrepancies, errors, or QC failures.

c. Were all corrective actions documented?

Yes No N/A Comments:

No corrective actions were documented in the case narrative or necessary.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The case narrative does not note an effect on data quality.

Laboratory Report Date:

July 22, 2020

CS Site Name:

FAI Statewide PFAS

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes No N/A Comments:

b. All applicable holding times met?

Yes No N/A Comments:

c. All soils reported on a dry weight basis?

Yes No N/A Comments:

This work order does not include soil samples.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes No N/A Comments:

The limit of detection (LOD) for analytes with non-detect results were compared to the respective ADEC Groundwater Cleanup Level. The LODs were below the ADEC Groundwater Cleanup Levels, with the following exception.

The VOC analyte 1,2,3-trichloropropane had LODs greater than the ADEC Groundwater Cleanup Level. The results for this analyte are identified (**bolded**) in the analytical tables.

e. Data quality or usability affected?

We cannot assess if the analytes noted in Section 5.d. are present in the samples at a concentration greater than the project limits.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

Laboratory Report Date:

July 22, 2020

CS Site Name:

FAI Statewide PFAS

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes No N/A Comments:

The VOC and DRO method blank results were below the LOQ; however, DRO was detected at an estimated concentration below the LOQ in method blank 1567099.

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

The project samples were associated with the same preparatory batch as the DRO method blank 1567099. The project samples *MW-1901-15*, *MW-1902-15*, *MW-2002-15*, and *EB -1902-15* had detections for DRO at a concentration less than five times the method blank result and are considered affected.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

The DRO results for project samples *MW-1901-15*, *MW-1902-15*, and *MW-2002-15* are considered not-detected and are flagged 'UB' at the LOQ in the analytical database. *EB -1902-15* is a field quality control sample, it is not flagged but is also considered affected.

v. Data quality or usability affected?

Comments:

Yes; see above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes No N/A Comments:

LCS/LCSD samples are reported for VOC analytes and DRO.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

Metals and/or inorganics were not analyzed as part of this work order.

Laboratory Report Date:

July 22, 2020

CS Site Name:

FAI Statewide PFAS

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

None; analytical accuracy and precision were demonstrated to be within acceptable limits.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability are not affected.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Note: Leave blank if not required for project

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

MS/MSD samples are not reported for this work order. Precision and accuracy are evaluated using the LCS/LCSD samples.

Laboratory Report Date:

July 22, 2020

CS Site Name:

FAI Statewide PFAS

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

Metals and/or inorganics were not analyzed as part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes No N/A Comments:

See above.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes No N/A Comments:

See above.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

See above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability are not affected.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes No N/A Comments:

Methods EPA8260 and AK102 use surrogate recovery to evaluate laboratory accuracy.

Laboratory Report Date:

July 22, 2020

CS Site Name:

FAI Statewide PFAS

- ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes No N/A Comments:

- iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

There were no surrogate recovery failures associated with this work order.

- iv. Data quality or usability affected?

Comments:

The data quality and/or usability are not affected.

e. Trip Blanks

- i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes No N/A Comments:

A VOC trip blank is reported in this work order.

- ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes No N/A Comments:

However, the project samples were transported in a single cooler.

- iii. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

VOCs were not detected in the trip blank sample.

- iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; VOCs were not detected in the trip blank.

Laboratory Report Date:

July 22, 2020

CS Site Name:

FAI Statewide PFAS

v. Data quality or usability affected?

Comments:

The data quality and/or usability are not affected.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No N/A

Comments:

ii. Submitted blind to lab?

Yes No N/A

Comments:

Field-duplicate pair *MW-1902-15* / *MW-2002-15* was submitted in this work order.

iii. Precision – All relative percent differences (RPD) less than specified project objectives?
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2) / 2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Yes No N/A

Comments:

The calculated RPD was within laboratory limits for DRO. The RPD could not be calculated for VOCs because these analytes were not detected.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The data quality and/or usability are not affected.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes No N/A

Comments:

Equipment blank sample *EB-1902-15* was submitted with this work order.

Laboratory Report Date:

July 22, 2020

CS Site Name:

FAI Statewide PFAS

i. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

However, DRO was detected at an estimated concentration below the LOQ in the equipment blank sample.

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

The equipment blank and project samples were affected by a DRO detection in the method blank. The equipment blank and project samples were qualified as non-detect due to the method blank detection. Further qualification is not required.

iii. Data quality or usability affected?

Comments:

No; see above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes No N/A Comments:

There were no additional flags/qualifiers required for this work order.



Laboratory Report of Analysis

To: Shannon & Wilson-Fairbanks
2355 Hill Rd
Fairbanks, AK 99707
(907)479-0600

Report Number: **1209670**

Client Project: **102519 FAI**

Dear Mary Nadel,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Jennifer at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Stephen C. Ede

2020.10.06

15:24:37 -08'00'

Jennifer Dawkins
Project Manager
Jennifer.Dawkins@sgs.com

Date

Case Narrative

SGS Client: **Shannon & Wilson-Fairbanks**

SGS Project: **1209670**

Project Name/Site: **102519 FAI**

Project Contact: **Mary Nadel**

Refer to sample receipt form for information on sample condition.

FTP-pre004 (1209670001) PS

Ethylene & Propylene Glycols 8015M were analyzed by Bio-Chem in Grand Rapids, MI.

8270D SIM - PAH surrogate recovery for 2-Methylnaphthalene d10 does not meet QC criteria. The sample was re-extracted past hold time. Surrogate recovery was not within QC criteria and results are comparable. The in-hold data is reported.

FTP-pre005 (1209670002) PS

8270D SIM - PAH surrogate recovery for 2-Methylnaphthalene d10 does not meet QC criteria. The sample was re-extracted past hold time. Surrogate recovery was not within QC criteria and results are comparable. The in-hold data is reported.

LCS for HBN 1812109 [XXX/43935 (1583279) LCS

AK102 - Surrogate recovery for 5a androstane does not meet QC criteria; however, the surrogate recoveries in the samples are within criteria.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 10/06/2020 2:14:59PM

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
TNTC	Too Numerous To Count
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
FTP-pre004	1209670001	09/17/2020	09/18/2020	Water (Surface, Eff., Ground)
FTP-pre005	1209670002	09/17/2020	09/18/2020	Water (Surface, Eff., Ground)
Trip blank	1209670003	09/17/2020	09/18/2020	Water (Surface, Eff., Ground)

<u>Method</u>	<u>Method Description</u>
8270D SIM LV (PAH)	8270 PAH SIM GC/MS LV
AK102	DRO/RRO Low Volume Water
AK103	DRO/RRO Low Volume Water
EP200.8	Metals in Water by 200.8 ICP-MS
SW8260D	Volatile Organic Compounds (W) FULL

Print Date: 10/06/2020 2:15:04PM

Detectable Results Summary

Client Sample ID: **FTP-pre004**

Lab Sample ID: 1209670001

Metals by ICP/MS

Polynuclear Aromatics GC/MS

Semivolatile Organic Fuels

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Arsenic	7.92	ug/L
Naphthalene	0.0698J	ug/L
Diesel Range Organics	19.3	mg/L
Residual Range Organics	8.57	mg/L
Benzene	0.284J	ug/L
o-Xylene	2.78	ug/L
P & M -Xylene	1.20J	ug/L

Client Sample ID: **FTP-pre005**

Lab Sample ID: 1209670002

Metals by ICP/MS

Semivolatile Organic Fuels

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Arsenic	7.75	ug/L
Diesel Range Organics	17.1	mg/L
Residual Range Organics	7.04	mg/L
o-Xylene	0.616J	ug/L

Print Date: 10/06/2020 2:15:06PM

Results of FTP-pre004

Client Sample ID: **FTP-pre004**
 Client Project ID: **102519 FAI**
 Lab Sample ID: 1209670001
 Lab Project ID: 1209670

Collection Date: 09/17/20 15:15
 Received Date: 09/18/20 08:54
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	7.92	5.00	1.50	ug/L	1		09/28/20 17:31

Batch Information

Analytical Batch: MMS10899
 Analytical Method: EP200.8
 Analyst: ACF
 Analytical Date/Time: 09/28/20 17:31
 Container ID: 1209670001-E

Prep Batch: MXX33669
 Prep Method: E200.2
 Prep Date/Time: 09/26/20 13:15
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL



Results of FTP-pre004

Client Sample ID: FTP-pre004
Client Project ID: 102519 FAI
Lab Sample ID: 1209670001
Lab Project ID: 1209670

Collection Date: 09/17/20 15:15
Received Date: 09/18/20 08:54
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with their respective results and quality indicators.

Batch Information

Analytical Batch: XMS12294
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 09/24/20 20:34
Container ID: 1209670001-C

Prep Batch: XXX43920
Prep Method: SW3535A
Prep Date/Time: 09/23/20 10:15
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL



Results of FTP-pre004

Client Sample ID: FTP-pre004
Client Project ID: 102519 FAI
Lab Sample ID: 1209670001
Lab Project ID: 1209670

Collection Date: 09/17/20 15:15
Received Date: 09/18/20 08:54
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane).

Batch Information

Analytical Batch: XFC15755
Analytical Method: AK102
Analyst: CDM
Analytical Date/Time: 09/30/20 18:45
Container ID: 1209670001-A
Prep Batch: XXX43935
Prep Method: SW3520C
Prep Date/Time: 09/24/20 14:56
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 5 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62).

Batch Information

Analytical Batch: XFC15755
Analytical Method: AK103
Analyst: CDM
Analytical Date/Time: 09/30/20 18:45
Container ID: 1209670001-A
Prep Batch: XXX43935
Prep Method: SW3520C
Prep Date/Time: 09/24/20 14:56
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 5 mL

Results of FTP-pre004

Client Sample ID: **FTP-pre004**
 Client Project ID: **102519 FAI**
 Lab Sample ID: 1209670001
 Lab Project ID: 1209670

Collection Date: 09/17/20 15:15
 Received Date: 09/18/20 08:54
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.284 J	0.400	0.120	ug/L	1		09/20/20 04:49
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/20/20 04:49
o-Xylene	2.78	1.00	0.310	ug/L	1		09/20/20 04:49
P & M -Xylene	1.20 J	2.00	0.620	ug/L	1		09/20/20 04:49
Toluene	0.500 U	1.00	0.310	ug/L	1		09/20/20 04:49
Surrogates							
1,2-Dichloroethane-D4 (surr)	101	81-118		%	1		09/20/20 04:49
4-Bromofluorobenzene (surr)	94.9	85-114		%	1		09/20/20 04:49
Toluene-d8 (surr)	99.4	89-112		%	1		09/20/20 04:49

Batch Information

Analytical Batch: VMS20333
 Analytical Method: SW8260D
 Analyst: NRB
 Analytical Date/Time: 09/20/20 04:49
 Container ID: 1209670001-F

Prep Batch: VXX36379
 Prep Method: SW5030B
 Prep Date/Time: 09/19/20 21:30
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of FTP-pre005

Client Sample ID: **FTP-pre005**
Client Project ID: **102519 FAI**
Lab Sample ID: 1209670002
Lab Project ID: 1209670

Collection Date: 09/17/20 15:05
Received Date: 09/18/20 08:54
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	7.75	5.00	1.50	ug/L	1		09/28/20 17:34

Batch Information

Analytical Batch: MMS10899
Analytical Method: EP200.8
Analyst: ACF
Analytical Date/Time: 09/28/20 17:34
Container ID: 1209670002-E

Prep Batch: MXX33669
Prep Method: E200.2
Prep Date/Time: 09/26/20 13:15
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL



Results of FTP-pre005

Client Sample ID: FTP-pre005
Client Project ID: 102519 FAI
Lab Sample ID: 1209670002
Lab Project ID: 1209670

Collection Date: 09/17/20 15:05
Received Date: 09/18/20 08:54
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with associated quality and detection data.

Batch Information

Analytical Batch: XMS12294
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 09/24/20 20:55
Container ID: 1209670002-C

Prep Batch: XXX43920
Prep Method: SW3535A
Prep Date/Time: 09/23/20 10:15
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Results of FTP-pre005

Client Sample ID: **FTP-pre005**
 Client Project ID: **102519 FAI**
 Lab Sample ID: 1209670002
 Lab Project ID: 1209670

Collection Date: 09/17/20 15:05
 Received Date: 09/18/20 08:54
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	17.1	2.94	0.882	mg/L	1		09/30/20 18:55

Surrogates

5a Androstane (surr)	83.6	50-150		%	1		09/30/20 18:55
----------------------	------	--------	--	---	---	--	----------------

Batch Information

Analytical Batch: XFC15755
 Analytical Method: AK102
 Analyst: CDM
 Analytical Date/Time: 09/30/20 18:55
 Container ID: 1209670002-A

Prep Batch: XXX43935
 Prep Method: SW3520C
 Prep Date/Time: 09/24/20 14:56
 Prep Initial Wt./Vol.: 255 mL
 Prep Extract Vol: 5 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	7.04	2.45	0.735	mg/L	1		09/30/20 18:55

Surrogates

n-Triacontane-d62 (surr)	89.3	50-150		%	1		09/30/20 18:55
--------------------------	------	--------	--	---	---	--	----------------

Batch Information

Analytical Batch: XFC15755
 Analytical Method: AK103
 Analyst: CDM
 Analytical Date/Time: 09/30/20 18:55
 Container ID: 1209670002-A

Prep Batch: XXX43935
 Prep Method: SW3520C
 Prep Date/Time: 09/24/20 14:56
 Prep Initial Wt./Vol.: 255 mL
 Prep Extract Vol: 5 mL

Results of FTP-pre005

Client Sample ID: **FTP-pre005**
 Client Project ID: **102519 FAI**
 Lab Sample ID: 1209670002
 Lab Project ID: 1209670

Collection Date: 09/17/20 15:05
 Received Date: 09/18/20 08:54
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		09/20/20 04:34
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/20/20 04:34
o-Xylene	0.616 J	1.00	0.310	ug/L	1		09/20/20 04:34
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		09/20/20 04:34
Toluene	0.500 U	1.00	0.310	ug/L	1		09/20/20 04:34
Surrogates							
1,2-Dichloroethane-D4 (surr)	101	81-118		%	1		09/20/20 04:34
4-Bromofluorobenzene (surr)	97	85-114		%	1		09/20/20 04:34
Toluene-d8 (surr)	99.5	89-112		%	1		09/20/20 04:34

Batch Information

Analytical Batch: VMS20333
 Analytical Method: SW8260D
 Analyst: NRB
 Analytical Date/Time: 09/20/20 04:34
 Container ID: 1209670002-F

Prep Batch: VXX36379
 Prep Method: SW5030B
 Prep Date/Time: 09/19/20 21:30
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Results of Trip blank

Client Sample ID: **Trip blank**
 Client Project ID: **102519 FAI**
 Lab Sample ID: 1209670003
 Lab Project ID: 1209670

Collection Date: 09/17/20 15:05
 Received Date: 09/18/20 08:54
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		09/20/20 00:11
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/20/20 00:11
o-Xylene	0.500 U	1.00	0.310	ug/L	1		09/20/20 00:11
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		09/20/20 00:11
Toluene	0.500 U	1.00	0.310	ug/L	1		09/20/20 00:11

Surrogates

1,2-Dichloroethane-D4 (surr)	106	81-118		%	1		09/20/20 00:11
4-Bromofluorobenzene (surr)	94.7	85-114		%	1		09/20/20 00:11
Toluene-d8 (surr)	98.7	89-112		%	1		09/20/20 00:11

Batch Information

Analytical Batch: VMS20333
 Analytical Method: SW8260D
 Analyst: NRB
 Analytical Date/Time: 09/20/20 00:11
 Container ID: 1209670003-A

Prep Batch: VXX36379
 Prep Method: SW5030B
 Prep Date/Time: 09/19/20 21:30
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1812190 [MXX/33669]

Blank Lab ID: 1583737

QC for Samples:

1209670001, 1209670002

Matrix: Water (Surface, Eff., Ground)

Results by EP200.8

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Arsenic	2.50U	5.00	1.50	ug/L

Batch Information

Analytical Batch: MMS10899

Analytical Method: EP200.8

Instrument: Perkin Elmer Nexlon P5

Analyst: ACF

Analytical Date/Time: 9/28/2020 4:40:08PM

Prep Batch: MXX33669

Prep Method: E200.2

Prep Date/Time: 9/26/2020 1:15:48PM

Prep Initial Wt./Vol.: 20 mL

Prep Extract Vol: 50 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1209670 [MXX33669]
Blank Spike Lab ID: 1583738
Date Analyzed: 09/28/2020 16:43

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1209670001, 1209670002

Results by EP200.8

Parameter	Blank Spike (ug/L)			CL
	Spike	Result	Rec (%)	
Arsenic	1000	1040	104	(85-115)

Batch Information

Analytical Batch: **MMS10899**
Analytical Method: **EP200.8**
Instrument: **Perkin Elmer Nexlon P5**
Analyst: **ACF**

Prep Batch: **MXX33669**
Prep Method: **E200.2**
Prep Date/Time: **09/26/2020 13:15**
Spike Init Wt./Vol.: 1000 ug/L Extract Vol: 50 mL
Dupe Init Wt./Vol.: Extract Vol:

Matrix Spike Summary

Original Sample ID: 1583740
 MS Sample ID: 1583741 MS
 MSD Sample ID:

Analysis Date: 09/28/2020 16:46
 Analysis Date: 09/28/2020 16:49
 Analysis Date:
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1209670001, 1209670002

Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Arsenic	1.69J	1000	1040	104				70-130		

Batch Information

Analytical Batch: MMS10899
 Analytical Method: EP200.8
 Instrument: Perkin Elmer Nexlon P5
 Analyst: ACF
 Analytical Date/Time: 9/28/2020 4:49:07PM

Prep Batch: MXX33669
 Prep Method: DW Digest for Metals on ICP-MS
 Prep Date/Time: 9/26/2020 1:15:48PM
 Prep Initial Wt./Vol.: 20.00mL
 Prep Extract Vol: 50.00mL

Method Blank

Blank ID: MB for HBN 1811933 [VXX/36379]
 Blank Lab ID: 1582288

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1209670001, 1209670002, 1209670003

Results by SW8260D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Benzene	0.200U	0.400	0.120	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
Toluene	0.500U	1.00	0.310	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	104	81-118		%
4-Bromofluorobenzene (surr)	97.4	85-114		%
Toluene-d8 (surr)	103	89-112		%

Batch Information

Analytical Batch: VMS20333
 Analytical Method: SW8260D
 Instrument: Agilent 7890-75MS
 Analyst: NRB
 Analytical Date/Time: 9/19/2020 9:45:00PM

Prep Batch: VXX36379
 Prep Method: SW5030B
 Prep Date/Time: 9/19/2020 9:30:00PM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1209670 [VXX36379]
 Blank Spike Lab ID: 1582289
 Date Analyzed: 09/19/2020 21:59

Spike Duplicate ID: LCSD for HBN 1209670 [VXX36379]
 Spike Duplicate Lab ID: 1582290
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1209670001, 1209670002, 1209670003

Results by SW8260D

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	30	29.4	98	30	29.2	97	(79-120)	0.95	(< 20)
Ethylbenzene	30	30.8	103	30	31.0	103	(79-121)	0.70	(< 20)
o-Xylene	30	31.8	106	30	31.9	106	(78-122)	0.33	(< 20)
P & M -Xylene	60	64.9	108	60	65.0	108	(80-121)	0.14	(< 20)
Toluene	30	28.5	95	30	31.8	106	(80-121)	11.00	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30	101	101	30	93.9	94	(81-118)	7.50	
4-Bromofluorobenzene (surr)	30	97	97	30	96.9	97	(85-114)	0.10	
Toluene-d8 (surr)	30	99.5	100	30	111	111	(89-112)	10.90	

Batch Information

Analytical Batch: VMS20333
 Analytical Method: SW8260D
 Instrument: Agilent 7890-75MS
 Analyst: NRB

Prep Batch: VXX36379
 Prep Method: SW5030B
 Prep Date/Time: 09/19/2020 21:30
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1812038 [XXX/43920]
 Blank Lab ID: 1582872

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1209670001, 1209670002

Results by 8270D SIM LV (PAH)

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Acenaphthene	0.0250U	0.0500	0.0150	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	ug/L
Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0100U	0.0200	0.00620	ug/L
Benzo[b]Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	ug/L
Chrysene	0.0250U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0100U	0.0200	0.00620	ug/L
Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Fluorene	0.0250U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	ug/L
Naphthalene	0.0500U	0.100	0.0310	ug/L
Phenanthrene	0.0250U	0.0500	0.0150	ug/L
Pyrene	0.0250U	0.0500	0.0150	ug/L
Surrogates				
2-Methylnaphthalene-d10 (surr)	60.4	37-78		%
Fluoranthene-d10 (surr)	73.5	24-116		%

Batch Information

Analytical Batch: XMS12294
 Analytical Method: 8270D SIM LV (PAH)
 Instrument: SVA Agilent 780/5975 GC/MS
 Analyst: DSD
 Analytical Date/Time: 9/24/2020 1:24:00PM

Prep Batch: XXX43920
 Prep Method: SW3535A
 Prep Date/Time: 9/23/2020 10:15:07AM
 Prep Initial Wt./Vol.: 250 mL
 Prep Extract Vol: 1 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1209670 [XXX43920]
 Blank Spike Lab ID: 1582873
 Date Analyzed: 09/24/2020 13:45

Spike Duplicate ID: LCSD for HBN 1209670
 [XXX43920]
 Spike Duplicate Lab ID: 1582874
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1209670001, 1209670002

Results by 8270D SIM LV (PAH)

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	2	1.40	70	2	1.42	71	(48-114)	1.70	(< 20)
Acenaphthylene	2	1.50	75	2	1.53	76	(35-121)	2.10	(< 20)
Anthracene	2	1.55	78	2	1.50	75	(53-119)	3.30	(< 20)
Benzo(a)Anthracene	2	1.55	77	2	1.46	73	(59-120)	5.30	(< 20)
Benzo[a]pyrene	2	1.82	91	2	1.74	87	(53-120)	4.40	(< 20)
Benzo[b]Fluoranthene	2	1.75	87	2	1.66	83	(53-126)	5.20	(< 20)
Benzo[g,h,i]perylene	2	1.84	92	2	1.78	89	(44-128)	3.70	(< 20)
Benzo[k]fluoranthene	2	1.73	87	2	1.65	83	(54-125)	4.50	(< 20)
Chrysene	2	1.64	82	2	1.58	79	(57-120)	3.90	(< 20)
Dibenzo[a,h]anthracene	2	1.93	96	2	1.86	93	(44-131)	3.40	(< 20)
Fluoranthene	2	1.55	78	2	1.48	74	(58-120)	5.10	(< 20)
Fluorene	2	1.53	77	2	1.52	76	(50-118)	0.62	(< 20)
Indeno[1,2,3-c,d] pyrene	2	2.04	102	2	1.95	97	(48-130)	4.70	(< 20)
Naphthalene	2	1.38	69	2	1.40	70	(43-114)	2.10	(< 20)
Phenanthrene	2	1.63	81	2	1.59	80	(53-115)	2.30	(< 20)
Pyrene	2	1.52	76	2	1.45	72	(53-121)	4.90	(< 20)
Surrogates									
2-Methylnaphthalene-d10 (surr)	2	60.8	61	2	62.5	63	(37-78)	2.70	
Fluoranthene-d10 (surr)	2	73.6	74	2	73.3	73	(24-116)	0.33	

Batch Information

Analytical Batch: XMS12294
 Analytical Method: 8270D SIM LV (PAH)
 Instrument: SVA Agilent 780/5975 GC/MS
 Analyst: DSD

Prep Batch: XXX43920
 Prep Method: SW3535A
 Prep Date/Time: 09/23/2020 10:15
 Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

Matrix Spike Summary

Original Sample ID: 1205053012
 MS Sample ID: 1582875 MS
 MSD Sample ID: 1582876 MSD

Analysis Date: 09/24/2020 16:08
 Analysis Date: 09/24/2020 16:28
 Analysis Date: 09/24/2020 16:49
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1209670001, 1209670002

Results by 8270D SIM LV (PAH)

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	0.0240U	1.92	1.28	66	1.92	1.38	72	48-114	7.50	(< 20)
Acenaphthylene	0.0240U	1.92	1.36	71	1.92	1.45	76	35-121	6.50	(< 20)
Anthracene	0.0240U	1.92	1.36	71	1.92	1.38	72	53-119	1.20	(< 20)
Benzo(a)Anthracene	0.0240U	1.92	1.37	71	1.92	1.31	68	59-120	4.80	(< 20)
Benzo[a]pyrene	0.00960U	1.92	1.51	79	1.92	1.47	77	53-120	2.50	(< 20)
Benzo[b]Fluoranthene	0.0240U	1.92	1.5	78	1.92	1.46	76	53-126	2.90	(< 20)
Benzo[g,h,i]perylene	0.0240U	1.92	1.38	72	1.92	1.35	70	44-128	2.50	(< 20)
Benzo[k]fluoranthene	0.0240U	1.92	1.42	74	1.92	1.35	71	54-125	5.00	(< 20)
Chrysene	0.0240U	1.92	1.47	76	1.92	1.39	72	57-120	5.50	(< 20)
Dibenzo[a,h]anthracene	0.00960U	1.92	1.47	77	1.92	1.44	75	44-131	2.60	(< 20)
Fluoranthene	0.0674	1.92	1.47	73	1.92	1.39	69	58-120	5.50	(< 20)
Fluorene	0.0240U	1.92	1.36	71	1.92	1.43	75	50-118	5.10	(< 20)
Indeno[1,2,3-c,d] pyrene	0.0240U	1.92	1.54	80	1.92	1.51	79	48-130	2.00	(< 20)
Naphthalene	0.0467J	1.92	1.39	70	1.92	1.45	73	43-114	3.90	(< 20)
Phenanthrene	0.0907	1.92	1.46	71	1.92	1.51	74	53-115	3.50	(< 20)
Pyrene	0.0897	1.92	1.45	71	1.92	1.39	68	53-121	4.40	(< 20)
Surrogates										
2-Methylnaphthalene-d10 (surr)		1.92	1.18	61	1.92	1.29	67	37-78	8.80	
Fluoranthene-d10 (surr)		1.92	1.38	72	1.92	1.34	70	24-116	3.20	

Batch Information

Analytical Batch: XMS12294
 Analytical Method: 8270D SIM LV (PAH)
 Instrument: SVA Agilent 780/5975 GC/MS
 Analyst: DSD
 Analytical Date/Time: 9/24/2020 4:28:00PM

Prep Batch: XXX43920
 Prep Method: 3535 Solid Phase Ext for 8270 PAH SIM LV
 Prep Date/Time: 9/23/2020 10:15:07AM
 Prep Initial Wt./Vol.: 260.00mL
 Prep Extract Vol: 1.00mL

Method Blank

Blank ID: MB for HBN 1812109 [XXX/43935]

Blank Lab ID: 1583278

QC for Samples:

1209670001, 1209670002

Matrix: Water (Surface, Eff., Ground)

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	0.300U	0.600	0.180	mg/L
Surrogates				
5a Androstane (surr)	105	60-120		%

Batch Information

Analytical Batch: XFC15755

Analytical Method: AK102

Instrument: Agilent 7890B F

Analyst: CDM

Analytical Date/Time: 9/30/2020 1:02:00PM

Prep Batch: XXX43935

Prep Method: SW3520C

Prep Date/Time: 9/24/2020 2:56:51PM

Prep Initial Wt./Vol.: 250 mL

Prep Extract Vol: 1 mL

Print Date: 10/06/2020 2:15:26PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1209670 [XXX43935]
 Blank Spike Lab ID: 1583279
 Date Analyzed: 10/01/2020 13:15

Spike Duplicate ID: LCSD for HBN 1209670 [XXX43935]
 Spike Duplicate Lab ID: 1583280
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1209670001, 1209670002

Results by AK102

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	20	23.6	118	20	21.9	109	(75-125)	7.70	(< 20)

Surrogates

5a Androstane (surr)	0.4	122	122	* 0.4	116	116	(60-120)	5.30	
----------------------	-----	-----	-----	-------	-----	-----	------------	------	--

Batch Information

Analytical Batch: **XFC15756**
 Analytical Method: **AK102**
 Instrument: **Agilent 7890B F**
 Analyst: **CDM**

Prep Batch: **XXX43935**
 Prep Method: **SW3520C**
 Prep Date/Time: **09/24/2020 14:56**
 Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

Print Date: 10/06/2020 2:15:29PM

Method Blank

Blank ID: MB for HBN 1812109 [XXX/43935]

Blank Lab ID: 1583278

QC for Samples:

1209670001, 1209670002

Matrix: Water (Surface, Eff., Ground)

Results by AK103

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Residual Range Organics	0.250U	0.500	0.150	mg/L
Surrogates				
nA riacontaneAt62 (surr)	117	60A20		%

Batch Information

h nalytical BatcF: XKC15755

h nalytical MetFod: h T103

Instrument: hgilent 7890B K

h nalytst: CDM

h nalytical Date/- ime: 9/30/2020 1:02:00PM

Prep BatcF: XXX43935

Prep MetFod: SW3520C

Prep Date/- ime: 9/24/2020 2:56:51PM

Prep Initial Wt./Vol.: 250 mL

Prep Extract Vol: 1 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1209670 [XXX43935]
 Blank Spike Lab ID: 1583279
 Date Analyzed: 10/01/2020 13:15

Spike Duplicate ID: LCSD for HBN 1209670
 [XXX43935]
 Spike Duplicate Lab ID: 1583280
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1209670001, 1209670002

Results by AK102

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Residual Range Organics	20	23.4	117	20	21.6	108	(60-120)	8.20	(< 20)
Surrogates									
n-Triacontane-d62 (surr)	0.4	118	118	0.4	109	109	(60-120)	7.80	

Batch Information

Analytical Batch: **XFC15756**
 Analytical Method: **AK102**
 Instrument: **Agilent 7890B F**
 Analyst: **CDM**

Prep Batch: **XXX42925**
 Prep Method: **S3 25VOC**
 Prep Date/Time: **09/14/2020 14:56**
 Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

1209670



Page 1 of 1
Laboratory S&S
Attn: Jen Dawkins

CORD

CHAIN-

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

400 N. 34th Street, Suite 100
Seattle, WA 98103
(206) 632-8020

2043 Westport Center Drive
St. Louis, MO 63146-3564
(314) 699-9860

5430 Fairbanks Street, Suite 3
Anchorage, AK 99518
(907) 561-2120

1200 17th Street, Suite 1024
Denver, Co 80202
(303) 825-3800

303 Wellisian Way
Richland, WA 99352
(509) 946-6309

Analysis Parameters/Sample Container Description
(include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Comp. Grab	TA9T	TA9H	TA9L	Total Number of Containers	Remarks/Matrix
FTP-pre004	1AK	1515	9/17/20	X	X	X	X	11	groundwater
FTP-pre005	2AK	1505	9/17/20	X	X	X	X	11	
	3AC								

Project Information	Sample Receipt	Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Project Number: 102519	Total Number of Containers: 22	Signature: [Signature]	Signature: [Signature]	Signature: [Signature]
Project Name: FAI	COC Seats/Intact? Y/N/NA	Printed Name: VESELINA YAEIKOVA	Printed Name: Jen Dawkins	Printed Name: [Signature]
Contact: MDN	Received Good Cond./Cold: 5.8	Date: 9/17/20	Date: 9/17/20	Date: 09/18/20
Ongoing Project? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Delivery Method:	Company: SHANNON & WILSON	Company: S&S	Company: S&S
Sampler: VTY	(attach shipping bill, if any)	Received By: 1. [Signature]	Received By: 2. [Signature]	Received By: 3. [Signature]
Instructions		Time: 1650	Time: 1655	Time: 0854
Requested Turnaround Time:		Signature: [Signature]	Signature: [Signature]	Signature: [Signature]
Special Instructions:		Printed Name: Jen Dawkins	Printed Name: [Signature]	Printed Name: [Signature]
Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report Yellow - w/shipment - for consignee files Pink - Shannon & Wilson - Job File		Company: S&S	Company: S&S	Company: S&S

F-19-91/UR Page 27 of 38 No. 31760



e-Sample Receipt Form

SGS Workorder #:

1209670



1 2 0 9 6 7 0

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements		
Were Custody Seals intact? Note # & location	Yes	1F 1B
COC accompanied samples?	Yes	
DOD: Were samples received in COC corresponding coolers?	N/A	
N/A **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	Yes	Cooler ID: 1 @ 2.6 °C Therm. ID: D50
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
*If >6°C, were samples collected <8 hours ago?	N/A	
If <0°C, were sample containers ice free?	N/A	
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Holding Time / Documentation / Sample Condition Requirements		
Note: Refer to form F-083 "Sample Guide" for specific holding times.		
Were samples received within holding time?	Yes	
Do samples match COC** (i.e., sample IDs, dates/times collected)?	Yes	
**Note: If times differ <1hr, record details & login per COC.		
***Note: If sample information on containers differs from COC, SGS will default to COC information		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)	Yes	
Were proper containers (type/mass/volume/preservative***)used?	Yes	Yes ***Exemption permitted for metals (e.g,200.8/6020A).
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	Yes	Trip Blanks were received with headspace >6mm. Proceed with limited Volume.
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	No	
Were all soil VOAs field extracted with MeOH+BFB?	N/A	
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		



e-Sample Receipt Form FBK

SGS Workorder #:

1209670

1209670

Review Criteria		Condition (Yes, No, N/A)	Exceptions Noted below	
Chain of Custody / Temperature Requirements			Yes	Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location		N/A		
COC accompanied samples?		Yes		
DOD: Were samples received in COC corresponding coolers?		N/A		
<input type="checkbox"/> **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required				
Temperature blank compliant* (i.e., 0-6 °C after CF)?		Yes	Cooler ID: 1 @ 5.8 °C	Therm. ID: D63
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.			Cooler ID: @	°C Therm. ID:
			Cooler ID: @	°C Therm. ID:
			Cooler ID: @	°C Therm. ID:
			Cooler ID: @	°C Therm. ID:
*If >6°C, were samples collected <8 hours ago?				
If <0°C, were sample containers ice free?				
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.				
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.		
Do samples match COC** (i.e., sample IDs, dates/times collected)?		N/C		
**Note: If times differ <1hr, record details & login per COC.				
***Note: If sample information on containers differs from COC, SGS will default to COC information				
Were samples in good condition (no leaks/cracks/breakage)?		Yes		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals))		Yes		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?		Yes		
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?		N/C		
Were all soil VOAs field extracted with MeOH+BFB?		N/A		
For Rush/Short Hold Time, was RUSH/Short HT email sent?		N/A		
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.				
Additional notes (if applicable):				
SGS Profile #			0	



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1209670001-A	HCL to pH < 2	OK			
1209670001-B	HCL to pH < 2	OK			
1209670001-C	No Preservative Required	OK			
1209670001-D	No Preservative Required	OK			
1209670001-E	HNO3 to pH < 2	OK			
1209670001-F	HCL to pH < 2	OK			
1209670001-G	HCL to pH < 2	OK			
1209670001-H	HCL to pH < 2	OK			
1209670001-I	No Preservative Required	OK			
1209670001-J	No Preservative Required	OK			
1209670001-K	No Preservative Required	OK			
1209670002-A	HCL to pH < 2	OK			
1209670002-B	HCL to pH < 2	OK			
1209670002-C	No Preservative Required	OK			
1209670002-D	No Preservative Required	OK			
1209670002-E	HNO3 to pH < 2	OK			
1209670002-F	HCL to pH < 2	OK			
1209670002-G	HCL to pH < 2	OK			
1209670002-H	HCL to pH < 2	OK			
1209670002-I	No Preservative Required	OK			
1209670002-J	No Preservative Required	OK			
1209670002-K	No Preservative Required	OK			
1209670003-A	HCL to pH < 2	OK			
1209670003-B	HCL to pH < 2	BU			
1209670003-C	HCL to pH < 2	BU			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.



1049 - 28th Street SE
Grand Rapids, MI 49508
Ph: 616/248-4900
Toll Free: 800/362-LABS
Fax: 616/248-4904

September 29, 2020

Julie Shumway
SGS North America Inc
200 W. Potter Drive
Anchorage, AK 99518

TEL: (907) 562-2343
FAX (907) 561-5301
RE: 1209670

Dear Julie Shumway:

Order No.: 2009109

BIO-CHEM Laboratories, Inc. received 2 samples on 9/22/2020 for the analyses presented in the following report.

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative.

If you have any questions regarding these tests results, please feel free to call.

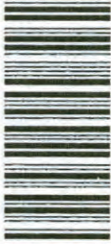
Please note that unless otherwise instructed, residual samples will be held for sixty (60) days from the original report date. At that time, all non-hazardous samples will be disposed of in accordance with federal, state and local regulations and ordinances, and hazardous samples shall be returned to you. Please contact the laboratory within thirty (30) days if other arrangements for sample retention need to be made.

Sincerely,

Cindy Euwema
Office Manager

2009109

Locations Nationwide
 Alaska Florida
 New Jersey Colorado
 Texas North Carolina
 Virginia Louisiana
www.us.sgs.com



SGS North America Inc.
 CHAIN OF CUSTODY RECORD

CLIENT: SGS North America Inc. - Alaska Division		SGS Reference:		Bio Chem		Page 1 of 1	
CONTACT: Julie Shumway		PHONE NO: (907) 562-2343		Additional Comments: All soils report out in dry weight unless			
PROJECT NAME: 1209670		PWSID#: NPDL#:		Preservative Used:		NONE	
REPORTS TO: Julie Shumway		E-MAIL: Julie.Shumway@sgs.com		TYPE		NONE	
INVOICE TO: SGS - Alaska		QUOTE #: P.O. #: 1209670		C = COMP		Ethylene Glycol 8015M	
RESERVED for lab use		DATE		GRAB		Propylene Glycol 8015M	
SAMPLE IDENTIFICATION		TIME		MI = Multi		MS	
FTP-pre004		09/17/2020		Incremental		MSD	
FTP-pre005		09/17/2020		Soils		SGS lab #	
						1209670001	
						1209670002	
Relinquished By: (1)		Date		Time		DOD Project?	
<i>[Signature]</i>		9/21/20		0919		YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	
Relinquished By: (2)		Date		Time		Report to DL (J Flags)? YES	
Relinquished By: (3)		Date		Time		If J - Report as DL/DLO/DLOQ.	
Relinquished By: (4)		Date		Time		Cooler ID:	
						Requested Turnaround Time and/or Special Instructions:	
						Temp Blank °C: 2.4°	
						or Ambient []	
						Chain of Custody Seal: (Circle)	
						INTACT <input checked="" type="checkbox"/> BROKEN <input type="checkbox"/> ABSENT <input type="checkbox"/>	

Received For Laboratory By: *Christina Blackwood*
 Received By: *[Signature]*
 Received By: *[Signature]*
 Received By: *[Signature]*
 http://www.sgs.com/terms_and_conditions.htm

CLIENT: SGS North America Inc
Project: 1209670
Lab Order: 2009109

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received
2009109-01A	FTP-pre004	Water	9/17/2020	9/22/2020
2009109-02A	FTP-pre005	Water	9/17/2020	9/22/2020

CLIENT: SGS North America Inc
Project: 1209670
Lab Order: 2009109

CASE NARRATIVE

Samples are routinely analyzed using methods outlined in the following references:

- (SW) Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Ed.
- (E) Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020.
- (A) Standard Methods for the Examination of Water and Wastewater, APHA, 18th Ed.
- (D) Annual Book of ASTM Standards.

Specific methods utilized for this project are provided in the analytical report and are identified by the reference document abbreviation () followed by the method number.

All QA/QC and sample analyses met method, laboratory and/or regulatory data quality objectives unless otherwise specified below.

No data qualifications required and there are no "J" flags to report.

CLIENT: SGS North America Inc

Project Number: 1209670

Lab Order: 2009109

Client Sample ID: FTP-pre004

Project: 1209670

Collection Date: 9/17/2020

Lab Sample ID: 2009109-01A

Matrix: WATER

Analyses	Method Ref.	Result	Q	PQL	Units	DF	Analyst	Date
Alcohols by GC/FID								
1. Ethylene Glycol	SW8015B	< 10		10	mg/L	1	LEB	9/23/2020
2. Propylene Glycol	SW8015B	< 10		10	mg/L	1	LEB	9/23/2020

Definitions: PQL - Practical Quantitation Limit
DF - Dilution Factor

Qualifiers (Q): J - Detected below PQL but above MDL: Estimated
S - Spike Recovery Outside Acceptance Limits
B - Analyte detected in associated Method Blank
N - See case narrative for explanation

CLIENT: SGS North America Inc
Lab Order: 2009109
Project: 1209670
Lab Sample ID: 2009109-02A

Project Number: 1209670
Client Sample ID: FTP-pre005
Collection Date: 9/17/2020
Matrix: WATER

Analyses	Method Ref.	Result	Q	PQL	Units	DF	Analyst	Date
Alcohols by GC/FID								
1. Ethylene Glycol	SW8015B	< 10		10	mg/L	1	LEB	9/23/2020
2. Propylene Glycol	SW8015B	< 10		10	mg/L	1	LEB	9/23/2020

Definitions: PQL - Practical Quantitation Limit
 DF - Dilution Factor

Qualifiers (Q): J - Detected below PQL but above MDL: Estimated
 S - Spike Recovery Outside Acceptance Limits
 B - Analyte detected in associated Method Blank
 N - See case narrative for explanation

Lab Order: 2009109
Client: SGS North America Inc
Project: 1209670

ANALYTICAL DETAIL REPORT

Sample ID	Client Sample ID	Matrix	Test Name	Date Sampled	TCLP/SPLP Date	Prep Date	QC Batch	Analysis Date	Analytical Batch
2009109-01A	FTP-pre004	Water	Alcohols by GC/FID	9/17/2020		9/23/2020	45460	9/23/2020	GC_B_FID_200923A
2009109-02A	FTP-pre005	Water	Alcohols by GC/FID	9/17/2020		9/23/2020	45460	9/23/2020	GC_B_FID_200923A

ANALYTICAL QC SUMMARY REPORT

CLIENT: SGS North America Inc
Work Order: 2009109
Project: 1209670

TestCode: ALCOHOL_W

Sample ID: MB-45460	SampType: MBLK	TestCode: ALCOHOL_W	Units: mg/L	Prep Date: 9/23/2020	Run ID: GC_B_FID_200923A						
Client ID: ZZZZZ	Batch ID: 45460	TestNo: SW8015B	(SW8015B)	Analysis Date: 9/23/2020	SeqNo: 1129124						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethylene Glycol	< 10	10									
Propylene Glycol	< 10	10									

Sample ID: LCS-45460	SampType: LCS	TestCode: ALCOHOL_W	Units: mg/L	Prep Date: 9/23/2020	Run ID: GC_B_FID_200923A						
Client ID: ZZZZZ	Batch ID: 45460	TestNo: SW8015B	(SW8015B)	Analysis Date: 9/23/2020	SeqNo: 1129125						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethylene Glycol	47.39	10	50	0	94.8	73.3	129	0	0	0	
Propylene Glycol	49.5	10	50	0	99	70	129	0	0	0	

Sample ID: 2009109-01AMS	SampType: MS	TestCode: ALCOHOL_W	Units: mg/L	Prep Date: 9/23/2020	Run ID: GC_B_FID_200923A						
Client ID: FTP-pre004	Batch ID: 45460	TestNo: SW8015B	(SW8015B)	Analysis Date: 9/23/2020	SeqNo: 1129130						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethylene Glycol	90.62	10	100	0	90.6	46	148	0	0	0	
Propylene Glycol	94.38	10	100	0	94.4	52.8	140	0	0	0	

Sample ID: 2009109-01AMSD	SampType: MSD	TestCode: ALCOHOL_W	Units: mg/L	Prep Date: 9/23/2020	Run ID: GC_B_FID_200923A						
Client ID: FTP-pre004	Batch ID: 45460	TestNo: SW8015B	(SW8015B)	Analysis Date: 9/23/2020	SeqNo: 1129131						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethylene Glycol	98.36	10	100	0	98.4	46	148	90.62	8.20	20	
Propylene Glycol	102.8	10	100	0	103	52.8	140	94.38	8.56	20	

Qualifiers: ND - Not Detected at the Reporting Limit
 S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits
 B - Analyte detected in the associated Method Blank
 J - Analyte detected below quantitation limits

Laboratory Data Review Checklist

Completed By:

Amber Masters

Title:

Environmental Scientist

Date:

11/1/2020

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

SGS North America, Inc.

Laboratory Report Number:

1209670

Laboratory Report Date:

10/6/2020

CS Site Name:

Fairbanks DOT&PF PFAS

ADEC File Number:

100.38.277

Hazard Identification Number:

26816

1209670

Laboratory Report Date:

10/6/2020

CS Site Name:

Fairbanks DOT&PF PFAS

Note: Any N/A or No box checked must have an explanation in the comments box.

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes No N/A Comments:

The samples were submitted to ADEC certified lab SGS, North America, Inc. in Anchorage, AK for analysis. SGS transferred samples to a reference laboratory for some analyses; see 1.b below.

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes No N/A Comments:

The samples were transferred to BioChem Laboratories, Inc. for analysis of ethylene glycol and propylene glycol. BioChem Laboratories, Inc. is not DEC certified for this method.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes No N/A Comments:

b. Correct analyses requested?

Yes No N/A Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes No N/A Comments:

Sample cooler temperature recorded at 2.6° C upon receipt at laboratory.

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes No N/A Comments:

1209670

Laboratory Report Date:

10/6/2020

CS Site Name:

Fairbanks DOT&PF PFAS

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes No N/A Comments:

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes No N/A Comments:

The laboratory receipt documentation notes that two of the three VOA vials for the trip blank were received with headspace >6mm. Data quality not affected as the analysis proceeded with the VOA without headspace.

e. Data quality or usability affected?

Comments:

Not applicable, see above.

4. Case Narrative

a. Present and understandable?

Yes No N/A Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

Yes No N/A Comments:

SGS*

The case narrative indicates the following:

Ethylene and propylene glycol analyses were performed by Bio-Chem in Grand Rapids, MI.

PAH surrogate recovery was not within laboratory QC criteria for 2-methylnaphthalene for the project samples included in this work order. The samples were re-extracted past hold-time, results for the reextracted samples were comparable. The data for in-hold samples are reported.

Surrogate recovery for 5a androstane does not meet QC criteria for the LCS sample; however, surrogate recoveries in the project samples are within QC limits.

Bio-Chem

The case narrative does not indicate any discrepancies with the data.

1209670

Laboratory Report Date:

10/6/2020

CS Site Name:

Fairbanks DOT&PF PFAS

c. Were all corrective actions documented?

Yes No N/A Comments:

Where required.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The case narrative does not specify an effect on data quality/usability.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes No N/A Comments:

b. All applicable holding times met?

Yes No N/A Comments:

c. All soils reported on a dry weight basis?

Yes No N/A Comments:

Soil samples were not submitted with this work order.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes No N/A Comments:

Yes, reported LOQs were below DEC groundwater cleanup levels, where applicable.

e. Data quality or usability affected?

No, see above.

1209670

Laboratory Report Date:

10/6/2020

CS Site Name:

Fairbanks DOT&PF PFAS

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes No N/A Comments:

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

There were no detections in the method blank samples associated with this work order.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

v. Data quality or usability affected?

Comments:

Not applicable, see above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes No N/A Comments:

LCS results were reported glycol analyses.

LCS/LCSD results were reported for VOCs, PAH, DRO, and RRO analyses.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

LCS results were reported for arsenic analysis.

1209670

Laboratory Report Date:

10/6/2020

CS Site Name:

Fairbanks DOT&PF PFAS

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Percent recovery and RPD were within acceptable limits.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Not applicable, see above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Note: Leave blank if not required for project

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

MS/MSD results were reported for PAH and glycol analyses.

1209670

Laboratory Report Date:

10/6/2020

CS Site Name:

Fairbanks DOT&PF PFAS

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

MS results were reported for arsenic analysis.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes No N/A Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes No N/A Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Percent recovery and RPD were within acceptable limits.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Not applicable, see above.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes No N/A Comments:

1209670

Laboratory Report Date:

10/6/2020

CS Site Name:

Fairbanks DOT&PF PFAS

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes No N/A Comments:

Surrogate recovery for 2-methylnaphthalene-d10 was below control limits in the project samples. This surrogate is associated with six the following PAHs included in this work order: acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene, and phenanthrene.

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

Naphthalene was detected in project sample *FTP-pre004* and is considered estimated, biased low and has been flagged 'JL' in the analytical database. Acenaphthene, acenaphthylene, anthracene, fluorene, and phenanthrene were not detected in this sample and their results are considered estimated with no direction of bias and have been flagged 'UJ' in the analytical database.

Acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene, and phenanthrene were not detected in project sample *FTP-pre005* and their results are considered estimated with no direction of bias and have been flagged 'UJ' in the analytical database.

iv. Data quality or usability affected?

Comments:

Yes, see above.

e. Trip Blanks

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes No N/A Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes No N/A Comments:

1209670

Laboratory Report Date:

10/6/2020

CS Site Name:

Fairbanks DOT&PF PFAS

iii. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

There were no detections in the trip blank associated with this work order.

v. Data quality or usability affected?

Comments:

Not applicable, see above.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No N/A Comments:

ii. Submitted blind to lab?

Yes No N/A Comments:

Field duplicate pair *FTP-pre004/FTP-pre005* was submitted with this work order.

iii. Precision – All relative percent differences (RPD) less than specified project objectives?
(Recommended: 30% water, 50% soil)

$$RPD (\%) = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2) / 2)} \times 100$$

Where R_1 = Sample Concentration
 R_2 = Field Duplicate Concentration

Yes No N/A Comments:

Relative percent difference for o-Xylene was above control limits.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Yes, o-Xylene results are flagged 'J' in project samples.

1209670

Laboratory Report Date:

10/6/2020

CS Site Name:

Fairbanks DOT&PF PFAS

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes No N/A Comments:

The project samples were collected using non-reusable equipment. An equipment blank is not required.

i. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

See above.

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

Not applicable, see above

iii. Data quality or usability affected?

Comments:

Not applicable, see above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes No N/A Comments:

No other data flags or qualifiers required.



Laboratory Report of Analysis

To: Shannon & Wilson-Fairbanks
2355 Hill Rd
Fairbanks, AK 99707
(907)479-0600

Report Number: **1209788**

Client Project: **102519-015**

Dear Marcy Nadel,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Jennifer at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Stephen C. Ede

2020.11.13

16:46:55 -09'00'

Jennifer Dawkins
Project Manager
Jennifer.Dawkins@sgs.com

Date

Case Narrative

SGS Client: **Shannon & Wilson-Fairbanks**

SGS Project: **1209788**

Project Name/Site: **102519-015**

Project Contact: **Marcy Nadel**

Refer to sample receipt form for information on sample condition.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 11/13/2020 4:07:48PM

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
TNTC	Too Numerous To Count
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
MW-1901-15	1209788001	10/27/2020	10/30/2020	Water (Surface, Eff., Ground)
EB-15	1209788002	10/27/2020	10/30/2020	Water (Surface, Eff., Ground)
MW-2901-15	1209788003	10/27/2020	10/30/2020	Water (Surface, Eff., Ground)
MW-1902-15	1209788004	10/28/2020	10/30/2020	Water (Surface, Eff., Ground)
Trip Blank	1209788005	10/27/2020	10/30/2020	Water (Surface, Eff., Ground)

<u>Method</u>	<u>Method Description</u>
AK102	DRO Low Volume (W)
SW8260D	Volatile Organic Compounds (W) FULL

Detectable Results Summary

Client Sample ID: **MW-1901-15**

Lab Sample ID: 1209788001

Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.348J	mg/L

Client Sample ID: **EB-15**

Lab Sample ID: 1209788002

Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.217J	mg/L

Client Sample ID: **MW-2901-15**

Lab Sample ID: 1209788003

Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.251J	mg/L

Client Sample ID: **MW-1902-15**

Lab Sample ID: 1209788004

Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.248J	mg/L



Results of MW-1901-15

Client Sample ID: **MW-1901-15**
Client Project ID: **102519-015**
Lab Sample ID: 1209788001
Lab Project ID: 1209788

Collection Date: 10/27/20 13:40
Received Date: 10/30/20 09:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.348 J	0.577	0.173	mg/L	1		11/11/20 06:50
Surrogates							
5a Androstane (surr)	100	50-150		%	1		11/11/20 06:50

Batch Information

Analytical Batch: XFC15808
Analytical Method: AK102
Analyst: CDM
Analytical Date/Time: 11/11/20 06:50
Container ID: 1209788001-A

Prep Batch: XXX44186
Prep Method: SW3520C
Prep Date/Time: 11/04/20 16:30
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL



Results of MW-1901-15

Client Sample ID: MW-1901-15
Client Project ID: 102519-015
Lab Sample ID: 1209788001
Lab Project ID: 1209788

Collection Date: 10/27/20 13:40
Received Date: 10/30/20 09:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of MW-1901-15

Client Sample ID: MW-1901-15
Client Project ID: 102519-015
Lab Sample ID: 1209788001
Lab Project ID: 1209788

Collection Date: 10/27/20 13:40
Received Date: 10/30/20 09:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Results of MW-1901-15

Client Sample ID: **MW-1901-15**
Client Project ID: **102519-015**
Lab Sample ID: 1209788001
Lab Project ID: 1209788

Collection Date: 10/27/20 13:40
Received Date: 10/30/20 09:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS20457
Analytical Method: SW8260D
Analyst: NRB
Analytical Date/Time: 10/30/20 21:34
Container ID: 1209788001-C

Prep Batch: VXX36631
Prep Method: SW5030B
Prep Date/Time: 10/30/20 14:30
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of **EB-15**

Client Sample ID: **EB-15**
Client Project ID: **102519-015**
Lab Sample ID: 1209788002
Lab Project ID: 1209788

Collection Date: 10/27/20 13:50
Received Date: 10/30/20 09:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.217 J	0.556	0.167	mg/L	1		11/11/20 07:00
Surrogates							
5a Androstane (surr)	102	50-150		%	1		11/11/20 07:00

Batch Information

Analytical Batch: XFC15808
Analytical Method: AK102
Analyst: CDM
Analytical Date/Time: 11/11/20 07:00
Container ID: 1209788002-A

Prep Batch: XXX44186
Prep Method: SW3520C
Prep Date/Time: 11/04/20 16:30
Prep Initial Wt./Vol.: 270 mL
Prep Extract Vol: 1 mL



Results of EB-15

Client Sample ID: EB-15
Client Project ID: 102519-015
Lab Sample ID: 1209788002
Lab Project ID: 1209788

Collection Date: 10/27/20 13:50
Received Date: 10/30/20 09:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of EB-15

Client Sample ID: **EB-15**
 Client Project ID: **102519-015**
 Lab Sample ID: 1209788002
 Lab Project ID: 1209788

Collection Date: 10/27/20 13:50
 Received Date: 10/30/20 09:11
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroform	0.500 U	1.00	0.310	ug/L	1		10/30/20 21:48
Chloromethane	0.500 U	1.00	0.310	ug/L	1		10/30/20 21:48
cis-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		10/30/20 21:48
cis-1,3-Dichloropropene	0.250 U	0.500	0.150	ug/L	1		10/30/20 21:48
Dibromochloromethane	0.250 U	0.500	0.150	ug/L	1		10/30/20 21:48
Dibromomethane	0.500 U	1.00	0.310	ug/L	1		10/30/20 21:48
Dichlorodifluoromethane	0.500 U	1.00	0.310	ug/L	1		10/30/20 21:48
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		10/30/20 21:48
Freon-113	5.00 U	10.0	3.10	ug/L	1		10/30/20 21:48
Hexachlorobutadiene	0.500 U	1.00	0.310	ug/L	1		10/30/20 21:48
Isopropylbenzene (Cumene)	0.500 U	1.00	0.310	ug/L	1		10/30/20 21:48
Methylene chloride	5.00 U	10.0	3.10	ug/L	1		10/30/20 21:48
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		10/30/20 21:48
Naphthalene	0.500 U	1.00	0.310	ug/L	1		10/30/20 21:48
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		10/30/20 21:48
n-Propylbenzene	0.500 U	1.00	0.310	ug/L	1		10/30/20 21:48
o-Xylene	0.500 U	1.00	0.310	ug/L	1		10/30/20 21:48
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		10/30/20 21:48
sec-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		10/30/20 21:48
Styrene	0.500 U	1.00	0.310	ug/L	1		10/30/20 21:48
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		10/30/20 21:48
Tetrachloroethene	0.500 U	1.00	0.310	ug/L	1		10/30/20 21:48
Toluene	0.500 U	1.00	0.310	ug/L	1		10/30/20 21:48
trans-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		10/30/20 21:48
trans-1,3-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		10/30/20 21:48
Trichloroethene	0.500 U	1.00	0.310	ug/L	1		10/30/20 21:48
Trichlorofluoromethane	0.500 U	1.00	0.310	ug/L	1		10/30/20 21:48
Vinyl acetate	5.00 U	10.0	3.10	ug/L	1		10/30/20 21:48
Vinyl chloride	0.0750 U	0.150	0.0500	ug/L	1		10/30/20 21:48
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		10/30/20 21:48
Surrogates							
1,2-Dichloroethane-D4 (surr)	111	81-118		%	1		10/30/20 21:48
4-Bromofluorobenzene (surr)	92.7	85-114		%	1		10/30/20 21:48
Toluene-d8 (surr)	98.7	89-112		%	1		10/30/20 21:48

Results of EB-15

Client Sample ID: **EB-15**
Client Project ID: **102519-015**
Lab Sample ID: 1209788002
Lab Project ID: 1209788

Collection Date: 10/27/20 13:50
Received Date: 10/30/20 09:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS20457
Analytical Method: SW8260D
Analyst: NRB
Analytical Date/Time: 10/30/20 21:48
Container ID: 1209788002-C

Prep Batch: VXX36631
Prep Method: SW5030B
Prep Date/Time: 10/30/20 14:30
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of MW-2901-15

Client Sample ID: **MW-2901-15**
 Client Project ID: **102519-015**
 Lab Sample ID: 1209788003
 Lab Project ID: 1209788

Collection Date: 10/27/20 13:35
 Received Date: 10/30/20 09:11
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.251 J	0.556	0.167	mg/L	1		11/11/20 07:11
Surrogates							
5a Androstane (surr)	103	50-150		%	1		11/11/20 07:11

Batch Information

Analytical Batch: XFC15808
 Analytical Method: AK102
 Analyst: CDM
 Analytical Date/Time: 11/11/20 07:11
 Container ID: 1209788003-A

Prep Batch: XXX44186
 Prep Method: SW3520C
 Prep Date/Time: 11/04/20 16:30
 Prep Initial Wt./Vol.: 270 mL
 Prep Extract Vol: 1 mL



Results of MW-2901-15

Client Sample ID: MW-2901-15
Client Project ID: 102519-015
Lab Sample ID: 1209788003
Lab Project ID: 1209788

Collection Date: 10/27/20 13:35
Received Date: 10/30/20 09:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of MW-2901-15

Client Sample ID: **MW-2901-15**
 Client Project ID: **102519-015**
 Lab Sample ID: 1209788003
 Lab Project ID: 1209788

Collection Date: 10/27/20 13:35
 Received Date: 10/30/20 09:11
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroform	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:02
Chloromethane	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:02
cis-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:02
cis-1,3-Dichloropropene	0.250 U	0.500	0.150	ug/L	1		10/30/20 22:02
Dibromochloromethane	0.250 U	0.500	0.150	ug/L	1		10/30/20 22:02
Dibromomethane	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:02
Dichlorodifluoromethane	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:02
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:02
Freon-113	5.00 U	10.0	3.10	ug/L	1		10/30/20 22:02
Hexachlorobutadiene	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:02
Isopropylbenzene (Cumene)	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:02
Methylene chloride	5.00 U	10.0	3.10	ug/L	1		10/30/20 22:02
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		10/30/20 22:02
Naphthalene	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:02
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:02
n-Propylbenzene	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:02
o-Xylene	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:02
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		10/30/20 22:02
sec-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:02
Styrene	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:02
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:02
Tetrachloroethene	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:02
Toluene	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:02
trans-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:02
trans-1,3-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:02
Trichloroethene	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:02
Trichlorofluoromethane	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:02
Vinyl acetate	5.00 U	10.0	3.10	ug/L	1		10/30/20 22:02
Vinyl chloride	0.0750 U	0.150	0.0500	ug/L	1		10/30/20 22:02
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		10/30/20 22:02
Surrogates							
1,2-Dichloroethane-D4 (surr)	114	81-118		%	1		10/30/20 22:02
4-Bromofluorobenzene (surr)	91	85-114		%	1		10/30/20 22:02
Toluene-d8 (surr)	97.7	89-112		%	1		10/30/20 22:02

Results of MW-2901-15

Client Sample ID: **MW-2901-15**
Client Project ID: **102519-015**
Lab Sample ID: 1209788003
Lab Project ID: 1209788

Collection Date: 10/27/20 13:35
Received Date: 10/30/20 09:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS20457
Analytical Method: SW8260D
Analyst: NRB
Analytical Date/Time: 10/30/20 22:02
Container ID: 1209788003-C

Prep Batch: VXX36631
Prep Method: SW5030B
Prep Date/Time: 10/30/20 14:30
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of MW-1902-15

Client Sample ID: **MW-1902-15**
 Client Project ID: **102519-015**
 Lab Sample ID: 1209788004
 Lab Project ID: 1209788

Collection Date: 10/28/20 13:33
 Received Date: 10/30/20 09:11
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.248 J	0.577	0.173	mg/L	1		11/11/20 07:21
Surrogates							
5a Androstane (surr)	100	50-150		%	1		11/11/20 07:21

Batch Information

Analytical Batch: XFC15808
 Analytical Method: AK102
 Analyst: CDM
 Analytical Date/Time: 11/11/20 07:21
 Container ID: 1209788004-A

Prep Batch: XXX44186
 Prep Method: SW3520C
 Prep Date/Time: 11/04/20 16:30
 Prep Initial Wt./Vol.: 260 mL
 Prep Extract Vol: 1 mL



Results of MW-1902-15

Client Sample ID: MW-1902-15
 Client Project ID: 102519-015
 Lab Sample ID: 1209788004
 Lab Project ID: 1209788

Collection Date: 10/28/20 13:33
 Received Date: 10/30/20 09:11
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,1,1,2-Tetrachloroethane	0.250 U	0.500	0.150	ug/L	1		10/30/20 22:17
1,1,1-Trichloroethane	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:17
1,1,2,2-Tetrachloroethane	0.250 U	0.500	0.150	ug/L	1		10/30/20 22:17
1,1,2-Trichloroethane	0.200 U	0.400	0.120	ug/L	1		10/30/20 22:17
1,1-Dichloroethane	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:17
1,1-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:17
1,1-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:17
1,2,3-Trichlorobenzene	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:17
1,2,3-Trichloropropane	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:17
1,2,4-Trichlorobenzene	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:17
1,2,4-Trimethylbenzene	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:17
1,2-Dibromo-3-chloropropane	5.00 U	10.0	3.10	ug/L	1		10/30/20 22:17
1,2-Dibromoethane	0.0375 U	0.0750	0.0180	ug/L	1		10/30/20 22:17
1,2-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:17
1,2-Dichloroethane	0.250 U	0.500	0.150	ug/L	1		10/30/20 22:17
1,2-Dichloropropane	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:17
1,3,5-Trimethylbenzene	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:17
1,3-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:17
1,3-Dichloropropane	0.250 U	0.500	0.150	ug/L	1		10/30/20 22:17
1,4-Dichlorobenzene	0.250 U	0.500	0.150	ug/L	1		10/30/20 22:17
2,2-Dichloropropane	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:17
2-Butanone (MEK)	5.00 U	10.0	3.10	ug/L	1		10/30/20 22:17
2-Chlorotoluene	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:17
2-Hexanone	5.00 U	10.0	3.10	ug/L	1		10/30/20 22:17
4-Chlorotoluene	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:17
4-Isopropyltoluene	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:17
4-Methyl-2-pentanone (MIBK)	5.00 U	10.0	3.10	ug/L	1		10/30/20 22:17
Benzene	0.200 U	0.400	0.120	ug/L	1		10/30/20 22:17
Bromobenzene	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:17
Bromochloromethane	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:17
Bromodichloromethane	0.250 U	0.500	0.150	ug/L	1		10/30/20 22:17
Bromoform	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:17
Bromomethane	2.50 U	5.00	2.00	ug/L	1		10/30/20 22:17
Carbon disulfide	5.00 U	10.0	3.10	ug/L	1		10/30/20 22:17
Carbon tetrachloride	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:17
Chlorobenzene	0.250 U	0.500	0.150	ug/L	1		10/30/20 22:17
Chloroethane	0.500 U	1.00	0.310	ug/L	1		10/30/20 22:17

Print Date: 11/13/2020 4:07:55PM

J flagging is activated



Results of MW-1902-15

Client Sample ID: MW-1902-15
Client Project ID: 102519-015
Lab Sample ID: 1209788004
Lab Project ID: 1209788

Collection Date: 10/28/20 13:33
Received Date: 10/30/20 09:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Results of MW-1902-15

Client Sample ID: **MW-1902-15**
Client Project ID: **102519-015**
Lab Sample ID: 1209788004
Lab Project ID: 1209788

Collection Date: 10/28/20 13:33
Received Date: 10/30/20 09:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS20457
Analytical Method: SW8260D
Analyst: NRB
Analytical Date/Time: 10/30/20 22:17
Container ID: 1209788004-C

Prep Batch: VXX36631
Prep Method: SW5030B
Prep Date/Time: 10/30/20 14:30
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of Trip Blank

Client Sample ID: Trip Blank
Client Project ID: 102519-015
Lab Sample ID: 1209788005
Lab Project ID: 1209788

Collection Date: 10/27/20 13:35
Received Date: 10/30/20 09:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of Trip Blank

Client Sample ID: **Trip Blank**
 Client Project ID: **102519-015**
 Lab Sample ID: 1209788005
 Lab Project ID: 1209788

Collection Date: 10/27/20 13:35
 Received Date: 10/30/20 09:11
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroform	0.500 U	1.00	0.310	ug/L	1		10/30/20 18:40
Chloromethane	0.500 U	1.00	0.310	ug/L	1		10/30/20 18:40
cis-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		10/30/20 18:40
cis-1,3-Dichloropropene	0.250 U	0.500	0.150	ug/L	1		10/30/20 18:40
Dibromochloromethane	0.250 U	0.500	0.150	ug/L	1		10/30/20 18:40
Dibromomethane	0.500 U	1.00	0.310	ug/L	1		10/30/20 18:40
Dichlorodifluoromethane	0.500 U	1.00	0.310	ug/L	1		10/30/20 18:40
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		10/30/20 18:40
Freon-113	5.00 U	10.0	3.10	ug/L	1		10/30/20 18:40
Hexachlorobutadiene	0.500 U	1.00	0.310	ug/L	1		10/30/20 18:40
Isopropylbenzene (Cumene)	0.500 U	1.00	0.310	ug/L	1		10/30/20 18:40
Methylene chloride	5.00 U	10.0	3.10	ug/L	1		10/30/20 18:40
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		10/30/20 18:40
Naphthalene	0.500 U	1.00	0.310	ug/L	1		10/30/20 18:40
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		10/30/20 18:40
n-Propylbenzene	0.500 U	1.00	0.310	ug/L	1		10/30/20 18:40
o-Xylene	0.500 U	1.00	0.310	ug/L	1		10/30/20 18:40
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		10/30/20 18:40
sec-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		10/30/20 18:40
Styrene	0.500 U	1.00	0.310	ug/L	1		10/30/20 18:40
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		10/30/20 18:40
Tetrachloroethene	0.500 U	1.00	0.310	ug/L	1		10/30/20 18:40
Toluene	0.500 U	1.00	0.310	ug/L	1		10/30/20 18:40
trans-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		10/30/20 18:40
trans-1,3-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		10/30/20 18:40
Trichloroethene	0.500 U	1.00	0.310	ug/L	1		10/30/20 18:40
Trichlorofluoromethane	0.500 U	1.00	0.310	ug/L	1		10/30/20 18:40
Vinyl acetate	5.00 U	10.0	3.10	ug/L	1		10/30/20 18:40
Vinyl chloride	0.0750 U	0.150	0.0500	ug/L	1		10/30/20 18:40
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		10/30/20 18:40
Surrogates							
1,2-Dichloroethane-D4 (surr)	112	81-118		%	1		10/30/20 18:40
4-Bromofluorobenzene (surr)	91.1	85-114		%	1		10/30/20 18:40
Toluene-d8 (surr)	99.1	89-112		%	1		10/30/20 18:40

Results of Trip Blank

Client Sample ID: **Trip Blank**
Client Project ID: **102519-015**
Lab Sample ID: 1209788005
Lab Project ID: 1209788

Collection Date: 10/27/20 13:35
Received Date: 10/30/20 09:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS20457
Analytical Method: SW8260D
Analyst: NRB
Analytical Date/Time: 10/30/20 18:40
Container ID: 1209788005-A

Prep Batch: VXX36631
Prep Method: SW5030B
Prep Date/Time: 10/30/20 14:30
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Method Blank

Blank ID: MB for HBN 1813664 [VXX/36631]
Blank Lab ID: 1590830

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1209788001, 1209788002, 1209788003, 1209788004, 1209788005

Results by SW8260D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,1,1,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,1-Trichloroethane	0.500U	1.00	0.310	ug/L
1,1,2,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,2-Trichloroethane	0.200U	0.400	0.120	ug/L
1,1-Dichloroethane	0.500U	1.00	0.310	ug/L
1,1-Dichloroethene	0.500U	1.00	0.310	ug/L
1,1-Dichloropropene	0.500U	1.00	0.310	ug/L
1,2,3-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,3-Trichloropropane	0.500U	1.00	0.310	ug/L
1,2,4-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,2-Dibromo-3-chloropropane	5.00U	10.0	3.10	ug/L
1,2-Dibromoethane	0.0375U	0.0750	0.0180	ug/L
1,2-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,2-Dichloroethane	0.250U	0.500	0.150	ug/L
1,2-Dichloropropane	0.500U	1.00	0.310	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,3-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,3-Dichloropropane	0.250U	0.500	0.150	ug/L
1,4-Dichlorobenzene	0.250U	0.500	0.150	ug/L
2,2-Dichloropropane	0.500U	1.00	0.310	ug/L
2-Butanone (MEK)	5.00U	10.0	3.10	ug/L
2-Chlorotoluene	0.500U	1.00	0.310	ug/L
2-Hexanone	5.00U	10.0	3.10	ug/L
4-Chlorotoluene	0.500U	1.00	0.310	ug/L
4-Isopropyltoluene	0.500U	1.00	0.310	ug/L
4-Methyl-2-pentanone (MIBK)	5.00U	10.0	3.10	ug/L
Benzene	0.200U	0.400	0.120	ug/L
Bromobenzene	0.500U	1.00	0.310	ug/L
Bromochloromethane	0.500U	1.00	0.310	ug/L
Bromodichloromethane	0.250U	0.500	0.150	ug/L
Bromoform	0.500U	1.00	0.310	ug/L
Bromomethane	2.50U	5.00	2.00	ug/L
Carbon disulfide	5.00U	10.0	3.10	ug/L
Carbon tetrachloride	0.500U	1.00	0.310	ug/L
Chlorobenzene	0.250U	0.500	0.150	ug/L
Chloroethane	0.500U	1.00	0.310	ug/L
Chloroform	0.500U	1.00	0.310	ug/L

Print Date: 11/13/2020 4:07:57PM

Method Blank

Blank ID: MB for HBN 1813664 [VXX/36631]
 Blank Lab ID: 1590830

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1209788001, 1209788002, 1209788003, 1209788004, 1209788005

Results by SW8260D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Chloromethane	0.500U	1.00	0.310	ug/L
cis-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
cis-1,3-Dichloropropene	0.250U	0.500	0.150	ug/L
Dibromochloromethane	0.250U	0.500	0.150	ug/L
Dibromomethane	0.500U	1.00	0.310	ug/L
Dichlorodifluoromethane	0.500U	1.00	0.310	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
Freon-113	5.00U	10.0	3.10	ug/L
Hexachlorobutadiene	0.500U	1.00	0.310	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	ug/L
Methylene chloride	5.00U	10.0	3.10	ug/L
Methyl-t-butyl ether	5.00U	10.0	3.10	ug/L
Naphthalene	0.500U	1.00	0.310	ug/L
n-Butylbenzene	0.500U	1.00	0.310	ug/L
n-Propylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
sec-Butylbenzene	0.500U	1.00	0.310	ug/L
Styrene	0.500U	1.00	0.310	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	ug/L
Tetrachloroethene	0.500U	1.00	0.310	ug/L
Toluene	0.500U	1.00	0.310	ug/L
trans-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
trans-1,3-Dichloropropene	0.500U	1.00	0.310	ug/L
Trichloroethene	0.500U	1.00	0.310	ug/L
Trichlorofluoromethane	0.500U	1.00	0.310	ug/L
Vinyl acetate	5.00U	10.0	3.10	ug/L
Vinyl chloride	0.0750U	0.150	0.0500	ug/L
Xylenes (total)	1.50U	3.00	1.00	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	112	81-118		%
4-Bromofluorobenzene (surr)	92.1	85-114		%
Toluene-d8 (surr)	101	89-112		%

Method Blank

Blank ID: MB for HBN 1813664 [VXX/36631]
Blank Lab ID: 1590830

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1209788001, 1209788002, 1209788003, 1209788004, 1209788005

Results by SW8260D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
------------------	----------------	---------------	-----------	--------------

Batch Information

Analytical Batch: VMS20457
Analytical Method: SW8260D
Instrument: Agilent 7890-75MS
Analyst: NRB
Analytical Date/Time: 10/30/2020 2:47:00PM

Prep Batch: VXX36631
Prep Method: SW5030B
Prep Date/Time: 10/30/2020 2:30:00PM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 11/13/2020 4:07:57PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1209788 [VXX36631]
 Blank Spike Lab ID: 1590831
 Date Analyzed: 10/30/2020 15:16

Spike Duplicate ID: LCSD for HBN 1209788
 [VXX36631]
 Spike Duplicate Lab ID: 1590832
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1209788001, 1209788002, 1209788003, 1209788004, 1209788005

Results by SW8260D

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1,1,2-Tetrachloroethane	30	32.8	109	30	32.8	109	(78-124)	0.17	(< 20)
1,1,1-Trichloroethane	30	31.1	104	30	31.7	106	(74-131)	2.10	(< 20)
1,1,2,2-Tetrachloroethane	30	29.6	99	30	29.5	98	(71-121)	0.33	(< 20)
1,1,2-Trichloroethane	30	31.3	104	30	31.6	105	(80-119)	0.84	(< 20)
1,1-Dichloroethane	30	31.1	104	30	31.7	106	(77-125)	2.00	(< 20)
1,1-Dichloroethene	30	34.0	113	30	34.4	115	(71-131)	1.30	(< 20)
1,1-Dichloropropene	30	31.9	106	30	32.7	109	(79-125)	2.50	(< 20)
1,2,3-Trichlorobenzene	30	32.8	109	30	32.3	108	(69-129)	1.70	(< 20)
1,2,3-Trichloropropane	30	30.5	102	30	30.3	101	(73-122)	0.66	(< 20)
1,2,4-Trichlorobenzene	30	33.8	113	30	32.9	110	(69-130)	2.50	(< 20)
1,2,4-Trimethylbenzene	30	27.4	91	30	27.9	93	(79-124)	1.80	(< 20)
1,2-Dibromo-3-chloropropane	30	27.6	92	30	27.2	91	(62-128)	1.40	(< 20)
1,2-Dibromoethane	30	32.5	108	30	33.1	110	(77-121)	1.70	(< 20)
1,2-Dichlorobenzene	30	31.6	105	30	31.7	106	(80-119)	0.48	(< 20)
1,2-Dichloroethane	30	31.7	106	30	31.9	106	(73-128)	0.60	(< 20)
1,2-Dichloropropane	30	30.2	101	30	30.7	102	(78-122)	1.50	(< 20)
1,3,5-Trimethylbenzene	30	28.0	93	30	28.2	94	(75-124)	0.73	(< 20)
1,3-Dichlorobenzene	30	32.0	107	30	32.3	108	(80-119)	0.96	(< 20)
1,3-Dichloropropane	30	31.2	104	30	31.5	105	(80-119)	1.00	(< 20)
1,4-Dichlorobenzene	30	32.2	107	30	32.5	108	(79-118)	0.80	(< 20)
2,2-Dichloropropane	30	24.9	83	30	25.2	84	(60-139)	1.30	(< 20)
2-Butanone (MEK)	90	86.8	96	90	86.0	96	(56-143)	0.87	(< 20)
2-Chlorotoluene	30	28.4	95	30	28.8	96	(79-122)	1.30	(< 20)
2-Hexanone	90	75.9	84	90	75.8	84	(57-139)	0.15	(< 20)
4-Chlorotoluene	30	28.7	96	30	28.7	96	(78-122)	0.04	(< 20)
4-Isopropyltoluene	30	29.4	98	30	29.0	97	(77-127)	1.40	(< 20)
4-Methyl-2-pentanone (MIBK)	90	83.1	92	90	82.2	91	(67-130)	1.00	(< 20)
Benzene	30	30.7	102	30	31.2	104	(79-120)	1.60	(< 20)
Bromobenzene	30	31.9	106	30	32.3	108	(80-120)	1.10	(< 20)
Bromochloromethane	30	33.8	113	30	34.4	115	(78-123)	1.60	(< 20)
Bromodichloromethane	30	33.2	111	30	33.4	111	(79-125)	0.71	(< 20)
Bromoform	30	33.4	111	30	33.7	112	(66-130)	0.80	(< 20)
Bromomethane	30	26.9	90	30	27.9	93	(53-141)	3.80	(< 20)
Carbon disulfide	45	50.2	112	45	52.3	116	(64-133)	4.10	(< 20)

Print Date: 11/13/2020 4:07:59PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1209788 [VXX36631]
 Blank Spike Lab ID: 1590831
 Date Analyzed: 10/30/2020 15:16

Spike Duplicate ID: LCSD for HBN 1209788
 [VXX36631]
 Spike Duplicate Lab ID: 1590832
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1209788001, 1209788002, 1209788003, 1209788004, 1209788005

Results by SW8260D

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Carbon tetrachloride	30	32.6	109	30	33.0	110	(72-136)	1.20	(< 20)
Chlorobenzene	30	32.9	110	30	33.4	111	(82-118)	1.50	(< 20)
Chloroethane	30	32.6	109	30	33.1	110	(60-138)	1.60	(< 20)
Chloroform	30	30.6	102	30	31.0	103	(79-124)	1.30	(< 20)
Chloromethane	30	27.5	92	30	27.7	92	(50-139)	0.80	(< 20)
cis-1,2-Dichloroethene	30	33.2	111	30	33.7	112	(78-123)	1.50	(< 20)
cis-1,3-Dichloropropene	30	30.2	101	30	30.5	102	(75-124)	1.10	(< 20)
Dibromochloromethane	30	33.1	110	30	33.4	111	(74-126)	0.76	(< 20)
Dibromomethane	30	33.5	112	30	33.6	112	(79-123)	0.25	(< 20)
Dichlorodifluoromethane	30	32.4	108	30	32.8	109	(32-152)	1.20	(< 20)
Ethylbenzene	30	31.9	106	30	32.6	109	(79-121)	2.10	(< 20)
Freon-113	45	50.6	112	45	51.2	114	(70-136)	1.20	(< 20)
Hexachlorobutadiene	30	28.7	96	30	28.3	94	(66-134)	1.40	(< 20)
Isopropylbenzene (Cumene)	30	31.3	104	30	31.5	105	(72-131)	0.76	(< 20)
Methylene chloride	30	33.9	113	30	34.5	115	(74-124)	1.80	(< 20)
Methyl-t-butyl ether	45	44.4	99	45	44.9	100	(71-124)	1.10	(< 20)
Naphthalene	30	28.9	96	30	29.2	98	(61-128)	1.30	(< 20)
n-Butylbenzene	30	30.4	101	30	29.6	99	(75-128)	2.70	(< 20)
n-Propylbenzene	30	29.5	98	30	29.8	99	(76-126)	0.92	(< 20)
o-Xylene	30	31.6	105	30	32.0	107	(78-122)	1.30	(< 20)
P & M -Xylene	60	63.7	106	60	64.8	108	(80-121)	1.80	(< 20)
sec-Butylbenzene	30	29.8	100	30	29.7	99	(77-126)	0.46	(< 20)
Styrene	30	30.8	103	30	31.1	104	(78-123)	1.00	(< 20)
tert-Butylbenzene	30	29.5	98	30	29.5	98	(78-124)	0.15	(< 20)
Tetrachloroethene	30	33.5	112	30	34.4	115	(74-129)	2.60	(< 20)
Toluene	30	30.7	102	30	31.1	104	(80-121)	1.10	(< 20)
trans-1,2-Dichloroethene	30	33.5	112	30	34.1	114	(75-124)	1.90	(< 20)
trans-1,3-Dichloropropene	30	29.1	97	30	29.5	98	(73-127)	1.30	(< 20)
Trichloroethene	30	33.0	110	30	33.5	112	(79-123)	1.50	(< 20)
Trichlorofluoromethane	30	33.9	113	30	34.3	114	(65-141)	1.10	(< 20)
Vinyl acetate	30	28.1	94	30	28.6	95	(54-146)	1.90	(< 20)
Vinyl chloride	30	32.3	108	30	33.0	110	(58-137)	2.30	(< 20)
Xylenes (total)	90	95.2	106	90	96.8	108	(79-121)	1.60	(< 20)

Print Date: 11/13/2020 4:07:59PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1209788 [VXX36631]
 Blank Spike Lab ID: 1590831
 Date Analyzed: 10/30/2020 15:16

Spike Duplicate ID: LCSD for HBN 1209788 [VXX36631]
 Spike Duplicate Lab ID: 1590832
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1209788001, 1209788002, 1209788003, 1209788004, 1209788005

Results by SW8260D

Parameter	Blank Spike (%)			Spike Duplicate (%)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Surrogates									
1,2-Dichloroethane-D4 (surr)	30	104	104	30	104	104	(81-118)	0.70	
4-Bromofluorobenzene (surr)	30	92.2	92	30	92.1	92	(85-114)	0.01	
Toluene-d8 (surr)	30	101	101	30	101	101	(89-112)	0.14	

Batch Information

Analytical Batch: **VMS20457**
 Analytical Method: **SW8260D**
 Instrument: **Agilent 7890-75MS**
 Analyst: **NRB**

Prep Batch: **VXX36631**
 Prep Method: **SW5030B**
 Prep Date/Time: **10/30/2020 14:30**
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL



Method Blank

Blank ID: MB for HBN 1813899 [XXX/44186]
Blank Lab ID: 1591512

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1209788001, 1209788002, 1209788003, 1209788004

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	0.181J	0.600	0.180	mg/L
Surrogates				
5a Androstane (surr)	104	60-120		%

Batch Information

Analytical Batch: XFC15808
Analytical Method: AK102
Instrument: Agilent 7890B F
Analyst: CDM
Analytical Date/Time: 11/11/2020 3:19:00AM

Prep Batch: XXX44186
Prep Method: SW3520C
Prep Date/Time: 11/4/2020 4:30:44PM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 11/13/2020 4:08:01PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1209788 [XXX44186]
 Blank Spike Lab ID: 1591513
 Date Analyzed: 11/11/2020 03:29

Spike Duplicate ID: LCSD for HBN 1209788
 [XXX44186]
 Spike Duplicate Lab ID: 1591514
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1209788001, 1209788002, 1209788003, 1209788004

Results by AK102

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	20	19.8	99	20	19.3	97	(75-125)	2.60	(< 20)

Surrogates

5a Androstane (surr)	0.4	115	115	0.4	115	115	(60-120)	0.06	
----------------------	-----	-----	-----	-----	-----	-----	------------	------	--

Batch Information

Analytical Batch: **XFC15808**
 Analytical Method: **AK102**
 Instrument: **Agilent 7890B F**
 Analyst: **CDM**

Prep Batch: **XXX44186**
 Prep Method: **SW3520C**
 Prep Date/Time: **11/04/2020 16:30**
 Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

1209788



2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600
www.shannonwilson.com

USTODY RECORD

Laboratory SGS Page 1 of 1
Attn: J. Dawkins

Analytical Methods (include preservative if used)

DRO		SBC	
Total Number of Containers		Remarks/Matrix Composition/Grab? Sample Containers	

Quote No: _____

J-Flags: Yes No

Turn Around Time: Normal Rush

Please Specify _____

Sample Identity	Lab No.	Time	Date Sampled	DRO	SBC	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
MW-1901-15	1AE	1340	10/27/20	X	X	5	
EB-15	2AE	1350	10/27/20	X	X	5	
MW-2901-15	3AE	1335	10/27/20	X	X	5	
MW-1902-15	4AE	1333	10/28/20	X	X	5	
Trip Blank	SAC						lab provided

Project Information

Number: 102519-015

Name: MDV@shannonwilson.com

Contact: MDV@shannonwilson.com

Ongoing Project? Yes No

Sampler: AM/J/ARM

Sample Receipt

Total No. of Containers: _____

COC Seals/Intact? Y/N/NA HD

Received Good Cont./COP 1.5

Temp: 1.5

Delivery Method: Hand Delivered

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: _____ Printed Name: <u>A. Masters</u> Company: <u>Shannon + Wilson, Inc</u>	Signature: _____ Printed Name: <u>Cecilia I. Missik</u> Company: <u>SGS</u>	Signature: _____ Printed Name: _____ Company: _____
Time: <u>1615</u> Date: <u>10/28/20</u>	Time: <u>1600</u> Date: <u>10/29/20</u>	Time: _____ Date: _____
Received By: 1. Signature: _____ Printed Name: <u>Cecilia I. Missik</u> Company: <u>SGS</u>	Received By: 2. Signature: _____ Printed Name: _____ Company: _____	Received By: 3. Signature: _____ Printed Name: _____ Company: _____
Time: <u>1625</u> Date: <u>10/28/20</u>	Time: _____ Date: _____	Time: <u>1711</u> Date: <u>10/30/20</u>

Notes:

TB kept with samples whole time

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

IF, B No. 36156 2#350737



e-Sample Receipt Form

SGS Workorder #:

1209788

1209788

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements		N/A Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	Yes	1F, 1B
COC accompanied samples?	Yes	
DOD: Were samples received in COC corresponding coolers?	N/A	
N/A **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	Yes	Cooler ID: 1 @ 1.8 °C Therm. ID: D23
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.		
*If >6°C, were samples collected <8 hours ago?	N/A	
If <0°C, were sample containers ice free?	N/A	
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.
Were samples received within holding time?	Yes	
Do samples match COC ** (i.e., sample IDs, dates/times collected)?	Yes	
**Note: If times differ <1hr, record details & login per COC.		
***Note: If sample information on containers differs from COC, SGS will default to COC information		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)	Yes	
		N/A ***Exemption permitted for metals (e.g.200.8/6020A).
Were proper containers (type/mass/volume/preservative***)used?	Yes	
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	Yes	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	Yes	
Were all soil VOAs field extracted with MeOH+BFB?	N/A	
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		



e-Sample Receipt Form FBK

SGS Workorder #:

1209788

1209788

Review Criteria		Condition (Yes, No, N/A)	Exceptions Noted below	
Chain of Custody / Temperature Requirements			Yes	Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location		N/A		
COC accompanied samples?		Yes		
DOD: Were samples received in COC corresponding coolers?		N/A		
<input type="checkbox"/> **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required				
Temperature blank compliant* (i.e., 0-6 °C after CF)?		Yes	Cooler ID: 1 @ 1.5 °C	Therm. ID: D53
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.			Cooler ID: @	Therm. ID:
			Cooler ID: @	Therm. ID:
			Cooler ID: @	Therm. ID:
			Cooler ID: @	Therm. ID:
*If >6°C, were samples collected <8 hours ago?				
If <0°C, were sample containers ice free?				
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.				
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.		
Do samples match COC** (i.e., sample IDs, dates/times collected)?		N/C		
Note: If times differ <1hr, record details & login per COC. *Note: If sample information on containers differs from COC, SGS will default to COC information				
Were samples in good condition (no leaks/cracks/breakage)?		Yes		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals))		Yes		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?		Yes		
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?		N/C		
Were all soil VOAs field extracted with MeOH+BFB?		N/A		
For Rush/Short Hold Time, was RUSH/Short HT email sent?		N/A		
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.				
Additional notes (if applicable):				
SGS Profile #	350732		350732	



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1209788001-A	HCL to pH < 2	OK			
1209788001-B	HCL to pH < 2	OK			
1209788001-C	HCL to pH < 2	OK			
1209788001-D	HCL to pH < 2	OK			
1209788001-E	HCL to pH < 2	OK			
1209788002-A	HCL to pH < 2	OK			
1209788002-B	HCL to pH < 2	OK			
1209788002-C	HCL to pH < 2	OK			
1209788002-D	HCL to pH < 2	OK			
1209788002-E	HCL to pH < 2	OK			
1209788003-A	HCL to pH < 2	OK			
1209788003-B	HCL to pH < 2	OK			
1209788003-C	HCL to pH < 2	OK			
1209788003-D	HCL to pH < 2	OK			
1209788003-E	HCL to pH < 2	OK			
1209788004-A	HCL to pH < 2	OK			
1209788004-B	HCL to pH < 2	OK			
1209788004-C	HCL to pH < 2	OK			
1209788004-D	HCL to pH < 2	OK			
1209788004-E	HCL to pH < 2	OK			
1209788005-A	HCL to pH < 2	OK			
1209788005-B	HCL to pH < 2	OK			
1209788005-C	HCL to pH < 2	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.

Laboratory Data Review Checklist

Completed By:

Andrew Frick

Title:

Environmental Scientist

Date:

December 7, 2020

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

SGS North America, Inc.

Laboratory Report Number:

1209788

Laboratory Report Date:

November 13, 2020

CS Site Name:

FIA Sitewide PFAS

ADEC File Number:

100.38.277

Hazard Identification Number:

26816

1209788

Laboratory Report Date:

November 13, 2020

CS Site Name:

FIA Sitewide PFAS

Note: Any N/A or No box checked must have an explanation in the comments box.

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes No N/A Comments:

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes No N/A Comments:

Analyses were performed by SGS North America, Inc. in Anchorage, Alaska.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes No N/A Comments:

b. Correct analyses requested?

Yes No N/A Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes No N/A Comments:

The temperature blank was measured within the acceptable temperature range of 0 °C to 6 °C upon arrival at the laboratory.

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes No N/A Comments:

1209788

Laboratory Report Date:

November 13, 2020

CS Site Name:

FIA Sitewide PFAS

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes No N/A Comments:

The laboratory notes the samples were received in acceptable condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes No N/A Comments:

There were no discrepancies.

e. Data quality or usability affected?

Comments:

Data quality and/or usability are not affected; see above.

4. Case Narrative

a. Present and understandable?

Yes No N/A Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

Yes No N/A Comments:

The case narrative does not list any discrepancies, errors, or QC failures.

c. Were all corrective actions documented?

Yes No N/A Comments:

No corrective actions were documented in the case narrative or necessary.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The case narrative does not note an effect on data quality.

1209788

Laboratory Report Date:

November 13, 2020

CS Site Name:

FIA Sitewide PFAS

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes No N/A Comments:

b. All applicable holding times met?

Yes No N/A Comments:

c. All soils reported on a dry weight basis?

Yes No N/A Comments:

This work order does not include soil samples.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes No N/A Comments:

The limit of detection (LOD) for analytes with non-detect results were compared to the respective ADEC Groundwater Cleanup Level. The LODs were below the ADEC Groundwater Cleanup Levels, with the following exception:

The VOC analyte 1,2,3-trichloropropane was not detected and had an LOD greater than the associated ADEC Groundwater Cleanup Level. The non-detect results for this analyte are identified (**bolded**) in the analytical tables.

e. Data quality or usability affected?

We cannot assess if 1,2,3-trichloropropane is present in the samples at a concentration greater than the ADEC Groundwater Cleanup Level but less than the LOD.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

1209788

Laboratory Report Date:

November 13, 2020

CS Site Name:

FIA Sitewide PFAS

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes No N/A Comments:

DRO were detected at an estimated concentration in the AK102 method blank sample associated with preparation batch XXX44186.

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

Preparation batch XXX44186 contains the field samples *MW-1901-15*, *MW-1902-15*, *MW-2901-15*, and *EB -15*. All the samples included with this preparation batch contained DRO concentrations within five times that of the concentration detected in the method blank.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

The DRO results for project samples *MW-1901-15*, *MW-1902-15*, and *MW-2901-15* are considered false-positives attributable to laboratory contamination and are flagged 'UB' at the LOQ in the analytical tables. *EB-15* is a field quality control sample; it is not reported but is also considered affected.

v. Data quality or usability affected?

Comments:

The data quality is affected; see above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes No N/A Comments:

An LCS/LCSD was reported for methods SW8260D and AK102.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

Metals and/or inorganics were not analyzed as part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

1209788

Laboratory Report Date:

November 13, 2020

CS Site Name:

FIA Sitewide PFAS

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

None; analytical accuracy and precision were demonstrated to be within acceptable limits.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability are not affected.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Note: Leave blank if not required for project

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

MS/MSD samples are not reported for this work order. Precision and accuracy are evaluated using the LCS/LCSD samples.

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

Metals and/or inorganics were not analyzed as part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes No N/A Comments:

See above.

1209788

Laboratory Report Date:

November 13, 2020

CS Site Name:

FIA Sitewide PFAS

- iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes No N/A Comments:

See above.

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

See above.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

- vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability are not affected.

- d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

- i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes No N/A Comments:

- ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes No N/A Comments:

- iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

There were no surrogate recovery failures associated with this work order.

1209788

Laboratory Report Date:

November 13, 2020

CS Site Name:

FIA Sitewide PFAS

iv. Data quality or usability affected?

Comments:

The data quality and/or usability are not affected.

e. Trip Blanks

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes No N/A Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes No N/A Comments:

iii. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

None; target analytes were not detected in the trip blank sample.

v. Data quality or usability affected?

Comments:

The data quality and/or usability are not affected.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No N/A Comments:

ii. Submitted blind to lab?

Yes No N/A Comments:

Field-duplicate samples MW-1901-15 and MW-2901-15 was submitted in this work order.

1209788

Laboratory Report Date:

November 13, 2020

CS Site Name:

FIA Sitewide PFAS

iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water, 50% soil)

$$RPD (\%) = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2) / 2)} \times 100$$

Where R₁ = Sample Concentration
R₂ = Field Duplicate Concentration

Yes No N/A Comments:

The RPD could not be calculated because the target analytes were not detected.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The data quality and/or usability are not affected.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes No N/A Comments:

The equipment blank sample *EB-15* was submitted with this work order.

i. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

DRO was detected at an estimated concentration in the equipment blank sample.

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

The equipment blank and project samples were affected by DRO contamination as identified in the associated method blank. For this reason, the DRO concentration identified in the equipment blank was determined to be a false-positive. Further qualification is not required.

iii. Data quality or usability affected?

Comments:

None; see above.

1209788

Laboratory Report Date:

November 13, 2020

CS Site Name:

FIA Sitewide PFAS

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes No N/A Comments:

There were no additional flags/qualifiers required for this work order.



Laboratory Report of Analysis

To: Shannon & Wilson-Fairbanks
2355 Hill Rd
Fairbanks, AK 99707
(907)479-0600

Report Number: **1209789**

Client Project: **102519-014 FAI FTP**

Dear Marcy Nadel,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Jennifer at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Stephen C. Ede

2020.11.18

15:16:10 -09'00'

Jennifer Dawkins
Project Manager
Jennifer.Dawkins@sgs.com

Date

Case Narrative

SGS Client: **Shannon & Wilson-Fairbanks**

SGS Project: **1209789**

Project Name/Site: **102519-014 FAI FTP**

Project Contact: **Marcy Nadel**

Refer to sample receipt form for information on sample condition.

FTP-pre-006 (1209789001) PS

8015M - Ethylene & Propylene Glycols were analyzed by Bio-Chem of Grand Rapids, MI.

8270D SIM - PAH surrogate recovery for 2-Methylnaphthalene d10 does not meet QC criteria. The sample was re-extracted past hold time. Surrogate recovery was not within QC criteria and results are comparable. The in-hold data is reported.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 11/18/2020 3:13:20PM

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
TNTC	Too Numerous To Count
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
FTP-pre-006	1209789001	10/29/2020	10/30/2020	Water (Surface, Eff., Ground)
Trip Blank	1209789002	10/29/2020	10/30/2020	Water (Surface, Eff., Ground)

<u>Method</u>	<u>Method Description</u>
EPA 602/624	602 Aromatics by 624 (W)
EPA 625M SIM (PAH) LV	625 PAH SIM GC/MS Low Volume
AK102	DRO/RRO Low Volume Water
AK103	DRO/RRO Low Volume Water
EP200.8	Metals in Water by 200.8 ICP-MS

Print Date: 11/18/2020 3:13:24PM

Detectable Results Summary

Client Sample ID: **FTP-pre-006**

Lab Sample ID: 1209789001

Metals by ICP/MS

Polynuclear Aromatics GC/MS

Semivolatile Organic Fuels

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Arsenic	35.7	ug/L
Fluorene	0.759	ug/L
Naphthalene	0.797	ug/L
Diesel Range Organics	22.3	mg/L
Residual Range Organics	10.6	mg/L
Benzene	4.33	ug/L
Ethylbenzene	7.98	ug/L
o-Xylene	42.0	ug/L
P & M -Xylene	38.6	ug/L
Toluene	2.90	ug/L

Results of FTP-pre-006

Client Sample ID: **FTP-pre-006**
 Client Project ID: **102519-014 FAI FTP**
 Lab Sample ID: 1209789001
 Lab Project ID: 1209789

Collection Date: 10/29/20 08:00
 Received Date: 10/30/20 09:11
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	35.7		5.00	1.50	ug/L	1		11/11/20 15:42

Batch Information

Analytical Batch: MMS10941
 Analytical Method: EP200.8
 Analyst: DMM
 Analytical Date/Time: 11/11/20 15:42
 Container ID: 1209789001-E

Prep Batch: MXX33800
 Prep Method: E200.2
 Prep Date/Time: 11/04/20 13:37
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL



Results of FTP-pre-006

Client Sample ID: FTP-pre-006
Client Project ID: 102519-014 FAI FTP
Lab Sample ID: 1209789001
Lab Project ID: 1209789

Collection Date: 10/29/20 08:00
Received Date: 10/30/20 09:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with associated quality and detection data.

Batch Information

Analytical Batch: XMS12382
Analytical Method: EPA 625M SIM (PAH) LV
Analyst: DSD
Analytical Date/Time: 11/04/20 19:36
Container ID: 1209789001-C

Prep Batch: XXX44165
Prep Method: SW3535A
Prep Date/Time: 11/02/20 13:00
Prep Initial Wt./Vol.: 270 mL
Prep Extract Vol: 1 mL

Results of FTP-pre-006

Client Sample ID: **FTP-pre-006**
 Client Project ID: **102519-014 FAI FTP**
 Lab Sample ID: 1209789001
 Lab Project ID: 1209789

Collection Date: 10/29/20 08:00
 Received Date: 10/30/20 09:11
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	22.3	0.545	0.164	mg/L	1		11/11/20 07:31
Surrogates							
5a Androstane (surr)	101	50-150		%	1		11/11/20 07:31

Batch Information

Analytical Batch: XFC15808
 Analytical Method: AK102
 Analyst: CDM
 Analytical Date/Time: 11/11/20 07:31
 Container ID: 1209789001-A

Prep Batch: XXX44186
 Prep Method: SW3520C
 Prep Date/Time: 11/04/20 16:30
 Prep Initial Wt./Vol.: 275 mL
 Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	10.6	0.455	0.136	mg/L	1		11/11/20 07:31
Surrogates							
n-Triacontane-d62 (surr)	109	50-150		%	1		11/11/20 07:31

Batch Information

Analytical Batch: XFC15808
 Analytical Method: AK103
 Analyst: CDM
 Analytical Date/Time: 11/11/20 07:31
 Container ID: 1209789001-A

Prep Batch: XXX44186
 Prep Method: SW3520C
 Prep Date/Time: 11/04/20 16:30
 Prep Initial Wt./Vol.: 275 mL
 Prep Extract Vol: 1 mL

Results of FTP-pre-006

Client Sample ID: **FTP-pre-006**
 Client Project ID: **102519-014 FAI FTP**
 Lab Sample ID: 1209789001
 Lab Project ID: 1209789

Collection Date: 10/29/20 08:00
 Received Date: 10/30/20 09:11
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	4.33		0.400	0.120	ug/L	1		11/01/20 21:37
Ethylbenzene	7.98		1.00	0.310	ug/L	1		11/01/20 21:37
o-Xylene	42.0		1.00	0.310	ug/L	1		11/01/20 21:37
P & M -Xylene	38.6		2.00	0.620	ug/L	1		11/01/20 21:37
Toluene	2.90		1.00	0.310	ug/L	1		11/01/20 21:37
Surrogates								
1,2-Dichloroethane-D4 (surr)	113		81-118		%	1		11/01/20 21:37
4-Bromofluorobenzene (surr)	93.3		85-114		%	1		11/01/20 21:37
Toluene-d8 (surr)	98.6		89-112		%	1		11/01/20 21:37

Batch Information

Analytical Batch: VMS20458
 Analytical Method: EPA 602/624
 Analyst: NRB
 Analytical Date/Time: 11/01/20 21:37
 Container ID: 1209789001-F

Prep Batch: VXX36635
 Prep Method: SW5030B
 Prep Date/Time: 11/01/20 14:30
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of Trip Blank

Client Sample ID: **Trip Blank**
Client Project ID: **102519-014 FAI FTP**
Lab Sample ID: 1209789002
Lab Project ID: 1209789

Collection Date: 10/29/20 08:00
Received Date: 10/30/20 09:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		11/01/20 18:45
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		11/01/20 18:45
o-Xylene	0.500 U	1.00	0.310	ug/L	1		11/01/20 18:45
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		11/01/20 18:45
Toluene	0.500 U	1.00	0.310	ug/L	1		11/01/20 18:45
Surrogates							
1,2-Dichloroethane-D4 (surr)	118	81-118		%	1		11/01/20 18:45
4-Bromofluorobenzene (surr)	91	85-114		%	1		11/01/20 18:45
Toluene-d8 (surr)	99	89-112		%	1		11/01/20 18:45

Batch Information

Analytical Batch: VMS20458
Analytical Method: EPA 602/624
Analyst: NRB
Analytical Date/Time: 11/01/20 18:45
Container ID: 1209789002-A

Prep Batch: VXX36635
Prep Method: SW5030B
Prep Date/Time: 11/01/20 14:30
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1813910 [MXX/33800]
Blank Lab ID: 1591575

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1209789001

Results by EP200.8

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Arsenic	2.50U	5.00	1.50	ug/L

Batch Information

Analytical Batch: MMS10941
Analytical Method: EP200.8
Instrument: Perkin Elmer Nexlon P5
Analyst: DMM
Analytical Date/Time: 11/11/2020 2:15:33PM

Prep Batch: MXX33800
Prep Method: E200.2
Prep Date/Time: 11/4/2020 1:37:44PM
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 11/18/2020 3:13:30PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1209789 [MXX33800]
Blank Spike Lab ID: 1591576
Date Analyzed: 11/11/2020 14:18

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1209789001

Results by EP200.8

Parameter	Blank Spike (ug/L)			CL
	Spike	Result	Rec (%)	
Arsenic	1000	1050	105	(85-115)

Batch Information

Analytical Batch: **MMS10941**
Analytical Method: **EP200.8**
Instrument: **Perkin Elmer Nexlon P5**
Analyst: **DMM**

Prep Batch: **MXX33800**
Prep Method: **E200.2**
Prep Date/Time: **11/04/2020 13:37**
Spike Init Wt./Vol.: 1000 ug/L Extract Vol: 50 mL
Dupe Init Wt./Vol.: Extract Vol:

Print Date: 11/18/2020 3:13:33PM

Matrix Spike Summary

Original Sample ID: 1591580
 MS Sample ID: 1591581 MS
 MSD Sample ID:

Analysis Date: 11/11/2020 14:30
 Analysis Date: 11/11/2020 14:33
 Analysis Date:
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1209789001

Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Arsenic	8.78	1000	1090	108				70-130		

Batch Information

Analytical Batch: MMS10941
 Analytical Method: EP200.8
 Instrument: Perkin Elmer Nexlon P5
 Analyst: DMM
 Analytical Date/Time: 11/11/2020 2:33:31PM

Prep Batch: MXX33800
 Prep Method: DW Digest for Metals on ICP-MS
 Prep Date/Time: 11/4/2020 1:37:44PM
 Prep Initial Wt./Vol.: 20.00mL
 Prep Extract Vol: 50.00mL

Print Date: 11/18/2020 3:13:34PM

Method Blank

Blank ID: MB for HBN 1813672 [VXX/36635]

Blank Lab ID: 1590868

QC for Samples:

1209789001, 1209789002

Matrix: Water (Surface, Eff., Ground)

Results by EPA 602/624

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Benzene	0.200U	0.400	0.120	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
Toluene	0.500U	1.00	0.310	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	114	81-118		%
4-Bromofluorobenzene (surr)	91	85-114		%
Toluene-d8 (surr)	99.4	89-112		%

Batch Information

Analytical Batch: VMS20458
 Analytical Method: EPA 602/624
 Instrument: Agilent 7890-75MS
 Analyst: NRB
 Analytical Date/Time: 11/1/2020 6:02:00PM

Prep Batch: VXX36635
 Prep Method: SW5030B
 Prep Date/Time: 11/1/2020 2:30:00PM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 11/18/2020 3:13:36PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1209789 [VXX36635]
 Blank Spike Lab ID: 1590869
 Date Analyzed: 11/01/2020 15:52

Spike Duplicate ID: LCSD for HBN 1209789 [VXX36635]
 Spike Duplicate Lab ID: 1590870
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1209789001, 1209789002

Results by EPA 602/624

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	30	30.9	103	30	31.2	104	(79-120)	1.10	(< 20)
Ethylbenzene	30	31.7	106	30	32.4	108	(79-121)	2.10	(< 20)
o-Xylene	30	31.2	104	30	31.4	105	(78-122)	0.75	(< 20)
P & M -Xylene	60	63.3	105	60	64.1	107	(80-121)	1.40	(< 20)
Toluene	30	30.3	101	30	31.3	104	(80-121)	3.10	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30	107	107	30	107	107	(81-118)	0.23	
4-Bromofluorobenzene (surr)	30	91.4	91	30	91.3	91	(85-114)	0.08	
Toluene-d8 (surr)	30	99.6	100	30	100	100	(89-112)	0.69	

Batch Information

Analytical Batch: **VMS20458**
 Analytical Method: **EPA 602/624**
 Instrument: **Agilent 7890-75MS**
 Analyst: **NRB**

Prep Batch: **VXX36635**
 Prep Method: **SW5030B**
 Prep Date/Time: **11/01/2020 14:30**
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1813695 [XXX/44165]
 Blank Lab ID: 1591042

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1209789001

Results by EPA 625M SIM (PAH) LV

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Acenaphthene	0.0250U	0.0500	0.0150	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	ug/L
Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0100U	0.0200	0.00620	ug/L
Benzo[b]Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	ug/L
Chrysene	0.0250U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0100U	0.0200	0.00620	ug/L
Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Fluorene	0.0250U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	ug/L
Naphthalene	0.0500U	0.100	0.0310	ug/L
Phenanthrene	0.0250U	0.0500	0.0150	ug/L
Pyrene	0.0250U	0.0500	0.0150	ug/L
Surrogates				
2-Methylnaphthalene-d10 (surr)	67.6	37-78		%
Fluoranthene-d10 (surr)	76.7	24-116		%

Batch Information

Analytical Batch: XMS12382
 Analytical Method: EPA 625M SIM (PAH) LV
 Instrument: Agilent GC 7890B/5977A SWA
 Analyst: DSD
 Analytical Date/Time: 11/4/2020 12:26:00PM

Prep Batch: XXX44165
 Prep Method: SW3535A
 Prep Date/Time: 11/2/2020 1:00:09PM
 Prep Initial Wt./Vol.: 250 mL
 Prep Extract Vol: 1 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1209789 [XXX44165]
 Blank Spike Lab ID: 1591043
 Date Analyzed: 11/04/2020 12:46

Spike Duplicate ID: LCSD for HBN 1209789
 [XXX44165]
 Spike Duplicate Lab ID: 1591044
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1209789001

Results by EPA 625M SIM (PAH) LV

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	2	1.51	76	2	1.39	70	(48-114)	8.20	(< 20)
Acenaphthylene	2	1.71	86	2	1.58	79	(35-121)	8.40	(< 20)
Anthracene	2	1.57	79	2	1.47	74	(53-119)	6.40	(< 20)
Benzo(a)Anthracene	2	1.53	77	2	1.47	73	(59-120)	4.40	(< 20)
Benzo[a]pyrene	2	1.72	86	2	1.67	84	(53-120)	3.10	(< 20)
Benzo[b]Fluoranthene	2	1.61	80	2	1.60	80	(53-126)	0.67	(< 20)
Benzo[g,h,i]perylene	2	1.77	88	2	1.74	87	(44-128)	1.50	(< 20)
Benzo[k]fluoranthene	2	1.72	86	2	1.65	83	(54-125)	3.70	(< 20)
Chrysene	2	1.63	82	2	1.57	79	(57-120)	3.60	(< 20)
Dibenzo[a,h]anthracene	2	1.80	90	2	1.77	89	(44-131)	1.70	(< 20)
Fluoranthene	2	1.51	76	2	1.51	76	(58-120)	0.19	(< 20)
Fluorene	2	1.57	79	2	1.45	73	(50-118)	7.60	(< 20)
Indeno[1,2,3-c,d] pyrene	2	1.89	95	2	1.85	92	(48-130)	2.40	(< 20)
Naphthalene	2	1.55	78	2	1.41	71	(43-114)	9.40	(< 20)
Phenanthrene	2	1.57	78	2	1.45	72	(53-115)	8.10	(< 20)
Pyrene	2	1.52	76	2	1.48	74	(53-121)	2.90	(< 20)
Surrogates									
2-Methylnaphthalene-d10 (surr)	2	69.5	70	2	61.3	61	(37-78)	12.50	
Fluoranthene-d10 (surr)	2	73	73	2	73.6	74	(24-116)	0.75	

Batch Information

Analytical Batch: XMS12382
 Analytical Method: EPA 625M SIM (PAH) LV
 Instrument: Agilent GC 7890B/5977A SWA
 Analyst: DSD

Prep Batch: XXX44165
 Prep Method: SW3535A
 Prep Date/Time: 11/02/2020 13:00
 Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

Matrix Spike Summary

Original Sample ID: 1206006001
 MS Sample ID: 1591113 MS
 MSD Sample ID: 1591114 MSD

Analysis Date: 11/04/2020 15:09
 Analysis Date: 11/04/2020 15:30
 Analysis Date: 11/04/2020 15:50
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1209789001

Results by EPA 625M SIM (PAH) LV

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	0.229	2.04	1.53	64	1.92	1.46	64	48-114	4.70	(< 20)
Acenaphthylene	0.0481U	2.04	1.53	75	1.92	1.53	79	35-121	0.32	(< 20)
Anthracene	0.0481U	2.04	1.49	73	1.92	1.44	75	53-119	3.40	(< 20)
Benzo(a)Anthracene	0.0481U	2.04	1.43	70	1.92	1.46	76	59-120	2.20	(< 20)
Benzo[a]pyrene	0.0192U	2.04	1.53	75	1.92	1.64	86	53-120	7.00	(< 20)
Benzo[b]Fluoranthene	0.0481U	2.04	1.57	77	1.92	1.53	80	53-126	2.30	(< 20)
Benzo[g,h,i]perylene	0.0481U	2.04	1.25	62	1.92	1.60	83	44-128	23.90	* (< 20)
Benzo[k]fluoranthene	0.0481U	2.04	1.43	70	1.92	1.62	85	54-125	12.70	(< 20)
Chrysene	0.0481U	2.04	1.51	74	1.92	1.55	81	57-120	2.70	(< 20)
Dibenzo[a,h]anthracene	0.0192U	2.04	1.22	60	1.92	1.64	85	44-131	29.20	* (< 20)
Fluoranthene	0.0481U	2.04	1.46	72	1.92	1.46	76	58-120	0.16	(< 20)
Fluorene	1.43	2.04	2.69	62	1.92	2.15	37	* 50-118	22.40	* (< 20)
Indeno[1,2,3-c,d] pyrene	0.0481U	2.04	1.47	72	1.92	1.71	89	48-130	14.90	(< 20)
Naphthalene	0.0962U	2.04	1.42	70	1.92	1.40	73	43-114	1.60	(< 20)
Phenanthrene	0.0481U	2.04	1.44	71	1.92	1.42	74	53-115	1.80	(< 20)
Pyrene	0.0481U	2.04	1.44	70	1.92	1.45	75	53-121	0.66	(< 20)
Surrogates										
2-Methylnaphthalene-d10 (surr)		2.04	1.17	57	1.92	1.21	63	37-78	3.70	
Fluoranthene-d10 (surr)		2.04	1.44	71	1.92	1.45	75	24-116	0.35	

Batch Information

Analytical Batch: XMS12382
 Analytical Method: EPA 625M SIM (PAH) LV
 Instrument: Agilent GC 7890B/5977A SWA
 Analyst: DSD
 Analytical Date/Time: 11/4/2020 3:30:00PM

Prep Batch: XXX44165
 Prep Method: 3535 Solid Phase Ext for 8270 PAH SIM LV
 Prep Date/Time: 11/2/2020 1:00:09PM
 Prep Initial Wt./Vol.: 245.00mL
 Prep Extract Vol: 1.00mL

Print Date: 11/18/2020 3:13:46PM

Method Blank

Blank ID: MB for HBN 1813899 [XXX/44186]

Blank Lab ID: 1591512

QC for Samples:
1209789001

Matrix: Water (Surface, Eff., Ground)

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	0.181J	0.600	0.180	mg/L
Surrogates				
5a Androstane (surr)	104	60-120		%

Batch Information

Analytical Batch: XFC15808
Analytical Method: AK102
Instrument: Agilent 7890B F
Analyst: CDM
Analytical Date/Time: 11/11/2020 3:19:00AM

Prep Batch: XXX44186
Prep Method: SW3520C
Prep Date/Time: 11/4/2020 4:30:44PM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 11/18/2020 3:13:48PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1209789 [XXX44186]
 Blank Spike Lab ID: 1591513
 Date Analyzed: 11/11/2020 03:29

Spike Duplicate ID: LCSD for HBN 1209789
 [XXX44186]
 Spike Duplicate Lab ID: 1591514
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1209789001

Results by AK102

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	20	19.8	99	20	19.3	97	(75-125)	2.60	(< 20)
Surrogates									
5a Androstane (surr)	0.4	115	115	0.4	115	115	(60-120)	0.06	

Batch Information

Analytical Batch: **XFC15808**
 Analytical Method: **AK102**
 Instrument: **Agilent 7890B F**
 Analyst: **CDM**

Prep Batch: **XXX44186**
 Prep Method: **SW3520C**
 Prep Date/Time: **11/04/2020 16:30**
 Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

Method Blank

Blank ID: MB for HBN 1813899 [XXX/44186]

Blank Lab ID: 1591512

QC for Samples:
1209789001

Matrix: Water (Surface, Eff., Ground)

Results by AK103

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Residual Range Organics	0.250U	0.500	0.150	mg/L
Surrogates				
n-Triacontane-d62 (surr)	118	60-120		%

Batch Information

Analytical Batch: XFC15808
 Analytical Method: AK103
 Instrument: Agilent 7890B F
 Analyst: CDM
 Analytical Date/Time: 11/11/2020 3:19:00AM

Prep Batch: XXX44186
 Prep Method: SW3520C
 Prep Date/Time: 11/4/2020 4:30:44PM
 Prep Initial Wt./Vol.: 250 mL
 Prep Extract Vol: 1 mL

Print Date: 11/18/2020 3:13:54PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1209789 [XXX44186]
 Blank Spike Lab ID: 1591513
 Date Analyzed: 11/11/2020 03:29

Spike Duplicate ID: LCSD for HBN 1209789
 [XXX44186]
 Spike Duplicate Lab ID: 1591514
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1209789001

Results by AK102

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL	
	Spike	Result	Rec (%)	Spike	Result	Rec (%)				
Residual Range Organics	20	23.0	115	20	22.9	115	(60-120)	0.34	(< 20)	
Surrogates										
n-hriacontane-d62 (surr)	0.4	116	116	0.4	119	119	(60-120)	2.10		

Batch Information

Analytical BatcT: **XFC15808**
 Analytical MetTod: **AK102**
 Instrument: **Agilent 7890B F**
 Analyst: **CDM**

Prep BatcT: **XXX44186**
 Prep MetTod: **SW2530C**
 Prep Date/time: **11/04/3030 16:20**
 Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

Print Date: 11/18/2020 3:13:57PM

1209789



CHAIN-

SHANNON & WILSON, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

2355 Hill Road Fairbanks, AK 99709 (907) 479-0600 www.shannonwilson.com

RECORD

Laboratory Attn:

Page 1 of 1

Analytical Methods (include preservative if used)

DVO (H2O)	AK121 AK123 (H2)																								
	TR44 AK123 (H2)																								
	TR44 (H2)																								
	TR44 (H2)																								
	TR44 (H2)																								
	TR44 (H2)																								
	TR44 (H2)																								
	TR44 (H2)																								
	TR44 (H2)																								
	TR44 (H2)																								
	TR44 (H2)																								
	TR44 (H2)																								

Turn Around Time: Normal Rush

Please Specify

Quote No: OPEN

J-Flags: Yes No

Sample Identity	Lab No.	Time	Date Sampled
FTP - pre - 006	JAC	0800	10/29/20
TRP Blg 1c	JAC	0800	10/29/20

Sample Identity	Lab No.	Time	Date Sampled	Analytical Methods (include preservative if used)				Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
				DVO (H2O)	TR44 (H2)	TR44 (H2)	TR44 (H2)		
FTP - pre - 006	JAC	0800	10/29/20	X	X	X	X	11	Slight foul odor, GW
TRP Blg 1c	JAC	0800	10/29/20	X	X	X	X	3	

Project Information

Number: 102519 - 014

Name: FAE FTP

Contact: MDN

Ongoing Project? Yes No

Sampler: MXT

Sample Receipt

Total No. of Containers: 14

COC Seals/Intact? Y/N/NA

Received Good Cond./Cold

Temp: 1.4

Delivery Method: Hand

Notes:

Trip blank with samples at all times

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: [Signature] Printed Name: Michael Jaramillo Company: Shannon & Wilson	Signature: [Signature] Printed Name: [Signature] Company: [Signature]	Signature: [Signature] Printed Name: [Signature] Company: [Signature]
Time: 8:55 Date: 10/29/20	Time: [Time] Date: [Date]	Time: [Time] Date: [Date]
Received By: 1. [Signature] Printed Name: [Signature] Company: [Signature]	Received By: 2. [Signature] Printed Name: [Signature] Company: [Signature]	Received By: 3. [Signature] Printed Name: [Signature] Company: [Signature]
Time: 0800 Date: 10/29/20	Time: [Time] Date: [Date]	Time: 9:11 Date: 10/30/20

151B

350737

No. 36163



e-Sample Receipt Form

SGS Workorder #:

1209789

1209789

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements		
Were Custody Seals intact? Note # & location	Yes	1F, 1B
COC accompanied samples?	Yes	
DOD: Were samples received in COC corresponding coolers?	N/A	
N/A **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	Yes	Cooler ID: 1 @ 1.8 °C Therm. ID: D23
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.		
*If >6°C, were samples collected <8 hours ago?	N/A	
If <0°C, were sample containers ice free?	N/A	
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Holding Time / Documentation / Sample Condition Requirements		
Note: Refer to form F-083 "Sample Guide" for specific holding times.		
Were samples received within holding time?	Yes	
Do samples match COC** (i.e., sample IDs, dates/times collected)?	Yes	
**Note: If times differ <1hr, record details & login per COC.		
***Note: If sample information on containers differs from COC, SGS will default to COC information		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)	No	Glycols not specified on COC. Proceed with ethylene and propylene per PM.
N/A ***Exemption permitted for metals (e.g.200.8/6020A).		
Were proper containers (type/mass/volume/preservative***)used?	Yes	
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	Yes	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	Yes	
Were all soil VOAs field extracted with MeOH+BFB?	N/A	
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		



e-Sample Receipt Form FBK

SGS Workorder #:

1209789

1209789

Review Criteria		Condition (Yes, No, N/A)	Exceptions Noted below	
Chain of Custody / Temperature Requirements			Yes	Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location		N/A		
COC accompanied samples?		Yes		
DOD: Were samples received in COC corresponding coolers?		N/A		
<input type="checkbox"/> **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required				
Temperature blank compliant* (i.e., 0-6 °C after CF)?		Yes	Cooler ID: 1 @ 1.4 °C	Therm. ID: D21
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.			Cooler ID: @	°C Therm. ID:
			Cooler ID: @	°C Therm. ID:
			Cooler ID: @	°C Therm. ID:
			Cooler ID: @	°C Therm. ID:
*If >6°C, were samples collected <8 hours ago?				
If <0°C, were sample containers ice free?				
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.				
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.		
Do samples match COC** (i.e., sample IDs, dates/times collected)?		N/C		
**Note: If times differ <1hr, record details & login per COC.				
***Note: If sample information on containers differs from COC, SGS will default to COC information				
Were samples in good condition (no leaks/cracks/breakage)?		Yes		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals))		Yes		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?		Yes		
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?		N/C		
Were all soil VOAs field extracted with MeOH+BFB?		N/A		
For Rush/Short Hold Time, was RUSH/Short HT email sent?		N/A		
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.				
Additional notes (if applicable):				
SGS Profile #	350732		350732	



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1209789001-A	HCL to pH < 2	OK			
1209789001-B	HCL to pH < 2	OK			
1209789001-C	No Preservative Required	OK			
1209789001-D	No Preservative Required	OK			
1209789001-E	HNO3 to pH < 2	OK			
1209789001-F	HCL to pH < 2	OK			
1209789001-G	HCL to pH < 2	OK			
1209789001-H	HCL to pH < 2	OK			
1209789001-I	HCL to pH < 2	OK			
1209789001-J	HCL to pH < 2	OK			
1209789001-K	HCL to pH < 2	OK			
1209789002-A	HCL to pH < 2	OK			
1209789002-B	HCL to pH < 2	OK			
1209789002-C	HCL to pH < 2	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.



1049 - 28th Street SE
Grand Rapids, MI 49508
Ph: 616/248-4900
Toll Free: 800/362-LABS
Fax: 616/248-4904

November 06, 2020

Julie Shumway
SGS North America Inc
200 W. Pötter Drive
Anchorage, AK 99518

TEL: (907) 562-2343
FAX (907) 561-5301
RE: 1209789

Dear Julie Shumway:

Order No.: 2011016

BIO-CHEM Laboratories, Inc. received 1 sample on 11/3/2020 for the analyses presented in the following report.

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative.

If you have any questions regarding these tests results, please feel free to call.

Please note that unless otherwise instructed, residual samples will be held for sixty (60) days from the original report date. At that time, all non-hazardous samples will be disposed of in accordance with federal, state and local regulations and ordinances, and hazardous samples shall be returned to you. Please contact the laboratory within thirty (30) days if other arrangements for sample retention need to be made.

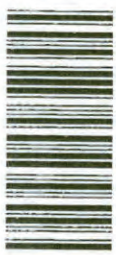
Sincerely,

Cindy Euwema
Office Manager

201010

- Locations Nationwide
- Alaska
- New Jersey
- Texas
- Virginia
- Florida
- Colorado
- North Carolina
- Louisiana

www.us.sgs.com



SGS North America Inc.
CHAIN OF CUSTODY RECORD

CLIENT: SGS North America Inc. - Alaska Division CONTACT: Julie Shumway (907) 562-2343 PROJECT NAME: 1209789 REPORTS TO: Julie Shumway INVOICE TO: SGS - Alaska		SGS Reference: Additional Comments: All soils report out in dry weight unless	
PHONE NO: (907) 562-2343 PWSID#: NPDL#: E-MAIL: Julie.Shumway@sgs.com Env.Alaska.RefLabTeam@sgs.com QUOTE #: P.O. #: 1209789	Preservative Used: TYPE C = COMP G = GRAB MI = Multi-Incremental Soils	# CONTAINERS 3	Location ID
RESERVED for lab use SAMPLE IDENTIFICATION FTP-pre-006	DATE mm/dd/yy 10/29/2020	TIME HHMM 08:00:00	MATRIX/ MATRIX CODE Water
Relinquished By: (1) <i>Advent</i>	Date 11-02-20	Time 1130	Received By: <i>Tedex/Philip LeHinga</i>
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received For Laboratory By:
DOD Project? NO		Report to DL (J Flags)? NO If J-Report as DL/LOD/LOQ.	
Data Deliverable Requirements: Level 2 + SGS EDD XML		Cooler ID:	
Requested Turnaround Time and/or Special Instructions:			
Temp Blank °C: 1.0		or Ambient []	
Chain of Custody Seal: (Circle)		INTACT <input checked="" type="checkbox"/> BROKEN <input type="checkbox"/> ABSENT <input type="checkbox"/>	

http://www.sgs.com/terms and conditions.htm

[X] 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
 [] 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

CLIENT: SGS North America Inc
Project: 1209789
Lab Order: 2011016

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received
2011016-01A	FTP-pre-006	Aqueous	10/29/2020	11/3/2020

CLIENT: SGS North America Inc
Project: 1209789
Lab Order: 2011016

CASE NARRATIVE

Samples are routinely analyzed using methods outlined in the following references:

- (SW) Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Ed.
- (E) Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020.
- (A) Standard Methods for the Examination of Water and Wastewater, APHA, 18th Ed.
- (D) Annual Book of ASTM Standards.

Specific methods utilized for this project are provided in the analytical report and are identified by the reference document abbreviation () followed by the method number.

All QA/QC and sample analyses met method, laboratory and/or regulatory data quality objectives unless otherwise specified below.

No data qualifications required.

CLIENT: SGS North America Inc

Project Number: 1209789

Lab Order: 2011016

Client Sample ID: FTP-pre-006

Project: 1209789

Collection Date: 10/29/2020

Lab Sample ID: 2011016-01A

Matrix: AQUEOUS

Analyses	Method Ref.	Result	Q	PQL	Units	DF	Analyst	Date
Alcohols by GC/FID								
1. Ethylene Glycol	SW8015B	< 10		10	mg/L	1	LEB	11/4/2020
2. Propylene Glycol	SW8015B	< 10		10	mg/L	1	LEB	11/4/2020

Definitions: PQL - Practical Quantitation Limit
DF - Dilution Factor

Qualifiers (Q): J - Detected below PQL but above MDL: Estimated
S - Spike Recovery Outside Acceptance Limits
B - Analyte detected in associated Method Blank
N - See case narrative for explanation

Lab Order: 2011016
Client: SGS North America Inc
Project: 1209789

ANALYTICAL DETAIL REPORT

Sample ID	Client Sample ID	Matrix	Test Name	Date Sampled	TCLP/SPLP Date	Prep Date	QC Batch	Analysis Date	Analytical Batch
-----------	------------------	--------	-----------	--------------	----------------	-----------	----------	---------------	------------------

2011016-01A	FTP-pre-006	Aqueous	Alcohols by GC/FID	10/29/2020		11/4/2020	45642	11/4/2020	GC_B_FID_201104B
-------------	-------------	---------	--------------------	------------	--	-----------	-------	-----------	------------------

CLIENT: SGS North America Inc
 Work Order: 2011016
 Project: 1209789

ANALYTICAL QC SUMMARY REPORT

TestCode: ALCOHOL_W

Sample ID: MB-45642	SampType: MBLK	TestCode: ALCOHOL_W	Units: mg/L	Prep Date: 11/4/2020	Run ID: GC_B_FID_201104B						
Client ID: ZZZZZ	Batch ID: 45642	TestNo: SW8015B	(SW8015B)	Analysis Date: 11/4/2020	SeqNo: 1132334						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethylene Glycol	< 10	10									
Propylene Glycol	< 10	10									

Sample ID: LCS-45642	SampType: LCS	TestCode: ALCOHOL_W	Units: mg/L	Prep Date: 11/4/2020	Run ID: GC_B_FID_201104B						
Client ID: ZZZZZ	Batch ID: 45642	TestNo: SW8015B	(SW8015B)	Analysis Date: 11/4/2020	SeqNo: 1132335						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethylene Glycol	56.11	10	50	0	112	73.3	129	0	0	0	
Propylene Glycol	52.5	10	50	0	105	70	129	0	0	0	

Sample ID: 2011016-01AMS	SampType: MS	TestCode: ALCOHOL_W	Units: mg/L	Prep Date: 11/4/2020	Run ID: GC_B_FID_201104B						
Client ID: FTP-pre-006	Batch ID: 45642	TestNo: SW8015B	(SW8015B)	Analysis Date: 11/4/2020	SeqNo: 1132337						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethylene Glycol	115.4	10	100	0	115	46	148	0	0	0	
Propylene Glycol	114.3	10	100	0	114	52.8	140	0	0	0	

Sample ID: 2011016-01AMSD	SampType: MSD	TestCode: ALCOHOL_W	Units: mg/L	Prep Date: 11/4/2020	Run ID: GC_B_FID_201104B						
Client ID: FTP-pre-006	Batch ID: 45642	TestNo: SW8015B	(SW8015B)	Analysis Date: 11/4/2020	SeqNo: 1132338						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethylene Glycol	116.8	10	100	0	117	46	148	115.4	1.23	20	
Propylene Glycol	113.7	10	100	0	114	52.8	140	114.3	0.526	20	

Qualifiers: ND - Not Detected at the Reporting Limit
 S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits
 B - Analyte detected in the associated Method Blank
 J - Analyte detected below quantitation limits

Laboratory Data Review Checklist

Completed By:

Amber Masters

Title:

Environmental Scientist

Date:

12/7/2020

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

SGS North America, Inc.

Laboratory Report Number:

1209789

Laboratory Report Date:

11/18/2020

CS Site Name:

FAI FTP

ADEC File Number:

100.38.277

Hazard Identification Number:

26816

1209789

Laboratory Report Date:

11/18/2020

CS Site Name:

FAI FTP

Note: Any N/A or No box checked must have an explanation in the comments box.

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes No N/A Comments:

The samples were submitted to ADEC certified lab SGS, North America, Inc. in Anchorage, AK for analysis. SGS transferred samples to a reference laboratory for some analyses; see 1.b below.

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes No N/A Comments:

The samples were transferred to BioChem Laboratories, Inc. for analysis of ethylene glycol and propylene glycol. BioChem Laboratories, Inc. is not DEC certified for this method.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes No N/A Comments:

b. Correct analyses requested?

Yes No N/A Comments:

Glycols were not specified on the COC, analysis of ethylene and propylene verified by project manager.

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes No N/A Comments:

Sample cooler temperature was recorded at 1.8° C upon receipt at laboratory. Sample cooler temperature was also recorded at 1.0° C upon receipt at the reference laboratory.

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes No N/A Comments:

1209789

Laboratory Report Date:

11/18/2020

CS Site Name:

FAI FTP

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes No N/A Comments:

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes No N/A Comments:

The laboratory receipt documentation does not note any discrepancies.

e. Data quality or usability affected?

Comments:

Not applicable, see above.

4. Case Narrative

a. Present and understandable?

Yes No N/A Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

Yes No N/A Comments:

SGS *
The case narrative indicates the following:
Ethylene and propylene glycol analyses were performed by Bio-Chem in Grand Rapids, MI.

PAH surrogate recovery was not within laboratory QC criteria for 2-methylnaphthalene for the project samples included in this work order. The samples were re-extracted past hold-time, results for the reextracted samples were comparable. The data for in-hold samples are reported.

Bio-Chem
The case narrative does not indicate any discrepancies with the data.

c. Were all corrective actions documented?

Yes No N/A Comments:

Where required; see above.

1209789

Laboratory Report Date:

11/18/2020

CS Site Name:

FAI FTP

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The case narrative does not specify an effect on data quality/usability.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes No N/A Comments:

b. All applicable holding times met?

Yes No N/A Comments:

c. All soils reported on a dry weight basis?

Yes No N/A Comments:

Soil samples were not submitted with this work order.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes No N/A Comments:

Yes, reported LOQs were below DEC groundwater cleanup levels, where applicable.

e. Data quality or usability affected?

No, see above.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

1209789

Laboratory Report Date:

11/18/2020

CS Site Name:

FAI FTP

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes No N/A Comments:

All method blank results were less than the LOQ, however, diesel range organics (DRO) were detected in the method blank above the method detection limit.

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

DRO was detected in the associated project sample greater than 10 times the concentration in the method blank. The results are not affected.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

v. Data quality or usability affected?

Comments:

Not applicable, see above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes No N/A Comments:

LCS results were reported glycol analyses.
LCS/LCSD results were reported for VOCs, PAH, DRO, and RRO analyses.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

LCS results were reported for arsenic analysis.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

1209789

Laboratory Report Date:

11/18/2020

CS Site Name:

FAI FTP

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Percent recovery and RPD were within acceptable limits.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Not applicable, see above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Note: Leave blank if not required for project

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

MS/MSD results were reported for PAH and glycol analyses.

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

MS results were reported for arsenic analysis.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes No N/A Comments:

Results for fluorene in the MSD were below control limits.

1209789

Laboratory Report Date:

11/18/2020

CS Site Name:

FAI FTP

- iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes No N/A Comments:

RPDs for benzo[g,h,i]perylene, dibenzo[a,h]anthracene, and fluorene were outside control limits.

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Project sample result are not affected, as the spiked sample was not part of the project sample set.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

N/A; see above.

- vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

No, see above.

- d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

- i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes No N/A Comments:

- ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes No N/A Comments:

Surrogate recovery for 2-methylnaphthalene-d10 was below control limits in the project sample *FTP-pre-006*. This surrogate is associated with the following PAHs included in this work order: acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene, and phenanthrene.

1209789

Laboratory Report Date:

11/18/2020

CS Site Name:

FAI FTP

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

Naphthalene and fluorene were detected in project sample *FTP-pre-006* and are considered estimated, biased low, flagged 'JL' in the analytical database. Acenaphthene, acenaphthylene, anthracene, and phenanthrene were not detected in this sample; the non-detect results are considered estimated with no direction of bias and have been flagged 'UJ' in the analytical database.

iv. Data quality or usability affected?

Comments:

Yes, see above.

e. Trip Blanks

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes No N/A Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes No N/A Comments:

iii. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

There were no detections in the trip blank associated with this work order.

v. Data quality or usability affected?

Comments:

Not applicable, see above.

1209789

Laboratory Report Date:

11/18/2020

CS Site Name:

FAI FTP

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No N/A Comments:

ii. Submitted blind to lab?

Yes No N/A Comments:

A field duplicate was not required or included with this work order.

iii. Precision – All relative percent differences (RPD) less than specified project objectives?
(Recommended: 30% water, 50% soil)

$$RPD (\%) = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2) / 2)} \times 100$$

Where R₁ = Sample Concentration
R₂ = Field Duplicate Concentration

Yes No N/A Comments:

See above.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

N/A, see above

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes No N/A Comments:

The project samples were collected using non-reusable equipment. An equipment blank is not required.

i. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

See above.

1209789

Laboratory Report Date:

11/18/2020

CS Site Name:

FAI FTP

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

Not applicable, see above

iii. Data quality or usability affected?

Comments:

Not applicable, see above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes No N/A Comments:

No other data flags or qualifiers required.



Laboratory Report of Analysis

To: Shannon & Wilson-Fairbanks
2355 Hill Rd
Fairbanks, AK 99707
(907)479-0600

Report Number: **1210288**

Client Project: **102519 FAI FTP MW**

Dear Marcy Nadel,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Jennifer at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Stephen C. Ede

2021.02.01

11:34:13 -09'00'

Jennifer Dawkins
Project Manager
Jennifer.Dawkins@sgs.com

Date

Case Narrative

SGS Client: **Shannon & Wilson-Fairbanks**

SGS Project: **1210288**

Project Name/Site: **102519 FAI FTP MW**

Project Contact: **Marcy Nadel**

Refer to sample receipt form for information on sample condition.

MB for HBN 1815550 [XXX/44391] (1598426) MB

AK102 - DRO is detected in the MB greater than one half the LOQ, but less than the LOQ.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 01/29/2021 11:50:49AM

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 DW Chemistry & Microbiology (Provisionally Certified as of 12/03/2020 for Turbidity by SM2130B, Copper & Mercury by EPA200.8 and Trihalomethanes by EPA 524.2) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
TNTC	Too Numerous To Count
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
MW-1901-15	1210288001	01/18/2021	01/20/2021	Water (Surface, Eff., Ground)
MW-1902-15	1210288002	01/18/2021	01/20/2021	Water (Surface, Eff., Ground)
MW-2902-15	1210288003	01/18/2021	01/20/2021	Water (Surface, Eff., Ground)
EB-1902-15	1210288004	01/18/2021	01/20/2021	Water (Surface, Eff., Ground)
Trip Blank	1210288005	01/18/2021	01/20/2021	Water (Surface, Eff., Ground)

<u>Method</u>	<u>Method Description</u>
AK102	DRO Low Volume (W)
SW8260D	Volatile Organic Compounds (W) FULL

Print Date: 01/29/2021 11:50:53AM

Detectable Results Summary

Client Sample ID: **MW-1901-15**

Lab Sample ID: 1210288001

Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.518J	mg/L

Client Sample ID: **MW-1902-15**

Lab Sample ID: 1210288002

Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.554J	mg/L

Client Sample ID: **MW-2902-15**

Lab Sample ID: 1210288003

Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.482J	mg/L

Client Sample ID: **EB-1902-15**

Lab Sample ID: 1210288004

Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.477J	mg/L

Results of MW-1901-15

Client Sample ID: **MW-1901-15**
 Client Project ID: **102519 FAI FTP MW**
 Lab Sample ID: 1210288001
 Lab Project ID: 1210288

Collection Date: 01/18/21 11:40
 Received Date: 01/20/21 09:40
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.518 J	0.577	0.173	mg/L	1		01/22/21 12:29
Surrogates							
5a Androstane (surr)	92.1	50-150		%	1		01/22/21 12:29

Batch Information

Analytical Batch: XFC15847
 Analytical Method: AK102
 Analyst: IVM
 Analytical Date/Time: 01/22/21 12:29
 Container ID: 1210288001-A

Prep Batch: XXX44391
 Prep Method: SW3520C
 Prep Date/Time: 01/21/21 16:00
 Prep Initial Wt./Vol.: 260 mL
 Prep Extract Vol: 1 mL



Results of MW-1901-15

Client Sample ID: MW-1901-15
Client Project ID: 102519 FAI FTP MW
Lab Sample ID: 1210288001
Lab Project ID: 1210288

Collection Date: 01/18/21 11:40
Received Date: 01/20/21 09:40
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of MW-1901-15

Client Sample ID: MW-1901-15
Client Project ID: 102519 FAI FTP MW
Lab Sample ID: 1210288001
Lab Project ID: 1210288

Collection Date: 01/18/21 11:40
Received Date: 01/20/21 09:40
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Results of MW-1901-15

Client Sample ID: **MW-1901-15**
Client Project ID: **102519 FAI FTP MW**
Lab Sample ID: 1210288001
Lab Project ID: 1210288

Collection Date: 01/18/21 11:40
Received Date: 01/20/21 09:40
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS20558
Analytical Method: SW8260D
Analyst: NRB
Analytical Date/Time: 01/25/21 01:24
Container ID: 1210288001-C

Prep Batch: VXX36798
Prep Method: SW5030B
Prep Date/Time: 01/24/21 11:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of MW-1902-15

Client Sample ID: MW-1902-15
Client Project ID: 102519 FAI FTP MW
Lab Sample ID: 1210288002
Lab Project ID: 1210288

Collection Date: 01/18/21 12:40
Received Date: 01/20/21 09:40
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane (surr)).

Batch Information

Analytical Batch: XFC15847
Analytical Method: AK102
Analyst: IVM
Analytical Date/Time: 01/22/21 12:39
Container ID: 1210288002-A

Prep Batch: XXX44391
Prep Method: SW3520C
Prep Date/Time: 01/21/21 16:00
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL



Results of MW-1902-15

Client Sample ID: MW-1902-15
Client Project ID: 102519 FAI FTP MW
Lab Sample ID: 1210288002
Lab Project ID: 1210288

Collection Date: 01/18/21 12:40
Received Date: 01/20/21 09:40
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of MW-1902-15

Client Sample ID: MW-1902-15
Client Project ID: 102519 FAI FTP MW
Lab Sample ID: 1210288002
Lab Project ID: 1210288

Collection Date: 01/18/21 12:40
Received Date: 01/20/21 09:40
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Results of MW-1902-15

Client Sample ID: **MW-1902-15**
Client Project ID: **102519 FAI FTP MW**
Lab Sample ID: 1210288002
Lab Project ID: 1210288

Collection Date: 01/18/21 12:40
Received Date: 01/20/21 09:40
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS20558
Analytical Method: SW8260D
Analyst: NRB
Analytical Date/Time: 01/25/21 01:39
Container ID: 1210288002-C

Prep Batch: VXX36798
Prep Method: SW5030B
Prep Date/Time: 01/24/21 11:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of MW-2902-15

Client Sample ID: **MW-2902-15**
 Client Project ID: **102519 FAI FTP MW**
 Lab Sample ID: 1210288003
 Lab Project ID: 1210288

Collection Date: 01/18/21 12:30
 Received Date: 01/20/21 09:40
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.482 J	0.577	0.173	mg/L	1		01/22/21 12:49
Surrogates							
5a Androstane (surr)	94.6	50-150		%	1		01/22/21 12:49

Batch Information

Analytical Batch: XFC15847
 Analytical Method: AK102
 Analyst: IVM
 Analytical Date/Time: 01/22/21 12:49
 Container ID: 1210288003-A

Prep Batch: XXX44391
 Prep Method: SW3520C
 Prep Date/Time: 01/21/21 16:00
 Prep Initial Wt./Vol.: 260 mL
 Prep Extract Vol: 1 mL



Results of MW-2902-15

Client Sample ID: MW-2902-15
Client Project ID: 102519 FAI FTP MW
Lab Sample ID: 1210288003
Lab Project ID: 1210288

Collection Date: 01/18/21 12:30
Received Date: 01/20/21 09:40
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of MW-2902-15

Client Sample ID: MW-2902-15
Client Project ID: 102519 FAI FTP MW
Lab Sample ID: 1210288003
Lab Project ID: 1210288

Collection Date: 01/18/21 12:30
Received Date: 01/20/21 09:40
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Results of MW-2902-15

Client Sample ID: **MW-2902-15**
Client Project ID: **102519 FAI FTP MW**
Lab Sample ID: 1210288003
Lab Project ID: 1210288

Collection Date: 01/18/21 12:30
Received Date: 01/20/21 09:40
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS20558
Analytical Method: SW8260D
Analyst: NRB
Analytical Date/Time: 01/25/21 01:53
Container ID: 1210288003-C

Prep Batch: VXX36798
Prep Method: SW5030B
Prep Date/Time: 01/24/21 11:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of EB-1902-15

Client Sample ID: **EB-1902-15**
 Client Project ID: **102519 FAI FTP MW**
 Lab Sample ID: 1210288004
 Lab Project ID: 1210288

Collection Date: 01/18/21 13:00
 Received Date: 01/20/21 09:40
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.477 J	0.638	0.191	mg/L	1		01/22/21 12:59
Surrogates							
5a Androstane (surr)	93.2	50-150		%	1		01/22/21 12:59

Batch Information

Analytical Batch: XFC15847
 Analytical Method: AK102
 Analyst: IVM
 Analytical Date/Time: 01/22/21 12:59
 Container ID: 1210288004-A

Prep Batch: XXX44391
 Prep Method: SW3520C
 Prep Date/Time: 01/21/21 16:00
 Prep Initial Wt./Vol.: 235 mL
 Prep Extract Vol: 1 mL



Results of EB-1902-15

Client Sample ID: EB-1902-15
Client Project ID: 102519 FAI FTP MW
Lab Sample ID: 1210288004
Lab Project ID: 1210288

Collection Date: 01/18/21 13:00
Received Date: 01/20/21 09:40
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of EB-1902-15

Client Sample ID: **EB-1902-15**
 Client Project ID: **102519 FAI FTP MW**
 Lab Sample ID: 1210288004
 Lab Project ID: 1210288

Collection Date: 01/18/21 13:00
 Received Date: 01/20/21 09:40
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroform	0.500 U	1.00	0.310	ug/L	1		01/25/21 02:08
Chloromethane	0.500 U	1.00	0.310	ug/L	1		01/25/21 02:08
cis-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		01/25/21 02:08
cis-1,3-Dichloropropene	0.250 U	0.500	0.150	ug/L	1		01/25/21 02:08
Dibromochloromethane	0.250 U	0.500	0.150	ug/L	1		01/25/21 02:08
Dibromomethane	0.500 U	1.00	0.310	ug/L	1		01/25/21 02:08
Dichlorodifluoromethane	0.500 U	1.00	0.310	ug/L	1		01/25/21 02:08
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		01/25/21 02:08
Freon-113	5.00 U	10.0	3.10	ug/L	1		01/25/21 02:08
Hexachlorobutadiene	0.500 U	1.00	0.310	ug/L	1		01/25/21 02:08
Isopropylbenzene (Cumene)	0.500 U	1.00	0.310	ug/L	1		01/25/21 02:08
Methylene chloride	5.00 U	10.0	3.10	ug/L	1		01/25/21 02:08
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		01/25/21 02:08
Naphthalene	0.500 U	1.00	0.310	ug/L	1		01/25/21 02:08
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		01/25/21 02:08
n-Propylbenzene	0.500 U	1.00	0.310	ug/L	1		01/25/21 02:08
o-Xylene	0.500 U	1.00	0.310	ug/L	1		01/25/21 02:08
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		01/25/21 02:08
sec-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		01/25/21 02:08
Styrene	0.500 U	1.00	0.310	ug/L	1		01/25/21 02:08
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		01/25/21 02:08
Tetrachloroethene	0.500 U	1.00	0.310	ug/L	1		01/25/21 02:08
Toluene	0.500 U	1.00	0.310	ug/L	1		01/25/21 02:08
trans-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		01/25/21 02:08
trans-1,3-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		01/25/21 02:08
Trichloroethene	0.500 U	1.00	0.310	ug/L	1		01/25/21 02:08
Trichlorofluoromethane	0.500 U	1.00	0.310	ug/L	1		01/25/21 02:08
Vinyl acetate	5.00 U	10.0	3.10	ug/L	1		01/25/21 02:08
Vinyl chloride	0.0750 U	0.150	0.0500	ug/L	1		01/25/21 02:08
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		01/25/21 02:08
Surrogates							
1,2-Dichloroethane-D4 (surr)	89.1	81-118		%	1		01/25/21 02:08
4-Bromofluorobenzene (surr)	90.6	85-114		%	1		01/25/21 02:08
Toluene-d8 (surr)	107	89-112		%	1		01/25/21 02:08

Results of EB-1902-15

Client Sample ID: **EB-1902-15**
Client Project ID: **102519 FAI FTP MW**
Lab Sample ID: 1210288004
Lab Project ID: 1210288

Collection Date: 01/18/21 13:00
Received Date: 01/20/21 09:40
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS20558
Analytical Method: SW8260D
Analyst: NRB
Analytical Date/Time: 01/25/21 02:08
Container ID: 1210288004-C

Prep Batch: VXX36798
Prep Method: SW5030B
Prep Date/Time: 01/24/21 11:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of Trip Blank

Client Sample ID: **Trip Blank**
 Client Project ID: **102519 FAI FTP MW**
 Lab Sample ID: 1210288005
 Lab Project ID: 1210288

Collection Date: 01/18/21 10:00
 Received Date: 01/20/21 09:40
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,1,1,2-Tetrachloroethane	0.250 U	0.500	0.150	ug/L	1		01/25/21 00:41
1,1,1-Trichloroethane	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
1,1,2,2-Tetrachloroethane	0.250 U	0.500	0.150	ug/L	1		01/25/21 00:41
1,1,2-Trichloroethane	0.200 U	0.400	0.120	ug/L	1		01/25/21 00:41
1,1-Dichloroethane	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
1,1-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
1,1-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
1,2,3-Trichlorobenzene	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
1,2,3-Trichloropropane	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
1,2,4-Trichlorobenzene	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
1,2,4-Trimethylbenzene	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
1,2-Dibromo-3-chloropropane	5.00 U	10.0	3.10	ug/L	1		01/25/21 00:41
1,2-Dibromoethane	0.0375 U	0.0750	0.0180	ug/L	1		01/25/21 00:41
1,2-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
1,2-Dichloroethane	0.250 U	0.500	0.150	ug/L	1		01/25/21 00:41
1,2-Dichloropropane	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
1,3,5-Trimethylbenzene	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
1,3-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
1,3-Dichloropropane	0.250 U	0.500	0.150	ug/L	1		01/25/21 00:41
1,4-Dichlorobenzene	0.250 U	0.500	0.150	ug/L	1		01/25/21 00:41
2,2-Dichloropropane	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
2-Butanone (MEK)	5.00 U	10.0	3.10	ug/L	1		01/25/21 00:41
2-Chlorotoluene	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
2-Hexanone	5.00 U	10.0	3.10	ug/L	1		01/25/21 00:41
4-Chlorotoluene	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
4-Isopropyltoluene	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
4-Methyl-2-pentanone (MIBK)	5.00 U	10.0	3.10	ug/L	1		01/25/21 00:41
Benzene	0.200 U	0.400	0.120	ug/L	1		01/25/21 00:41
Bromobenzene	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
Bromochloromethane	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
Bromodichloromethane	0.250 U	0.500	0.150	ug/L	1		01/25/21 00:41
Bromoform	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
Bromomethane	2.50 U	5.00	2.00	ug/L	1		01/25/21 00:41
Carbon disulfide	5.00 U	10.0	3.10	ug/L	1		01/25/21 00:41
Carbon tetrachloride	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
Chlorobenzene	0.250 U	0.500	0.150	ug/L	1		01/25/21 00:41
Chloroethane	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41

Print Date: 01/29/2021 11:50:57AM

J flagging is activated



Results of Trip Blank

Client Sample ID: **Trip Blank**
 Client Project ID: **102519 FAI FTP MW**
 Lab Sample ID: 1210288005
 Lab Project ID: 1210288

Collection Date: 01/18/21 10:00
 Received Date: 01/20/21 09:40
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroform	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
Chloromethane	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
cis-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
cis-1,3-Dichloropropene	0.250 U	0.500	0.150	ug/L	1		01/25/21 00:41
Dibromochloromethane	0.250 U	0.500	0.150	ug/L	1		01/25/21 00:41
Dibromomethane	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
Dichlorodifluoromethane	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
Freon-113	5.00 U	10.0	3.10	ug/L	1		01/25/21 00:41
Hexachlorobutadiene	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
Isopropylbenzene (Cumene)	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
Methylene chloride	5.00 U	10.0	3.10	ug/L	1		01/25/21 00:41
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		01/25/21 00:41
Naphthalene	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
n-Propylbenzene	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
o-Xylene	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		01/25/21 00:41
sec-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
Styrene	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
Tetrachloroethene	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
Toluene	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
trans-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
trans-1,3-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
Trichloroethene	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
Trichlorofluoromethane	0.500 U	1.00	0.310	ug/L	1		01/25/21 00:41
Vinyl acetate	5.00 U	10.0	3.10	ug/L	1		01/25/21 00:41
Vinyl chloride	0.0750 U	0.150	0.0500	ug/L	1		01/25/21 00:41
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		01/25/21 00:41
Surrogates							
1,2-Dichloroethane-D4 (surr)	88.5	81-118		%	1		01/25/21 00:41
4-Bromofluorobenzene (surr)	90.1	85-114		%	1		01/25/21 00:41
Toluene-d8 (surr)	107	89-112		%	1		01/25/21 00:41

Results of Trip Blank

Client Sample ID: **Trip Blank**
Client Project ID: **102519 FAI FTP MW**
Lab Sample ID: 1210288005
Lab Project ID: 1210288

Collection Date: 01/18/21 10:00
Received Date: 01/20/21 09:40
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS20558
Analytical Method: SW8260D
Analyst: NRB
Analytical Date/Time: 01/25/21 00:41
Container ID: 1210288005-A

Prep Batch: VXX36798
Prep Method: SW5030B
Prep Date/Time: 01/24/21 11:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Method Blank

Blank ID: MB for HBN 1815590 [VXX/36798]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1598570

QC for Samples:

1210288001, 1210288002, 1210288003, 1210288004, 1210288005

Results by SW8260D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,1,1,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,1-Trichloroethane	0.500U	1.00	0.310	ug/L
1,1,2,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,2-Trichloroethane	0.200U	0.400	0.120	ug/L
1,1-Dichloroethane	0.500U	1.00	0.310	ug/L
1,1-Dichloroethene	0.500U	1.00	0.310	ug/L
1,1-Dichloropropene	0.500U	1.00	0.310	ug/L
1,2,3-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,3-Trichloropropane	0.500U	1.00	0.310	ug/L
1,2,4-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,2-Dibromo-3-chloropropane	5.00U	10.0	3.10	ug/L
1,2-Dibromoethane	0.0375U	0.0750	0.0180	ug/L
1,2-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,2-Dichloroethane	0.250U	0.500	0.150	ug/L
1,2-Dichloropropane	0.500U	1.00	0.310	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,3-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,3-Dichloropropane	0.250U	0.500	0.150	ug/L
1,4-Dichlorobenzene	0.250U	0.500	0.150	ug/L
2,2-Dichloropropane	0.500U	1.00	0.310	ug/L
2-Butanone (MEK)	5.00U	10.0	3.10	ug/L
2-Chlorotoluene	0.500U	1.00	0.310	ug/L
2-Hexanone	5.00U	10.0	3.10	ug/L
4-Chlorotoluene	0.500U	1.00	0.310	ug/L
4-Isopropyltoluene	0.500U	1.00	0.310	ug/L
4-Methyl-2-pentanone (MIBK)	5.00U	10.0	3.10	ug/L
Benzene	0.200U	0.400	0.120	ug/L
Bromobenzene	0.500U	1.00	0.310	ug/L
Bromochloromethane	0.500U	1.00	0.310	ug/L
Bromodichloromethane	0.250U	0.500	0.150	ug/L
Bromoform	0.500U	1.00	0.310	ug/L
Bromomethane	2.50U	5.00	2.00	ug/L
Carbon disulfide	5.00U	10.0	3.10	ug/L
Carbon tetrachloride	0.500U	1.00	0.310	ug/L
Chlorobenzene	0.250U	0.500	0.150	ug/L
Chloroethane	0.500U	1.00	0.310	ug/L
Chloroform	0.500U	1.00	0.310	ug/L

Print Date: 01/29/2021 11:50:59AM

Method Blank

Blank ID: MB for HBN 1815590 [VXX/36798]
 Blank Lab ID: 1598570

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1210288001, 1210288002, 1210288003, 1210288004, 1210288005

Results by SW8260D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Chloromethane	0.500U	1.00	0.310	ug/L
cis-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
cis-1,3-Dichloropropene	0.250U	0.500	0.150	ug/L
Dibromochloromethane	0.250U	0.500	0.150	ug/L
Dibromomethane	0.500U	1.00	0.310	ug/L
Dichlorodifluoromethane	0.500U	1.00	0.310	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
Freon-113	5.00U	10.0	3.10	ug/L
Hexachlorobutadiene	0.500U	1.00	0.310	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	ug/L
Methylene chloride	5.00U	10.0	3.10	ug/L
Methyl-t-butyl ether	5.00U	10.0	3.10	ug/L
Naphthalene	0.500U	1.00	0.310	ug/L
n-Butylbenzene	0.500U	1.00	0.310	ug/L
n-Propylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
sec-Butylbenzene	0.500U	1.00	0.310	ug/L
Styrene	0.500U	1.00	0.310	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	ug/L
Tetrachloroethene	0.500U	1.00	0.310	ug/L
Toluene	0.500U	1.00	0.310	ug/L
trans-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
trans-1,3-Dichloropropene	0.500U	1.00	0.310	ug/L
Trichloroethene	0.500U	1.00	0.310	ug/L
Trichlorofluoromethane	0.500U	1.00	0.310	ug/L
Vinyl acetate	5.00U	10.0	3.10	ug/L
Vinyl chloride	0.0750U	0.150	0.0500	ug/L
Xylenes (total)	1.50U	3.00	1.00	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	87.2	81-118		%
4-Bromofluorobenzene (surr)	89.1	85-114		%
Toluene-d8 (surr)	105	89-112		%

Method Blank

Blank ID: MB for HBN 1815590 [VXX/36798]
 Blank Lab ID: 1598570

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1210288001, 1210288002, 1210288003, 1210288004, 1210288005

Results by SW8260D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
------------------	----------------	---------------	-----------	--------------

Batch Information

Analytical Batch: VMS20558
 Analytical Method: SW8260D
 Instrument: Agilent 7890-75MS
 Analyst: NRB
 Analytical Date/Time: 1/24/2021 11:14:00PM

Prep Batch: VXX36798
 Prep Method: SW5030B
 Prep Date/Time: 1/24/2021 11:00:00AM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 01/29/2021 11:50:59AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1210288 [VXX36798]
 Blank Spike Lab ID: 1598571
 Date Analyzed: 01/24/2021 23:28

Spike Duplicate ID: LCSD for HBN 1210288
 [VXX36798]
 Spike Duplicate Lab ID: 1598572
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1210288001, 1210288002, 1210288003, 1210288004, 1210288005

Results by SW8260D

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1,1,2-Tetrachloroethane	30	34.2	114	30	35.0	117	(78-124)	2.40	(< 20)
1,1,1-Trichloroethane	30	30.5	102	30	30.7	102	(74-131)	0.66	(< 20)
1,1,2,2-Tetrachloroethane	30	27.9	93	30	28.8	96	(71-121)	3.00	(< 20)
1,1,2-Trichloroethane	30	31.6	105	30	32.8	109	(80-119)	3.70	(< 20)
1,1-Dichloroethane	30	29.9	100	30	30.4	101	(77-125)	1.60	(< 20)
1,1-Dichloroethene	30	31.6	105	30	31.5	105	(71-131)	0.29	(< 20)
1,1-Dichloropropene	30	31.7	106	30	31.7	106	(79-125)	0.10	(< 20)
1,2,3-Trichlorobenzene	30	30.5	102	30	33.5	112	(69-129)	9.50	(< 20)
1,2,3-Trichloropropane	30	28.2	94	30	29.5	98	(73-122)	4.40	(< 20)
1,2,4-Trichlorobenzene	30	31.7	106	30	34.2	114	(69-130)	7.70	(< 20)
1,2,4-Trimethylbenzene	30	29.1	97	30	29.7	99	(79-124)	2.20	(< 20)
1,2-Dibromo-3-chloropropane	30	25.1	84	30	26.7	89	(62-128)	6.20	(< 20)
1,2-Dibromoethane	30	33.7	112	30	35.1	117	(77-121)	3.90	(< 20)
1,2-Dichlorobenzene	30	31.0	103	30	32.3	108	(80-119)	4.10	(< 20)
1,2-Dichloroethane	30	25.7	86	30	26.3	88	(73-128)	2.40	(< 20)
1,2-Dichloropropane	30	32.1	107	30	32.7	109	(78-122)	2.10	(< 20)
1,3,5-Trimethylbenzene	30	28.7	96	30	29.6	99	(75-124)	2.90	(< 20)
1,3-Dichlorobenzene	30	31.4	105	30	32.4	108	(80-119)	3.10	(< 20)
1,3-Dichloropropane	30	30.7	102	30	31.9	106	(80-119)	3.80	(< 20)
1,4-Dichlorobenzene	30	31.6	105	30	32.6	109	(79-118)	3.10	(< 20)
2,2-Dichloropropane	30	29.1	97	30	28.9	97	(60-139)	0.64	(< 20)
2-Butanone (MEK)	90	90.4	100	90	96.9	108	(56-143)	7.00	(< 20)
2-Chlorotoluene	30	29.2	97	30	28.3	94	(79-122)	3.10	(< 20)
2-Hexanone	90	81.0	90	90	86.0	96	(57-139)	6.00	(< 20)
4-Chlorotoluene	30	28.0	93	30	28.7	96	(78-122)	2.30	(< 20)
4-Isopropyltoluene	30	29.9	100	30	31.2	104	(77-127)	4.10	(< 20)
4-Methyl-2-pentanone (MIBK)	90	94.3	105	90	97.8	109	(67-130)	3.70	(< 20)
Benzene	30	33.3	111	30	33.5	112	(79-120)	0.53	(< 20)
Bromobenzene	30	31.9	106	30	32.8	109	(80-120)	2.90	(< 20)
Bromochloromethane	30	35.3	118	30	36.2	121	(78-123)	2.30	(< 20)
Bromodichloromethane	30	31.0	103	30	31.7	106	(79-125)	2.00	(< 20)
Bromoform	30	35.4	118	30	37.3	124	(66-130)	5.20	(< 20)
Bromomethane	30	25.3	85	30	25.6	85	(53-141)	0.97	(< 20)
Carbon disulfide	45	44.8	100	45	44.0	98	(64-133)	1.90	(< 20)

Print Date: 01/29/2021 11:51:01AM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1210288 [VXX36798]
 Blank Spike Lab ID: 1598571
 Date Analyzed: 01/24/2021 23:28

Spike Duplicate ID: LCSD for HBN 1210288
 [VXX36798]
 Spike Duplicate Lab ID: 1598572
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1210288001, 1210288002, 1210288003, 1210288004, 1210288005

Results by SW8260D

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Carbon tetrachloride	30	32.2	107	30	32.3	108	(72-136)	0.48	(< 20)
Chlorobenzene	30	33.4	111	30	34.0	113	(82-118)	2.00	(< 20)
Chloroethane	30	28.4	95	30	24.6	82	(60-138)	14.30	(< 20)
Chloroform	30	30.3	101	30	30.9	103	(79-124)	1.70	(< 20)
Chloromethane	30	27.3	91	30	27.0	90	(50-139)	1.30	(< 20)
cis-1,2-Dichloroethene	30	33.8	113	30	34.3	114	(78-123)	1.30	(< 20)
cis-1,3-Dichloropropene	30	33.0	110	30	33.5	112	(75-124)	1.50	(< 20)
Dibromochloromethane	30	33.6	112	30	34.9	116	(74-126)	3.80	(< 20)
Dibromomethane	30	31.9	106	30	32.6	109	(79-123)	2.40	(< 20)
Dichlorodifluoromethane	30	30.2	101	30	29.9	100	(32-152)	0.92	(< 20)
Ethylbenzene	30	33.5	112	30	34.1	114	(79-121)	1.90	(< 20)
Freon-113	45	47.3	105	45	47.1	105	(70-136)	0.47	(< 20)
Hexachlorobutadiene	30	30.8	103	30	31.4	105	(66-134)	1.90	(< 20)
Isopropylbenzene (Cumene)	30	32.6	109	30	33.5	112	(72-131)	3.00	(< 20)
Methylene chloride	30	31.6	105	30	32.1	107	(74-124)	1.70	(< 20)
Methyl-t-butyl ether	45	46.6	103	45	47.4	105	(71-124)	1.90	(< 20)
Naphthalene	30	29.0	97	30	31.7	106	(61-128)	9.00	(< 20)
n-Butylbenzene	30	28.2	94	30	29.6	99	(75-128)	4.70	(< 20)
n-Propylbenzene	30	28.3	94	30	29.0	97	(76-126)	2.60	(< 20)
o-Xylene	30	33.2	111	30	34.1	114	(78-122)	2.60	(< 20)
P & M -Xylene	60	66.2	110	60	67.7	113	(80-121)	2.20	(< 20)
sec-Butylbenzene	30	29.2	97	30	30.5	102	(77-126)	4.40	(< 20)
Styrene	30	33.4	111	30	34.3	114	(78-123)	2.50	(< 20)
tert-Butylbenzene	30	29.8	99	30	30.9	103	(78-124)	3.70	(< 20)
Tetrachloroethene	30	36.0	120	30	36.6	122	(74-129)	1.80	(< 20)
Toluene	30	32.3	108	30	33.1	110	(80-121)	2.60	(< 20)
trans-1,2-Dichloroethene	30	33.6	112	30	33.6	112	(75-124)	0.16	(< 20)
trans-1,3-Dichloropropene	30	30.1	100	30	31.1	104	(73-127)	3.10	(< 20)
Trichloroethene	30	33.2	111	30	33.3	111	(79-123)	0.27	(< 20)
Trichlorofluoromethane	30	29.6	99	30	29.0	97	(65-141)	2.20	(< 20)
Vinyl acetate	30	31.6	105	30	32.4	108	(54-146)	2.40	(< 20)
Vinyl chloride	30	27.9	93	30	27.7	92	(58-137)	0.75	(< 20)
Xylenes (total)	90	99.5	111	90	102	113	(79-121)	2.30	(< 20)

Print Date: 01/29/2021 11:51:01AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1210288 [VXX36798]
 Blank Spike Lab ID: 1598571
 Date Analyzed: 01/24/2021 23:28

Spike Duplicate ID: LCSD for HBN 1210288
 [VXX36798]
 Spike Duplicate Lab ID: 1598572
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1210288001, 1210288002, 1210288003, 1210288004, 1210288005

Results by SW8260D

Parameter	Blank Spike (%)			Spike Duplicate (%)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Surrogates									
1,2-Dichloroethane-D4 (surr)	30	85.8	86	30	84.9	85	(81-118)	0.99	
4-Bromofluorobenzene (surr)	30	87.8	88	30	88.3	88	(85-114)	0.61	
Toluene-d8 (surr)	30	105	105	30	106	106	(89-112)	1.10	

Batch Information

Analytical Batch: **VMS20558**
 Analytical Method: **SW8260D**
 Instrument: **Agilent 7890-75MS**
 Analyst: **NRB**

Prep Batch: **VXX36798**
 Prep Method: **SW5030B**
 Prep Date/Time: **01/24/2021 11:00**
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1815550 [XXX/44391]
Blank Lab ID: 1598426

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1210288001, 1210288002, 1210288003, 1210288004

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	0.284J	0.600	0.180	mg/L
Surrogates				
5a Androstane (surr)	95.1	60-120		%

Batch Information

Analytical Batch: XFC15847
Analytical Method: AK102
Instrument: Agilent 7890B F
Analyst: IVM
Analytical Date/Time: 1/22/2021 11:29:00AM

Prep Batch: XXX44391
Prep Method: SW3520C
Prep Date/Time: 1/21/2021 4:00:41PM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 01/29/2021 11:51:04AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1210288 [XXX44391]
 Blank Spike Lab ID: 1598427
 Date Analyzed: 01/22/2021 11:39

Spike Duplicate ID: LCSD for HBN 1210288
 [XXX44391]
 Spike Duplicate Lab ID: 1598428
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1210288001, 1210288002, 1210288003, 1210288004

Results by AK102

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	20	19.9	99	20	19.4	97	(75-125)	2.30	(< 20)

Surrogates

5a Androstane (surr)	0.4	107	107	0.4	108	108	(60-120)	0.48	
----------------------	-----	-----	-----	-----	-----	-----	------------	------	--

Batch Information

Analytical Batch: **XFC15847**
 Analytical Method: **AK102**
 Instrument: **Agilent 7890B F**
 Analyst: **IVM**

Prep Batch: **XXX44391**
 Prep Method: **SW3520C**
 Prep Date/Time: **01/21/2021 16:00**
 Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

CHAIN-OF-CUSTODY RECORD

Laboratory SGS Page 1 of 1
 Attn: Sen Dawkins

Analytical Methods (include preservative if used)

P# 350732 u

Turn Around Time:
 Normal Rush
 Please Specify

Quote No:
 J-Flags: Yes No

DRO AK 102
VOC EPA8260D

1210288



Sample Identity	Lab No.	Time	Date Sampled	Sample Containers					
MW-1901-1S	(1AE)	11:40	1-18	X	X			5	GW, Grab
MW-1902-1S	(2AE)	12:40	1-18	X	X			5	GW, Grab
MW-2702-1S	(3AE)	12:30	1-18	X	X			5	GW, Grab
EB-1902-1S	(4AE)	13:00	1-18	X	X			5	GW, Grab
Trip Blank	(5AC)	10:00	1-18	X	X			3	Lab Supplied

Project Information	Sample Receipt	Relinquished By: 1.			Relinquished By: 2.			Relinquished By: 3.		
		Signature:	Time:	Date:	Signature:	Time:	Date:	Signature:	Time:	Date:
Number: 102519	Total No. of Containers: 23	Adam Wyborny	14:05	1/19/21	[Signature]	14:50	1/19/21	[Signature]	04:30	1/20/21
Name: FAI FTP MW	COC Seals/Intact? Y/N/NA	Adam Wyborny	14:05	1/19/21	Sen Dawkins	14:50	1/19/21	Michelle Allerman	04:30	1/20/21
Contact: MPN	Received Good Cond./Cold	Shannon & Wilson	14:05	1/19/21	SGS	14:50	1/19/21	SGS	04:30	1/20/21
Ongoing Project? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Temp: 3.4									
Sampler: JKR, APW	Delivery Method: Hand									
Notes:		Received By: 1.			Received By: 2.			Received By: 3.		
		[Signature]	14:05	1/19/21	[Signature]	14:50	1/19/21	[Signature]	04:30	1/20/21

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
 Yellow - w/shipment - for consignee files
 Pink - Shannon & Wilson - job file



SGS Workorder #:

S&W

Review Criteria	Condition (Yes, No, N/A)	Exceptions noted below	
Chain of Custody / Temperature Requirements		<input checked="" type="checkbox"/> Yes	Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	N/A		
COC accompanied samples?	Yes		
DOD: Were samples received in COC corresponding coolers?	N/A		
<input type="checkbox"/> **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required			
Temperature blank compliant* (i.e., 0-6 °C after CF)?	<input checked="" type="checkbox"/> Yes	Cooler ID: 1	@ 3.4 °C Therm. ID: D51
	<input type="checkbox"/>	Cooler ID:	@ °C Therm. ID:
	<input type="checkbox"/>	Cooler ID:	@ °C Therm. ID:
	<input type="checkbox"/>	Cooler ID:	@ °C Therm. ID:
	<input type="checkbox"/>		
*If >6°C, were samples collected <8 hours ago? <input type="checkbox"/>			
If <0°C, were sample containers ice free? <input type="checkbox"/>			
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.			
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.	
Do samples match COC** (i.e., sample IDs, dates/times collected)?	N/C		
**Note: If times differ <1hr, record details & login per COC.			
***Note: If sample information on containers differs from COC, SGS will default to COC information			
Were samples in good condition (no leaks/cracks/breakage)?	<input checked="" type="checkbox"/> Yes		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)	<input checked="" type="checkbox"/> Yes		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	<input checked="" type="checkbox"/> Yes		
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	N/C		
Were all soil VOAs field extracted with MeOH+BFB?	N/A		
For Rush/Short Hold Time, was RUSH/Short HT email sent?	N/A		
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.			
Additional notes (if applicable):			
SGS Profile #	350732	350732	



e-Sample Receipt Form

SGS Workorder #:

1210288



1 2 1 0 2 8 8

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements		
Were Custody Seals intact? Note # & location	Yes	1F,1B
COC accompanied samples?	Yes	
DOD: Were samples received in COC corresponding coolers?	N/A	
N/A **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	Yes	Cooler ID: 1 @ 2.1 °C Therm. ID: D50
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
*If >6°C, were samples collected <8 hours ago?	N/A	
If <0°C, were sample containers ice free?	N/A	
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Holding Time / Documentation / Sample Condition Requirements		
Note: Refer to form F-083 "Sample Guide" for specific holding times.		
Were samples received within holding time?	Yes	
Do samples match COC** (i.e., sample IDs, dates/times collected)?	Yes	
**Note: If times differ <1hr, record details & login per COC.		
***Note: If sample information on containers differs from COC, SGS will default to COC information		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)	Yes	
Were proper containers (type/mass/volume/preservative***) used?	Yes	N/A ***Exemption permitted for metals (e.g,200.8/6020B).
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	Yes	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	Yes	
Were all soil VOAs field extracted with MeOH+BFB?	N/A	
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1210288001-A	HCL to pH < 2	OK			
1210288001-B	HCL to pH < 2	OK			
1210288001-C	HCL to pH < 2	OK			
1210288001-D	HCL to pH < 2	OK			
1210288001-E	HCL to pH < 2	OK			
1210288002-A	HCL to pH < 2	OK			
1210288002-B	HCL to pH < 2	OK			
1210288002-C	HCL to pH < 2	OK			
1210288002-D	HCL to pH < 2	OK			
1210288002-E	HCL to pH < 2	OK			
1210288003-A	HCL to pH < 2	OK			
1210288003-B	HCL to pH < 2	OK			
1210288003-C	HCL to pH < 2	OK			
1210288003-D	HCL to pH < 2	OK			
1210288003-E	HCL to pH < 2	OK			
1210288004-A	HCL to pH < 2	OK			
1210288004-B	HCL to pH < 2	OK			
1210288004-C	HCL to pH < 2	OK			
1210288004-D	HCL to pH < 2	OK			
1210288004-E	HCL to pH < 2	OK			
1210288005-A	HCL to pH < 2	OK			
1210288005-B	HCL to pH < 2	OK			
1210288005-C	HCL to pH < 2	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.

Laboratory Data Review Checklist

Completed By:

Justin Risley

Title:

Engineering Staff

Date:

February 2, 2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

SGS North America, Inc.

Laboratory Report Number:

1210288

Laboratory Report Date:

February 1, 2021

CS Site Name:

FAI Statewide PFAS

ADEC File Number:

100.38.277

Hazard Identification Number:

26816

1210288

Laboratory Report Date:

February 1, 2021

CS Site Name:

FAI Statewide PFAS

Note: Any N/A or No box checked must have an explanation in the comments box.

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes No N/A Comments:

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes No N/A Comments:

Analyses were performed by SGS North America, Inc. in Anchorage, Alaska.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes No N/A Comments:

b. Correct analyses requested?

Yes No N/A Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes No N/A Comments:

The temperature blank was measured within the acceptable temperature range of 0 °C to 6 °C upon arrival at the laboratory.

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes No N/A Comments:

1210288

Laboratory Report Date:

February 1, 2021

CS Site Name:

FAI Statewide PFAS

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes No N/A Comments:

The laboratory notes the samples were received in acceptable condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes No N/A Comments:

The laboratory does not note any discrepancies.

e. Data quality or usability affected?

Comments:

Data quality and/or usability are not affected; see above.

4. Case Narrative

a. Present and understandable?

Yes No N/A Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

Yes No N/A Comments:

The case narrative notes DRO were detected in the method blank greater than ½ of the LOQ.

c. Were all corrective actions documented?

Yes No N/A Comments:

No corrective actions were documented in the case narrative or necessary.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The case narrative does not note an effect on data quality.

1210288

Laboratory Report Date:

February 1, 2021

CS Site Name:

FAI Statewide PFAS

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes No N/A Comments:

b. All applicable holding times met?

Yes No N/A Comments:

c. All soils reported on a dry weight basis?

Yes No N/A Comments:

This work order does not include soil samples.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes No N/A Comments:

The limit of detection (LOD) for analytes with non-detect results were compared to the respective ADEC Groundwater Cleanup Level. The LODs were below the ADEC Groundwater Cleanup Levels, with the following exception.

The VOC analyte 1,2,3-trichloropropane had LODs greater than the ADEC Groundwater Cleanup Level for each project sample. The results for this analyte are identified (**bolded**) in the analytical table.

e. Data quality or usability affected?

We cannot assess if the analytes noted in Section 5.d. are present in the samples at a concentration greater than the project limits.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

1210288

Laboratory Report Date:

February 1, 2021

CS Site Name:

FAI Statewide PFAS

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes No N/A Comments:

The VOC and DRO method blank results were below the LOQ; however, DRO were detected at an estimated concentration below the LOQ in method blank 1598426.

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

Each of the project samples are associated with the same preparatory batch as the DRO method blank 1567099. The project samples *MW-1901-15*, *MW-1902-15*, *MW-2902-15*, and *EB -1902-15* had detections for DRO at a concentration less than five times the method blank result and are considered affected.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

The DRO results for project samples *MW-1901-15*, *MW-1902-15*, and *MW-2902-15* are considered not-detected and are flagged 'UB' at the LOQ in the analytical database. *EB-1902-15* is a field quality control sample, it is not flagged but is also considered affected. See 6.g. below for additional details on the equipment blank sample.

v. Data quality or usability affected?

Comments:

Yes; see above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes No N/A Comments:

LCS/LCSD samples are reported for VOC analytes and DRO.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

Metals and/or inorganics were not analyzed as part of this work order.

1210288

Laboratory Report Date:

February 1, 2021

CS Site Name:

FAI Statewide PFAS

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

- iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

None; analytical accuracy and precision were demonstrated to be within acceptable limits.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

- vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability are not affected.

- c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Note: Leave blank if not required for project

- i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

MS/MSD samples are not reported for this work order. Precision and accuracy are evaluated using the LCS/LCSD samples.

1210288

Laboratory Report Date:

February 1, 2021

CS Site Name:

FAI Statewide PFAS

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

Metals and/or inorganics were not analyzed as part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes No N/A Comments:

See above.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes No N/A Comments:

See above.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

See above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability are not affected.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes No N/A Comments:

Methods EPA8260 and AK102 use surrogate recovery to evaluate laboratory accuracy.

1210288

Laboratory Report Date:

February 1, 2021

CS Site Name:

FAI Statewide PFAS

- ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes No N/A Comments:

- iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

There were no surrogate recovery failures associated with this work order.

- iv. Data quality or usability affected?

Comments:

The data quality and/or usability are not affected.

- e. Trip Blanks

- i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes No N/A Comments:

A VOC trip blank is reported in this work order.

- ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes No N/A Comments:

However, the project samples were transported in a single cooler.

- iii. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

VOCs were not detected in the trip blank sample.

- iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; VOCs were not detected in the trip blank.

1210288

Laboratory Report Date:

February 1, 2021

CS Site Name:

FAI Statewide PFAS

v. Data quality or usability affected?

Comments:

The data quality and/or usability are not affected.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No N/A Comments:

ii. Submitted blind to lab?

Yes No N/A Comments:

Field-duplicate pair *MW-1902-15* / *MW-2902-15* was submitted in this work order.

iii. Precision – All relative percent differences (RPD) less than specified project objectives?
(Recommended: 30% water, 50% soil)

$$RPD (\%) = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2) / 2)} \times 100$$

Where R_1 = Sample Concentration
 R_2 = Field Duplicate Concentration

Yes No N/A Comments:

RPDs could not be calculated for the duplicate pair, as VOCs were not detected. DRO results are also considered not detected due to method blank contamination.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The data quality and/or usability are not affected.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes No N/A Comments:

Equipment blank sample *EB-1902-15* was submitted with this work order.

1210288

Laboratory Report Date:

February 1, 2021

CS Site Name:

FAI Statewide PFAS

i. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

However, DRO were detected at an estimated concentration below the LOQ in the equipment blank sample.

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

The equipment blank and project samples were affected by a DRO detection in the method blank. The equipment blank and project samples were qualified as non-detect due to the method blank detection. Further qualification is not required.

iii. Data quality or usability affected?

Comments:

No; see above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes No N/A Comments:

There were no additional flags/qualifiers required for this work order.



Laboratory Report of Analysis

To: Shannon & Wilson-Fairbanks
2355 Hill Rd
Fairbanks, AK 99707
(907)479-0600

Report Number: **1211681**

Client Project: **102519-015 FAI FTP**

Dear Marcy Nadel,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Jennifer at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Stephen C. Ede

2021.04.21

14:00:59 -08'00'

Jennifer Dawkins
Project Manager
Jennifer.Dawkins@sgs.com

Date

Case Narrative

SGS Client: **Shannon & Wilson-Fairbanks**
SGS Project: **1211681**
Project Name/Site: **102519-015 FAI FTP**
Project Contact: **Marcy Nadel**

Refer to sample receipt form for information on sample condition.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 04/21/2021 1:16:14PM

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
TNTC	Too Numerous To Count
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
MW-1901-15	1211681001	04/13/2021	04/15/2021	Water (Surface, Eff., Ground)
MW-1902-15	1211681002	04/13/2021	04/15/2021	Water (Surface, Eff., Ground)
MW-1901-115	1211681003	04/13/2021	04/15/2021	Water (Surface, Eff., Ground)
EB-1901-15	1211681004	04/13/2021	04/15/2021	Water (Surface, Eff., Ground)
Trip Blank	1211681005	04/13/2021	04/14/2021	Water (Surface, Eff., Ground)

<u>Method</u>	<u>Method Description</u>
AK102	DRO Low Volume (W)
SW8260D	Volatile Organic Compounds (W) FULL

Print Date: 04/21/2021 1:16:18PM

Detectable Results Summary

Client Sample ID: **MW-1901-15**

Lab Sample ID: 1211681001

Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.237J	mg/L

Client Sample ID: **MW-1902-15**

Lab Sample ID: 1211681002

Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.208J	mg/L

Client Sample ID: **MW-1901-115**

Lab Sample ID: 1211681003

Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.204J	mg/L

Client Sample ID: **EB-1901-15**

Lab Sample ID: 1211681004

Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.182J	mg/L

Results of MW-1901-15

Client Sample ID: **MW-1901-15**
 Client Project ID: **102519-015 FAI FTP**
 Lab Sample ID: 1211681001
 Lab Project ID: 1211681

Collection Date: 04/13/21 16:47
 Received Date: 04/15/21 08:56
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.237 J	0.566	0.170	mg/L	1		04/19/21 12:22
Surrogates							
5a Androstane (surr)	86.5	50-150		%	1		04/19/21 12:22

Batch Information

Analytical Batch: XFC15896
 Analytical Method: AK102
 Analyst: IVM
 Analytical Date/Time: 04/19/21 12:22
 Container ID: 1211681001-A

Prep Batch: XXX44638
 Prep Method: SW3520C
 Prep Date/Time: 04/15/21 16:02
 Prep Initial Wt./Vol.: 265 mL
 Prep Extract Vol: 1 mL



Results of MW-1901-15

Client Sample ID: MW-1901-15
Client Project ID: 102519-015 FAI FTP
Lab Sample ID: 1211681001
Lab Project ID: 1211681

Collection Date: 04/13/21 16:47
Received Date: 04/15/21 08:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of MW-1901-15

Client Sample ID: MW-1901-15
Client Project ID: 102519-015 FAI FTP
Lab Sample ID: 1211681001
Lab Project ID: 1211681

Collection Date: 04/13/21 16:47
Received Date: 04/15/21 08:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Results of MW-1901-15

Client Sample ID: **MW-1901-15**
Client Project ID: **102519-015 FAI FTP**
Lab Sample ID: 1211681001
Lab Project ID: 1211681

Collection Date: 04/13/21 16:47
Received Date: 04/15/21 08:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS20651
Analytical Method: SW8260D
Analyst: JMG
Analytical Date/Time: 04/15/21 22:33
Container ID: 1211681001-C

Prep Batch: VXX36948
Prep Method: SW5030B
Prep Date/Time: 04/15/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of MW-1902-15

Client Sample ID: **MW-1902-15**
 Client Project ID: **102519-015 FAI FTP**
 Lab Sample ID: 1211681002
 Lab Project ID: 1211681

Collection Date: 04/13/21 10:02
 Received Date: 04/15/21 08:56
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.208 J	0.600	0.180	mg/L	1		04/19/21 12:31
Surrogates							
5a Androstane (surr)	90	50-150		%	1		04/19/21 12:31

Batch Information

Analytical Batch: XFC15896
 Analytical Method: AK102
 Analyst: IVM
 Analytical Date/Time: 04/19/21 12:31
 Container ID: 1211681002-A

Prep Batch: XXX44638
 Prep Method: SW3520C
 Prep Date/Time: 04/15/21 16:02
 Prep Initial Wt./Vol.: 250 mL
 Prep Extract Vol: 1 mL



Results of MW-1902-15

Client Sample ID: MW-1902-15
Client Project ID: 102519-015 FAI FTP
Lab Sample ID: 1211681002
Lab Project ID: 1211681

Collection Date: 04/13/21 10:02
Received Date: 04/15/21 08:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of MW-1902-15

Client Sample ID: MW-1902-15
Client Project ID: 102519-015 FAI FTP
Lab Sample ID: 1211681002
Lab Project ID: 1211681

Collection Date: 04/13/21 10:02
Received Date: 04/15/21 08:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Results of MW-1902-15

Client Sample ID: **MW-1902-15**
Client Project ID: **102519-015 FAI FTP**
Lab Sample ID: 1211681002
Lab Project ID: 1211681

Collection Date: 04/13/21 10:02
Received Date: 04/15/21 08:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS20651
Analytical Method: SW8260D
Analyst: JMG
Analytical Date/Time: 04/15/21 22:49
Container ID: 1211681002-C

Prep Batch: VXX36948
Prep Method: SW5030B
Prep Date/Time: 04/15/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of MW-1901-115

Client Sample ID: **MW-1901-115**
 Client Project ID: **102519-015 FAI FTP**
 Lab Sample ID: 1211681003
 Lab Project ID: 1211681

Collection Date: 04/13/21 16:57
 Received Date: 04/15/21 08:56
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.204 J	0.556	0.167	mg/L	1		04/19/21 12:41
Surrogates							
5a Androstane (surr)	88.7	50-150		%	1		04/19/21 12:41

Batch Information

Analytical Batch: XFC15896
 Analytical Method: AK102
 Analyst: IVM
 Analytical Date/Time: 04/19/21 12:41
 Container ID: 1211681003-A

Prep Batch: XXX44638
 Prep Method: SW3520C
 Prep Date/Time: 04/15/21 16:02
 Prep Initial Wt./Vol.: 270 mL
 Prep Extract Vol: 1 mL



Results of MW-1901-115

Client Sample ID: MW-1901-115
Client Project ID: 102519-015 FAI FTP
Lab Sample ID: 1211681003
Lab Project ID: 1211681

Collection Date: 04/13/21 16:57
Received Date: 04/15/21 08:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of MW-1901-115

Client Sample ID: MW-1901-115
Client Project ID: 102519-015 FAI FTP
Lab Sample ID: 1211681003
Lab Project ID: 1211681

Collection Date: 04/13/21 16:57
Received Date: 04/15/21 08:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Results of MW-1901-115

Client Sample ID: **MW-1901-115**
Client Project ID: **102519-015 FAI FTP**
Lab Sample ID: 1211681003
Lab Project ID: 1211681

Collection Date: 04/13/21 16:57
Received Date: 04/15/21 08:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS20651
Analytical Method: SW8260D
Analyst: JMG
Analytical Date/Time: 04/15/21 23:05
Container ID: 1211681003-C

Prep Batch: VXX36948
Prep Method: SW5030B
Prep Date/Time: 04/15/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of EB-1901-15

Client Sample ID: **EB-1901-15**
 Client Project ID: **102519-015 FAI FTP**
 Lab Sample ID: 1211681004
 Lab Project ID: 1211681

Collection Date: 04/13/21 17:10
 Received Date: 04/15/21 08:56
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.182 J	0.566	0.170	mg/L	1		04/19/21 12:51
Surrogates							
5a Androstane (surr)	91.1	50-150		%	1		04/19/21 12:51

Batch Information

Analytical Batch: XFC15896
 Analytical Method: AK102
 Analyst: IVM
 Analytical Date/Time: 04/19/21 12:51
 Container ID: 1211681004-A

Prep Batch: XXX44638
 Prep Method: SW3520C
 Prep Date/Time: 04/15/21 16:02
 Prep Initial Wt./Vol.: 265 mL
 Prep Extract Vol: 1 mL



Results of EB-1901-15

Client Sample ID: EB-1901-15
Client Project ID: 102519-015 FAI FTP
Lab Sample ID: 1211681004
Lab Project ID: 1211681

Collection Date: 04/13/21 17:10
Received Date: 04/15/21 08:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of **EB-1901-15**

Client Sample ID: **EB-1901-15**
Client Project ID: **102519-015 FAI FTP**
Lab Sample ID: 1211681004
Lab Project ID: 1211681

Collection Date: 04/13/21 17:10
Received Date: 04/15/21 08:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroform	0.500 U	1.00	0.310	ug/L	1		04/15/21 23:21
Chloromethane	0.500 U	1.00	0.310	ug/L	1		04/15/21 23:21
cis-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		04/15/21 23:21
cis-1,3-Dichloropropene	0.250 U	0.500	0.150	ug/L	1		04/15/21 23:21
Dibromochloromethane	0.250 U	0.500	0.150	ug/L	1		04/15/21 23:21
Dibromomethane	0.500 U	1.00	0.310	ug/L	1		04/15/21 23:21
Dichlorodifluoromethane	0.500 U	1.00	0.310	ug/L	1		04/15/21 23:21
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		04/15/21 23:21
Freon-113	5.00 U	10.0	3.10	ug/L	1		04/15/21 23:21
Hexachlorobutadiene	0.500 U	1.00	0.310	ug/L	1		04/15/21 23:21
Isopropylbenzene (Cumene)	0.500 U	1.00	0.310	ug/L	1		04/15/21 23:21
Methylene chloride	5.00 U	10.0	3.10	ug/L	1		04/15/21 23:21
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		04/15/21 23:21
Naphthalene	0.500 U	1.00	0.310	ug/L	1		04/15/21 23:21
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		04/15/21 23:21
n-Propylbenzene	0.500 U	1.00	0.310	ug/L	1		04/15/21 23:21
o-Xylene	0.500 U	1.00	0.310	ug/L	1		04/15/21 23:21
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		04/15/21 23:21
sec-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		04/15/21 23:21
Styrene	0.500 U	1.00	0.310	ug/L	1		04/15/21 23:21
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		04/15/21 23:21
Tetrachloroethene	0.500 U	1.00	0.310	ug/L	1		04/15/21 23:21
Toluene	0.500 U	1.00	0.310	ug/L	1		04/15/21 23:21
trans-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		04/15/21 23:21
trans-1,3-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		04/15/21 23:21
Trichloroethene	0.500 U	1.00	0.310	ug/L	1		04/15/21 23:21
Trichlorofluoromethane	0.500 U	1.00	0.310	ug/L	1		04/15/21 23:21
Vinyl acetate	5.00 U	10.0	3.10	ug/L	1		04/15/21 23:21
Vinyl chloride	0.0750 U	0.150	0.0500	ug/L	1		04/15/21 23:21
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		04/15/21 23:21
Surrogates							
1,2-Dichloroethane-D4 (surr)	102	81-118		%	1		04/15/21 23:21
4-Bromofluorobenzene (surr)	100	85-114		%	1		04/15/21 23:21
Toluene-d8 (surr)	99.9	89-112		%	1		04/15/21 23:21

Results of EB-1901-15

Client Sample ID: **EB-1901-15**
Client Project ID: **102519-015 FAI FTP**
Lab Sample ID: 1211681004
Lab Project ID: 1211681

Collection Date: 04/13/21 17:10
Received Date: 04/15/21 08:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS20651
Analytical Method: SW8260D
Analyst: JMG
Analytical Date/Time: 04/15/21 23:21
Container ID: 1211681004-C

Prep Batch: VXX36948
Prep Method: SW5030B
Prep Date/Time: 04/15/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of Trip Blank

Client Sample ID: **Trip Blank**
 Client Project ID: **102519-015 FAI FTP**
 Lab Sample ID: 1211681005
 Lab Project ID: 1211681

Collection Date: 04/13/21 10:02
 Received Date: 04/14/21 18:09
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,1,1,2-Tetrachloroethane	0.250 U	0.500	0.150	ug/L	1		04/15/21 19:37
1,1,1-Trichloroethane	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
1,1,2,2-Tetrachloroethane	0.250 U	0.500	0.150	ug/L	1		04/15/21 19:37
1,1,2-Trichloroethane	0.200 U	0.400	0.120	ug/L	1		04/15/21 19:37
1,1-Dichloroethane	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
1,1-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
1,1-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
1,2,3-Trichlorobenzene	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
1,2,3-Trichloropropane	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
1,2,4-Trichlorobenzene	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
1,2,4-Trimethylbenzene	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
1,2-Dibromo-3-chloropropane	5.00 U	10.0	3.10	ug/L	1		04/15/21 19:37
1,2-Dibromoethane	0.0375 U	0.0750	0.0180	ug/L	1		04/15/21 19:37
1,2-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
1,2-Dichloroethane	0.250 U	0.500	0.150	ug/L	1		04/15/21 19:37
1,2-Dichloropropane	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
1,3,5-Trimethylbenzene	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
1,3-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
1,3-Dichloropropane	0.250 U	0.500	0.150	ug/L	1		04/15/21 19:37
1,4-Dichlorobenzene	0.250 U	0.500	0.150	ug/L	1		04/15/21 19:37
2,2-Dichloropropane	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
2-Butanone (MEK)	5.00 U	10.0	3.10	ug/L	1		04/15/21 19:37
2-Chlorotoluene	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
2-Hexanone	5.00 U	10.0	3.10	ug/L	1		04/15/21 19:37
4-Chlorotoluene	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
4-Isopropyltoluene	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
4-Methyl-2-pentanone (MIBK)	5.00 U	10.0	3.10	ug/L	1		04/15/21 19:37
Benzene	0.200 U	0.400	0.120	ug/L	1		04/15/21 19:37
Bromobenzene	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
Bromochloromethane	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
Bromodichloromethane	0.250 U	0.500	0.150	ug/L	1		04/15/21 19:37
Bromoform	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
Bromomethane	2.50 U	5.00	2.00	ug/L	1		04/15/21 19:37
Carbon disulfide	5.00 U	10.0	3.10	ug/L	1		04/15/21 19:37
Carbon tetrachloride	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
Chlorobenzene	0.250 U	0.500	0.150	ug/L	1		04/15/21 19:37
Chloroethane	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37

Print Date: 04/21/2021 1:16:21PM

J flagging is activated



Results of Trip Blank

Client Sample ID: **Trip Blank**
 Client Project ID: **102519-015 FAI FTP**
 Lab Sample ID: 1211681005
 Lab Project ID: 1211681

Collection Date: 04/13/21 10:02
 Received Date: 04/14/21 18:09
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroform	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
Chloromethane	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
cis-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
cis-1,3-Dichloropropene	0.250 U	0.500	0.150	ug/L	1		04/15/21 19:37
Dibromochloromethane	0.250 U	0.500	0.150	ug/L	1		04/15/21 19:37
Dibromomethane	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
Dichlorodifluoromethane	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
Freon-113	5.00 U	10.0	3.10	ug/L	1		04/15/21 19:37
Hexachlorobutadiene	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
Isopropylbenzene (Cumene)	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
Methylene chloride	5.00 U	10.0	3.10	ug/L	1		04/15/21 19:37
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		04/15/21 19:37
Naphthalene	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
n-Propylbenzene	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
o-Xylene	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		04/15/21 19:37
sec-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
Styrene	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
Tetrachloroethene	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
Toluene	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
trans-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
trans-1,3-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
Trichloroethene	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
Trichlorofluoromethane	0.500 U	1.00	0.310	ug/L	1		04/15/21 19:37
Vinyl acetate	5.00 U	10.0	3.10	ug/L	1		04/15/21 19:37
Vinyl chloride	0.0750 U	0.150	0.0500	ug/L	1		04/15/21 19:37
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		04/15/21 19:37
Surrogates							
1,2-Dichloroethane-D4 (surr)	103	81-118		%	1		04/15/21 19:37
4-Bromofluorobenzene (surr)	101	85-114		%	1		04/15/21 19:37
Toluene-d8 (surr)	101	89-112		%	1		04/15/21 19:37

Results of Trip Blank

Client Sample ID: **Trip Blank**
Client Project ID: **102519-015 FAI FTP**
Lab Sample ID: 1211681005
Lab Project ID: 1211681

Collection Date: 04/13/21 10:02
Received Date: 04/14/21 18:09
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS20651
Analytical Method: SW8260D
Analyst: JMG
Analytical Date/Time: 04/15/21 19:37
Container ID: 1211681005-A

Prep Batch: VXX36948
Prep Method: SW5030B
Prep Date/Time: 04/15/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Method Blank

Blank ID: MB for HBN 1817854 [VXX/36948]
Blank Lab ID: 1606392

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1211681001, 1211681002, 1211681003, 1211681004, 1211681005

Results by SW8260D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,1,1,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,1-Trichloroethane	0.500U	1.00	0.310	ug/L
1,1,2,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,2-Trichloroethane	0.200U	0.400	0.120	ug/L
1,1-Dichloroethane	0.500U	1.00	0.310	ug/L
1,1-Dichloroethene	0.500U	1.00	0.310	ug/L
1,1-Dichloropropene	0.500U	1.00	0.310	ug/L
1,2,3-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,3-Trichloropropane	0.500U	1.00	0.310	ug/L
1,2,4-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,2-Dibromo-3-chloropropane	5.00U	10.0	3.10	ug/L
1,2-Dibromoethane	0.0375U	0.0750	0.0180	ug/L
1,2-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,2-Dichloroethane	0.250U	0.500	0.150	ug/L
1,2-Dichloropropane	0.500U	1.00	0.310	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,3-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,3-Dichloropropane	0.250U	0.500	0.150	ug/L
1,4-Dichlorobenzene	0.250U	0.500	0.150	ug/L
2,2-Dichloropropane	0.500U	1.00	0.310	ug/L
2-Butanone (MEK)	5.00U	10.0	3.10	ug/L
2-Chlorotoluene	0.500U	1.00	0.310	ug/L
2-Hexanone	5.00U	10.0	3.10	ug/L
4-Chlorotoluene	0.500U	1.00	0.310	ug/L
4-Isopropyltoluene	0.500U	1.00	0.310	ug/L
4-Methyl-2-pentanone (MIBK)	5.00U	10.0	3.10	ug/L
Benzene	0.200U	0.400	0.120	ug/L
Bromobenzene	0.500U	1.00	0.310	ug/L
Bromochloromethane	0.500U	1.00	0.310	ug/L
Bromodichloromethane	0.250U	0.500	0.150	ug/L
Bromoform	0.500U	1.00	0.310	ug/L
Bromomethane	2.50U	5.00	2.00	ug/L
Carbon disulfide	5.00U	10.0	3.10	ug/L
Carbon tetrachloride	0.500U	1.00	0.310	ug/L
Chlorobenzene	0.250U	0.500	0.150	ug/L
Chloroethane	0.500U	1.00	0.310	ug/L
Chloroform	0.500U	1.00	0.310	ug/L

Print Date: 04/21/2021 1:16:23PM

Method Blank

Blank ID: MB for HBN 1817854 [VXX/36948]
 Blank Lab ID: 1606392

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1211681001, 1211681002, 1211681003, 1211681004, 1211681005

Results by SW8260D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Chloromethane	0.500U	1.00	0.310	ug/L
cis-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
cis-1,3-Dichloropropene	0.250U	0.500	0.150	ug/L
Dibromochloromethane	0.250U	0.500	0.150	ug/L
Dibromomethane	0.500U	1.00	0.310	ug/L
Dichlorodifluoromethane	0.500U	1.00	0.310	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
Freon-113	5.00U	10.0	3.10	ug/L
Hexachlorobutadiene	0.500U	1.00	0.310	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	ug/L
Methylene chloride	5.00U	10.0	3.10	ug/L
Methyl-t-butyl ether	5.00U	10.0	3.10	ug/L
Naphthalene	0.500U	1.00	0.310	ug/L
n-Butylbenzene	0.500U	1.00	0.310	ug/L
n-Propylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
sec-Butylbenzene	0.500U	1.00	0.310	ug/L
Styrene	0.500U	1.00	0.310	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	ug/L
Tetrachloroethene	0.500U	1.00	0.310	ug/L
Toluene	0.500U	1.00	0.310	ug/L
trans-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
trans-1,3-Dichloropropene	0.500U	1.00	0.310	ug/L
Trichloroethene	0.500U	1.00	0.310	ug/L
Trichlorofluoromethane	0.500U	1.00	0.310	ug/L
Vinyl acetate	5.00U	10.0	3.10	ug/L
Vinyl chloride	0.0750U	0.150	0.0500	ug/L
Xylenes (total)	1.50U	3.00	1.00	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	101	81-118		%
4-Bromofluorobenzene (surr)	103	85-114		%
Toluene-d8 (surr)	99.8	89-112		%

Method Blank

Blank ID: MB for HBN 1817854 [VXX/36948]
Blank Lab ID: 1606392

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1211681001, 1211681002, 1211681003, 1211681004, 1211681005

Results by SW8260D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
------------------	----------------	---------------	-----------	--------------

Batch Information

Analytical Batch: VMS20651
Analytical Method: SW8260D
Instrument: VPA 780/5975 GC/MS
Analyst: JMG
Analytical Date/Time: 4/15/2021 5:45:00PM

Prep Batch: VXX36948
Prep Method: SW5030B
Prep Date/Time: 4/15/2021 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 04/21/2021 1:16:23PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1211681 [VXX36948]
 Blank Spike Lab ID: 1606393
 Date Analyzed: 04/15/2021 18:01

Spike Duplicate ID: LCSD for HBN 1211681 [VXX36948]
 Spike Duplicate Lab ID: 1606394
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1211681001, 1211681002, 1211681003, 1211681004, 1211681005

Results by SW8260D

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1,1,2-Tetrachloroethane	30	31.4	105	30	31.1	104	(78-124)	1.00	(< 20)
1,1,1-Trichloroethane	30	30.8	103	30	30.4	101	(74-131)	1.10	(< 20)
1,1,2,2-Tetrachloroethane	30	31.9	106	30	31.3	104	(71-121)	2.00	(< 20)
1,1,2-Trichloroethane	30	31.5	105	30	30.9	103	(80-119)	2.10	(< 20)
1,1-Dichloroethane	30	30.2	101	30	29.8	99	(77-125)	1.50	(< 20)
1,1-Dichloroethene	30	31.2	104	30	30.1	100	(71-131)	3.40	(< 20)
1,1-Dichloropropene	30	31.1	104	30	30.5	102	(79-125)	2.00	(< 20)
1,2,3-Trichlorobenzene	30	32.3	108	30	32.2	107	(69-129)	0.34	(< 20)
1,2,3-Trichloropropane	30	31.6	105	30	31.1	104	(73-122)	1.30	(< 20)
1,2,4-Trichlorobenzene	30	32.3	108	30	32.4	108	(69-130)	0.15	(< 20)
1,2,4-Trimethylbenzene	30	32.3	108	30	31.8	106	(79-124)	1.50	(< 20)
1,2-Dibromo-3-chloropropane	30	32.4	108	30	32.1	107	(62-128)	1.10	(< 20)
1,2-Dibromoethane	30	32.2	107	30	31.6	105	(77-121)	1.80	(< 20)
1,2-Dichlorobenzene	30	30.5	102	30	30.6	102	(80-119)	0.10	(< 20)
1,2-Dichloroethane	30	29.7	99	30	29.5	98	(73-128)	0.47	(< 20)
1,2-Dichloropropane	30	30.6	102	30	30.5	102	(78-122)	0.46	(< 20)
1,3,5-Trimethylbenzene	30	31.8	106	30	31.8	106	(75-124)	0.09	(< 20)
1,3-Dichlorobenzene	30	30.8	103	30	30.7	102	(80-119)	0.36	(< 20)
1,3-Dichloropropane	30	31.3	104	30	30.9	103	(80-119)	1.30	(< 20)
1,4-Dichlorobenzene	30	31.0	103	30	30.9	103	(79-118)	0.45	(< 20)
2,2-Dichloropropane	30	31.8	106	30	31.3	104	(60-139)	1.40	(< 20)
2-Butanone (MEK)	90	95.3	106	90	97.1	108	(56-143)	1.90	(< 20)
2-Chlorotoluene	30	31.4	105	30	31.0	103	(79-122)	1.20	(< 20)
2-Hexanone	90	96.7	107	90	94.7	105	(57-139)	2.10	(< 20)
4-Chlorotoluene	30	31.4	105	30	30.9	103	(78-122)	1.30	(< 20)
4-Isopropyltoluene	30	29.4	98	30	29.1	97	(77-127)	1.20	(< 20)
4-Methyl-2-pentanone (MIBK)	90	96.9	108	90	96.4	107	(67-130)	0.53	(< 20)
Benzene	30	30.8	103	30	30.0	100	(79-120)	2.50	(< 20)
Bromobenzene	30	30.9	103	30	30.6	102	(80-120)	0.88	(< 20)
Bromochloromethane	30	30.5	102	30	30.8	103	(78-123)	1.00	(< 20)
Bromodichloromethane	30	31.0	103	30	31.0	103	(79-125)	0.19	(< 20)
Bromoform	30	31.5	105	30	31.7	106	(66-130)	0.44	(< 20)
Bromomethane	30	33.1	110	30	31.6	105	(53-141)	4.70	(< 20)
Carbon disulfide	45	46.1	102	45	44.8	100	(64-133)	2.80	(< 20)

Print Date: 04/21/2021 1:16:26PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1211681 [VXX36948]
 Blank Spike Lab ID: 1606393
 Date Analyzed: 04/15/2021 18:01

Spike Duplicate ID: LCSD for HBN 1211681 [VXX36948]
 Spike Duplicate Lab ID: 1606394
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1211681001, 1211681002, 1211681003, 1211681004, 1211681005

Results by SW8260D

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Carbon tetrachloride	30	31.7	106	30	31.2	104	(72-136)	1.70	(< 20)
Chlorobenzene	30	30.8	103	30	30.3	101	(82-118)	1.60	(< 20)
Chloroethane	30	30.3	101	30	28.9	96	(60-138)	5.00	(< 20)
Chloroform	30	29.3	98	30	29.0	97	(79-124)	1.00	(< 20)
Chloromethane	30	30.8	103	30	29.5	98	(50-139)	4.10	(< 20)
cis-1,2-Dichloroethene	30	30.4	101	30	29.6	99	(78-123)	2.70	(< 20)
cis-1,3-Dichloropropene	30	31.8	106	30	31.9	106	(75-124)	0.35	(< 20)
Dibromochloromethane	30	31.6	105	30	31.6	105	(74-126)	0.28	(< 20)
Dibromomethane	30	30.8	103	30	29.6	99	(79-123)	3.90	(< 20)
Dichlorodifluoromethane	30	28.0	93	30	27.1	90	(32-152)	3.40	(< 20)
Ethylbenzene	30	31.7	106	30	30.7	102	(79-121)	3.20	(< 20)
Freon-113	45	47.0	104	45	46.1	102	(70-136)	2.00	(< 20)
Hexachlorobutadiene	30	31.2	104	30	31.4	105	(66-134)	0.77	(< 20)
Isopropylbenzene (Cumene)	30	31.9	106	30	31.1	104	(72-131)	2.70	(< 20)
Methylene chloride	30	30.5	102	30	30.2	101	(74-124)	0.96	(< 20)
Methyl-t-butyl ether	45	46.6	103	45	46.5	103	(71-124)	0.13	(< 20)
Naphthalene	30	29.9	100	30	29.4	98	(61-128)	1.70	(< 20)
n-Butylbenzene	30	32.7	109	30	32.1	107	(75-128)	2.10	(< 20)
n-Propylbenzene	30	32.0	107	30	31.3	104	(76-126)	2.30	(< 20)
o-Xylene	30	31.3	104	30	30.7	102	(78-122)	1.90	(< 20)
P & M -Xylene	60	62.6	104	60	61.9	103	(80-121)	1.10	(< 20)
sec-Butylbenzene	30	29.8	99	30	29.2	98	(77-126)	2.00	(< 20)
Styrene	30	32.1	107	30	31.4	105	(78-123)	2.10	(< 20)
tert-Butylbenzene	30	32.0	107	30	31.6	105	(78-124)	1.10	(< 20)
Tetrachloroethene	30	30.9	103	30	30.3	101	(74-129)	2.00	(< 20)
Toluene	30	29.7	99	30	29.1	97	(80-121)	2.00	(< 20)
trans-1,2-Dichloroethene	30	30.8	103	30	30.2	101	(75-124)	2.00	(< 20)
trans-1,3-Dichloropropene	30	29.3	98	30	29.5	99	(73-127)	0.71	(< 20)
Trichloroethene	30	30.2	101	30	29.8	99	(79-123)	1.20	(< 20)
Trichlorofluoromethane	30	30.9	103	30	30.1	100	(65-141)	2.90	(< 20)
Vinyl acetate	30	29.1	97	30	28.7	96	(54-146)	1.30	(< 20)
Vinyl chloride	30	30.7	102	30	29.1	97	(58-137)	5.30	(< 20)
Xylenes (total)	90	93.9	104	90	92.6	103	(79-121)	1.30	(< 20)

Print Date: 04/21/2021 1:16:26PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1211681 [VXX36948]
 Blank Spike Lab ID: 1606393
 Date Analyzed: 04/15/2021 18:01

Spike Duplicate ID: LCSD for HBN 1211681 [VXX36948]
 Spike Duplicate Lab ID: 1606394
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1211681001, 1211681002, 1211681003, 1211681004, 1211681005

Results by SW8260D

Parameter	Blank Spike (%)			Spike Duplicate (%)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Surrogates									
1,2-Dichloroethane-D4 (surr)	30		98	30		98	(81-118)	0.10	
4-Bromofluorobenzene (surr)	30		102	30		101	(85-114)	0.49	
Toluene-d8 (surr)	30		101	30		100	(89-112)	0.83	

Batch Information

Analytical Batch: **VMS20651**
 Analytical Method: **SW8260D**
 Instrument: **VPA 780/5975 GC/MS**
 Analyst: **JMG**

Prep Batch: **VXX36948**
 Prep Method: **SW5030B**
 Prep Date/Time: **04/15/2021 06:00**
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1817817 [XXX/44638]

Blank Lab ID: 1606249

QC for Samples:

1211681001, 1211681002, 1211681003, 1211681004

Matrix: Water (Surface, Eff., Ground)

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	0.300U	0.600	0.180	mg/L
Surrogates				
5a Androstane (surr)	91.5	60-120		%

Batch Information

Analytical Batch: XFC15896

Analytical Method: AK102

Instrument: Agilent 7890B F

Analyst: IVM

Analytical Date/Time: 4/19/2021 11:52:00AM

Prep Batch: XXX44638

Prep Method: SW3520C

Prep Date/Time: 4/15/2021 4:02:38PM

Prep Initial Wt./Vol.: 250 mL

Prep Extract Vol: 1 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1211681 [XXX44638]
 Blank Spike Lab ID: 1606250
 Date Analyzed: 04/19/2021 12:02

Spike Duplicate ID: LCSD for HBN 1211681
 [XXX44638]
 Spike Duplicate Lab ID: 1606251
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1211681001, 1211681002, 1211681003, 1211681004

Results by AK102

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	20	20.6	103	20	19.5	98	(75-125)	5.40	(< 20)

Surrogates

5a Androstane (surr)	0.4		108	0.4		105	(60-120)	2.80	
----------------------	-----	--	-----	-----	--	-----	------------	------	--

Batch Information

Analytical Batch: **XFC15896**
 Analytical Method: **AK102**
 Instrument: **Agilent 7890B F**
 Analyst: **IVM**

Prep Batch: **XXX44638**
 Prep Method: **SW3520C**
 Prep Date/Time: **04/15/2021 16:02**
 Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

Dawkins, Jennifer A (Fairbanks)

From: Dawkins, Jennifer A (Fairbanks)
Sent: Thursday, April 15, 2021 11:30 AM
To: Dawkins, Jennifer A (Fairbanks)
Subject: 1211681 Change Order

The clients needs to run DRO only (AK 102).

Thanks,

Jen

Jennifer A-B Dawkins
Environment, Health & Safety

Fairbanks Client Services
Project Manager - Alaska

SGS

3180 Peger Rd. Ste. 190

Fairbanks, AK 99709

907-474-8656

907-322-8444

jennifer.dawkins@sgs.com

CHAIN-OF-CUSTODY RECORD

Analytical Methods (include preservative if used)

1211681



VOC EPA SW-8260 (HCL)
 DR0 AK 103 (HCL)

Quote No: _____
 J-Flags: Yes No

Turn Around Time:
 Normal Rush
 Please Specify _____

Sample Identity	Lab No.	Time	Date Sampled	Total	Remarks/Matrix Composition/Grab? Sample Containers
MW-1901-15	1AE	1647	4-13-21	5	Groundwater
MW-1902-15	2AE	1002	4-13-21	5	
MW-1901-115	3AE	1657	4-13-21	5	
EB-1901-15	4AE	1710	4-13-21	5	
	SAC				

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: <u>Justin Riskley</u> Printed Name: <u>Justin Riskley</u> Date: <u>4-14-21</u> Company: <u>Shannon & Wilson, Inc.</u>	Signature: <u>Sen Dawkins</u> Printed Name: <u>Sen Dawkins</u> Date: <u>4-14-21</u> Company: <u>SGS</u>	Signature: _____ Printed Name: _____ Date: _____ Company: _____
Received By: 1.	Received By: 2.	Received By: 3.
Signature: _____ Printed Name: _____ Date: <u>4-14-21</u> Company: <u>SGS</u>	Signature: _____ Printed Name: _____ Date: _____ Company: _____	Signature: _____ Printed Name: _____ Date: _____ Company: _____

Sample Receipt

Total No. of Containers: 20
 COC Seals/Intact? Y/N/A
 Received Good Cond./Cold
 Temp: 4.6
 Delivery Method: _____

Project Information

Number: 102519-015
 Name: FAI FTP
 Contact: MDN
 Ongoing Project? Yes No
 Sampler: JKR/MXJ

Notes:

ANC: 1F, 1B
 TB: 2.4°C #D58

Distribution: White - shipment - returned to Shannon & Wilson w/ laboratory report
 Yellow - shipment - for consignee files
 Pink - Shannon & Wilson - job file



e-Sample Receipt Form FBK

SGS Workorder #:

S&W

S & W

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below				
Chain of Custody / Temperature Requirements		<input checked="" type="checkbox"/> Yes	Exemption permitted if sampler hand carries/delivers.			
Were Custody Seals intact? Note # & location	N/A					
COC accompanied samples?	Yes					
DOD: Were samples received in COC corresponding coolers?	N/A					
<input type="checkbox"/> **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required						
Temperature blank compliant* (i.e., 0-6 °C after CF)?	Yes	Cooler ID: 1	@	4.5 °C	Therm. ID: D53	
		Cooler ID:	@	°C	Therm. ID:	
		Cooler ID:	@	°C	Therm. ID:	
		Cooler ID:	@	°C	Therm. ID:	
<p>If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.</p>						
*If >6°C, were samples collected <8 hours ago? <input type="checkbox"/>						
If <0°C, were sample containers ice free? <input type="checkbox"/>						
<p>Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.</p>						
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.				
Do samples match COC** (i.e., sample IDs, dates/times collected)?	N/C					
**Note: If times differ <1hr, record details & login per COC.						
***Note: If sample information on containers differs from COC, SGS will default to COC information						
Were samples in good condition (no leaks/cracks/breakage)?	Yes					
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals))	Yes					
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	Yes					
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	N/C					
Were all soil VOAs field extracted with MeOH+BFB?	N/A					
For Rush/Short Hold Time, was RUSH/Short HT email sent?	N/A					
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.						
Additional notes (if applicable):						
SGS Profile #	350732	350732				



e-Sample Receipt Form

SGS Workorder #:

1211681



1 2 1 1 6 8 1

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements		
Were Custody Seals intact? Note # & location	Yes	1F,1B
COC accompanied samples?	Yes	
DOD: Were samples received in COC corresponding coolers?	N/A	
N/A **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	Yes	Cooler ID: 1 @ 2.4 °C Therm. ID: D58
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
*If >6°C, were samples collected <8 hours ago?	N/A	
If <0°C, were sample containers ice free?	N/A	
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Holding Time / Documentation / Sample Condition Requirements		
Note: Refer to form F-083 "Sample Guide" for specific holding times.		
Were samples received within holding time?	Yes	
Do samples match COC** (i.e., sample IDs, dates/times collected)?	Yes	
**Note: If times differ <1hr, record details & login per COC.		
***Note: If sample information on containers differs from COC, SGS will default to COC information		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)	Yes	
Were proper containers (type/mass/volume/preservative***) used?	Yes	N/A ***Exemption permitted for metals (e.g,200.8/6020B).
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	Yes	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	Yes	
Were all soil VOAs field extracted with MeOH+BFB?	N/A	
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1211681001-A	HCL to pH < 2	OK			
1211681001-B	HCL to pH < 2	OK			
1211681001-C	HCL to pH < 2	OK			
1211681001-D	HCL to pH < 2	OK			
1211681001-E	HCL to pH < 2	OK			
1211681002-A	HCL to pH < 2	OK			
1211681002-B	HCL to pH < 2	OK			
1211681002-C	HCL to pH < 2	OK			
1211681002-D	HCL to pH < 2	OK			
1211681002-E	HCL to pH < 2	OK			
1211681003-A	HCL to pH < 2	OK			
1211681003-B	HCL to pH < 2	OK			
1211681003-C	HCL to pH < 2	OK			
1211681003-D	HCL to pH < 2	OK			
1211681003-E	HCL to pH < 2	OK			
1211681004-A	HCL to pH < 2	OK			
1211681004-B	HCL to pH < 2	OK			
1211681004-C	HCL to pH < 2	OK			
1211681004-D	HCL to pH < 2	OK			
1211681004-E	HCL to pH < 2	OK			
1211681005-A	HCL to pH < 2	OK			
1211681005-B	HCL to pH < 2	OK			
1211681005-C	HCL to pH < 2	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.

Laboratory Data Review Checklist

Completed By:

Justin Risley

Title:

Engineering Staff

Date:

April 22, 2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

SGS North America, Inc.

Laboratory Report Number:

1211681

Laboratory Report Date:

April 21, 2021

CS Site Name:

FAI Statewide PFAS

ADEC File Number:

100.38.277

Hazard Identification Number:

26816

1211681

Laboratory Report Date:

April 21, 2021

CS Site Name:

FAI Statewide PFAS

Note: Any N/A or No box checked must have an explanation in the comments box.

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes No N/A Comments:

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes No N/A Comments:

Analyses were performed by SGS North America, Inc. in Anchorage, Alaska.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes No N/A Comments:

b. Correct analyses requested?

Yes No N/A Comments:

DRO was requested by AK103 on the CoC instead of by AK102. The laboratory confirmed DRO analysis by AK102 and analyzed using this method.

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes No N/A Comments:

The cooler was received in Fairbanks at 4.6° C, and received in Anchorage at 2.4° C.

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes No N/A Comments:

1211681

Laboratory Report Date:

April 21, 2021

CS Site Name:

FAI Statewide PFAS

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes No N/A Comments:

The laboratory notes the samples were received in acceptable condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes No N/A Comments:

The laboratory does not note any discrepancies.

e. Data quality or usability affected?

Comments:

Data quality and/or usability are not affected; see above.

4. Case Narrative

a. Present and understandable?

Yes No N/A Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

Yes No N/A Comments:

The lab does not identify any discrepancies, errors, or QC failures.

c. Were all corrective actions documented?

Yes No N/A Comments:

No corrective actions were documented in the case narrative or necessary.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The case narrative does not note an effect on data quality.

1211681

Laboratory Report Date:

April 21, 2021

CS Site Name:

FAI Statewide PFAS

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes No N/A Comments:

DRO was requested by AK103 on the CoC instead of by AK102. The laboratory confirmed DRO analysis by AK102 and analyzed using this method.

b. All applicable holding times met?

Yes No N/A Comments:

c. All soils reported on a dry weight basis?

Yes No N/A Comments:

This work order does not include soil samples.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes No N/A Comments:

The limit of detection (LOD) for analytes with non-detect results were compared to the respective ADEC Groundwater Cleanup Level. The LODs were below the ADEC Groundwater Cleanup Levels, except for VOC analyte 1,2,3-trichloropropane. The results for this analyte are identified (**bolded**) in the analytical table.

e. Data quality or usability affected?

We cannot assess if the analytes noted in Section 5.d. are present in the samples at a concentration greater than the project limits.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

1211681

Laboratory Report Date:

April 21, 2021

CS Site Name:

FAI Statewide PFAS

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes No N/A Comments:

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

v. Data quality or usability affected?

Comments:

Data quality or usability not affected; see above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes No N/A Comments:

LCS/LCSD samples are reported for VOC analytes and DRO.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

Metals and/or inorganics were not analyzed as part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

1211681

Laboratory Report Date:

April 21, 2021

CS Site Name:

FAI Statewide PFAS

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

None; analytical accuracy and precision were demonstrated to be within acceptable limits.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability are not affected.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Note: Leave blank if not required for project

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

MS/MSD samples are not reported for this work order. Precision and accuracy are evaluated using the LCS/LCSD samples.

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

Metals and/or inorganics were not analyzed as part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes No N/A Comments:

See above.

1211681

Laboratory Report Date:

April 21, 2021

CS Site Name:

FAI Statewide PFAS

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes No N/A Comments:

See above.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Not applicable, see above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability are not affected.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes No N/A Comments:

Methods EPA8260 and AK102 use surrogate recovery to evaluate laboratory accuracy.

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes No N/A Comments:

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

There were no surrogate recovery failures associated with this work order.

1211681

Laboratory Report Date:

April 21, 2021

CS Site Name:

FAI Statewide PFAS

iv. Data quality or usability affected?

Comments:

The data quality and/or usability are not affected.

e. Trip Blanks

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples?
(If not, enter explanation below.)

Yes No N/A Comments:

A VOC trip blank is reported in this work order.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC?
(If not, a comment explaining why must be entered below)

Yes No N/A Comments:

However, the project samples were transported in a single cooler.

iii. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

VOCs were not detected in the trip blank sample.

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; VOCs were not detected in the trip blank.

v. Data quality or usability affected?

Comments:

The data quality and/or usability are not affected.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No N/A Comments:

1211681

Laboratory Report Date:

April 21, 2021

CS Site Name:

FAI Statewide PFAS

ii. Submitted blind to lab?

Yes No N/A Comments:

Field-duplicate pair *MW-1901-15* / *MW-1901-115* was submitted in this work order.

iii. Precision – All relative percent differences (RPD) less than specified project objectives?
(Recommended: 30% water, 50% soil)

$$RPD (\%) = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2) / 2)} \times 100$$

Where R_1 = Sample Concentration
 R_2 = Field Duplicate Concentration

Yes No N/A Comments:

The RPDs were within acceptable limits, where calculable.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The data quality and/or usability are not affected.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes No N/A Comments:

Equipment blank sample *EB-1901-15* was submitted with this work order.

i. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

However, DRO were detected at an estimated concentration below the LOQ in the equipment blank sample.

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

The project samples *MW-1901-15*, *MW-1901-115*, and *MW-1902-15* are affected by the detection in the equipment blank. These results are considered non-detects and flagged 'UB' at the LOQ in the analytical database.

1211681

Laboratory Report Date:

April 21, 2021

CS Site Name:

FAI Statewide PFAS

iii. Data quality or usability affected?

Comments:

Yes; see above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes No N/A Comments:

There were no additional flags/qualifiers required for this work order.



September 16, 2019

Vista Work Order No. 1903075

Ms. Marcy Nadel
Shannon & Wilson, Inc.
2355 Hill Road
Fairbanks, AK 99709

Dear Ms. Nadel,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on September 11, 2019 under your Project Name 'FAI FTP / 102519-010'.

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

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

Sincerely,

A handwritten signature in blue ink, appearing to read "M Maier", is written over a light blue horizontal line.

Martha Maier
Laboratory Director



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

Vista Work Order No. 1903075

Case Narrative

Sample Condition on Receipt:

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

Analytical Notes:

PFAS Isotope Dilution Method

The samples contained particulate and were centrifuged prior to extraction.

The samples were extracted and analyzed for a selected list of PFAS using the PFAS Isotope Dilution Method. The results for PFOA and PFOS include both linear and branched isomers.

Holding Times

The samples were extracted and analyzed within the method hold times.

Quality Control

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

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

Sample "19FAI-FTP-Pre101" for PFOS was re-injected due to high levels of matrix interferences. The re-injection at a dilution of 1:1000 was prepared using standard addition.

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

TABLE OF CONTENTS

Case Narrative.....	1
Table of Contents.....	3
Sample Inventory.....	4
Analytical Results.....	5
Qualifiers.....	14
Certifications.....	15
Sample Receipt.....	18

Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1903075-01	19FAI-FTP-Pre001	09-Sep-19 19:30	11-Sep-19 09:15	HDPE Bottle, 250 mL HDPE Bottle, 250 mL
1903075-02	19FAI-FTP-Pre101	09-Sep-19 19:20	11-Sep-19 09:15	HDPE Bottle, 250 mL HDPE Bottle, 250 mL
1903075-03	19FAI-FTP-Post001	09-Sep-19 20:00	11-Sep-19 09:15	HDPE Bottle, 250 mL HDPE Bottle, 250 mL
1903075-04	19FAI-FTP-Post002	10-Sep-19 11:00	11-Sep-19 09:15	HDPE Bottle, 250 mL HDPE Bottle, 250 mL

ANALYTICAL RESULTS

Sample ID: Method Blank

PFAS Isotope Dilution Method

Client Data		Laboratory Data								
Name:	Shannon & Wilson, Inc.	Lab Sample:	B9J0101-BLK1	Column:	BEH C18					
Project:	FAI FTP / 102519-010	Matrix:	Aqueous							
Analyte	CAS Number	Conc. (ng/L)	MDL	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFOA	335-67-1	ND	0.326	2.00		B9J0101	11-Sep-19	0.250 L	12-Sep-19 11:04	1
PFOS	1763-23-1	ND	0.404	2.00		B9J0101	11-Sep-19	0.250 L	12-Sep-19 11:04	1
Labeled Standards	Type	% Recovery	MDL	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFOA	IS	102		60 - 130		B9J0101	11-Sep-19	0.250 L	12-Sep-19 11:04	1
13C8-PFOS	IS	99.8		60 - 130		B9J0101	11-Sep-19	0.250 L	12-Sep-19 11:04	1

MDL - Method Detection Limit RL - Reporting limit Results reported to MDL.

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

Sample ID: OPR

PFAS Isotope Dilution Method

Client Data		Laboratory Data											
Name:	Shannon & Wilson, Inc.	Matrix:	Aqueous	Lab Sample:	B910101-BS1	Column:	BEH C18						
Project:	FAI FTP / 102519-010												
Analyte	CAS Number	Amt Found (ng/L)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution		
PFOA	335-67-1	41.1	40.0	103	70 - 130		B910101	11-Sep-19	0.250 L	12-Sep-19	10:54		
PFOS	1763-23-1	38.3	40.0	95.7	70 - 130		B910101	11-Sep-19	0.250 L	12-Sep-19	10:54		
Labeled Standards	Type			% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution		
13C2-PFOA	IS			99.3	60 - 130		B910101	11-Sep-19	0.250 L	12-Sep-19	10:54		
13C8-PFOS	IS			95.5	60 - 130		B910101	11-Sep-19	0.250 L	12-Sep-19	10:54		

Sample ID: Method Blank

PFAS Isotope Dilution Method

Client Data		Laboratory Data								
Name:	Shannon & Wilson, Inc.	Lab Sample:	B9J0102-BLK1							
Project:	FAI FTP / 102519-010	Matrix:	Aqueous							
		Column:	BEH C18							
Analyte	CAS Number	Conc. (ng/L)	MDL	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFOA	335-67-1	0.362	0.326	2.00	J	B9J0102	11-Sep-19	0.250 L	12-Sep-19 10:01	1
PFOS	1763-23-1	ND	0.404	2.00		B9J0102	11-Sep-19	0.250 L	12-Sep-19 10:01	1
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-PFOA	IS	102	60 - 130		B9J0102	11-Sep-19	0.250 L	12-Sep-19 10:01	1	
13C8-PFOS	IS	91.6	60 - 130		B9J0102	11-Sep-19	0.250 L	12-Sep-19 10:01	1	

MDL - Method Detection Limit RL - Reporting limit Results reported to MDL.

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

Sample ID: OPR

PFAS Isotope Dilution Method

Client Data		Laboratory Data										
Name:	Shannon & Wilson, Inc.	Matrix:	Aqueous	Lab Sample:	B910102-BS1	Column:	BEH C18					
Project:	FAI FTP / 102519-010											
Analyte	CAS Number	Amt Found (ng/L)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
PFOA	335-67-1	43.2	40.0	108	70 - 130	B	B910102	11-Sep-19	0.250 L	12-Sep-19 09:50	1	
PFOS	1763-23-1	42.2	40.0	106	70 - 130		B910102	11-Sep-19	0.250 L	12-Sep-19 09:50	1	
Labeled Standards	Type	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution			
13C2-PFOA	IS	98.8	60 - 130		B910102	11-Sep-19	0.250 L	12-Sep-19 09:50	1			
13C8-PFOS	IS	103	60 - 130		B910102	11-Sep-19	0.250 L	12-Sep-19 09:50	1			

Sample ID: 19FAI-FTP-Pre001				PFAS Isotope Dilution Method						
Client Data		Laboratory Data		Matrix:		Column:				
Name:	Shannon & Wilson, Inc.	Lab Sample:	1903075-01	Date Received:	11-Sep-19 09:15	Matrix:	Water			
Project:	FAI FTP / 102519-010	Date Collected:	09-Sep-19 19:30	Batch:	B9J0101	Batch:	BEH C18			
Analyte	CAS Number	Conc. (ng/L)	MDL	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFOA	335-67-1	8140	71.5	439	D	B9J0101	11-Sep-19	0.228 L	12-Sep-19 11:15	200
PFOS	1763-23-1	240000	88.6	439	D	B9J0101	11-Sep-19	0.228 L	12-Sep-19 11:15	200
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-PFOA	IS	68.4	60 - 130	D	B9J0101	11-Sep-19	0.228 L	12-Sep-19 11:15	200	
13C8-PFOS	IS	93.8	60 - 130	D	B9J0101	11-Sep-19	0.228 L	12-Sep-19 11:15	200	

MDL - Method Detection Limit RL - Reporting limit Results reported to MDL.

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

Sample ID: 19FAI-FTP-Pre101		PFAS Isotope Dilution Method									
Client Data		Laboratory Data									
Name:	Shannon & Wilson, Inc.	Matrix:	Water	Lab Sample:	1903075-02	Column:	BEH C18	Date Collected:	09-Sep-19 19:20	Date Received:	11-Sep-19 09:15
Project:	FAI FTP / 102519-010										
Analyte	CAS Number	Conc. (ng/L)	MDL	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
PFOA	335-47-1	4090	70.5	633	D	B9J0101	11-Sep-19	0.231 L	12-Sep-19 11:25	200	
PFOS	1743-23-1	52200	637	2170	D	B9J0101	11-Sep-19	0.231 L	13-Sep-19 16:31	1000	
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution		
13C2-PFOA	IS	48.2	40 - 130	D	B9J0101	11-Sep-19	0.231 L	12-Sep-19 11:25	200		
13C8-PFOS	IS	102	40 - 130	D	B9J0101	11-Sep-19	0.231 L	13-Sep-19 16:31	1000		

MDL - Method Detection Limit RL - Reporting limit Results reported to MDL.

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

Sample ID: 19FAI-FTP-Pr00LLI		PFAS I0trpe Dilutirn Methrd									
Client Data		baoryatrys Data					boryatrys Data				
Name:	Shannon & Wilson, Inc.	Matrix:	Water	Lab Sample:	1903075-03	Column:	BEH C18	Date Collected:	09-Sep-19 20:00	Date Received:	11-Sep-19 09:15
Project:	FAI FTP / 102519-010										
Analste	CAS Numoey	Crnc. (ng/b)	MDb	Rb	Qualificy0	Batch	Extyacted	Samp Size	Analszed	Dilutirn	
PFOA	335-47-1	ND	0.352	2.14		B9J0102	11-Sep-19	0.231 L	12-Sep-19 10:11	1	
PFOS	1743-23-1	201	0.634	2.14		B9J0102	11-Sep-19	0.231 L	12-Sep-19 10:11	1	
b aoeled Standayd0	Tspe	% Recrveys	bimit0		Qualificy0	Batch	Extyacted	Samp Size	Analszed	Dilutirn	
13C2-PFOA	IS	100	40 - 130			B9J0102	11-Sep-19	0.231 L	12-Sep-19 10:11	1	
13C8-PFOS	IS	88.9	40 - 130			B9J0102	11-Sep-19	0.231 L	12-Sep-19 10:11	1	

MDL - Method Detection Limit RL - Reporting limit Results reported to MDL.

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

Sample ID: 19FAI-FTP-Post002

PFAS Isotope Dilution Method

Client Data		Laboratory Data								
Name: Sna&&o&W's il, o& l&cu	Matrix: s ater	Lab Sample: 1903075-0h	ColBn& E H8 CIR							
Project: FAI FTP / 102519-010	Date Collected: 10-Sep-19 11:00	Date v eceiOed: 11-Sep-19 09:15								
Analyte	CAS Number	Conc. (ng/L)	MDL	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PF4 A	335-67-1	ND	0b5h	2uL R		E9J0102	11-Sep-19	0u230 L	12-Sep-19 10:22	1
PF4 S	1763-23-1	9R5	0th39	2uL R		E9J0102	11-Sep-19	0u230 L	12-Sep-19 10:22	1
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-PF4 A	IS	101	60 - 130		E9J0102	11-Sep-19	0u230 L	12-Sep-19 10:22	1	
13CR-PF4 S	IS	996	60 - 130		E9J0102	11-Sep-19	0u230 L	12-Sep-19 10:22	1	

MDL - Method Detection Limit v L - v eporting limit v e, Bt, reported to MDL u s ne&reported, PF8 xS, PF4 A, PF4 S, MeF4 SAA a&d HF4 SAA i&Ble boin l&dear a&d bra&ened i, omer, u 4 &y me l&ear i, omer i, reported for all other a&lyte, u

DATA QUALIFIERS & ABBREVIATIONS

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

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

Vista Analytical Laboratory Certifications

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

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

NELAP Accredited Test Methods

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

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

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

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

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

1903075 1.8°C

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

2365 Hill Road
 Fairbanks, AK 99709
 (907) 479-0600
 www.shannonwilson.com

CHAIN-OF-CUSTODY RECORD

Page 1 of 1
 Laboratory Vista Analytical
 Attn: Jade White-Dobbs

Analytical Methods (include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
19 FAI - FTP - Pre 001*		19:30	9/9/19	X	
19 FAI - FTP - Pre 101*		19:20	9/9/19	X	
19 FAI - FTP - Post 001		20:00	9/9/19	X	
19 FAI - FTP - Post 002		11:00	9/10/19	X	Water Grab Sample

PFOS/PFOA EPA 537 M

Project Information

Number: 102519-010
 Name: FAI FTP
 Contact: MDN
 Ongoing Project? Yes No
 Sampler: APW/MDN

Sample Receipt

Total No. of Containers: 8
 COC Seals/Intact? Y/N/NA
 Received Good Cond./Cold
 Temp:
 Delivery Method: FedEx

Notes:

1-day TAT if possible.
 Please include project no. on invoice.

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
 Yellow - w/shipment - for consignee files
 Pink - Shannon & Wilson - job file

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: <u>Adam Wyborny</u> Printed Name: <u>Adam Wyborny</u> Company: <u>Shannon & Wilson, Inc.</u>	Signature: _____ Printed Name: _____ Company: _____	Signature: _____ Printed Name: _____ Company: _____
Time: <u>12:00</u> Date: <u>9/10/19</u>	Time: _____ Date: _____	Time: _____ Date: _____
Received By: 1. Signature: <u>W. Sparks</u> Printed Name: <u>Marissa Sparks</u> Company: <u>Volk</u>	Received By: 2. Signature: _____ Printed Name: _____ Company: _____	Received By: 3. Signature: _____ Printed Name: _____ Company: _____
Time: <u>0915</u> Date: <u>09/11/19</u>	Time: _____ Date: _____	Time: _____ Date: _____

* Two samples may require dilution.

Sample Log-In Checklist

 Page # 1 of 1

 Vista Work Order #: 1903075

 TAT rush

Samples Arrival:	Date/Time 09/11/19 0915	Initials: WWS	Location: WR-2
			Shelf/Rack: 4/8
Logged In:	Date/Time 09/11/19 0920	Initials: WWS	Location: R-13, WR-2 ↓ ↓ Shelf/Rack: 2-1, 2-3
Delivered By:	<input checked="" type="checkbox"/> FedEx	<input type="checkbox"/> UPS	<input type="checkbox"/> On Trac
	<input type="checkbox"/> GSO	<input type="checkbox"/> DHL	<input type="checkbox"/> Hand Delivered
	<input type="checkbox"/> Other		
Preservation:	<input type="checkbox"/> Ice	<input checked="" type="checkbox"/> Blue Ice	<input type="checkbox"/> Dry Ice
	<input type="checkbox"/> None		
Temp °C: 1.8 (uncorrected)	Probe used: Y / <input checked="" type="checkbox"/> N		Thermometer ID: IR-3
Temp °C: 1.8 (corrected)			

	YES	NO	NA
Adequate Sample Volume Received?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Holding Time Acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shipping Container(s) Intact?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shipping Custody Seals Intact?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shipping Documentation Present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Airbill	Trk # <u>7897 1860 9796</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample Container Intact?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample Custody Seals Intact?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Chain of Custody / Sample Documentation Present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
COC Anomaly/Sample Acceptance Form completed?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
If Chlorinated or Drinking Water Samples, Acceptable Preservation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Preservation Documented:	<input type="checkbox"/> Na ₂ S ₂ O ₃	<input type="checkbox"/> Trizma	<input type="checkbox"/> None
	<input type="checkbox"/> Other	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	<input checked="" type="checkbox"/> NA		
Shipping Container	<input type="checkbox"/> Vista	<input checked="" type="checkbox"/> Client	<input type="checkbox"/> Retain
	<input checked="" type="checkbox"/> Return	<input type="checkbox"/> Dispose	

Comments: collection times not listed on COC sample labels.
 WWS
 09/11/19

Laboratory Data Review Checklist

Completed By:

Ashley Jaramillo

Title:

Chemist

Date:

September 23, 2019

CS Report Name:

Fairbanks International Airport (FAI)

Report Date:

September 16, 2019

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Vista Analytical Laboratory

Laboratory Report Number:

1903075

ADEC File Number:

100.38.070

Hazard Identification Number:

1071

1. Laboratory

- a. Did an ADEC CS approved laboratory receive and
- perform
- all of the submitted sample analyses?

 Yes No

Comments:

- b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

 Yes No

Comments:

Not applicable, no samples were transferred or sub-contracted.

2. Chain of Custody (CoC)

- a. CoC information completed, signed, and dated (including released/received by)?

 Yes No

Comments:

- b. Correct Analyses requested?

 Yes No

Comments:

3. Laboratory Sample Receipt Documentation

- a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

 Yes No

Comments:

- b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

 Yes No

Comments:

Analysis of PFOS and PFOA by this method does not require chemical preservation.

- c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

 Yes No

Comments:

The sample receipt form notes that the samples arrived at the laboratory in good condition.

- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes No

Comments:

Collection times were not listed on the sample labels. Samples were logged in per the collection times listed on the chain of custody. Data quality or usability was not affected.

- e. Data quality or usability affected?

Comments:

See 3d above.

4. Case Narrative

- a. Present and understandable?

Yes No

Comments:

- b. Discrepancies, errors, or QC failures identified by the lab?

Yes No

Comments:

The samples contained particulates and were centrifuged prior to extraction.

Sample *19FAI-FTP-Pre101* was re-injected for PFOS analysis due to high levels of matrix interferences. The re-injection was performed at a dilution of 1:1000 and was prepared using standard addition.

- c. Were all corrective actions documented?

Yes No

Comments:

See 4b above.

- d. What is the effect on data quality/usability according to the case narrative?

Comments:

Case narrative does not specify an effect on data quality, it only discusses discrepancies and what was done in light of them. Any notable data quality issues mentioned in the case narrative are discussed above in 4b or elsewhere within this ADEC checklist.

5. Samples Results

- a. Correct analyses performed/reported as requested on COC?

Yes No

Comments:

b. All applicable holding times met?

Yes No

Comments:

c. All soils reported on a dry weight basis?

Yes No

Comments:

Not applicable, soil samples were not submitted with this work order.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes No

Comments:

The LOQ, equivalent to the Vista Analytical's Reporting Limit (RL), is less than the applicable ADEC groundwater cleanup levels.

e. Data quality or usability affected?

Yes No

Comments:

The data quality and/or usability are not affected.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes No

Comments:

ii. All method blank results less than limit of quantitation (LOQ)?

Yes No

Comments:

No analytes were detected in method blanks at concentrations exceeding the LOQ; however, PFOA was detected at a concentration below the LOQ in the method blank sample B9I0102-BLK1.

iii. If above LOQ, what samples are affected?

Comments:

PFOA was either not detected or detected at a concentration greater than ten times the concentration detected in the method blank sample. Therefore, no data qualification is required.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No

Comments:

The data quality is not affected; see above.

v. Data quality or usability affected?

Comments:

The data quality and/or usability are not affected.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes No

Comments:

The laboratory reported ongoing precision and recovery (OPR) samples for each batch.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No

Comments:

N/A; metals and/or inorganics were not analyzed as part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No

Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No

Comments:

Not applicable, precision was not evaluated.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

No samples are affected. Analytical accuracy was demonstrated to be within acceptable limits.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No

Comments:

Qualification of the data was not required; see above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability are not affected.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

Yes No

Comments:

The analytical method uses IDA recovery, which entails adding a ¹³C-isotope of each target analyte, and assessing the recovery of each analyte. The isotopically-labeled compounds are discussed as surrogates for this method.

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

Yes No

Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

Yes No

Comments:

N/A; there were no IDA recovery failures associated with this work order.

iv. Data quality or usability affected?

Comments:

The data quality and usability are not affected; see above.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes No

Comments:

PFOS and PFOA are not volatile compounds; therefore, a trip blank is not required.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes No

Comments:

N/A; a trip blank is not required.

iii. All results less than LOQ?

Yes No

Comments:

N/A; a trip blank is not required.

iv. If above LOQ, what samples are affected?

Comments:

None; a trip blank was not submitted with this work order.

v. Data quality or usability affected?

Comments:

The data quality and/or usability are not affected; see above.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No

Comments:

ii. Submitted blind to lab?

Yes No

Comments:

Sample *19FAI-FTP-Pre101* is a field duplicate of *19FAI-FTP-Pre001*.

iii. Precision – All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Yes No

Comments:

The relative precision demonstrated between the detected results of the field-duplicate samples was within the recommended DQO of 30%, where calculable, except for PFOS.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The PFOS results for samples *19FAI-FTP-Pre001* and *19FAI-FTP-Pre101* are considered estimated and have been flagged 'J' in the analytical results table. Impact to data is minor as the affected results are at least one order of magnitude larger than the ADEC groundwater cleanup level.

f. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below).

Yes No Not Applicable

The samples were collected without the use of reusable sampling equipment.

i. All results less than LOQ?

Yes No Comments:

Not applicable, an equipment-blank sample was not collected.

ii. If above LOQ, what samples are affected?

Comments:

Not applicable, an equipment-blank sample was not collected.

iii. Data quality or usability affected?

Comments:

Data quality or usability not affected.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes No Comments:

There were no additional flags/qualifiers required for this work order.

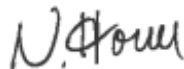
ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-54557-1
Client Project/Site: FAI 2019 FTP
Revision: 1

For:
Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

Attn: Marcy Nadel



Authorized for release by:
12/11/2019 4:32:45 PM
Nathaniel Horner, Project Management Assistant I
nathaniel.horner@testamericainc.com

Designee for
David Alltucker, Project Manager I
(916)374-4383
david.alltucker@testamericainc.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:
www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



Table of Contents

Cover Page	1
Table of Contents	2
Definitions/Glossary	3
Case Narrative	4
Detection Summary	5
Client Sample Results	7
Isotope Dilution Summary	13
QC Sample Results	15
QC Association Summary	17
Lab Chronicle	18
Certification Summary	20
Method Summary	21
Sample Summary	22
Chain of Custody	23
Receipt Checklists	24

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: FAI 2019 FTP

Job ID: 320-54557-1

Qualifiers

LCMS

Qualifier	Qualifier Description
E	Result exceeded calibration range.
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: Shannon & Wilson, Inc
Project/Site: FAI 2019 FTP

Job ID: 320-54557-1

Job ID: 320-54557-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative 320-54557-1 Rev(1)

Revision 1

This report was revised on 12/11/2019 to update the method 537 analyte list.

Receipt

The samples were received on 9/20/2019 12:35 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 9.1° C.

Comments:

Analyte list updated per client request

LCMS

Methods 537 (modified), EPA 537(Mod): Due to a shortage in the marketplace for 13C3-PFBS, the target analyte Perfluorobutanesulfonic acid (PFBS) and/or perfluoropentanesulfonic acid (PFPeS) could not be quantitated against 13C3-PFBS (its labeled variant) as listed in the SOP. PFBS was quantitated versus 18O2-PFHxS instead.

Method 537 (modified): The concentration of Perfluorooctanesulfonic acid (PFOS) associated with the following samples exceeded the instrument calibration range: 19FAI-FTP-EW-001 (320-54557-1), 19FAI-FTP-EW-003 (320-54557-3) and 19FAI-FTP-EB-001 (320-54557-5). These analytes have been qualified; however, the peak did not saturate the instrument detector. Historical data indicate that for the isotope dilution method, dilution and re-analysis will not produce significantly different results from those reported above the calibration range.

Method 537 (modified): The concentration of M2-6:2 FTS associated with the following sample exceeded the instrument calibration range: 19FAI-FTP-EW-002 (320-54557-2) and 19FAI-FTP-EW-004 (320-54557-4). These analytes have been qualified; however, the peak did not saturate the instrument detector. Historical data indicate that for the isotope dilution method, dilution and re-analysis will not produce significantly different results from those reported above the calibration range.

Method 537 (modified): The "I" qualifier means the transition mass ratio for the indicated analyte(s) was outside of the established ratio limits. The qualitative identification of the analyte(s) has/have some degree of uncertainty. However, analyst judgement was used to positively identify the analyte(s). 19FAI-FTP-EW-002 (320-54557-2)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

Method SHAKE: The following samples were prepared outside of preparation holding time due to being on hold: 19FAI-FTP-EW-001 (320-54557-1), 19FAI-FTP-EW-002 (320-54557-2), 19FAI-FTP-EW-003 (320-54557-3), 19FAI-FTP-EW-004 (320-54557-4), 19FAI-FTP-EB-001 (320-54557-5), 19FAI-FTP-EB-101 (320-54557-6), (320-54557-A-1 MS) and (320-54557-A-1 MSD).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI 2019 FTP

Job ID: 320-54557-1

Client Sample ID: 19FAI-FTP-EW-001

Lab Sample ID: 320-54557-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.22		0.22	0.046	ug/Kg	1	☒	537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.15	J	0.22	0.032	ug/Kg	1	☒	537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	1.1		0.22	0.095	ug/Kg	1	☒	537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.61		0.22	0.040	ug/Kg	1	☒	537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.038	J	0.22	0.028	ug/Kg	1	☒	537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.6		0.22	0.034	ug/Kg	1	☒	537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	25	E	0.55	0.22	ug/Kg	1	☒	537 (modified)	Total/NA

Client Sample ID: 19FAI-FTP-EW-002

Lab Sample ID: 320-54557-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.46		0.24	0.051	ug/Kg	1	☒	537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.16	J	0.24	0.035	ug/Kg	1	☒	537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.81		0.24	0.10	ug/Kg	1	☒	537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.41		0.24	0.043	ug/Kg	1	☒	537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.048	J	0.24	0.030	ug/Kg	1	☒	537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.5		0.24	0.037	ug/Kg	1	☒	537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.2	I	0.60	0.24	ug/Kg	1	☒	537 (modified)	Total/NA

Client Sample ID: 19FAI-FTP-EW-003

Lab Sample ID: 320-54557-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.5		0.27	0.057	ug/Kg	1	☒	537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.43		0.27	0.039	ug/Kg	1	☒	537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	1.7		0.27	0.12	ug/Kg	1	☒	537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	1.1		0.27	0.049	ug/Kg	1	☒	537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.20	J	0.27	0.034	ug/Kg	1	☒	537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	4.2		0.27	0.042	ug/Kg	1	☒	537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	42	E	0.68	0.27	ug/Kg	1	☒	537 (modified)	Total/NA

Client Sample ID: 19FAI-FTP-EW-004

Lab Sample ID: 320-54557-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.93		0.24	0.051	ug/Kg	1	☒	537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.30		0.24	0.035	ug/Kg	1	☒	537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	2.5		0.24	0.10	ug/Kg	1	☒	537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.13	J	0.24	0.030	ug/Kg	1	☒	537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.5		0.24	0.037	ug/Kg	1	☒	537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.37	J	0.60	0.24	ug/Kg	1	☒	537 (modified)	Total/NA

Client Sample ID: 19FAI-FTP-EB-001

Lab Sample ID: 320-54557-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.90		0.26	0.055	ug/Kg	1	☒	537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.25	J	0.26	0.038	ug/Kg	1	☒	537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	1.3		0.26	0.11	ug/Kg	1	☒	537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.22	J	0.26	0.047	ug/Kg	1	☒	537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.092	J	0.26	0.033	ug/Kg	1	☒	537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.4		0.26	0.040	ug/Kg	1	☒	537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	34	E	0.65	0.26	ug/Kg	1	☒	537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI 2019 FTP

Job ID: 320-54557-1

Client Sample ID: 19FAI-FTP-EB-101

Lab Sample ID: 320-54557-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.1		0.28	0.058	ug/Kg	1	✳	537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.27	J	0.28	0.040	ug/Kg	1	✳	537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	1.3		0.28	0.12	ug/Kg	1	✳	537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.11	J	0.28	0.035	ug/Kg	1	✳	537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	6.6		0.28	0.043	ug/Kg	1	✳	537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.9		0.69	0.28	ug/Kg	1	✳	537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI 2019 FTP

Job ID: 320-54557-1

Client Sample ID: 19FAI-FTP-EW-001

Lab Sample ID: 320-54557-1

Date Collected: 09/19/19 09:18

Matrix: Solid

Date Received: 09/20/19 12:35

Percent Solids: 89.5

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	0.22		0.22	0.046	ug/Kg	☼	10/02/19 07:41	10/09/19 06:09	1
Perfluoroheptanoic acid (PFHpA)	0.15	J	0.22	0.032	ug/Kg	☼	10/02/19 07:41	10/09/19 06:09	1
Perfluorooctanoic acid (PFOA)	1.1		0.22	0.095	ug/Kg	☼	10/02/19 07:41	10/09/19 06:09	1
Perfluorononanoic acid (PFNA)	0.61		0.22	0.040	ug/Kg	☼	10/02/19 07:41	10/09/19 06:09	1
Perfluorodecanoic acid (PFDA)	ND		0.22	0.024	ug/Kg	☼	10/02/19 07:41	10/09/19 06:09	1
Perfluoroundecanoic acid (PFUnA)	ND		0.22	0.040	ug/Kg	☼	10/02/19 07:41	10/09/19 06:09	1
Perfluorododecanoic acid (PFDoA)	ND		0.22	0.074	ug/Kg	☼	10/02/19 07:41	10/09/19 06:09	1
Perfluorotridecanoic acid (PFTriA)	ND		0.22	0.056	ug/Kg	☼	10/02/19 07:41	10/09/19 06:09	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.22	0.059	ug/Kg	☼	10/02/19 07:41	10/09/19 06:09	1
Perfluorobutanesulfonic acid (PFBS)	0.038	J	0.22	0.028	ug/Kg	☼	10/02/19 07:41	10/09/19 06:09	1
Perfluorohexanesulfonic acid (PFHxS)	1.6		0.22	0.034	ug/Kg	☼	10/02/19 07:41	10/09/19 06:09	1
Perfluorooctanesulfonic acid (PFOS)	25	E	0.55	0.22	ug/Kg	☼	10/02/19 07:41	10/09/19 06:09	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.2	0.43	ug/Kg	☼	10/02/19 07:41	10/09/19 06:09	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.2	0.41	ug/Kg	☼	10/02/19 07:41	10/09/19 06:09	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.22	0.030	ug/Kg	☼	10/02/19 07:41	10/09/19 06:09	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.22	0.020	ug/Kg	☼	10/02/19 07:41	10/09/19 06:09	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.28	0.12	ug/Kg	☼	10/02/19 07:41	10/09/19 06:09	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		0.22	0.024	ug/Kg	☼	10/02/19 07:41	10/09/19 06:09	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	98		25 - 150				10/02/19 07:41	10/09/19 06:09	1
13C5 PFPeA	102		25 - 150				10/02/19 07:41	10/09/19 06:09	1
13C2 PFHxA	101		25 - 150				10/02/19 07:41	10/09/19 06:09	1
13C4 PFHpA	105		25 - 150				10/02/19 07:41	10/09/19 06:09	1
13C4 PFOA	104		25 - 150				10/02/19 07:41	10/09/19 06:09	1
13C5 PFNA	105		25 - 150				10/02/19 07:41	10/09/19 06:09	1
13C2 PFDA	103		25 - 150				10/02/19 07:41	10/09/19 06:09	1
13C2 PFUnA	103		25 - 150				10/02/19 07:41	10/09/19 06:09	1
13C2 PFDoA	102		25 - 150				10/02/19 07:41	10/09/19 06:09	1
13C2 PFTeDA	108		25 - 150				10/02/19 07:41	10/09/19 06:09	1
18O2 PFHxS	101		25 - 150				10/02/19 07:41	10/09/19 06:09	1
13C4 PFOS	92		25 - 150				10/02/19 07:41	10/09/19 06:09	1
13C8 FOSA	88		25 - 150				10/02/19 07:41	10/09/19 06:09	1
d3-NMeFOSAA	98		25 - 150				10/02/19 07:41	10/09/19 06:09	1
d5-NEtFOSAA	102		25 - 150				10/02/19 07:41	10/09/19 06:09	1
M2-6:2 FTS	101		25 - 150				10/02/19 07:41	10/09/19 06:09	1
M2-8:2 FTS	93		25 - 150				10/02/19 07:41	10/09/19 06:09	1
13C3 HFPO-DA	93		25 - 150				10/02/19 07:41	10/09/19 06:09	1

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI 2019 FTP

Job ID: 320-54557-1

Client Sample ID: 19FAI-FTP-EW-002

Lab Sample ID: 320-54557-2

Date Collected: 09/19/19 09:20

Matrix: Solid

Date Received: 09/20/19 12:35

Percent Solids: 79.7

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	0.46		0.24	0.051	ug/Kg	☼	10/02/19 07:41	10/09/19 06:19	1
Perfluoroheptanoic acid (PFHpA)	0.16	J	0.24	0.035	ug/Kg	☼	10/02/19 07:41	10/09/19 06:19	1
Perfluorooctanoic acid (PFOA)	0.81		0.24	0.10	ug/Kg	☼	10/02/19 07:41	10/09/19 06:19	1
Perfluorononanoic acid (PFNA)	0.41		0.24	0.043	ug/Kg	☼	10/02/19 07:41	10/09/19 06:19	1
Perfluorodecanoic acid (PFDA)	ND		0.24	0.026	ug/Kg	☼	10/02/19 07:41	10/09/19 06:19	1
Perfluoroundecanoic acid (PFUnA)	ND		0.24	0.043	ug/Kg	☼	10/02/19 07:41	10/09/19 06:19	1
Perfluorododecanoic acid (PFDoA)	ND		0.24	0.081	ug/Kg	☼	10/02/19 07:41	10/09/19 06:19	1
Perfluorotridecanoic acid (PFTriA)	ND		0.24	0.061	ug/Kg	☼	10/02/19 07:41	10/09/19 06:19	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.24	0.065	ug/Kg	☼	10/02/19 07:41	10/09/19 06:19	1
Perfluorobutanesulfonic acid (PFBS)	0.048	J	0.24	0.030	ug/Kg	☼	10/02/19 07:41	10/09/19 06:19	1
Perfluorohexanesulfonic acid (PFHxS)	1.5		0.24	0.037	ug/Kg	☼	10/02/19 07:41	10/09/19 06:19	1
Perfluorooctanesulfonic acid (PFOS)	3.2	I	0.60	0.24	ug/Kg	☼	10/02/19 07:41	10/09/19 06:19	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.4	0.47	ug/Kg	☼	10/02/19 07:41	10/09/19 06:19	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.4	0.44	ug/Kg	☼	10/02/19 07:41	10/09/19 06:19	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.24	0.032	ug/Kg	☼	10/02/19 07:41	10/09/19 06:19	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.24	0.022	ug/Kg	☼	10/02/19 07:41	10/09/19 06:19	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.30	0.13	ug/Kg	☼	10/02/19 07:41	10/09/19 06:19	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		0.24	0.026	ug/Kg	☼	10/02/19 07:41	10/09/19 06:19	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	98		25 - 150				10/02/19 07:41	10/09/19 06:19	1
13C5 PFPeA	100		25 - 150				10/02/19 07:41	10/09/19 06:19	1
13C2 PFHxA	102		25 - 150				10/02/19 07:41	10/09/19 06:19	1
13C4 PFHpA	106		25 - 150				10/02/19 07:41	10/09/19 06:19	1
13C4 PFOA	106		25 - 150				10/02/19 07:41	10/09/19 06:19	1
13C5 PFNA	109		25 - 150				10/02/19 07:41	10/09/19 06:19	1
13C2 PFDA	105		25 - 150				10/02/19 07:41	10/09/19 06:19	1
13C2 PFUnA	105		25 - 150				10/02/19 07:41	10/09/19 06:19	1
13C2 PFDoA	103		25 - 150				10/02/19 07:41	10/09/19 06:19	1
13C2 PFTeDA	101		25 - 150				10/02/19 07:41	10/09/19 06:19	1
18O2 PFHxS	101		25 - 150				10/02/19 07:41	10/09/19 06:19	1
13C4 PFOS	99		25 - 150				10/02/19 07:41	10/09/19 06:19	1
13C8 FOSA	97		25 - 150				10/02/19 07:41	10/09/19 06:19	1
d3-NMeFOSAA	110		25 - 150				10/02/19 07:41	10/09/19 06:19	1
d5-NEtFOSAA	108		25 - 150				10/02/19 07:41	10/09/19 06:19	1
M2-6:2 FTS	104		25 - 150				10/02/19 07:41	10/09/19 06:19	1
M2-8:2 FTS	107		25 - 150				10/02/19 07:41	10/09/19 06:19	1
13C3 HFPO-DA	106		25 - 150				10/02/19 07:41	10/09/19 06:19	1

Eurolins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI 2019 FTP

Job ID: 320-54557-1

Client Sample ID: 19FAI-FTP-EW-003

Lab Sample ID: 320-54557-3

Date Collected: 09/19/19 09:25

Matrix: Solid

Date Received: 09/20/19 12:35

Percent Solids: 72.6

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	1.5		0.27	0.057	ug/Kg	☼	10/02/19 07:41	10/09/19 06:29	1
Perfluoroheptanoic acid (PFHpA)	0.43		0.27	0.039	ug/Kg	☼	10/02/19 07:41	10/09/19 06:29	1
Perfluorooctanoic acid (PFOA)	1.7		0.27	0.12	ug/Kg	☼	10/02/19 07:41	10/09/19 06:29	1
Perfluorononanoic acid (PFNA)	1.1		0.27	0.049	ug/Kg	☼	10/02/19 07:41	10/09/19 06:29	1
Perfluorodecanoic acid (PFDA)	ND		0.27	0.030	ug/Kg	☼	10/02/19 07:41	10/09/19 06:29	1
Perfluoroundecanoic acid (PFUnA)	ND		0.27	0.049	ug/Kg	☼	10/02/19 07:41	10/09/19 06:29	1
Perfluorododecanoic acid (PFDoA)	ND		0.27	0.091	ug/Kg	☼	10/02/19 07:41	10/09/19 06:29	1
Perfluorotridecanoic acid (PFTriA)	ND		0.27	0.069	ug/Kg	☼	10/02/19 07:41	10/09/19 06:29	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.27	0.074	ug/Kg	☼	10/02/19 07:41	10/09/19 06:29	1
Perfluorobutanesulfonic acid (PFBS)	0.20	J	0.27	0.034	ug/Kg	☼	10/02/19 07:41	10/09/19 06:29	1
Perfluorohexanesulfonic acid (PFHxS)	4.2		0.27	0.042	ug/Kg	☼	10/02/19 07:41	10/09/19 06:29	1
Perfluorooctanesulfonic acid (PFOS)	42	E	0.68	0.27	ug/Kg	☼	10/02/19 07:41	10/09/19 06:29	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.7	0.53	ug/Kg	☼	10/02/19 07:41	10/09/19 06:29	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.7	0.50	ug/Kg	☼	10/02/19 07:41	10/09/19 06:29	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.27	0.037	ug/Kg	☼	10/02/19 07:41	10/09/19 06:29	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.27	0.025	ug/Kg	☼	10/02/19 07:41	10/09/19 06:29	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.34	0.15	ug/Kg	☼	10/02/19 07:41	10/09/19 06:29	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		0.27	0.030	ug/Kg	☼	10/02/19 07:41	10/09/19 06:29	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	94		25 - 150				10/02/19 07:41	10/09/19 06:29	1
13C5 PFPeA	96		25 - 150				10/02/19 07:41	10/09/19 06:29	1
13C2 PFHxA	99		25 - 150				10/02/19 07:41	10/09/19 06:29	1
13C4 PFHpA	103		25 - 150				10/02/19 07:41	10/09/19 06:29	1
13C4 PFOA	105		25 - 150				10/02/19 07:41	10/09/19 06:29	1
13C5 PFNA	104		25 - 150				10/02/19 07:41	10/09/19 06:29	1
13C2 PFDA	108		25 - 150				10/02/19 07:41	10/09/19 06:29	1
13C2 PFUnA	104		25 - 150				10/02/19 07:41	10/09/19 06:29	1
13C2 PFDoA	95		25 - 150				10/02/19 07:41	10/09/19 06:29	1
13C2 PFTeDA	96		25 - 150				10/02/19 07:41	10/09/19 06:29	1
18O2 PFHxS	99		25 - 150				10/02/19 07:41	10/09/19 06:29	1
13C4 PFOS	93		25 - 150				10/02/19 07:41	10/09/19 06:29	1
13C8 FOSA	94		25 - 150				10/02/19 07:41	10/09/19 06:29	1
d3-NMeFOSAA	121		25 - 150				10/02/19 07:41	10/09/19 06:29	1
d5-NEtFOSAA	106		25 - 150				10/02/19 07:41	10/09/19 06:29	1
M2-6:2 FTS	140		25 - 150				10/02/19 07:41	10/09/19 06:29	1
M2-8:2 FTS	140		25 - 150				10/02/19 07:41	10/09/19 06:29	1
13C3 HFPO-DA	83		25 - 150				10/02/19 07:41	10/09/19 06:29	1

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI 2019 FTP

Job ID: 320-54557-1

Client Sample ID: 19FAI-FTP-EW-004

Lab Sample ID: 320-54557-4

Date Collected: 09/19/19 09:30

Matrix: Solid

Date Received: 09/20/19 12:35

Percent Solids: 77.0

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	0.93		0.24	0.051	ug/Kg	☼	10/02/19 07:41	10/09/19 06:38	1
Perfluoroheptanoic acid (PFHpA)	0.30		0.24	0.035	ug/Kg	☼	10/02/19 07:41	10/09/19 06:38	1
Perfluorooctanoic acid (PFOA)	2.5		0.24	0.10	ug/Kg	☼	10/02/19 07:41	10/09/19 06:38	1
Perfluorononanoic acid (PFNA)	ND		0.24	0.043	ug/Kg	☼	10/02/19 07:41	10/09/19 06:38	1
Perfluorodecanoic acid (PFDA)	ND		0.24	0.026	ug/Kg	☼	10/02/19 07:41	10/09/19 06:38	1
Perfluoroundecanoic acid (PFUnA)	ND		0.24	0.043	ug/Kg	☼	10/02/19 07:41	10/09/19 06:38	1
Perfluorododecanoic acid (PFDoA)	ND		0.24	0.081	ug/Kg	☼	10/02/19 07:41	10/09/19 06:38	1
Perfluorotridecanoic acid (PFTriA)	ND		0.24	0.061	ug/Kg	☼	10/02/19 07:41	10/09/19 06:38	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.24	0.065	ug/Kg	☼	10/02/19 07:41	10/09/19 06:38	1
Perfluorobutanesulfonic acid (PFBS)	0.13	J	0.24	0.030	ug/Kg	☼	10/02/19 07:41	10/09/19 06:38	1
Perfluorohexanesulfonic acid (PFHxS)	2.5		0.24	0.037	ug/Kg	☼	10/02/19 07:41	10/09/19 06:38	1
Perfluorooctanesulfonic acid (PFOS)	0.37	J	0.60	0.24	ug/Kg	☼	10/02/19 07:41	10/09/19 06:38	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.4	0.47	ug/Kg	☼	10/02/19 07:41	10/09/19 06:38	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.4	0.45	ug/Kg	☼	10/02/19 07:41	10/09/19 06:38	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.24	0.032	ug/Kg	☼	10/02/19 07:41	10/09/19 06:38	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.24	0.022	ug/Kg	☼	10/02/19 07:41	10/09/19 06:38	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.30	0.13	ug/Kg	☼	10/02/19 07:41	10/09/19 06:38	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.24	0.026	ug/Kg	☼	10/02/19 07:41	10/09/19 06:38	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	93		25 - 150				10/02/19 07:41	10/09/19 06:38	1
13C5 PFPeA	98		25 - 150				10/02/19 07:41	10/09/19 06:38	1
13C2 PFHxA	100		25 - 150				10/02/19 07:41	10/09/19 06:38	1
13C4 PFHpA	104		25 - 150				10/02/19 07:41	10/09/19 06:38	1
13C4 PFOA	103		25 - 150				10/02/19 07:41	10/09/19 06:38	1
13C5 PFNA	100		25 - 150				10/02/19 07:41	10/09/19 06:38	1
13C2 PFDA	99		25 - 150				10/02/19 07:41	10/09/19 06:38	1
13C2 PFUnA	96		25 - 150				10/02/19 07:41	10/09/19 06:38	1
13C2 PFDoA	100		25 - 150				10/02/19 07:41	10/09/19 06:38	1
13C2 PFTeDA	96		25 - 150				10/02/19 07:41	10/09/19 06:38	1
18O2 PFHxS	100		25 - 150				10/02/19 07:41	10/09/19 06:38	1
13C4 PFOS	92		25 - 150				10/02/19 07:41	10/09/19 06:38	1
13C8 FOSA	85		25 - 150				10/02/19 07:41	10/09/19 06:38	1
d3-NMeFOSAA	89		25 - 150				10/02/19 07:41	10/09/19 06:38	1
d5-NEtFOSAA	83		25 - 150				10/02/19 07:41	10/09/19 06:38	1
M2-6:2 FTS	101		25 - 150				10/02/19 07:41	10/09/19 06:38	1
M2-8:2 FTS	101		25 - 150				10/02/19 07:41	10/09/19 06:38	1
13C3 HFPO-DA	91		25 - 150				10/02/19 07:41	10/09/19 06:38	1

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI 2019 FTP

Job ID: 320-54557-1

Client Sample ID: 19FAI-FTP-EB-001

Lab Sample ID: 320-54557-5

Date Collected: 09/19/19 09:15

Matrix: Solid

Date Received: 09/20/19 12:35

Percent Solids: 74.2

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	0.90		0.26	0.055	ug/Kg	☼	10/02/19 07:41	10/09/19 06:48	1
Perfluoroheptanoic acid (PFHpA)	0.25	J	0.26	0.038	ug/Kg	☼	10/02/19 07:41	10/09/19 06:48	1
Perfluorooctanoic acid (PFOA)	1.3		0.26	0.11	ug/Kg	☼	10/02/19 07:41	10/09/19 06:48	1
Perfluorononanoic acid (PFNA)	0.22	J	0.26	0.047	ug/Kg	☼	10/02/19 07:41	10/09/19 06:48	1
Perfluorodecanoic acid (PFDA)	ND		0.26	0.029	ug/Kg	☼	10/02/19 07:41	10/09/19 06:48	1
Perfluoroundecanoic acid (PFUnA)	ND		0.26	0.047	ug/Kg	☼	10/02/19 07:41	10/09/19 06:48	1
Perfluorododecanoic acid (PFDoA)	ND		0.26	0.087	ug/Kg	☼	10/02/19 07:41	10/09/19 06:48	1
Perfluorotridecanoic acid (PFTriA)	ND		0.26	0.066	ug/Kg	☼	10/02/19 07:41	10/09/19 06:48	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.26	0.070	ug/Kg	☼	10/02/19 07:41	10/09/19 06:48	1
Perfluorobutanesulfonic acid (PFBS)	0.092	J	0.26	0.033	ug/Kg	☼	10/02/19 07:41	10/09/19 06:48	1
Perfluorohexanesulfonic acid (PFHxS)	5.4		0.26	0.040	ug/Kg	☼	10/02/19 07:41	10/09/19 06:48	1
Perfluorooctanesulfonic acid (PFOS)	34	E	0.65	0.26	ug/Kg	☼	10/02/19 07:41	10/09/19 06:48	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.6	0.51	ug/Kg	☼	10/02/19 07:41	10/09/19 06:48	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.6	0.48	ug/Kg	☼	10/02/19 07:41	10/09/19 06:48	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.26	0.035	ug/Kg	☼	10/02/19 07:41	10/09/19 06:48	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.26	0.023	ug/Kg	☼	10/02/19 07:41	10/09/19 06:48	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.33	0.14	ug/Kg	☼	10/02/19 07:41	10/09/19 06:48	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		0.26	0.029	ug/Kg	☼	10/02/19 07:41	10/09/19 06:48	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	98		25 - 150				10/02/19 07:41	10/09/19 06:48	1
13C5 PFPeA	101		25 - 150				10/02/19 07:41	10/09/19 06:48	1
13C2 PFHxA	103		25 - 150				10/02/19 07:41	10/09/19 06:48	1
13C4 PFHpA	108		25 - 150				10/02/19 07:41	10/09/19 06:48	1
13C4 PFOA	109		25 - 150				10/02/19 07:41	10/09/19 06:48	1
13C5 PFNA	103		25 - 150				10/02/19 07:41	10/09/19 06:48	1
13C2 PFDA	110		25 - 150				10/02/19 07:41	10/09/19 06:48	1
13C2 PFUnA	111		25 - 150				10/02/19 07:41	10/09/19 06:48	1
13C2 PFDoA	106		25 - 150				10/02/19 07:41	10/09/19 06:48	1
13C2 PFTeDA	104		25 - 150				10/02/19 07:41	10/09/19 06:48	1
18O2 PFHxS	106		25 - 150				10/02/19 07:41	10/09/19 06:48	1
13C4 PFOS	96		25 - 150				10/02/19 07:41	10/09/19 06:48	1
13C8 FOSA	94		25 - 150				10/02/19 07:41	10/09/19 06:48	1
d3-NMeFOSAA	121		25 - 150				10/02/19 07:41	10/09/19 06:48	1
d5-NEtFOSAA	102		25 - 150				10/02/19 07:41	10/09/19 06:48	1
M2-6:2 FTS	133		25 - 150				10/02/19 07:41	10/09/19 06:48	1
M2-8:2 FTS	123		25 - 150				10/02/19 07:41	10/09/19 06:48	1
13C3 HFPO-DA	87		25 - 150				10/02/19 07:41	10/09/19 06:48	1

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI 2019 FTP

Job ID: 320-54557-1

Client Sample ID: 19FAI-FTP-EB-101

Lab Sample ID: 320-54557-6

Date Collected: 09/19/19 09:05

Matrix: Solid

Date Received: 09/20/19 12:35

Percent Solids: 71.9

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	1.1		0.28	0.058	ug/Kg	☼	10/02/19 07:41	10/09/19 06:58	1
Perfluoroheptanoic acid (PFHpA)	0.27	J	0.28	0.040	ug/Kg	☼	10/02/19 07:41	10/09/19 06:58	1
Perfluorooctanoic acid (PFOA)	1.3		0.28	0.12	ug/Kg	☼	10/02/19 07:41	10/09/19 06:58	1
Perfluorononanoic acid (PFNA)	ND		0.28	0.050	ug/Kg	☼	10/02/19 07:41	10/09/19 06:58	1
Perfluorodecanoic acid (PFDA)	ND		0.28	0.031	ug/Kg	☼	10/02/19 07:41	10/09/19 06:58	1
Perfluoroundecanoic acid (PFUnA)	ND		0.28	0.050	ug/Kg	☼	10/02/19 07:41	10/09/19 06:58	1
Perfluorododecanoic acid (PFDoA)	ND		0.28	0.093	ug/Kg	☼	10/02/19 07:41	10/09/19 06:58	1
Perfluorotridecanoic acid (PFTriA)	ND		0.28	0.071	ug/Kg	☼	10/02/19 07:41	10/09/19 06:58	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.28	0.075	ug/Kg	☼	10/02/19 07:41	10/09/19 06:58	1
Perfluorobutanesulfonic acid (PFBS)	0.11	J	0.28	0.035	ug/Kg	☼	10/02/19 07:41	10/09/19 06:58	1
Perfluorohexanesulfonic acid (PFHxS)	6.6		0.28	0.043	ug/Kg	☼	10/02/19 07:41	10/09/19 06:58	1
Perfluorooctanesulfonic acid (PFOS)	3.9		0.69	0.28	ug/Kg	☼	10/02/19 07:41	10/09/19 06:58	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.8	0.54	ug/Kg	☼	10/02/19 07:41	10/09/19 06:58	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.8	0.51	ug/Kg	☼	10/02/19 07:41	10/09/19 06:58	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.28	0.038	ug/Kg	☼	10/02/19 07:41	10/09/19 06:58	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.28	0.025	ug/Kg	☼	10/02/19 07:41	10/09/19 06:58	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.35	0.15	ug/Kg	☼	10/02/19 07:41	10/09/19 06:58	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		0.28	0.031	ug/Kg	☼	10/02/19 07:41	10/09/19 06:58	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	94		25 - 150				10/02/19 07:41	10/09/19 06:58	1
13C5 PFPeA	98		25 - 150				10/02/19 07:41	10/09/19 06:58	1
13C2 PFHxA	99		25 - 150				10/02/19 07:41	10/09/19 06:58	1
13C4 PFHpA	102		25 - 150				10/02/19 07:41	10/09/19 06:58	1
13C4 PFOA	105		25 - 150				10/02/19 07:41	10/09/19 06:58	1
13C5 PFNA	104		25 - 150				10/02/19 07:41	10/09/19 06:58	1
13C2 PFDA	105		25 - 150				10/02/19 07:41	10/09/19 06:58	1
13C2 PFUnA	103		25 - 150				10/02/19 07:41	10/09/19 06:58	1
13C2 PFDoA	104		25 - 150				10/02/19 07:41	10/09/19 06:58	1
13C2 PFTeDA	103		25 - 150				10/02/19 07:41	10/09/19 06:58	1
18O2 PFHxS	103		25 - 150				10/02/19 07:41	10/09/19 06:58	1
13C4 PFOS	97		25 - 150				10/02/19 07:41	10/09/19 06:58	1
13C8 FOSA	87		25 - 150				10/02/19 07:41	10/09/19 06:58	1
d3-NMeFOSAA	125		25 - 150				10/02/19 07:41	10/09/19 06:58	1
d5-NEtFOSAA	97		25 - 150				10/02/19 07:41	10/09/19 06:58	1
M2-6:2 FTS	122		25 - 150				10/02/19 07:41	10/09/19 06:58	1
M2-8:2 FTS	118		25 - 150				10/02/19 07:41	10/09/19 06:58	1
13C3 HFPO-DA	97		25 - 150				10/02/19 07:41	10/09/19 06:58	1

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI 2019 FTP

Job ID: 320-54557-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Solid

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	PFHpA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
320-54557-1	19FAI-FTP-EW-001	98	102	101	105	104	105	103	103
320-54557-2	19FAI-FTP-EW-002	98	100	102	106	106	109	105	105
320-54557-3	19FAI-FTP-EW-003	94	96	99	103	105	104	108	104
320-54557-4	19FAI-FTP-EW-004	93	98	100	104	103	100	99	96
320-54557-5	19FAI-FTP-EB-001	98	101	103	108	109	103	110	111
320-54557-6	19FAI-FTP-EB-101	94	98	99	102	105	104	105	103
LCS 320-327723/2-A	Lab Control Sample	98	101	103	108	106	103	99	98
MB 320-327723/1-A	Method Blank	95	98	97	102	105	103	101	100

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (25-150)	-NMeFOS/ (25-150)	-NEtFOS/ (25-150)	M262FTS (25-150)
320-54557-1	19FAI-FTP-EW-001	102	108	101	92	88	98	102	101
320-54557-2	19FAI-FTP-EW-002	103	101	101	99	97	110	108	104
320-54557-3	19FAI-FTP-EW-003	95	96	99	93	94	121	106	140
320-54557-4	19FAI-FTP-EW-004	100	96	100	92	85	89	83	101
320-54557-5	19FAI-FTP-EB-001	106	104	106	96	94	121	102	133
320-54557-6	19FAI-FTP-EB-101	104	103	103	97	87	125	97	122
LCS 320-327723/2-A	Lab Control Sample	100	101	105	95	87	103	102	113
MB 320-327723/1-A	Method Blank	95	106	101	93	84	99	100	112

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	M282FTS (25-150)	HFPODA (25-150)
320-54557-1	19FAI-FTP-EW-001	93	93
320-54557-2	19FAI-FTP-EW-002	107	106
320-54557-3	19FAI-FTP-EW-003	140	83
320-54557-4	19FAI-FTP-EW-004	101	91
320-54557-5	19FAI-FTP-EB-001	123	87
320-54557-6	19FAI-FTP-EB-101	118	97
LCS 320-327723/2-A	Lab Control Sample	96	91
MB 320-327723/1-A	Method Blank	101	95

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
PFHpA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
PFOSA = 13C8 FOSA
d3-NMeFOSAA = d3-NMeFOSAA
d5-NEtFOSAA = d5-NEtFOSAA
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS

Eurofins TestAmerica, Sacramento

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI 2019 FTP
HFPODA = 13C3 HFPO-DA

Job ID: 320-54557-1

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI 2019 FTP

Job ID: 320-54557-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-327723/1-A

Matrix: Solid

Analysis Batch: 329422

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 327723

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		0.20	0.042	ug/Kg		10/02/19 07:41	10/09/19 04:04	1
Perfluoroheptanoic acid (PFHpA)	ND		0.20	0.029	ug/Kg		10/02/19 07:41	10/09/19 04:04	1
Perfluorooctanoic acid (PFOA)	ND		0.20	0.086	ug/Kg		10/02/19 07:41	10/09/19 04:04	1
Perfluorononanoic acid (PFNA)	ND		0.20	0.036	ug/Kg		10/02/19 07:41	10/09/19 04:04	1
Perfluorodecanoic acid (PFDA)	ND		0.20	0.022	ug/Kg		10/02/19 07:41	10/09/19 04:04	1
Perfluoroundecanoic acid (PFUnA)	ND		0.20	0.036	ug/Kg		10/02/19 07:41	10/09/19 04:04	1
Perfluorododecanoic acid (PFDoA)	ND		0.20	0.067	ug/Kg		10/02/19 07:41	10/09/19 04:04	1
Perfluorotridecanoic acid (PFTriA)	ND		0.20	0.051	ug/Kg		10/02/19 07:41	10/09/19 04:04	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.20	0.054	ug/Kg		10/02/19 07:41	10/09/19 04:04	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.20	0.025	ug/Kg		10/02/19 07:41	10/09/19 04:04	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.20	0.031	ug/Kg		10/02/19 07:41	10/09/19 04:04	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.50	0.20	ug/Kg		10/02/19 07:41	10/09/19 04:04	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.0	0.39	ug/Kg		10/02/19 07:41	10/09/19 04:04	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.0	0.37	ug/Kg		10/02/19 07:41	10/09/19 04:04	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.20	0.027	ug/Kg		10/02/19 07:41	10/09/19 04:04	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.20	0.018	ug/Kg		10/02/19 07:41	10/09/19 04:04	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.25	0.11	ug/Kg		10/02/19 07:41	10/09/19 04:04	1
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid	ND		0.20	0.022	ug/Kg		10/02/19 07:41	10/09/19 04:04	1
Isotope Dilution	MB	MB	Limits				Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier							
13C4 PFBA	95		25 - 150				10/02/19 07:41	10/09/19 04:04	1
13C5 PFPeA	98		25 - 150				10/02/19 07:41	10/09/19 04:04	1
13C2 PFHxA	97		25 - 150				10/02/19 07:41	10/09/19 04:04	1
13C4 PFHpA	102		25 - 150				10/02/19 07:41	10/09/19 04:04	1
13C4 PFOA	105		25 - 150				10/02/19 07:41	10/09/19 04:04	1
13C5 PFNA	103		25 - 150				10/02/19 07:41	10/09/19 04:04	1
13C2 PFDA	101		25 - 150				10/02/19 07:41	10/09/19 04:04	1
13C2 PFUnA	100		25 - 150				10/02/19 07:41	10/09/19 04:04	1
13C2 PFDoA	95		25 - 150				10/02/19 07:41	10/09/19 04:04	1
13C2 PFTeDA	106		25 - 150				10/02/19 07:41	10/09/19 04:04	1
18O2 PFHxS	101		25 - 150				10/02/19 07:41	10/09/19 04:04	1
13C4 PFOS	93		25 - 150				10/02/19 07:41	10/09/19 04:04	1
13C8 FOSA	84		25 - 150				10/02/19 07:41	10/09/19 04:04	1
d3-NMeFOSAA	99		25 - 150				10/02/19 07:41	10/09/19 04:04	1
d5-NEtFOSAA	100		25 - 150				10/02/19 07:41	10/09/19 04:04	1
M2-6:2 FTS	112		25 - 150				10/02/19 07:41	10/09/19 04:04	1
M2-8:2 FTS	101		25 - 150				10/02/19 07:41	10/09/19 04:04	1
13C3 HFPO-DA	95		25 - 150				10/02/19 07:41	10/09/19 04:04	1

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI 2019 FTP

Job ID: 320-54557-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-327723/2-A
Matrix: Solid
Analysis Batch: 329422

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 327723

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorohexanoic acid (PFHxA)	2.00	1.93		ug/Kg		96	75 - 125
Perfluoroheptanoic acid (PFHpA)	2.00	2.00		ug/Kg		100	76 - 124
Perfluorooctanoic acid (PFOA)	2.00	1.89		ug/Kg		95	76 - 121
Perfluorononanoic acid (PFNA)	2.00	2.11		ug/Kg		106	74 - 126
Perfluorodecanoic acid (PFDA)	2.00	2.02		ug/Kg		101	74 - 124
Perfluoroundecanoic acid (PFUnA)	2.00	1.91		ug/Kg		96	74 - 114
Perfluorododecanoic acid (PFDoA)	2.00	2.09		ug/Kg		104	75 - 123
Perfluorotridecanoic acid (PFTriA)	2.00	2.13		ug/Kg		106	43 - 116
Perfluorotetradecanoic acid (PFTeA)	2.00	2.00		ug/Kg		100	22 - 129
Perfluorobutanesulfonic acid (PFBS)	1.77	1.63		ug/Kg		92	73 - 142
Perfluorohexanesulfonic acid (PFHxS)	1.82	1.57		ug/Kg		86	75 - 121
Perfluorooctanesulfonic acid (PFOS)	1.86	1.84		ug/Kg		99	69 - 131
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	2.00	2.05		ug/Kg		103	65 - 135
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	2.00	2.07		ug/Kg		103	65 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	1.86	1.85		ug/Kg		99	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.88	2.19		ug/Kg		116	70 - 130
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	2.00	2.25		ug/Kg		112	70 - 130
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	1.88	1.56		ug/Kg		83	70 - 130

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C4 PFBA	98		25 - 150
13C5 PFPeA	101		25 - 150
13C2 PFHxA	103		25 - 150
13C4 PFHpA	108		25 - 150
13C4 PFOA	106		25 - 150
13C5 PFNA	103		25 - 150
13C2 PFDA	99		25 - 150
13C2 PFUnA	98		25 - 150
13C2 PFDoA	100		25 - 150
13C2 PFTeDA	101		25 - 150
18O2 PFHxS	105		25 - 150
13C4 PFOS	95		25 - 150
13C8 FOSA	87		25 - 150
d3-NMeFOSAA	103		25 - 150
d5-NEtFOSAA	102		25 - 150
M2-6:2 FTS	113		25 - 150
M2-8:2 FTS	96		25 - 150
13C3 HFPO-DA	91		25 - 150

Eurofins TestAmerica, Sacramento

QC Association Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI 2019 FTP

Job ID: 320-54557-1

LCMS

Prep Batch: 327723

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-54557-1	19FAI-FTP-EW-001	Total/NA	Solid	SHAKE	
320-54557-2	19FAI-FTP-EW-002	Total/NA	Solid	SHAKE	
320-54557-3	19FAI-FTP-EW-003	Total/NA	Solid	SHAKE	
320-54557-4	19FAI-FTP-EW-004	Total/NA	Solid	SHAKE	
320-54557-5	19FAI-FTP-EB-001	Total/NA	Solid	SHAKE	
320-54557-6	19FAI-FTP-EB-101	Total/NA	Solid	SHAKE	
MB 320-327723/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 320-327723/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	

Analysis Batch: 329422

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-54557-1	19FAI-FTP-EW-001	Total/NA	Solid	537 (modified)	327723
320-54557-2	19FAI-FTP-EW-002	Total/NA	Solid	537 (modified)	327723
320-54557-3	19FAI-FTP-EW-003	Total/NA	Solid	537 (modified)	327723
320-54557-4	19FAI-FTP-EW-004	Total/NA	Solid	537 (modified)	327723
320-54557-5	19FAI-FTP-EB-001	Total/NA	Solid	537 (modified)	327723
320-54557-6	19FAI-FTP-EB-101	Total/NA	Solid	537 (modified)	327723
MB 320-327723/1-A	Method Blank	Total/NA	Solid	537 (modified)	327723
LCS 320-327723/2-A	Lab Control Sample	Total/NA	Solid	537 (modified)	327723

General Chemistry

Analysis Batch: 326146

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-54557-1	19FAI-FTP-EW-001	Total/NA	Solid	D 2216	
320-54557-2	19FAI-FTP-EW-002	Total/NA	Solid	D 2216	
320-54557-3	19FAI-FTP-EW-003	Total/NA	Solid	D 2216	
320-54557-4	19FAI-FTP-EW-004	Total/NA	Solid	D 2216	
320-54557-5	19FAI-FTP-EB-001	Total/NA	Solid	D 2216	
320-54557-6	19FAI-FTP-EB-101	Total/NA	Solid	D 2216	

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: FAI 2019 FTP

Job ID: 320-54557-1

Client Sample ID: 19FAI-FTP-EW-001

Lab Sample ID: 320-54557-1

Date Collected: 09/19/19 09:18

Matrix: Solid

Date Received: 09/20/19 12:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			326146	09/25/19 17:21	HRB	TAL SAC

Client Sample ID: 19FAI-FTP-EW-001

Lab Sample ID: 320-54557-1

Date Collected: 09/19/19 09:18

Matrix: Solid

Date Received: 09/20/19 12:35

Percent Solids: 89.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.08 g	10.00 mL	327723	10/02/19 07:41	AEC	TAL SAC
Total/NA	Analysis	537 (modified)		1			329422	10/09/19 06:09	VPM	TAL SAC

Client Sample ID: 19FAI-FTP-EW-002

Lab Sample ID: 320-54557-2

Date Collected: 09/19/19 09:20

Matrix: Solid

Date Received: 09/20/19 12:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			326146	09/25/19 17:21	HRB	TAL SAC

Client Sample ID: 19FAI-FTP-EW-002

Lab Sample ID: 320-54557-2

Date Collected: 09/19/19 09:20

Matrix: Solid

Date Received: 09/20/19 12:35

Percent Solids: 79.7

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.22 g	10.00 mL	327723	10/02/19 07:41	AEC	TAL SAC
Total/NA	Analysis	537 (modified)		1			329422	10/09/19 06:19	VPM	TAL SAC

Client Sample ID: 19FAI-FTP-EW-003

Lab Sample ID: 320-54557-3

Date Collected: 09/19/19 09:25

Matrix: Solid

Date Received: 09/20/19 12:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			326146	09/25/19 17:21	HRB	TAL SAC

Client Sample ID: 19FAI-FTP-EW-003

Lab Sample ID: 320-54557-3

Date Collected: 09/19/19 09:25

Matrix: Solid

Date Received: 09/20/19 12:35

Percent Solids: 72.6

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.06 g	10.00 mL	327723	10/02/19 07:41	AEC	TAL SAC
Total/NA	Analysis	537 (modified)		1			329422	10/09/19 06:29	VPM	TAL SAC

Client Sample ID: 19FAI-FTP-EW-004

Lab Sample ID: 320-54557-4

Date Collected: 09/19/19 09:30

Matrix: Solid

Date Received: 09/20/19 12:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			326146	09/25/19 17:21	HRB	TAL SAC

Eurofins TestAmerica, Sacramento

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: FAI 2019 FTP

Job ID: 320-54557-1

Client Sample ID: 19FAI-FTP-EW-004

Lab Sample ID: 320-54557-4

Date Collected: 09/19/19 09:30

Matrix: Solid

Date Received: 09/20/19 12:35

Percent Solids: 77.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.40 g	10.00 mL	327723	10/02/19 07:41	AEC	TAL SAC
Total/NA	Analysis	537 (modified)		1			329422	10/09/19 06:38	VPM	TAL SAC

Client Sample ID: 19FAI-FTP-EB-001

Lab Sample ID: 320-54557-5

Date Collected: 09/19/19 09:15

Matrix: Solid

Date Received: 09/20/19 12:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			326146	09/25/19 17:21	HRB	TAL SAC

Client Sample ID: 19FAI-FTP-EB-001

Lab Sample ID: 320-54557-5

Date Collected: 09/19/19 09:15

Matrix: Solid

Date Received: 09/20/19 12:35

Percent Solids: 74.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.17 g	10.00 mL	327723	10/02/19 07:41	AEC	TAL SAC
Total/NA	Analysis	537 (modified)		1			329422	10/09/19 06:48	VPM	TAL SAC

Client Sample ID: 19FAI-FTP-EB-101

Lab Sample ID: 320-54557-6

Date Collected: 09/19/19 09:05

Matrix: Solid

Date Received: 09/20/19 12:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			326146	09/25/19 17:21	HRB	TAL SAC

Client Sample ID: 19FAI-FTP-EB-101

Lab Sample ID: 320-54557-6

Date Collected: 09/19/19 09:05

Matrix: Solid

Date Received: 09/20/19 12:35

Percent Solids: 71.9

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.00 g	10.00 mL	327723	10/02/19 07:41	AEC	TAL SAC
Total/NA	Analysis	537 (modified)		1			329422	10/09/19 06:58	VPM	TAL SAC

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: Shannon & Wilson, Inc
 Project/Site: FAI 2019 FTP

Job ID: 320-54557-1

Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
California	State	2897	01-31-20
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Georgia	State	4040	01-29-20
Hawaii	State	<cert No.>	01-29-20
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-19
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Michigan	State	9947	01-29-20
Michigan	State Program	9947	01-31-20
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19
Wyoming	State Program	8TMS-L	01-28-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI 2019 FTP

Job ID: 320-54557-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
D 2216	Percent Moisture	ASTM	TAL SAC
SHAKE	Shake Extraction with Ultrasonic Bath Extraction	SW846	TAL SAC

Protocol References:

ASTM = ASTM International

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600



Sample Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI 2019 FTP

Job ID: 320-54557-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-54557-1	19FAI-FTP-EW-001	Solid	09/19/19 09:18	09/20/19 12:35	
320-54557-2	19FAI-FTP-EW-002	Solid	09/19/19 09:20	09/20/19 12:35	
320-54557-3	19FAI-FTP-EW-003	Solid	09/19/19 09:25	09/20/19 12:35	
320-54557-4	19FAI-FTP-EW-004	Solid	09/19/19 09:30	09/20/19 12:35	
320-54557-5	19FAI-FTP-EB-001	Solid	09/19/19 09:15	09/20/19 12:35	
320-54557-6	19FAI-FTP-EB-101	Solid	09/19/19 09:05	09/20/19 12:35	

CHAIN-OF-CUSTODY RECORD

Analytical Methods (include preservative if used)

Total Number of Containers PFOS/PFOA EPA 537m	Remarks/Matrix Composition/Grab? Sample Containers Soil Grab Sample
--	--

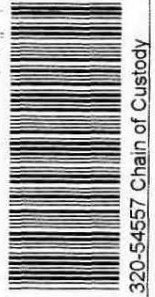
Quote No: _____

J-Flags: Yes No

Turn Around Time:
 Normal Rush

Please Specify _____

Sample Identity	Lab No.	Time	Date Sampled	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
19FAI-FTP-EW-001		9:18	9/19/19	X	
19FAI-FTP-EW-002		9:20		X	
19FAI-FTP-EW-003		9:25		X	
19FAI-FTP-EW-004		9:30		X	
19FAI-FTP-EB-001		9:15		X	
19FAI-FTP-EB-101		9:05		X	



Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: <u>Adam Wyborny</u> Printed Name: <u>Adam Wyborny</u> Company: <u>Shannon & Wilson, Inc.</u>	Signature: _____ Printed Name: _____ Company: _____	Signature: _____ Printed Name: _____ Company: _____
Time: <u>11:10</u> Date: <u>9/19/19</u>	Time: <u>11:30</u> Date: <u>9/19/19</u>	Time: _____ Date: _____
Received By: 1. Signature: _____ Printed Name: <u>A. Masters</u> Company: <u>Shannon & Wilson, Inc.</u>	Received By: 2. Signature: <u>Shannon Wilson, Inc.</u> Printed Name: _____ Company: _____	Received By: 3. Signature: _____ Printed Name: _____ Company: _____
Time: <u>11:10</u> Date: <u>9/19/19</u>	Time: <u>12:30</u> Date: <u>9/20/19</u>	Time: _____ Date: _____

Sample Receipt

Total No. of Containers: 6

COC Seals/Intact? Y/N/NA

Received Good Cond./Cold _____

Temp: _____

Delivery Method: AK Air Cargo

Notes:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
 Yellow - w/shipment - for consignee files
 Pink - Shannon & Wilson - job file

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-54557-1

Login Number: 54557

List Source: Eurofins TestAmerica, Sacramento

List Number: 1

Creator: Oropeza, Salvador

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	102519
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	Gel Packs
Cooler Temperature is acceptable.	False	Cooler temperature outside required temperature criteria.
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Laboratory Data Review Checklist

Completed By:

Brittany Blood

Title:

Environmental Professional I

Date:

10/26/2019

Consultant Firm:

Shannon and Wilson, Inc.

Laboratory Name:

Eurofins TestAmerica

Laboratory Report Number:

320-54557-1

Laboratory Report Date:

10/25/2019

CS Site Name:

FAI 2019 FTP

ADEC File Number:

100.38.277

Hazard Identification Number:

26816

320-54557-1

Laboratory Report Date:

10/25/2019

CS Site Name:

FAI 2019 FTP

Note: Any N/A or No box checked must have an explanation in the comments box.

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes No N/A Comments:

The ADEC certified the TestAmerica/Eurofins Laboratories West Sacramento, CA location for the analysis of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) on February 6, 2018. These compounds were included in the ADEC’s Contaminated Sites Laboratory Approval 17-020.

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes No N/A Comments:

Samples were not transferred to another laboratory.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes No N/A Comments:

b. Correct analyses requested?

Yes No N/A Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes No N/A Comments:

The sample cooler arrived at 9.1°C. Due to the high chemical and biological stability of PFAS, it is unlikely the integrity of the project samples was adversely affected by the high cooler temperature. Analysis of PFAS by this method does not require a preservative. In an e-mail dated August 3, 2015, the ADEC project manager noted that he had spoken with their chemist, who "agrees the high temperature probably would not affect the PFC results." PFAS are also known as PFCs.

320-54557-1

Laboratory Report Date:

10/25/2019

CS Site Name:

FAI 2019 FTP

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes No N/A Comments:

Analysis of PFAS does not require chemical preservation

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes No N/A Comments:

The sample receipt form notes that the samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes No N/A Comments:

See above.

e. Data quality or usability affected?

Comments:

Data quality and/or usability is not affected; see above.

4. Case Narrative

a. Present and understandable?

Yes No N/A Comments:

320-54557-1

Laboratory Report Date:

10/25/2019

CS Site Name:

FAI 2019 FTP

b. Discrepancies, errors, or QC failures identified by the lab?

Yes No N/A Comments:

The following samples, for percent moisture preparation, were prepared outside of preparation holding time due to being on hold: *19FAI-FTP-EW-001, 19FAI-FTP-EW-002, 19FAI-FTP-EW-003, 19FAI-FTP-EW-004, 19FAI-FTP-EB-001, 19FAI-FTP-EB-101*, (320-54557-A-1 MS) and (320-54557-A-1 MSD). However, no MS/MSD sample was reported as a part of this work order and there is no regulatory holding time for percent moisture analysis. Data quality or usability not affected.

Due to a shortage in the marketplace for 13C3-PFBS, the target analyte Perfluorobutanesulfonic acid (PFBS) and/or perfluoropentanesulfonic acid (PFPeS) could not be quantitated against 13C3-PFBS (its labeled variant) as listed in the SOP. PFBS was quantitated versus 18O2-PFHxS instead.

The concentration of Perfluorooctanesulfonic acid (PFOS) associated with the following samples exceeded the instrument calibration range: *19FAI-FTP-EW-001, 19FAI-FTP-EW-003 and 19FAI-FTP-EB-001*. These analytes have been qualified; however, the peak did not saturate the instrument detector. Historical data indicate that for the isotope dilution method, dilution and re-analysis will not produce significantly different results from those reported above the calibration range. *19FAI-FTP-EW-001, 19FAI-FTP-EW-003, and 19FAI-FTP-EB-001* were flagged "J" due to the analyte concentrations of PFOS being above the calibration curve.

The concentration of M2-6:2 FTS associated with the following sample exceeded the instrument calibration range: *19FAI-FTP-EW-002 and 19FAI-FTP-EW-004*. These analytes have been qualified; however, the peak did not saturate the instrument detector. Historical data indicate that for the isotope dilution method, dilution and re-analysis will not produce significantly different results from those reported above the calibration range. The analyte associated with the IDA was not reported in this work order. There is no impact to the data as a result of these exceedances.

The "I" qualifier means the transition mass ratio for the indicated analyte(s) was outside of the established ratio limits. The qualitative identification of the analyte(s) has/have some degree of uncertainty. However, analyst judgement was used to positively identify the analyte(s). *19FAI-FTP-EW-002*. Therefore, the PFOS result for sample *19FAI-FTP-EW-002* was flagged "J".

c. Were all corrective actions documented?

Yes No N/A Comments:

320-54557-1

Laboratory Report Date:

10/25/2019

CS Site Name:

FAI 2019 FTP

d. What is the effect on data quality/usability according to the case narrative?

Comments:

Data quality and/or usability was not affected; see above.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes No N/A Comments:

b. All applicable holding times met?

Yes No N/A Comments:

c. All soils reported on a dry weight basis?

Yes No N/A Comments:

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes No N/A Comments:

e. Data quality or usability affected?

Data quality and or usability were not affected.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

320-54557-1

Laboratory Report Date:

10/25/2019

CS Site Name:

FAI 2019 FTP

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes No N/A Comments:

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

Not applicable, see above.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

There was not a method blank detection, therefore qualification is not required.

v. Data quality or usability affected?

Comments:

Data quality and/or usability is not affected.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes No N/A Comments:

There is an LCS but not an LCSD

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

Metals/inorganics were not analyzed as part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

320-54557-1

Laboratory Report Date:

10/25/2019

CS Site Name:

FAI 2019 FTP

- iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

There is not an LCSD to determine precision.

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Not applicable, see above.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

No data flags were necessary for LCS failure.

- vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Data quality and/or usability were not affected.

- c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Note: Leave blank if not required for project

- i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

No MS/MSD samples were reported with this work order.

- ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

Metals/inorganics were not analyzed as a part of this work order.

320-54557-1

Laboratory Report Date:

10/25/2019

CS Site Name:

FAI 2019 FTP

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

See above.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

See above.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Not applicable, see above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Data quality and/or usability was not affected; see above.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes No N/A Comments:

320-54557-1

Laboratory Report Date:

10/25/2019

CS Site Name:

FAI 2019 FTP

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

Yes No N/A Comments:

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

No samples were affected.

iv. Data quality or usability affected?

Comments:

Data quality and or usability was not affected.

e. Trip Blanks

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes No N/A Comments:

A trip blank was not required as PFAS is not volatile.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes No N/A Comments:

A trip blank was not required.

iii. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

A trip blank was not required.

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

320-54557-1

Laboratory Report Date:

10/25/2019

CS Site Name:

FAI 2019 FTP

v. Data quality or usability affected?

Comments:

Data quality and/or usability was not affected.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No N/A Comments:

ii. Submitted blind to lab?

Yes No N/A Comments:

Field duplicates for the excavation base, 19FAI-FTP-EB-101 and 19FAI-FTP-EB-001 were submitted blindly to the lab for PFOS.

iii. Precision – All relative percent differences (RPD) less than specified project objectives?
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2) / 2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Yes No N/A Comments:

RPDs were less than the 50% DQO for soil except, where calculable, except for PFOS. The PFOS result in the field duplicate pair has been flagged J, unless previously qualified.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Data quality and/or usability were not affected.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes No N/A Comments:

Reusable equipment was not used for the collection of these samples.

320-54557-1

Laboratory Report Date:

10/25/2019

CS Site Name:

FAI 2019 FTP

i. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

See above.

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

Not applicable, see above.

iii. Data quality or usability affected?

Comments:

Data quality and/or usability was not affected; see above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes No N/A Comments:

See section 4b.

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-54558-2
Client Project/Site: FAI Burn Pit

For:

Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

Attn: Marcy Nadel



Authorized for release by:
11/12/2019 8:59:02 AM

David Alltucker, Project Manager I
(916)374-4383
david.alltucker@testamericainc.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:
www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



Table of Contents

Cover Page	1
Table of Contents	2
Definitions/Glossary	3
Case Narrative	4
Detection Summary	5
Client Sample Results	6
Isotope Dilution Summary	7
QC Sample Results	8
QC Association Summary	10
Lab Chronicle	11
Certification Summary	12
Method Summary	13
Sample Summary	14
Receipt Checklists	15

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-54558-2

Qualifiers

LCMS

Qualifier	Qualifier Description
*	Isotope Dilution analyte is outside acceptance limits.
B	Compound was found in the blank and sample.
H	Sample was prepped or analyzed beyond the specified holding time
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-54558-2

Job ID: 320-54558-2

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative 320-54558-2

Receipt

The samples were received on 9/20/2019 12:35 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 9.1° C.

LCMS

Method 537 (modified): Due to a shortage in the marketplace for 13C3-PFBS, the target analyte Perfluorobutanesulfonic acid (PFBS) and/or Perfluoropentanesulfonic acid (PFPeS) could not be quantitated against 13C3-PFBS (its labeled variant) as listed in the SOP. PFBS and PFPeS were quantitated versus 18O2-PFHxS instead.

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for d5-NEtFOSAA the following sample: MW-9701-12 (320-54558-1). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method 537 (modified): Results for sample MW-9701-12 (320-54558-1) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method 3535: The following samples were observed to contain sediment prior to extraction: MW-9701-12 (320-54558-1)

Method 3535: During the extraction process, the following sample contains non-settleable particulate which clogged the solid-phase extraction column: MW-9701-12 (320-54558-1) .

Method 3535: The following sample was prepared outside of preparation holding time as request to re-extract for longer analyte liste was requested past holding time: MW-9701-12 (320-54558-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-54558-2

Client Sample ID: MW-9701-12

Lab Sample ID: 320-54558-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	3000	H	180	53	ng/L	100		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	510	H	180	23	ng/L	100		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	430	H	180	77	ng/L	100		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2600	H	180	18	ng/L	100		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	20000	H B	180	15	ng/L	100		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1600	H	180	49	ng/L	100		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-54558-2

Client Sample ID: MW-9701-12

Lab Sample ID: 320-54558-1

Date Collected: 09/11/19 11:34

Matrix: Water

Date Received: 09/20/19 12:35

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	3000	H	180	53	ng/L		10/21/19 06:25	10/23/19 09:53	100
Perfluoroheptanoic acid (PFHpA)	510	H	180	23	ng/L		10/21/19 06:25	10/23/19 09:53	100
Perfluorooctanoic acid (PFOA)	430	H	180	77	ng/L		10/21/19 06:25	10/23/19 09:53	100
Perfluorononanoic acid (PFNA)	ND	H	180	25	ng/L		10/21/19 06:25	10/23/19 09:53	100
Perfluorodecanoic acid (PFDA)	ND	H	180	28	ng/L		10/21/19 06:25	10/23/19 09:53	100
Perfluoroundecanoic acid (PFUnA)	ND	H	180	100	ng/L		10/21/19 06:25	10/23/19 09:53	100
Perfluorododecanoic acid (PFDoA)	ND	H	180	50	ng/L		10/21/19 06:25	10/23/19 09:53	100
Perfluorotridecanoic acid (PFTriA)	ND	H	180	120	ng/L		10/21/19 06:25	10/23/19 09:53	100
Perfluorotetradecanoic acid (PFTeA)	ND	H	180	26	ng/L		10/21/19 06:25	10/23/19 09:53	100
Perfluorobutanesulfonic acid (PFBS)	2600	H	180	18	ng/L		10/21/19 06:25	10/23/19 09:53	100
Perfluorohexanesulfonic acid (PFHxS)	20000	H B	180	15	ng/L		10/21/19 06:25	10/23/19 09:53	100
Perfluorooctanesulfonic acid (PFOS)	1600	H	180	49	ng/L		10/21/19 06:25	10/23/19 09:53	100
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1800	170	ng/L		10/21/19 06:25	10/23/19 09:53	100
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1800	280	ng/L		10/21/19 06:25	10/23/19 09:53	100
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND	H	180	22	ng/L		10/21/19 06:25	10/23/19 09:53	100
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	H	360	140	ng/L		10/21/19 06:25	10/23/19 09:53	100
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND	H	180	29	ng/L		10/21/19 06:25	10/23/19 09:53	100
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	180	16	ng/L		10/21/19 06:25	10/23/19 09:53	100
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	75		25 - 150				10/21/19 06:25	10/23/19 09:53	100
13C4 PFHpA	72		25 - 150				10/21/19 06:25	10/23/19 09:53	100
13C4 PFOA	84		25 - 150				10/21/19 06:25	10/23/19 09:53	100
13C5 PFNA	88		25 - 150				10/21/19 06:25	10/23/19 09:53	100
13C2 PFDA	74		25 - 150				10/21/19 06:25	10/23/19 09:53	100
13C2 PFUnA	74		25 - 150				10/21/19 06:25	10/23/19 09:53	100
13C2 PFDoA	70		25 - 150				10/21/19 06:25	10/23/19 09:53	100
13C2 PFTeDA	61		25 - 150				10/21/19 06:25	10/23/19 09:53	100
18O2 PFHxS	92		25 - 150				10/21/19 06:25	10/23/19 09:53	100
13C4 PFOS	78		25 - 150				10/21/19 06:25	10/23/19 09:53	100
d3-NMeFOSAA	119		25 - 150				10/21/19 06:25	10/23/19 09:53	100
d5-NEtFOSAA	155 *		25 - 150				10/21/19 06:25	10/23/19 09:53	100
13C3 HFPO-DA	75		25 - 150				10/21/19 06:25	10/23/19 09:53	100

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-54558-2

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxA (25-150)	PFHpA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)	PFDoA (25-150)	PFTDA (25-150)
320-54558-1	MW-9701-12	75	72	84	88	74	74	70	61
LCS 320-332396/2-A	Lab Control Sample	96	103	99	101	103	109	99	109
MB 320-332396/1-A	Method Blank	100	106	103	109	106	119	107	97

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxS (25-150)	PFOS (25-150)	-NMeFOS/ (25-150)	-NEtFOS/ (25-150)	HFPODA (25-150)
320-54558-1	MW-9701-12	92	78	119	155 *	75
LCS 320-332396/2-A	Lab Control Sample	103	97	91	94	130
MB 320-332396/1-A	Method Blank	109	99	91	98	100

Surrogate Legend

- PFHxA = 13C2 PFHxA
- PFHpA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDoA = 13C2 PFDoA
- PFTDA = 13C2 PFTeDA
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- d3-NMeFOSAA = d3-NMeFOSAA
- d5-NEtFOSAA = d5-NEtFOSAA
- HFPODA = 13C3 HFPO-DA

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-54558-2

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-332396/1-A
Matrix: Water
Analysis Batch: 332814

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 332396

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		10/21/19 06:25	10/22/19 22:26	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		10/21/19 06:25	10/22/19 22:26	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		10/21/19 06:25	10/22/19 22:26	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		10/21/19 06:25	10/22/19 22:26	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		10/21/19 06:25	10/22/19 22:26	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		10/21/19 06:25	10/22/19 22:26	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		10/21/19 06:25	10/22/19 22:26	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		10/21/19 06:25	10/22/19 22:26	1
Perfluorotetradecanoic acid (PFTeA)	0.344	J	2.0	0.29	ng/L		10/21/19 06:25	10/22/19 22:26	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		10/21/19 06:25	10/22/19 22:26	1
Perfluorohexanesulfonic acid (PFHxS)	0.266	J	2.0	0.17	ng/L		10/21/19 06:25	10/22/19 22:26	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		10/21/19 06:25	10/22/19 22:26	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		20	1.9	ng/L		10/21/19 06:25	10/22/19 22:26	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		20	3.1	ng/L		10/21/19 06:25	10/22/19 22:26	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		10/21/19 06:25	10/22/19 22:26	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		10/21/19 06:25	10/22/19 22:26	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		10/21/19 06:25	10/22/19 22:26	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.18	ng/L		10/21/19 06:25	10/22/19 22:26	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	100		25 - 150	10/21/19 06:25	10/22/19 22:26	1
13C4 PFHpA	106		25 - 150	10/21/19 06:25	10/22/19 22:26	1
13C4 PFOA	103		25 - 150	10/21/19 06:25	10/22/19 22:26	1
13C5 PFNA	109		25 - 150	10/21/19 06:25	10/22/19 22:26	1
13C2 PFDA	106		25 - 150	10/21/19 06:25	10/22/19 22:26	1
13C2 PFUnA	119		25 - 150	10/21/19 06:25	10/22/19 22:26	1
13C2 PFDoA	107		25 - 150	10/21/19 06:25	10/22/19 22:26	1
13C2 PFTeDA	97		25 - 150	10/21/19 06:25	10/22/19 22:26	1
18O2 PFHxS	109		25 - 150	10/21/19 06:25	10/22/19 22:26	1
13C4 PFOS	99		25 - 150	10/21/19 06:25	10/22/19 22:26	1
d3-NMeFOSAA	91		25 - 150	10/21/19 06:25	10/22/19 22:26	1
d5-NEtFOSAA	98		25 - 150	10/21/19 06:25	10/22/19 22:26	1
13C3 HFPO-DA	100		25 - 150	10/21/19 06:25	10/22/19 22:26	1

Lab Sample ID: LCS 320-332396/2-A
Matrix: Water
Analysis Batch: 332814

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 332396

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid (PFHxA)	40.0	42.7		ng/L		107	66 - 126
Perfluoroheptanoic acid (PFHpA)	40.0	40.4		ng/L		101	66 - 126
Perfluorooctanoic acid (PFOA)	40.0	45.9		ng/L		115	64 - 124
Perfluorononanoic acid (PFNA)	40.0	45.7		ng/L		114	68 - 128
Perfluorodecanoic acid (PFDA)	40.0	42.6		ng/L		107	69 - 129

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-54558-2

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-332396/2-A
Matrix: Water
Analysis Batch: 332814

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 332396

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoroundecanoic acid (PFUnA)	40.0	41.0		ng/L		102	60 - 120
Perfluorododecanoic acid (PFDoA)	40.0	45.8		ng/L		114	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	46.3		ng/L		116	72 - 132
Perfluorotetradecanoic acid (PFTeA)	40.0	41.0		ng/L		102	68 - 128
Perfluorobutanesulfonic acid (PFBS)	35.4	36.5		ng/L		103	73 - 133
Perfluorohexanesulfonic acid (PFHxS)	36.4	33.3		ng/L		91	63 - 123
Perfluorooctanesulfonic acid (PFOS)	37.1	36.5		ng/L		98	67 - 127
9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid	37.3	39.5		ng/L		106	70 - 130
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	44.7		ng/L		112	70 - 130
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	31.9		ng/L		85	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	42.8		ng/L		113	70 - 130

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
<i>13C2 PFHxA</i>	96		25 - 150
<i>13C4 PFHpA</i>	103		25 - 150
<i>13C4 PFOA</i>	99		25 - 150
<i>13C5 PFNA</i>	101		25 - 150
<i>13C2 PFDA</i>	103		25 - 150
<i>13C2 PFUnA</i>	109		25 - 150
<i>13C2 PFDoA</i>	99		25 - 150
<i>13C2 PFTeDA</i>	109		25 - 150
<i>18O2 PFHxS</i>	103		25 - 150
<i>13C4 PFOS</i>	97		25 - 150
<i>d3-NMeFOSAA</i>	91		25 - 150
<i>d5-NEtFOSAA</i>	94		25 - 150
<i>13C3 HFPO-DA</i>	130		25 - 150

QC Association Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-54558-2

LCMS

Prep Batch: 332396

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-54558-1	MW-9701-12	Total/NA	Water	3535	
MB 320-332396/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-332396/2-A	Lab Control Sample	Total/NA	Water	3535	

Analysis Batch: 332814

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-332396/1-A	Method Blank	Total/NA	Water	537 (modified)	332396
LCS 320-332396/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	332396

Analysis Batch: 332907

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-54558-1	MW-9701-12	Total/NA	Water	537 (modified)	332396

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-54558-2

Client Sample ID: MW-9701-12

Lab Sample ID: 320-54558-1

Date Collected: 09/11/19 11:34

Matrix: Water

Date Received: 09/20/19 12:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			274.4 mL	10 mL	332396	10/21/19 06:25	AF	TAL SAC
Total/NA	Analysis	537 (modified)		100			332907	10/23/19 09:53	S1M	TAL SAC

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Accreditation/Certification Summary

Client: Shannon & Wilson, Inc
 Project/Site: FAI Burn Pit

Job ID: 320-54558-2

Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
California	State	2897	01-31-20
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Georgia	State	4040	01-29-20
Hawaii	State	<cert No.>	01-29-20
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-19
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Michigan	State	9947	01-29-20
Michigan	State Program	9947	01-31-20
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
USEPA UCMR	Federal	CA00044	12-31-20
Utah	NELAP	CA000442019-01	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19
Wyoming	State Program	8TMS-L	01-28-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-54558-2

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
3535	Solid-Phase Extraction (SPE)	SW846	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600



Sample Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-54558-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-54558-1	MW-9701-12	Water	09/11/19 11:34	09/20/19 12:35	

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-54558-2

Login Number: 54558

List Source: Eurofins TestAmerica, Sacramento

List Number: 1

Creator: Oropeza, Salvador

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	102519
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	GEL PACKS
Cooler Temperature is acceptable.	False	Cooler temperature outside required temperature criteria.
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Laboratory Data Review Checklist

Completed By:

Brittany Blood

Title:

Environmental Professional I

Date:

11/26/2019

Consultant Firm:

Shannon and Wilson, Inc.

Laboratory Name:

Eurofins TestAmerica

Laboratory Report Number:

320-54558-2

Laboratory Report Date:

11/12/2019

CS Site Name:

Fairbanks Burn Pit

ADEC File Number:

100.38.277

Hazard Identification Number:

26816

320-54558-2

Laboratory Report Date:

11/12/2019

CS Site Name:

Fairbanks Burn Pit

Note: Any N/A or No box checked must have an explanation in the comments box.

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes No N/A Comments:

The ADEC certified the TestAmerica/Eurofins Laboratories West Sacramento, CA location for the analysis of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) on February 6, 2018. These compounds were included in the ADEC's Contaminated Sites Laboratory Approval 17-020.

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes No N/A Comments:

Samples were not transferred to another laboratory.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes No N/A Comments:

b. Correct analyses requested?

Yes No N/A Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes No N/A Comments:

The sample cooler arrived at 9.1°C. Due to the high chemical and biological stability of PFAS, it is unlikely the integrity of the project samples was adversely affected by the high cooler temperature. Analysis of PFAS by this method does not require a preservative. In an e-mail dated August 3, 2015, the ADEC project manager noted that he had spoken with their chemist, who "agrees the high temperature probably would not affect the PFC results." PFAS are also known as PFCs.

320-54558-2

Laboratory Report Date:

11/12/2019

CS Site Name:

Fairbanks Burn Pit

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes No N/A Comments:

Analysis of PFAS compounds does not require chemical preservation.

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes No N/A Comments:

The sample receipt form notes that the samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes No N/A Comments:

See above.

e. Data quality or usability affected?

Comments:

The data quality and/or usability were not affected. Due to the high chemical and biological stability of PFAS, it is unlikely the integrity of the project samples was adversely affected by the high cooler temperature. Analysis PFAS in soil samples does not require preservative, other than temperature.

4. Case Narrative

a. Present and understandable?

Yes No N/A Comments:

320-54558-2

Laboratory Report Date:

11/12/2019

CS Site Name:

Fairbanks Burn Pit

b. Discrepancies, errors, or QC failures identified by the lab?

Yes No N/A Comments:

Due to a shortage in the marketplace for 13C3-PFBS, the target analyte Perfluorobutanesulfonic acid (PFBS) and/or Perfluoropentanesulfonic acid (PFPeS) could not be quantitated against 13C3-PFBS (its labeled variant) as listed in the SOP. PFBS and PFPeS were quantitated versus 18O2-PFHxS instead.

Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for d5-NEtFOSAA the following sample: *MW-9701-12*. Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Results for sample *MW-9701-12* were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits.

The following samples were observed to contain sediment prior to extraction: *MW-9701-12*.

During the extraction process, the following sample contains non-settleable particulate which clogged the solid-phase extraction column: *MW-9701-12*.

The following sample was prepared outside of preparation holding time as request to re-extract for longer analyte list was requested past holding time: *MW-9701-12*.

c. Were all corrective actions documented?

Yes No N/A Comments:

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The data quality and/or usability was not affected; see above.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes No N/A Comments:

320-54558-2

Laboratory Report Date:

11/12/2019

CS Site Name:

Fairbanks Burn Pit

b. All applicable holding times met?

Yes No N/A Comments:

The samples were prepared grossly outside of the holding time as they were re-extracted. Samples that were non-detected were rejected (Flagged 'R') and samples that had detection were flagged 'J'.

c. All soils reported on a dry weight basis?

Yes No N/A Comments:

This is a water sample.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes No N/A Comments:

e. Data quality or usability affected?

Data quality and/or usability was not affected.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes No N/A Comments:

No analytes were detected in the method blank sample, however, there were detections in PFTeA and PFHxS below the LOQ.

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

No samples were affected for these analytes as the results for PFHxS are much greater than 10 times the result of the method blank. The results for PFTeA was a non detect and therefore not flagged.

320-54558-2

Laboratory Report Date:

11/12/2019

CS Site Name:

Fairbanks Burn Pit

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

v. Data quality or usability affected?

Comments:

Data quality and/or usability is not affected.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes No N/A Comments:

There is an LCS, but not an LCSD

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

Metals and/or organics were not analyzed on this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

There is not an LCSD to determine precision

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Not applicable, see above.

320-54558-2

Laboratory Report Date:

11/12/2019

CS Site Name:

Fairbanks Burn Pit

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability was not affected.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Note: Leave blank if not required for project

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

MS/MSD samples were not reported with this work order.

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

Metals and/or organics were not analyzed on this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

See above.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

See above.

320-54558-2

Laboratory Report Date:

11/12/2019

CS Site Name:

Fairbanks Burn Pit

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Not applicable, see above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Data quality and or usability was not affected.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes No N/A Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

Yes No N/A Comments:

MW-9701-12 had a high IDA recovery for NetFOSAA.

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

The results for this analyte were non-detect therefore flagging was not necessary.

iv. Data quality or usability affected?

Comments:

Data quality and or usability was not affected.

320-54558-2

Laboratory Report Date:

11/12/2019

CS Site Name:

Fairbanks Burn Pit

e. Trip Blanks

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes No N/A Comments:

A trip blank is not required as PFAS is not volatile.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes No N/A Comments:

A trip blank is not required.

iii. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

A trip blank is not required.

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

v. Data quality or usability affected?

Comments:

Data quality and/or usability was not affected.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No N/A Comments:

Field duplicate pair MW-9701-12 and MW-9701-112 were submitted together, but re-analyzed on separate work orders, respectively (J54558-2 and J54558-3).

ii. Submitted blind to lab?

Yes No N/A Comments:

320-54558-2

Laboratory Report Date:

11/12/2019

CS Site Name:

Fairbanks Burn Pit

iii. Precision – All relative percent differences (RPD) less than specified project objectives?
(Recommended: 30% water, 50% soil)

$$RPD (\%) = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2) / 2)} \times 100$$

Where R_1 = Sample Concentration
 R_2 = Field Duplicate Concentration

Yes No N/A Comments:

RPD calculations were not conducted, as the field duplicate pair were split between work orders and were re-prepared grossly outside of the preparation holding time. All field duplicate pair results are impacted by the holding time exceedance and have already been flagged accordingly.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Data quality and/or usability was not affected.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes No N/A Comments:

An equipment blank was not submitted with this work order; however an equipment blank was submitted for the overall project.
Additionally, a field blank (FB-9701-12) was collected and submitted with workorder J54558-3. The field blank discrepancies are discussed below.

i. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

No analytes were detected in the field blank sample above the LOQ, however, PFTeA, PFBS, PFHxS, and ADONA were all detected in the field blank sample below the LOQ. However, detections in the field blank sample are likely due to method blank contamination as evidenced by similar concentrations detected in the method blank sample (see LDRC for 54558-3 for more information). No data qualification required due to these field blank detections.

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

320-54558-2

Laboratory Report Date:

11/12/2019

CS Site Name:

Fairbanks Burn Pit

iii. Data quality or usability affected?

Comments:

Data quality and/or usability was not affected.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes No N/A

Comments:

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-54558-3
Client Project/Site: FAI Burn Pit

For:

Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

Attn: Marcy Nadel



Authorized for release by:
11/29/2019 11:45:04 AM

David Alltucker, Project Manager I
(916)374-4383
david.alltucker@testamericainc.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:
www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



Table of Contents

Cover Page	1
Table of Contents	2
Definitions/Glossary	3
Case Narrative	4
Detection Summary	6
Client Sample Results	7
Isotope Dilution Summary	10
QC Sample Results	11
QC Association Summary	14
Lab Chronicle	15
Certification Summary	16
Method Summary	17
Sample Summary	18
Receipt Checklists	19

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-54558-3

Qualifiers

LCMS

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
H	Sample was prepped or analyzed beyond the specified holding time
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-54558-3

Job ID: 320-54558-3

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative 320-54558-3

Receipt

The samples were received on 9/20/2019 12:35 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 9.1° C.

Receipt Exceptions

The following samples were received at the laboratory outside the required temperature criteria at 9.1C MW-9701-12 (320-54558-1), MW-9701-112 (320-54558-2), FB-9701-112 (320-54558-3) and MW-9702-12 (320-54558-4). There was no temp blank present. The gel packs were bagged and samples were individually bagged and not by gel packs.

LCMS

Method 537 (modified): Due to a shortage in the marketplace for 13C3-PFBS, the target analyte PFBS and/or Perfluoropentanesulfonic acid (PFPeS) could not be quantitated against 13C3-PFBS (its labeled variant) as listed in the SOP. PFBS and Perfluoropentanesulfonic acid (PFPeS) was quantitated versus 18O2-PFHxS instead.

Method 537 (modified): A deviation from the Standard Operating Procedure (SOP) occurred. Details are as follows: Due to a shortage in the marketplace for 13C3-PFBS, the target analyte PFBS and/or Perfluoropentanesulfonic acid (PFPeS) could not be quantitated against 13C3-PFBS (its labeled variant) as listed in the SOP. PFBS and Perfluoropentanesulfonic acid (PFPeS) was quantitated versus 18O2-PFHxS instead.

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for 13C4 PFOS and 18O2 PFHxS in the following samples and LCS/LCSD : (LCS 320-341005/2-A) and (LCSD 320-341005/3-A). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method 537 (modified): The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 320-341005 and analytical batch 320-341153 recovered outside control limits for the following analytes: Perfluoroundecanoic acid (PFUnA).

Method 537 (modified): Results for samples MW-9701-112 (320-54558-2) and MW-9702-12 (320-54558-4) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits

Method 537 (modified): The "I" qualifier means the transition mass ratio for the indicated analyte(s) was outside of the established ratio limits. The qualitative identification of the analyte(s) has/have some degree of uncertainty. However, analyst judgement was used to positively identify the analyte(s). FB-9701-112 (320-54558-3)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-341005.

Method 3535: The following samples were re-prepared outside of preparation holding time due at client request to extract for longer analyte list: MW-9701-112 (320-54558-2), FB-9701-112 (320-54558-3) and MW-9702-12 (320-54558-4).

Method 3535: The following samples contain a thin layer of orange sediments at the bottom of the bottle prior to extraction: MW-9701-112 (320-54558-2) and MW-9702-12 (320-54558-4)

Method 3535: During the solid phase extraction process, the following sample contain non-settable particulates which clogged the extraction column: MW-9701-112 (320-54558-2).

Case Narrative

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-54558-3

Job ID: 320-54558-3 (Continued)

Laboratory: Eurofins TestAmerica, Sacramento (Continued)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-54558-3

Client Sample ID: MW-9701-112

Lab Sample ID: 320-54558-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	2000	H	180	52	ng/L	100		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	320	H	180	23	ng/L	100		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	290	H	180	77	ng/L	100		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1900	H B	180	18	ng/L	100		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	14000	H B	180	15	ng/L	100		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	850	H	180	49	ng/L	100		537 (modified)	Total/NA

Client Sample ID: FB-9701-112

Lab Sample ID: 320-54558-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorotetradecanoic acid (PFTeA)	0.31	J H I B	1.8	0.26	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.72	J H B	1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.66	J H B	1.8	0.15	ng/L	1		537 (modified)	Total/NA
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	0.16	J H I B	1.8	0.16	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-9702-12

Lab Sample ID: 320-54558-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1700	H	180	53	ng/L	100		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	190	H	180	23	ng/L	100		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	950	H	180	78	ng/L	100		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	690	H B	180	18	ng/L	100		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	8000	H B	180	16	ng/L	100		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	290	H	180	50	ng/L	100		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-54558-3

Client Sample ID: MW-9701-112

Lab Sample ID: 320-54558-2

Date Collected: 09/11/19 11:24

Matrix: Water

Date Received: 09/20/19 12:35

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	2000	H	180	52	ng/L		11/23/19 06:42	11/26/19 02:50	100
Perfluoroheptanoic acid (PFHpA)	320	H	180	23	ng/L		11/23/19 06:42	11/26/19 02:50	100
Perfluorooctanoic acid (PFOA)	290	H	180	77	ng/L		11/23/19 06:42	11/26/19 02:50	100
Perfluorononanoic acid (PFNA)	ND	H	180	24	ng/L		11/23/19 06:42	11/26/19 02:50	100
Perfluorodecanoic acid (PFDA)	ND	H	180	28	ng/L		11/23/19 06:42	11/26/19 02:50	100
Perfluoroundecanoic acid (PFUnA)	ND	H	180	99	ng/L		11/23/19 06:42	11/26/19 02:50	100
Perfluorododecanoic acid (PFDoA)	ND	H	180	50	ng/L		11/23/19 06:42	11/26/19 02:50	100
Perfluorotridecanoic acid (PFTriA)	ND	H	180	120	ng/L		11/23/19 06:42	11/26/19 02:50	100
Perfluorotetradecanoic acid (PFTeA)	ND	H	180	26	ng/L		11/23/19 06:42	11/26/19 02:50	100
Perfluorobutanesulfonic acid (PFBS)	1900	H B	180	18	ng/L		11/23/19 06:42	11/26/19 02:50	100
Perfluorohexanesulfonic acid (PFHxS)	14000	H B	180	15	ng/L		11/23/19 06:42	11/26/19 02:50	100
Perfluorooctanesulfonic acid (PFOS)	850	H	180	49	ng/L		11/23/19 06:42	11/26/19 02:50	100
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1800	170	ng/L		11/23/19 06:42	11/26/19 02:50	100
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1800	280	ng/L		11/23/19 06:42	11/26/19 02:50	100
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND	H	180	22	ng/L		11/23/19 06:42	11/26/19 02:50	100
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	H	360	140	ng/L		11/23/19 06:42	11/26/19 02:50	100
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND	H	180	29	ng/L		11/23/19 06:42	11/26/19 02:50	100
4,8-Dioxo-3H-perfluorononanoic acid (ADONA)	ND	H	180	16	ng/L		11/23/19 06:42	11/26/19 02:50	100
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	91		25 - 150				11/23/19 06:42	11/26/19 02:50	100
13C4 PFHpA	95		25 - 150				11/23/19 06:42	11/26/19 02:50	100
13C4 PFOA	99		25 - 150				11/23/19 06:42	11/26/19 02:50	100
13C5 PFNA	97		25 - 150				11/23/19 06:42	11/26/19 02:50	100
13C2 PFDA	94		25 - 150				11/23/19 06:42	11/26/19 02:50	100
13C2 PFUnA	100		25 - 150				11/23/19 06:42	11/26/19 02:50	100
13C2 PFDoA	104		25 - 150				11/23/19 06:42	11/26/19 02:50	100
13C2 PFTeDA	92		25 - 150				11/23/19 06:42	11/26/19 02:50	100
18O2 PFHxS	96		25 - 150				11/23/19 06:42	11/26/19 02:50	100
13C4 PFOS	94		25 - 150				11/23/19 06:42	11/26/19 02:50	100
d3-NMeFOSAA	127		25 - 150				11/23/19 06:42	11/26/19 02:50	100
d5-NEtFOSAA	110		25 - 150				11/23/19 06:42	11/26/19 02:50	100
13C3 HFPO-DA	106		25 - 150				11/23/19 06:42	11/26/19 02:50	100

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-54558-3

Client Sample ID: FB-9701-112

Lab Sample ID: 320-54558-3

Date Collected: 09/11/19 11:35

Matrix: Water

Date Received: 09/20/19 12:35

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND	H	1.8	0.53	ng/L		11/23/19 06:42	11/26/19 02:40	1
Perfluoroheptanoic acid (PFHpA)	ND	H	1.8	0.23	ng/L		11/23/19 06:42	11/26/19 02:40	1
Perfluorooctanoic acid (PFOA)	ND	H	1.8	0.77	ng/L		11/23/19 06:42	11/26/19 02:40	1
Perfluorononanoic acid (PFNA)	ND	H	1.8	0.25	ng/L		11/23/19 06:42	11/26/19 02:40	1
Perfluorodecanoic acid (PFDA)	ND	H	1.8	0.28	ng/L		11/23/19 06:42	11/26/19 02:40	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.8	1.0	ng/L		11/23/19 06:42	11/26/19 02:40	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.8	0.50	ng/L		11/23/19 06:42	11/26/19 02:40	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.8	1.2	ng/L		11/23/19 06:42	11/26/19 02:40	1
Perfluorotetradecanoic acid (PFTeA)	0.31	J H I B	1.8	0.26	ng/L		11/23/19 06:42	11/26/19 02:40	1
Perfluorobutanesulfonic acid (PFBS)	0.72	J H B	1.8	0.18	ng/L		11/23/19 06:42	11/26/19 02:40	1
Perfluorohexanesulfonic acid (PFHxS)	0.66	J H B	1.8	0.15	ng/L		11/23/19 06:42	11/26/19 02:40	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.8	0.49	ng/L		11/23/19 06:42	11/26/19 02:40	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	18	1.7	ng/L		11/23/19 06:42	11/26/19 02:40	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	18	2.8	ng/L		11/23/19 06:42	11/26/19 02:40	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND	H	1.8	0.22	ng/L		11/23/19 06:42	11/26/19 02:40	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	H	3.6	1.4	ng/L		11/23/19 06:42	11/26/19 02:40	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND	H	1.8	0.29	ng/L		11/23/19 06:42	11/26/19 02:40	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	0.16	J H I B	1.8	0.16	ng/L		11/23/19 06:42	11/26/19 02:40	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	99		25 - 150	11/23/19 06:42	11/26/19 02:40	1
13C4 PFHpA	105		25 - 150	11/23/19 06:42	11/26/19 02:40	1
13C4 PFOA	109		25 - 150	11/23/19 06:42	11/26/19 02:40	1
13C5 PFNA	106		25 - 150	11/23/19 06:42	11/26/19 02:40	1
13C2 PFDA	109		25 - 150	11/23/19 06:42	11/26/19 02:40	1
13C2 PFUnA	104		25 - 150	11/23/19 06:42	11/26/19 02:40	1
13C2 PFDoA	113		25 - 150	11/23/19 06:42	11/26/19 02:40	1
13C2 PFTeDA	112		25 - 150	11/23/19 06:42	11/26/19 02:40	1
18O2 PFHxS	111		25 - 150	11/23/19 06:42	11/26/19 02:40	1
13C4 PFOS	111		25 - 150	11/23/19 06:42	11/26/19 02:40	1
d3-NMeFOSAA	101		25 - 150	11/23/19 06:42	11/26/19 02:40	1
d5-NEtFOSAA	101		25 - 150	11/23/19 06:42	11/26/19 02:40	1
13C3 HFPO-DA	126		25 - 150	11/23/19 06:42	11/26/19 02:40	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-54558-3

Client Sample ID: MW-9702-12

Lab Sample ID: 320-54558-4

Date Collected: 09/11/19 13:12

Matrix: Water

Date Received: 09/20/19 12:35

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	1700	H	180	53	ng/L		11/23/19 06:42	11/26/19 03:00	100
Perfluoroheptanoic acid (PFHpA)	190	H	180	23	ng/L		11/23/19 06:42	11/26/19 03:00	100
Perfluorooctanoic acid (PFOA)	950	H	180	78	ng/L		11/23/19 06:42	11/26/19 03:00	100
Perfluorononanoic acid (PFNA)	ND	H	180	25	ng/L		11/23/19 06:42	11/26/19 03:00	100
Perfluorodecanoic acid (PFDA)	ND	H	180	29	ng/L		11/23/19 06:42	11/26/19 03:00	100
Perfluoroundecanoic acid (PFUnA)	ND	H	180	100	ng/L		11/23/19 06:42	11/26/19 03:00	100
Perfluorododecanoic acid (PFDoA)	ND	H	180	51	ng/L		11/23/19 06:42	11/26/19 03:00	100
Perfluorotridecanoic acid (PFTriA)	ND	H	180	120	ng/L		11/23/19 06:42	11/26/19 03:00	100
Perfluorotetradecanoic acid (PFTeA)	ND	H	180	27	ng/L		11/23/19 06:42	11/26/19 03:00	100
Perfluorobutanesulfonic acid (PFBS)	690	H B	180	18	ng/L		11/23/19 06:42	11/26/19 03:00	100
Perfluorohexanesulfonic acid (PFHxS)	8000	H B	180	16	ng/L		11/23/19 06:42	11/26/19 03:00	100
Perfluorooctanesulfonic acid (PFOS)	290	H	180	50	ng/L		11/23/19 06:42	11/26/19 03:00	100
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1800	180	ng/L		11/23/19 06:42	11/26/19 03:00	100
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1800	290	ng/L		11/23/19 06:42	11/26/19 03:00	100
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND	H	180	22	ng/L		11/23/19 06:42	11/26/19 03:00	100
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	H	370	140	ng/L		11/23/19 06:42	11/26/19 03:00	100
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND	H	180	30	ng/L		11/23/19 06:42	11/26/19 03:00	100
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	180	17	ng/L		11/23/19 06:42	11/26/19 03:00	100
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	104		25 - 150				11/23/19 06:42	11/26/19 03:00	100
13C4 PFHpA	106		25 - 150				11/23/19 06:42	11/26/19 03:00	100
13C4 PFOA	112		25 - 150				11/23/19 06:42	11/26/19 03:00	100
13C5 PFNA	111		25 - 150				11/23/19 06:42	11/26/19 03:00	100
13C2 PFDA	103		25 - 150				11/23/19 06:42	11/26/19 03:00	100
13C2 PFUnA	110		25 - 150				11/23/19 06:42	11/26/19 03:00	100
13C2 PFDoA	111		25 - 150				11/23/19 06:42	11/26/19 03:00	100
13C2 PFTeDA	110		25 - 150				11/23/19 06:42	11/26/19 03:00	100
18O2 PFHxS	112		25 - 150				11/23/19 06:42	11/26/19 03:00	100
13C4 PFOS	101		25 - 150				11/23/19 06:42	11/26/19 03:00	100
d3-NMeFOSAA	116		25 - 150				11/23/19 06:42	11/26/19 03:00	100
d5-NEtFOSAA	122		25 - 150				11/23/19 06:42	11/26/19 03:00	100
13C3 HFPO-DA	131		25 - 150				11/23/19 06:42	11/26/19 03:00	100

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-54558-3

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxA (25-150)	PFHpA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)	PFDaA (25-150)	PFTDA (25-150)
320-54558-2	MW-9701-112	91	95	99	97	94	100	104	92
320-54558-3	FB-9701-112	99	105	109	106	109	104	113	112
320-54558-4	MW-9702-12	104	106	112	111	103	110	111	110
LCS 320-341005/2-A	Lab Control Sample	104	107	111	101	109	105	113	110
LCSD 320-341005/3-A	Lab Control Sample Dup	100	108	108	106	109	110	111	112
MB 320-341005/1-A	Method Blank	98	105	103	107	105	109	116	109

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxS (25-150)	PFOS (25-150)	d3-NMeFOSAA (25-150)	d5-NEtFOSAA (25-150)	HFPODA (25-150)
320-54558-2	MW-9701-112	96	94	127	110	106
320-54558-3	FB-9701-112	111	111	101	101	126
320-54558-4	MW-9702-12	112	101	116	122	131
LCS 320-341005/2-A	Lab Control Sample	116	106	99	96	130
LCSD 320-341005/3-A	Lab Control Sample Dup	120	109	99	103	125
MB 320-341005/1-A	Method Blank	114	106	98	101	116

Surrogate Legend

PFHxA = 13C2 PFHxA
 PFHpA = 13C4 PFHpA
 PFOA = 13C4 PFOA
 PFNA = 13C5 PFNA
 PFDA = 13C2 PFDA
 PFUnA = 13C2 PFUnA
 PFDaA = 13C2 PFDaA
 PFTDA = 13C2 PFTeDA
 PFHxS = 18O2 PFHxS
 PFOS = 13C4 PFOS
 d3-NMeFOSAA = d3-NMeFOSAA
 d5-NEtFOSAA = d5-NEtFOSAA
 HFPODA = 13C3 HFPO-DA

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-54558-3

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-341005/1-A
Matrix: Water
Analysis Batch: 341685

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 341005

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		11/23/19 06:42	11/26/19 02:10	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		11/23/19 06:42	11/26/19 02:10	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		11/23/19 06:42	11/26/19 02:10	1
Perfluorononanoic acid (PFNA)	0.356	J	2.0	0.27	ng/L		11/23/19 06:42	11/26/19 02:10	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		11/23/19 06:42	11/26/19 02:10	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		11/23/19 06:42	11/26/19 02:10	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		11/23/19 06:42	11/26/19 02:10	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		11/23/19 06:42	11/26/19 02:10	1
Perfluorotetradecanoic acid (PFTeA)	0.521	J	2.0	0.29	ng/L		11/23/19 06:42	11/26/19 02:10	1
Perfluorobutanesulfonic acid (PFBS)	1.07	J	2.0	0.20	ng/L		11/23/19 06:42	11/26/19 02:10	1
Perfluorohexanesulfonic acid (PFHxS)	0.542	J	2.0	0.17	ng/L		11/23/19 06:42	11/26/19 02:10	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		11/23/19 06:42	11/26/19 02:10	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		20	1.9	ng/L		11/23/19 06:42	11/26/19 02:10	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		20	3.1	ng/L		11/23/19 06:42	11/26/19 02:10	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	0.273	J	2.0	0.24	ng/L		11/23/19 06:42	11/26/19 02:10	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		11/23/19 06:42	11/26/19 02:10	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		11/23/19 06:42	11/26/19 02:10	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	0.323	J	2.0	0.18	ng/L		11/23/19 06:42	11/26/19 02:10	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	98		25 - 150	11/23/19 06:42	11/26/19 02:10	1
13C4 PFHpA	105		25 - 150	11/23/19 06:42	11/26/19 02:10	1
13C4 PFOA	103		25 - 150	11/23/19 06:42	11/26/19 02:10	1
13C5 PFNA	107		25 - 150	11/23/19 06:42	11/26/19 02:10	1
13C2 PFDA	105		25 - 150	11/23/19 06:42	11/26/19 02:10	1
13C2 PFUnA	109		25 - 150	11/23/19 06:42	11/26/19 02:10	1
13C2 PFDoA	116		25 - 150	11/23/19 06:42	11/26/19 02:10	1
13C2 PFTeDA	109		25 - 150	11/23/19 06:42	11/26/19 02:10	1
18O2 PFHxS	114		25 - 150	11/23/19 06:42	11/26/19 02:10	1
13C4 PFOS	106		25 - 150	11/23/19 06:42	11/26/19 02:10	1
d3-NMeFOSAA	98		25 - 150	11/23/19 06:42	11/26/19 02:10	1
d5-NEtFOSAA	101		25 - 150	11/23/19 06:42	11/26/19 02:10	1
13C3 HFPO-DA	116		25 - 150	11/23/19 06:42	11/26/19 02:10	1

Lab Sample ID: LCS 320-341005/2-A
Matrix: Water
Analysis Batch: 341685

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 341005

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorohexanoic acid (PFHxA)	40.0	36.6		ng/L		92	66 - 126
Perfluoroheptanoic acid (PFHpA)	40.0	36.3		ng/L		91	66 - 126
Perfluorooctanoic acid (PFOA)	40.0	36.3		ng/L		91	64 - 124
Perfluorononanoic acid (PFNA)	40.0	41.3		ng/L		103	68 - 128
Perfluorodecanoic acid (PFDA)	40.0	40.1		ng/L		100	69 - 129

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-54558-3

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-341005/2-A
Matrix: Water
Analysis Batch: 341685

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 341005

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoroundecanoic acid (PFUnA)	40.0	37.0		ng/L		92	60 - 120
Perfluorododecanoic acid (PFDoA)	40.0	36.0		ng/L		90	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	35.1		ng/L		88	72 - 132
Perfluorotetradecanoic acid (PFTeA)	40.0	35.3		ng/L		88	68 - 128
Perfluorobutanesulfonic acid (PFBS)	35.4	30.7		ng/L		87	73 - 133
Perfluorohexanesulfonic acid (PFHxS)	36.4	32.1		ng/L		88	63 - 123
Perfluorooctanesulfonic acid (PFOS)	37.1	33.1		ng/L		89	67 - 127
9-Chlorohexadecafluoro-3-oxan onane-1-sulfonic acid	37.3	37.4		ng/L		100	70 - 130
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	29.6		ng/L		74	70 - 130
11-Chloroeicosafluoro-3-oxaund ecane-1-sulfonic acid	37.7	36.4		ng/L		97	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	36.1		ng/L		96	70 - 130

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C2 PFHxA	104		25 - 150
13C4 PFHpA	107		25 - 150
13C4 PFOA	111		25 - 150
13C5 PFNA	101		25 - 150
13C2 PFDA	109		25 - 150
13C2 PFUnA	105		25 - 150
13C2 PFDoA	113		25 - 150
13C2 PFTeDA	110		25 - 150
18O2 PFHxS	116		25 - 150
13C4 PFOS	106		25 - 150
d3-NMeFOSAA	99		25 - 150
d5-NEtFOSAA	96		25 - 150
13C3 HFPO-DA	130		25 - 150

Lab Sample ID: LCSD 320-341005/3-A
Matrix: Water
Analysis Batch: 341685

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 341005

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	40.2		ng/L		101	66 - 126	9	30
Perfluoroheptanoic acid (PFHpA)	40.0	37.5		ng/L		94	66 - 126	3	30
Perfluorooctanoic acid (PFOA)	40.0	38.9		ng/L		97	64 - 124	7	30
Perfluorononanoic acid (PFNA)	40.0	40.7		ng/L		102	68 - 128	2	30
Perfluorodecanoic acid (PFDA)	40.0	41.0		ng/L		103	69 - 129	2	30
Perfluoroundecanoic acid (PFUnA)	40.0	38.1		ng/L		95	60 - 120	3	30
Perfluorododecanoic acid (PFDoA)	40.0	40.2		ng/L		101	71 - 131	11	30

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
 Project/Site: FAI Burn Pit

Job ID: 320-54558-3

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-341005/3-A
Matrix: Water
Analysis Batch: 341685

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 341005

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorotridecanoic acid (PFTriA)	40.0	35.9		ng/L		90	72 - 132	2	30
Perfluorotetradecanoic acid (PFTeA)	40.0	36.0		ng/L		90	68 - 128	2	30
Perfluorobutanesulfonic acid (PFBS)	35.4	31.5		ng/L		89	73 - 133	3	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	32.0		ng/L		88	63 - 123	0	30
Perfluorooctanesulfonic acid (PFOS)	37.1	34.0		ng/L		92	67 - 127	3	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	36.9		ng/L		99	70 - 130	1	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	31.9		ng/L		80	70 - 130	7	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	36.8		ng/L		98	70 - 130	1	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	37.3		ng/L		99	70 - 130	3	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C2 PFHxA	100		25 - 150
13C4 PFHpA	108		25 - 150
13C4 PFOA	108		25 - 150
13C5 PFNA	106		25 - 150
13C2 PFDA	109		25 - 150
13C2 PFUnA	110		25 - 150
13C2 PFDoA	111		25 - 150
13C2 PFTeDA	112		25 - 150
18O2 PFHxS	120		25 - 150
13C4 PFOS	109		25 - 150
d3-NMeFOSAA	99		25 - 150
d5-NEtFOSAA	103		25 - 150
13C3 HFPO-DA	125		25 - 150

QC Association Summary

Client: Shannon & Wilson, Inc
 Project/Site: FAI Burn Pit

Job ID: 320-54558-3

LCMS

Prep Batch: 341005

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-54558-2	MW-9701-112	Total/NA	Water	3535	
320-54558-3	FB-9701-112	Total/NA	Water	3535	
320-54558-4	MW-9702-12	Total/NA	Water	3535	
MB 320-341005/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-341005/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-341005/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 341685

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-54558-2	MW-9701-112	Total/NA	Water	537 (modified)	341005
320-54558-3	FB-9701-112	Total/NA	Water	537 (modified)	341005
320-54558-4	MW-9702-12	Total/NA	Water	537 (modified)	341005
MB 320-341005/1-A	Method Blank	Total/NA	Water	537 (modified)	341005
LCS 320-341005/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	341005
LCSD 320-341005/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	341005



Lab Chronicle

Client: Shannon & Wilson, Inc
 Project/Site: FAI Burn Pit

Job ID: 320-54558-3

Client Sample ID: MW-9701-112

Lab Sample ID: 320-54558-2

Date Collected: 09/11/19 11:24

Matrix: Water

Date Received: 09/20/19 12:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			277.5 mL	10.0 mL	341005	11/23/19 06:42	MTN	TAL SAC
Total/NA	Analysis	537 (modified)		100			341685	11/26/19 02:50	S1M	TAL SAC

Client Sample ID: FB-9701-112

Lab Sample ID: 320-54558-3

Date Collected: 09/11/19 11:35

Matrix: Water

Date Received: 09/20/19 12:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			274.2 mL	10.0 mL	341005	11/23/19 06:42	MTN	TAL SAC
Total/NA	Analysis	537 (modified)		1			341685	11/26/19 02:40	S1M	TAL SAC

Client Sample ID: MW-9702-12

Lab Sample ID: 320-54558-4

Date Collected: 09/11/19 13:12

Matrix: Water

Date Received: 09/20/19 12:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			271.1 mL	10.0 mL	341005	11/23/19 06:42	MTN	TAL SAC
Total/NA	Analysis	537 (modified)		100			341685	11/26/19 03:00	S1M	TAL SAC

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: Shannon & Wilson, Inc
 Project/Site: FAI Burn Pit

Job ID: 320-54558-3

Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
California	State	2897	01-31-20
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Georgia	State	4040	01-29-20
Hawaii	State	<cert No.>	01-29-20
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-20 *
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Michigan	State	9947	01-29-20
Michigan	State Program	9947	01-31-20
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19
Wyoming	State Program	8TMS-L	01-28-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-54558-3

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
3535	Solid-Phase Extraction (SPE)	SW846	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600



Sample Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-54558-3

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-54558-2	MW-9701-112	Water	09/11/19 11:24	09/20/19 12:35	
320-54558-3	FB-9701-112	Water	09/11/19 11:35	09/20/19 12:35	
320-54558-4	MW-9702-12	Water	09/11/19 13:12	09/20/19 12:35	

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-54558-3

Login Number: 54558

List Source: Eurofins TestAmerica, Sacramento

List Number: 1

Creator: Oropeza, Salvador

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	102519
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	GEL PACKS
Cooler Temperature is acceptable.	False	Cooler temperature outside required temperature criteria.
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Laboratory Data Review Checklist

Completed By:

Brittany Blood

Title:

Environmental Professional I

Date:

12/4/2019

Consultant Firm:

Shannon and Wilson, Inc.

Laboratory Name:

Eurofins TestAmerica

Laboratory Report Number:

320-54558-3

Laboratory Report Date:

11/29/2019

CS Site Name:

FAI Burn Pit

ADEC File Number:

100.30.277

Hazard Identification Number:

26816

320-54558-3

Laboratory Report Date:

11/29/2019

CS Site Name:

FAI Burn Pit

Note: Any N/A or No box checked must have an explanation in the comments box.

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes No N/A Comments:

The ADEC certified the TestAmerica/Eurofins Laboratories West Sacramento, CA location for the analysis of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) on February 6, 2018. These compounds were included in the ADEC's Contaminated Sites Laboratory Approval 17-020.

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes No N/A Comments:

Samples were not transferred to another laboratory.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes No N/A Comments:

b. Correct analyses requested?

Yes No N/A Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes No N/A Comments:

The sample cooler arrived at 9.1°C. Due to the high chemical and biological stability of PFAS, it is unlikely the integrity of the project samples was adversely affected by the high cooler temperature. Analysis of PFAS by this method does not require a preservative. In an e-mail dated August 3, 2015, the ADEC project manager noted that he had spoken with their chemist, who "agrees the high temperature probably would not affect the PFC results." PFAS are also known as PFCs.

320-54558-3

Laboratory Report Date:

11/29/2019

CS Site Name:

FAI Burn Pit

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes No N/A Comments:

Analysis of PFAS does not require chemical preservation.

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes No N/A Comments:

The sample receipt form notes that the samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes No N/A Comments:

See above.

e. Data quality or usability affected?

Comments:

The data quality and/or usability were not affected. Due to the high chemical and biological stability of PFAS, it is unlikely the integrity of the project samples was adversely affected by the high cooler temperature. Analysis PFAS in soil samples does not require preservative, other than temperature.

4. Case Narrative

a. Present and understandable?

Yes No N/A Comments:

320-54558-3

Laboratory Report Date:

11/29/2019

CS Site Name:

FAI Burn Pit

b. Discrepancies, errors, or QC failures identified by the lab?

Yes No N/A Comments:

320-54558-3

Laboratory Report Date:

11/29/2019

CS Site Name:

FAI Burn Pit

The following samples were received at the laboratory outside the required temperature criteria at 9.1C: *MW-9701-12*, *MW-9701-112*, *FB-9701-112* and *MW-9702-12*. There was no temp blank present. The gel packs were bagged and samples were individually bagged and not by gel packs. Sample results for *MW-9701-12* are included in work order J54558-2.

Due to a shortage in the marketplace for 13C3-PFBS, the target analyte PFBS and/or Perfluoropentanesulfonic acid (PFPeS) could not be quantitated against 13C3-PFBS (its labeled variant) as listed in the SOP. PFBS and Perfluoropentanesulfonic acid (PFPeS) was quantitated versus 18O2-PFHxS instead.

A deviation from the Standard Operating Procedure (SOP) occurred. Details are as follows: Due to a shortage in the marketplace for 13C3-PFBS, the target analyte PFBS and/or Perfluoropentanesulfonic acid (PFPeS) could not be quantitated against 13C3-PFBS (its labeled variant) as listed in the SOP. PFBS and Perfluoropentanesulfonic acid (PFPeS) was quantitated versus 18O2-PFHxS instead.

Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for 13C4 PFOS and 18O2 PFHxS in the following samples and LCS/LCSD: (LCS 320-341005/2-A) and (LCSD 320-341005/3-A). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries. This recovery discrepancy is not reported in the work order.

The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 320-341005 and analytical batch 320-341153 recovered outside control limits for the following analytes: Perfluoroundecanoic acid (PFUnA). This recovery discrepancy is not reported in the work order.

Results for samples *MW-9701-112* and *MW-9702-12* were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits.

The "I" qualifier means the transition mass ratio for the indicated analyte(s) was outside of the established ratio limits. The qualitative identification of the analyte(s) has/have some degree of uncertainty. However, analyst judgement was used to positively identify the analyte(s). *FB-9701-112*. Therefore, the PFTeA result for this sample was qualified 'J' due to the degree of uncertainty. However, this sample is a field QC sample and is not used for reporting purposes.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-341005.

320-54558-3

Laboratory Report Date:

11/29/2019

CS Site Name:

FAI Burn Pit

The following samples were re-prepared outside of preparation holding time due at client request to extract for longer analyte list: *MW-9701-112, FB-9701-112 and MW-9702-12*. See 5b, below.

The following samples contain a thin layer of orange sediments at the bottom of the bottle prior to extraction: *MW-9701-112 and MW-9702-12*.

During the solid phase extraction process, the following sample contain non-settable particulates which clogged the extraction column: *MW-9701-112*.

c. Were all corrective actions documented?

Yes No N/A Comments:

d. What is the effect on data quality/usability according to the case narrative?

Comments:

Data quality and/or usability was not affected.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes No N/A Comments:

b. All applicable holding times met?

Yes No N/A Comments:

The samples were prepared grossly outside of the holding time as they were re-extracted. Samples that were non-detected are rejected and have been flagged 'R' and samples that had detections were flagged 'J'.

c. All soils reported on a dry weight basis?

Yes No N/A Comments:

320-54558-3

Laboratory Report Date:

11/29/2019

CS Site Name:

FAI Burn Pit

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes No N/A Comments:

e. Data quality or usability affected?

Data quality and/or usability were not affected.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes No N/A Comments:

No method blank results were detected above the LOQ, however, PFNA, PFTeA, PFBS, PFHxS, 9-chlorohexadecafluoro-3-oxononane-1-sulfonic acid, and ADONA were detected below the LOQ.

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

PFNA and 9-chlorohexadecafluoro-3-oxononane-1-sulfonic acid were not detected in any associated project samples.

PFTeA, PFBS, PFHxS, and ADONA were detected within five times the concentration detected in the method blank sample in sample *FB-9701-112*. These results have been flagged 'UB' and are considered non-detect at the LOQ. However, this sample is a field QC sample and the results are not used for reporting purposes.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

320-54558-3

Laboratory Report Date:

11/29/2019

CS Site Name:

FAI Burn Pit

v. Data quality or usability affected?

Comments:

Data quality and/or usability were not affected.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes No N/A Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

Metals and/or organics were not analyzed on this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

The case narrative (Section 4b) reported that there was an LCS/LCSD RPD failure for the analyte PFUNA. However, upon reviewing the LCS/LCSD data, there does not appear to be an LCS/LCSD failure.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Not applicable, see above.

320-54558-3

Laboratory Report Date:

11/29/2019

CS Site Name:

FAI Burn Pit

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Data quality and or usability were not affected.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Note: Leave blank if not required for project

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

There was insufficient sample volume to report an MS/MSD

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

Metals and/or organics were not analyzed on this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

See above.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

See above.

320-54558-3

Laboratory Report Date:

11/29/2019

CS Site Name:

FAI Burn Pit

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Not applicable, see above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Data quality and/or usability are not affected; see above.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes No N/A Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

Yes No N/A Comments:

Although the case narrative notes and IDA recovery above the recommended limit for PFOS and PFHxS, the results reported were not actually above the laboratory limits.

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

No IDA analytes had failed surrogate recoveries.

iv. Data quality or usability affected?

Comments:

Data quality and/or usability were not affected.

320-54558-3

Laboratory Report Date:

11/29/2019

CS Site Name:

FAI Burn Pit

e. Trip Blanks

- i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples?
(If not, enter explanation below.)

Yes No N/A Comments:

A trip blank is not required for PFAS, as these compounds are not volatile.

- ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC?
(If not, a comment explaining why must be entered below)

Yes No N/A Comments:

A trip blank is not required.

- iii. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

See above.

- iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

Not applicable, see above.

- v. Data quality or usability affected?

Comments:

Data quality and/or usability is not affected.

f. Field Duplicate

- i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No N/A Comments:

Field duplicate pair MW-9701-12 and MW-9701-112 were submitted together, but re-analyzed on separate work orders, respectively (J54558-2 and J54558-3).

- ii. Submitted blind to lab?

Yes No N/A Comments:

320-54558-3

Laboratory Report Date:

11/29/2019

CS Site Name:

FAI Burn Pit

iii. Precision – All relative percent differences (RPD) less than specified project objectives?
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
 R_2 = Field Duplicate Concentration

Yes No N/A Comments:

RPD calculations were not conducted, as the field duplicate pair were split between work orders and were re-prepared grossly outside of the preparation holding time. All field duplicate pair results are impacted by the holding time exceedance and have already been flagged accordingly.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Data quality and/or usability were not affected; see above.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes No N/A Comments:

An equipment blank was not submitted with this work order; however an equipment blank was submitted for the overall project.

Additionally, a field blank (*FB-9701-12*) was collected and submitted with this workorder. The field blank discrepancies are discussed below.

i. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

No analytes were detected in the field blank sample above the LOQ, however, PFTeA, PFBS, PFHxS, and ADONA were all detected in the field blank sample below the LOQ. However, detections in the field blank sample are likely due to method blank contamination as evidenced by similar concentrations detected in the method blank sample. No data qualification required due to these field blank detections.

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

Not applicable, see above.

320-54558-3

Laboratory Report Date:

11/29/2019

CS Site Name:

FAI Burn Pit

iii. Data quality or usability affected?

Comments:

Not applicable, see above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes No N/A

Comments:

See 4b, above.

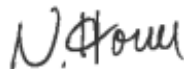
ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-54940-1
Client Project/Site: FAI PFAS
Revision: 1

For:
Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

Attn: Marcy Nadel



Authorized for release by:
12/11/2019 4:33:32 PM
Nathaniel Horner, Project Management Assistant I
nathaniel.horner@testamericainc.com

Designee for
David Alltucker, Project Manager I
(916)374-4383
david.alltucker@testamericainc.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:
www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



Table of Contents

Cover Page	1
Table of Contents	2
Definitions/Glossary	3
Case Narrative	4
Detection Summary	5
Client Sample Results	6
Isotope Dilution Summary	14
QC Sample Results	16
QC Association Summary	20
Lab Chronicle	21
Certification Summary	24
Method Summary	25
Sample Summary	26
Chain of Custody	27
Receipt Checklists	28

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54940-1

Qualifiers

LCMS

Qualifier	Qualifier Description
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54940-1

Job ID: 320-54940-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative 320-54940-1 Rev(1)

Revision 1

This report was revised on 12/11/2019 to update the method 537 analyte list.

Receipt

The samples were received on 10/3/2019 10:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 6.0° C.

LCMS

Method 537 (modified): The "I" qualifier means the transition mass ratio for the indicated analyte was outside of the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty. However, analyst judgement was used to positively identify the analyte. SB-1902-80 (320-54940-4)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry

Method Moisture: There is no regulatory holding time for percent moisture analysis. The H flag for the following samples, SB-1901-15 (320-54940-6), SB-2001-15 (320-54940-7) and SB-1901-40 (320-54940-8), have been removed in analytical batch 320-328893. This Non-conformance indicates that the samples were analyzed out of 14 days of collection.

Method Moisture: The sample duplicate (DUP) precision for analytical batch 320-328951 was outside control limits. Sample non-homogeneity is suspected. Samples were not re-extracted and reanalyzed because the moisture content for the parent sample and its duplicate was less than 10%. . (320-54940-A-5 DU)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54940-1

Client Sample ID: SB-1902-15

Lab Sample ID: 320-54940-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.057	J	0.24	0.037	ug/Kg	1	☼	537 (modified)	Total/NA

Client Sample ID: SB-2902-15

Lab Sample ID: 320-54940-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.053	J	0.24	0.037	ug/Kg	1	☼	537 (modified)	Total/NA

Client Sample ID: SB-1902-40

Lab Sample ID: 320-54940-3

No Detections.

Client Sample ID: SB-1902-80

Lab Sample ID: 320-54940-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.034	J I	0.21	0.033	ug/Kg	1	☼	537 (modified)	Total/NA

Client Sample ID: SB-1902-150

Lab Sample ID: 320-54940-5

No Detections.

Client Sample ID: SB-1901-15

Lab Sample ID: 320-54940-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.39		0.24	0.049	ug/Kg	1	☼	537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.051	J	0.24	0.034	ug/Kg	1	☼	537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.12	J	0.24	0.029	ug/Kg	1	☼	537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.2		0.24	0.037	ug/Kg	1	☼	537 (modified)	Total/NA

Client Sample ID: SB-2001-15

Lab Sample ID: 320-54940-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.43		0.23	0.048	ug/Kg	1	☼	537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.062	J	0.23	0.033	ug/Kg	1	☼	537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.10	J	0.23	0.098	ug/Kg	1	☼	537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.14	J	0.23	0.029	ug/Kg	1	☼	537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.3		0.23	0.035	ug/Kg	1	☼	537 (modified)	Total/NA

Client Sample ID: SB-1901-40

Lab Sample ID: 320-54940-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.055	J	0.22	0.046	ug/Kg	1	☼	537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.034	J	0.22	0.027	ug/Kg	1	☼	537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.092	J	0.22	0.034	ug/Kg	1	☼	537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54940-1

Client Sample ID: SB-1902-15

Lab Sample ID: 320-54940-1

Date Collected: 09/30/19 23:30

Matrix: Solid

Date Received: 10/03/19 10:45

Percent Solids: 81.8

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		0.24	0.050	ug/Kg	☼	10/05/19 09:53	10/10/19 07:19	1
Perfluoroheptanoic acid (PFHpA)	ND		0.24	0.034	ug/Kg	☼	10/05/19 09:53	10/10/19 07:19	1
Perfluorooctanoic acid (PFOA)	ND		0.24	0.10	ug/Kg	☼	10/05/19 09:53	10/10/19 07:19	1
Perfluorononanoic acid (PFNA)	ND		0.24	0.043	ug/Kg	☼	10/05/19 09:53	10/10/19 07:19	1
Perfluorodecanoic acid (PFDA)	ND		0.24	0.026	ug/Kg	☼	10/05/19 09:53	10/10/19 07:19	1
Perfluoroundecanoic acid (PFUnA)	ND		0.24	0.043	ug/Kg	☼	10/05/19 09:53	10/10/19 07:19	1
Perfluorododecanoic acid (PFDoA)	ND		0.24	0.080	ug/Kg	☼	10/05/19 09:53	10/10/19 07:19	1
Perfluorotridecanoic acid (PFTriA)	ND		0.24	0.061	ug/Kg	☼	10/05/19 09:53	10/10/19 07:19	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.24	0.064	ug/Kg	☼	10/05/19 09:53	10/10/19 07:19	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.24	0.030	ug/Kg	☼	10/05/19 09:53	10/10/19 07:19	1
Perfluorohexanesulfonic acid (PFHxS)	0.057	J	0.24	0.037	ug/Kg	☼	10/05/19 09:53	10/10/19 07:19	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.59	0.24	ug/Kg	☼	10/05/19 09:53	10/10/19 07:19	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.4	0.46	ug/Kg	☼	10/05/19 09:53	10/10/19 07:19	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.4	0.44	ug/Kg	☼	10/05/19 09:53	10/10/19 07:19	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.24	0.032	ug/Kg	☼	10/05/19 09:53	10/10/19 07:19	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.30	0.13	ug/Kg	☼	10/05/19 09:53	10/10/19 07:19	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.24	0.026	ug/Kg	☼	10/05/19 09:53	10/10/19 07:19	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.24	0.021	ug/Kg	☼	10/05/19 09:53	10/10/19 07:19	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	94		25 - 150	10/05/19 09:53	10/10/19 07:19	1
13C5 PFPeA	94		25 - 150	10/05/19 09:53	10/10/19 07:19	1
13C2 PFHxA	94		25 - 150	10/05/19 09:53	10/10/19 07:19	1
13C4 PFHpA	100		25 - 150	10/05/19 09:53	10/10/19 07:19	1
13C4 PFOA	103		25 - 150	10/05/19 09:53	10/10/19 07:19	1
13C5 PFNA	102		25 - 150	10/05/19 09:53	10/10/19 07:19	1
13C2 PFDA	102		25 - 150	10/05/19 09:53	10/10/19 07:19	1
13C2 PFUnA	97		25 - 150	10/05/19 09:53	10/10/19 07:19	1
13C2 PFDoA	104		25 - 150	10/05/19 09:53	10/10/19 07:19	1
13C2 PFTeDA	97		25 - 150	10/05/19 09:53	10/10/19 07:19	1
18O2 PFHxS	100		25 - 150	10/05/19 09:53	10/10/19 07:19	1
13C4 PFOS	99		25 - 150	10/05/19 09:53	10/10/19 07:19	1
13C8 FOSA	91		25 - 150	10/05/19 09:53	10/10/19 07:19	1
d3-NMeFOSAA	114		25 - 150	10/05/19 09:53	10/10/19 07:19	1
d5-NEtFOSAA	92		25 - 150	10/05/19 09:53	10/10/19 07:19	1
M2-6:2 FTS	99		25 - 150	10/05/19 09:53	10/10/19 07:19	1
M2-8:2 FTS	99		25 - 150	10/05/19 09:53	10/10/19 07:19	1
13C3 HFPO-DA	95		25 - 150	10/05/19 09:53	10/10/19 07:19	1

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54940-1

Client Sample ID: SB-2902-15

Lab Sample ID: 320-54940-2

Date Collected: 09/30/19 23:20

Matrix: Solid

Date Received: 10/03/19 10:45

Percent Solids: 83.4

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		0.24	0.050	ug/Kg	☼	10/05/19 09:53	10/10/19 07:48	1
Perfluoroheptanoic acid (PFHpA)	ND		0.24	0.035	ug/Kg	☼	10/05/19 09:53	10/10/19 07:48	1
Perfluorooctanoic acid (PFOA)	ND		0.24	0.10	ug/Kg	☼	10/05/19 09:53	10/10/19 07:48	1
Perfluorononanoic acid (PFNA)	ND		0.24	0.043	ug/Kg	☼	10/05/19 09:53	10/10/19 07:48	1
Perfluorodecanoic acid (PFDA)	ND		0.24	0.026	ug/Kg	☼	10/05/19 09:53	10/10/19 07:48	1
Perfluoroundecanoic acid (PFUnA)	ND		0.24	0.043	ug/Kg	☼	10/05/19 09:53	10/10/19 07:48	1
Perfluorododecanoic acid (PFDoA)	ND		0.24	0.080	ug/Kg	☼	10/05/19 09:53	10/10/19 07:48	1
Perfluorotridecanoic acid (PFTriA)	ND		0.24	0.061	ug/Kg	☼	10/05/19 09:53	10/10/19 07:48	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.24	0.064	ug/Kg	☼	10/05/19 09:53	10/10/19 07:48	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.24	0.030	ug/Kg	☼	10/05/19 09:53	10/10/19 07:48	1
Perfluorohexanesulfonic acid (PFHxS)	0.053	J	0.24	0.037	ug/Kg	☼	10/05/19 09:53	10/10/19 07:48	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.60	0.24	ug/Kg	☼	10/05/19 09:53	10/10/19 07:48	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.4	0.46	ug/Kg	☼	10/05/19 09:53	10/10/19 07:48	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.4	0.44	ug/Kg	☼	10/05/19 09:53	10/10/19 07:48	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.24	0.032	ug/Kg	☼	10/05/19 09:53	10/10/19 07:48	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.30	0.13	ug/Kg	☼	10/05/19 09:53	10/10/19 07:48	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.24	0.026	ug/Kg	☼	10/05/19 09:53	10/10/19 07:48	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.24	0.021	ug/Kg	☼	10/05/19 09:53	10/10/19 07:48	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	96		25 - 150	10/05/19 09:53	10/10/19 07:48	1
13C5 PFPeA	101		25 - 150	10/05/19 09:53	10/10/19 07:48	1
13C2 PFHxA	97		25 - 150	10/05/19 09:53	10/10/19 07:48	1
13C4 PFHpA	102		25 - 150	10/05/19 09:53	10/10/19 07:48	1
13C4 PFOA	104		25 - 150	10/05/19 09:53	10/10/19 07:48	1
13C5 PFNA	104		25 - 150	10/05/19 09:53	10/10/19 07:48	1
13C2 PFDA	102		25 - 150	10/05/19 09:53	10/10/19 07:48	1
13C2 PFUnA	98		25 - 150	10/05/19 09:53	10/10/19 07:48	1
13C2 PFDoA	102		25 - 150	10/05/19 09:53	10/10/19 07:48	1
13C2 PFTeDA	96		25 - 150	10/05/19 09:53	10/10/19 07:48	1
18O2 PFHxS	106		25 - 150	10/05/19 09:53	10/10/19 07:48	1
13C4 PFOS	102		25 - 150	10/05/19 09:53	10/10/19 07:48	1
13C8 FOSA	102		25 - 150	10/05/19 09:53	10/10/19 07:48	1
d3-NMeFOSAA	96		25 - 150	10/05/19 09:53	10/10/19 07:48	1
d5-NEtFOSAA	98		25 - 150	10/05/19 09:53	10/10/19 07:48	1
M2-6:2 FTS	103		25 - 150	10/05/19 09:53	10/10/19 07:48	1
M2-8:2 FTS	99		25 - 150	10/05/19 09:53	10/10/19 07:48	1
13C3 HFPO-DA	98		25 - 150	10/05/19 09:53	10/10/19 07:48	1

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54940-1

Client Sample ID: SB-1902-40

Lab Sample ID: 320-54940-3

Date Collected: 09/30/19 04:55

Matrix: Solid

Date Received: 10/03/19 10:45

Percent Solids: 75.6

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		0.26	0.054	ug/Kg	☼	10/05/19 09:53	10/10/19 07:57	1
Perfluoroheptanoic acid (PFHpA)	ND		0.26	0.037	ug/Kg	☼	10/05/19 09:53	10/10/19 07:57	1
Perfluorooctanoic acid (PFOA)	ND		0.26	0.11	ug/Kg	☼	10/05/19 09:53	10/10/19 07:57	1
Perfluorononanoic acid (PFNA)	ND		0.26	0.046	ug/Kg	☼	10/05/19 09:53	10/10/19 07:57	1
Perfluorodecanoic acid (PFDA)	ND		0.26	0.028	ug/Kg	☼	10/05/19 09:53	10/10/19 07:57	1
Perfluoroundecanoic acid (PFUnA)	ND		0.26	0.046	ug/Kg	☼	10/05/19 09:53	10/10/19 07:57	1
Perfluorododecanoic acid (PFDoA)	ND		0.26	0.086	ug/Kg	☼	10/05/19 09:53	10/10/19 07:57	1
Perfluorotridecanoic acid (PFTriA)	ND		0.26	0.065	ug/Kg	☼	10/05/19 09:53	10/10/19 07:57	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.26	0.069	ug/Kg	☼	10/05/19 09:53	10/10/19 07:57	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.26	0.032	ug/Kg	☼	10/05/19 09:53	10/10/19 07:57	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.26	0.040	ug/Kg	☼	10/05/19 09:53	10/10/19 07:57	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.64	0.26	ug/Kg	☼	10/05/19 09:53	10/10/19 07:57	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.6	0.50	ug/Kg	☼	10/05/19 09:53	10/10/19 07:57	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.6	0.47	ug/Kg	☼	10/05/19 09:53	10/10/19 07:57	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.26	0.035	ug/Kg	☼	10/05/19 09:53	10/10/19 07:57	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.32	0.14	ug/Kg	☼	10/05/19 09:53	10/10/19 07:57	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.26	0.028	ug/Kg	☼	10/05/19 09:53	10/10/19 07:57	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.26	0.023	ug/Kg	☼	10/05/19 09:53	10/10/19 07:57	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	98		25 - 150	10/05/19 09:53	10/10/19 07:57	1
13C5 PFPeA	99		25 - 150	10/05/19 09:53	10/10/19 07:57	1
13C2 PFHxA	95		25 - 150	10/05/19 09:53	10/10/19 07:57	1
13C4 PFHpA	104		25 - 150	10/05/19 09:53	10/10/19 07:57	1
13C4 PFOA	104		25 - 150	10/05/19 09:53	10/10/19 07:57	1
13C5 PFNA	103		25 - 150	10/05/19 09:53	10/10/19 07:57	1
13C2 PFDA	100		25 - 150	10/05/19 09:53	10/10/19 07:57	1
13C2 PFUnA	100		25 - 150	10/05/19 09:53	10/10/19 07:57	1
13C2 PFDoA	108		25 - 150	10/05/19 09:53	10/10/19 07:57	1
13C2 PFTeDA	95		25 - 150	10/05/19 09:53	10/10/19 07:57	1
18O2 PFHxS	106		25 - 150	10/05/19 09:53	10/10/19 07:57	1
13C4 PFOS	102		25 - 150	10/05/19 09:53	10/10/19 07:57	1
13C8 FOSA	95		25 - 150	10/05/19 09:53	10/10/19 07:57	1
d3-NMeFOSAA	100		25 - 150	10/05/19 09:53	10/10/19 07:57	1
d5-NEtFOSAA	100		25 - 150	10/05/19 09:53	10/10/19 07:57	1
M2-6:2 FTS	105		25 - 150	10/05/19 09:53	10/10/19 07:57	1
M2-8:2 FTS	99		25 - 150	10/05/19 09:53	10/10/19 07:57	1
13C3 HFPO-DA	89		25 - 150	10/05/19 09:53	10/10/19 07:57	1

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54940-1

Client Sample ID: SB-1902-80

Lab Sample ID: 320-54940-4

Date Collected: 09/29/19 23:40

Matrix: Solid

Date Received: 10/03/19 10:45

Percent Solids: 86.6

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		0.21	0.044	ug/Kg	☼	10/05/19 09:53	10/10/19 08:07	1
Perfluoroheptanoic acid (PFHpA)	ND		0.21	0.031	ug/Kg	☼	10/05/19 09:53	10/10/19 08:07	1
Perfluorooctanoic acid (PFOA)	ND		0.21	0.091	ug/Kg	☼	10/05/19 09:53	10/10/19 08:07	1
Perfluorononanoic acid (PFNA)	ND		0.21	0.038	ug/Kg	☼	10/05/19 09:53	10/10/19 08:07	1
Perfluorodecanoic acid (PFDA)	ND		0.21	0.023	ug/Kg	☼	10/05/19 09:53	10/10/19 08:07	1
Perfluoroundecanoic acid (PFUnA)	ND		0.21	0.038	ug/Kg	☼	10/05/19 09:53	10/10/19 08:07	1
Perfluorododecanoic acid (PFDoA)	ND		0.21	0.071	ug/Kg	☼	10/05/19 09:53	10/10/19 08:07	1
Perfluorotridecanoic acid (PFTriA)	ND		0.21	0.054	ug/Kg	☼	10/05/19 09:53	10/10/19 08:07	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.21	0.057	ug/Kg	☼	10/05/19 09:53	10/10/19 08:07	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.21	0.026	ug/Kg	☼	10/05/19 09:53	10/10/19 08:07	1
Perfluorohexanesulfonic acid (PFHxS)	0.034	J I	0.21	0.033	ug/Kg	☼	10/05/19 09:53	10/10/19 08:07	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.53	0.21	ug/Kg	☼	10/05/19 09:53	10/10/19 08:07	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.1	0.41	ug/Kg	☼	10/05/19 09:53	10/10/19 08:07	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.1	0.39	ug/Kg	☼	10/05/19 09:53	10/10/19 08:07	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.21	0.029	ug/Kg	☼	10/05/19 09:53	10/10/19 08:07	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.26	0.12	ug/Kg	☼	10/05/19 09:53	10/10/19 08:07	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.21	0.023	ug/Kg	☼	10/05/19 09:53	10/10/19 08:07	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.21	0.019	ug/Kg	☼	10/05/19 09:53	10/10/19 08:07	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	92		25 - 150	10/05/19 09:53	10/10/19 08:07	1
13C5 PFPeA	96		25 - 150	10/05/19 09:53	10/10/19 08:07	1
13C2 PFHxA	94		25 - 150	10/05/19 09:53	10/10/19 08:07	1
13C4 PFHpA	102		25 - 150	10/05/19 09:53	10/10/19 08:07	1
13C4 PFOA	104		25 - 150	10/05/19 09:53	10/10/19 08:07	1
13C5 PFNA	106		25 - 150	10/05/19 09:53	10/10/19 08:07	1
13C2 PFDA	103		25 - 150	10/05/19 09:53	10/10/19 08:07	1
13C2 PFUnA	106		25 - 150	10/05/19 09:53	10/10/19 08:07	1
13C2 PFDoA	97		25 - 150	10/05/19 09:53	10/10/19 08:07	1
13C2 PFTeDA	93		25 - 150	10/05/19 09:53	10/10/19 08:07	1
18O2 PFHxS	98		25 - 150	10/05/19 09:53	10/10/19 08:07	1
13C4 PFOS	98		25 - 150	10/05/19 09:53	10/10/19 08:07	1
13C8 FOSA	95		25 - 150	10/05/19 09:53	10/10/19 08:07	1
d3-NMeFOSAA	124		25 - 150	10/05/19 09:53	10/10/19 08:07	1
d5-NEtFOSAA	107		25 - 150	10/05/19 09:53	10/10/19 08:07	1
M2-6:2 FTS	111		25 - 150	10/05/19 09:53	10/10/19 08:07	1
M2-8:2 FTS	120		25 - 150	10/05/19 09:53	10/10/19 08:07	1
13C3 HFPO-DA	84		25 - 150	10/05/19 09:53	10/10/19 08:07	1

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54940-1

Client Sample ID: SB-1902-150

Lab Sample ID: 320-54940-5

Date Collected: 09/28/19 04:17

Matrix: Solid

Date Received: 10/03/19 10:45

Percent Solids: 87.0

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		0.23	0.048	ug/Kg	☼	10/05/19 09:53	10/10/19 08:17	1
Perfluoroheptanoic acid (PFHpA)	ND		0.23	0.033	ug/Kg	☼	10/05/19 09:53	10/10/19 08:17	1
Perfluorooctanoic acid (PFOA)	ND		0.23	0.098	ug/Kg	☼	10/05/19 09:53	10/10/19 08:17	1
Perfluorononanoic acid (PFNA)	ND		0.23	0.041	ug/Kg	☼	10/05/19 09:53	10/10/19 08:17	1
Perfluorodecanoic acid (PFDA)	ND		0.23	0.025	ug/Kg	☼	10/05/19 09:53	10/10/19 08:17	1
Perfluoroundecanoic acid (PFUnA)	ND		0.23	0.041	ug/Kg	☼	10/05/19 09:53	10/10/19 08:17	1
Perfluorododecanoic acid (PFDoA)	ND		0.23	0.076	ug/Kg	☼	10/05/19 09:53	10/10/19 08:17	1
Perfluorotridecanoic acid (PFTriA)	ND		0.23	0.058	ug/Kg	☼	10/05/19 09:53	10/10/19 08:17	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.23	0.061	ug/Kg	☼	10/05/19 09:53	10/10/19 08:17	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.23	0.028	ug/Kg	☼	10/05/19 09:53	10/10/19 08:17	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.23	0.035	ug/Kg	☼	10/05/19 09:53	10/10/19 08:17	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.57	0.23	ug/Kg	☼	10/05/19 09:53	10/10/19 08:17	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.3	0.44	ug/Kg	☼	10/05/19 09:53	10/10/19 08:17	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.3	0.42	ug/Kg	☼	10/05/19 09:53	10/10/19 08:17	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.23	0.031	ug/Kg	☼	10/05/19 09:53	10/10/19 08:17	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.28	0.12	ug/Kg	☼	10/05/19 09:53	10/10/19 08:17	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.23	0.025	ug/Kg	☼	10/05/19 09:53	10/10/19 08:17	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.23	0.020	ug/Kg	☼	10/05/19 09:53	10/10/19 08:17	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	94		25 - 150	10/05/19 09:53	10/10/19 08:17	1
13C5 PFPeA	100		25 - 150	10/05/19 09:53	10/10/19 08:17	1
13C2 PFHxA	96		25 - 150	10/05/19 09:53	10/10/19 08:17	1
13C4 PFHpA	108		25 - 150	10/05/19 09:53	10/10/19 08:17	1
13C4 PFOA	104		25 - 150	10/05/19 09:53	10/10/19 08:17	1
13C5 PFNA	103		25 - 150	10/05/19 09:53	10/10/19 08:17	1
13C2 PFDA	101		25 - 150	10/05/19 09:53	10/10/19 08:17	1
13C2 PFUnA	95		25 - 150	10/05/19 09:53	10/10/19 08:17	1
13C2 PFDoA	98		25 - 150	10/05/19 09:53	10/10/19 08:17	1
13C2 PFTeDA	93		25 - 150	10/05/19 09:53	10/10/19 08:17	1
18O2 PFHxS	103		25 - 150	10/05/19 09:53	10/10/19 08:17	1
13C4 PFOS	100		25 - 150	10/05/19 09:53	10/10/19 08:17	1
13C8 FOSA	93		25 - 150	10/05/19 09:53	10/10/19 08:17	1
d3-NMeFOSAA	94		25 - 150	10/05/19 09:53	10/10/19 08:17	1
d5-NEtFOSAA	96		25 - 150	10/05/19 09:53	10/10/19 08:17	1
M2-6:2 FTS	99		25 - 150	10/05/19 09:53	10/10/19 08:17	1
M2-8:2 FTS	97		25 - 150	10/05/19 09:53	10/10/19 08:17	1
13C3 HFPO-DA	88		25 - 150	10/05/19 09:53	10/10/19 08:17	1

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54940-1

Client Sample ID: SB-1901-15

Lab Sample ID: 320-54940-6

Date Collected: 09/21/19 16:20

Matrix: Solid

Date Received: 10/03/19 10:45

Percent Solids: 81.8

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	0.39		0.24	0.049	ug/Kg	☼	10/05/19 09:53	10/10/19 08:26	1
Perfluoroheptanoic acid (PFHpA)	0.051	J	0.24	0.034	ug/Kg	☼	10/05/19 09:53	10/10/19 08:26	1
Perfluorooctanoic acid (PFOA)	ND		0.24	0.10	ug/Kg	☼	10/05/19 09:53	10/10/19 08:26	1
Perfluorononanoic acid (PFNA)	ND		0.24	0.042	ug/Kg	☼	10/05/19 09:53	10/10/19 08:26	1
Perfluorodecanoic acid (PFDA)	ND		0.24	0.026	ug/Kg	☼	10/05/19 09:53	10/10/19 08:26	1
Perfluoroundecanoic acid (PFUnA)	ND		0.24	0.042	ug/Kg	☼	10/05/19 09:53	10/10/19 08:26	1
Perfluorododecanoic acid (PFDoA)	ND		0.24	0.079	ug/Kg	☼	10/05/19 09:53	10/10/19 08:26	1
Perfluorotridecanoic acid (PFTriA)	ND		0.24	0.060	ug/Kg	☼	10/05/19 09:53	10/10/19 08:26	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.24	0.064	ug/Kg	☼	10/05/19 09:53	10/10/19 08:26	1
Perfluorobutanesulfonic acid (PFBS)	0.12	J	0.24	0.029	ug/Kg	☼	10/05/19 09:53	10/10/19 08:26	1
Perfluorohexanesulfonic acid (PFHxS)	1.2		0.24	0.037	ug/Kg	☼	10/05/19 09:53	10/10/19 08:26	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.59	0.24	ug/Kg	☼	10/05/19 09:53	10/10/19 08:26	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.4	0.46	ug/Kg	☼	10/05/19 09:53	10/10/19 08:26	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.4	0.44	ug/Kg	☼	10/05/19 09:53	10/10/19 08:26	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.24	0.032	ug/Kg	☼	10/05/19 09:53	10/10/19 08:26	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.29	0.13	ug/Kg	☼	10/05/19 09:53	10/10/19 08:26	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		0.24	0.026	ug/Kg	☼	10/05/19 09:53	10/10/19 08:26	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.24	0.021	ug/Kg	☼	10/05/19 09:53	10/10/19 08:26	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	91		25 - 150	10/05/19 09:53	10/10/19 08:26	1
13C5 PFPeA	93		25 - 150	10/05/19 09:53	10/10/19 08:26	1
13C2 PFHxA	93		25 - 150	10/05/19 09:53	10/10/19 08:26	1
13C4 PFHpA	99		25 - 150	10/05/19 09:53	10/10/19 08:26	1
13C4 PFOA	100		25 - 150	10/05/19 09:53	10/10/19 08:26	1
13C5 PFNA	97		25 - 150	10/05/19 09:53	10/10/19 08:26	1
13C2 PFDA	95		25 - 150	10/05/19 09:53	10/10/19 08:26	1
13C2 PFUnA	91		25 - 150	10/05/19 09:53	10/10/19 08:26	1
13C2 PFDoA	92		25 - 150	10/05/19 09:53	10/10/19 08:26	1
13C2 PFTeDA	93		25 - 150	10/05/19 09:53	10/10/19 08:26	1
18O2 PFHxS	100		25 - 150	10/05/19 09:53	10/10/19 08:26	1
13C4 PFOS	96		25 - 150	10/05/19 09:53	10/10/19 08:26	1
13C8 FOSA	88		25 - 150	10/05/19 09:53	10/10/19 08:26	1
d3-NMeFOSAA	96		25 - 150	10/05/19 09:53	10/10/19 08:26	1
d5-NEtFOSAA	89		25 - 150	10/05/19 09:53	10/10/19 08:26	1
M2-6:2 FTS	101		25 - 150	10/05/19 09:53	10/10/19 08:26	1
M2-8:2 FTS	111		25 - 150	10/05/19 09:53	10/10/19 08:26	1
13C3 HFPO-DA	86		25 - 150	10/05/19 09:53	10/10/19 08:26	1

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54940-1

Client Sample ID: SB-2001-15

Lab Sample ID: 320-54940-7

Date Collected: 09/21/19 16:10

Matrix: Solid

Date Received: 10/03/19 10:45

Percent Solids: 81.9

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	0.43		0.23	0.048	ug/Kg	☼	10/05/19 09:53	10/10/19 08:55	1
Perfluoroheptanoic acid (PFHpA)	0.062	J	0.23	0.033	ug/Kg	☼	10/05/19 09:53	10/10/19 08:55	1
Perfluorooctanoic acid (PFOA)	0.10	J	0.23	0.098	ug/Kg	☼	10/05/19 09:53	10/10/19 08:55	1
Perfluorononanoic acid (PFNA)	ND		0.23	0.041	ug/Kg	☼	10/05/19 09:53	10/10/19 08:55	1
Perfluorodecanoic acid (PFDA)	ND		0.23	0.025	ug/Kg	☼	10/05/19 09:53	10/10/19 08:55	1
Perfluoroundecanoic acid (PFUnA)	ND		0.23	0.041	ug/Kg	☼	10/05/19 09:53	10/10/19 08:55	1
Perfluorododecanoic acid (PFDoA)	ND		0.23	0.077	ug/Kg	☼	10/05/19 09:53	10/10/19 08:55	1
Perfluorotridecanoic acid (PFTriA)	ND		0.23	0.058	ug/Kg	☼	10/05/19 09:53	10/10/19 08:55	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.23	0.062	ug/Kg	☼	10/05/19 09:53	10/10/19 08:55	1
Perfluorobutanesulfonic acid (PFBS)	0.14	J	0.23	0.029	ug/Kg	☼	10/05/19 09:53	10/10/19 08:55	1
Perfluorohexanesulfonic acid (PFHxS)	1.3		0.23	0.035	ug/Kg	☼	10/05/19 09:53	10/10/19 08:55	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.57	0.23	ug/Kg	☼	10/05/19 09:53	10/10/19 08:55	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.3	0.45	ug/Kg	☼	10/05/19 09:53	10/10/19 08:55	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.3	0.42	ug/Kg	☼	10/05/19 09:53	10/10/19 08:55	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.23	0.031	ug/Kg	☼	10/05/19 09:53	10/10/19 08:55	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.29	0.13	ug/Kg	☼	10/05/19 09:53	10/10/19 08:55	1
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid	ND		0.23	0.025	ug/Kg	☼	10/05/19 09:53	10/10/19 08:55	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.23	0.021	ug/Kg	☼	10/05/19 09:53	10/10/19 08:55	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	92		25 - 150	10/05/19 09:53	10/10/19 08:55	1
13C5 PFPeA	96		25 - 150	10/05/19 09:53	10/10/19 08:55	1
13C2 PFHxA	97		25 - 150	10/05/19 09:53	10/10/19 08:55	1
13C4 PFHpA	99		25 - 150	10/05/19 09:53	10/10/19 08:55	1
13C4 PFOA	100		25 - 150	10/05/19 09:53	10/10/19 08:55	1
13C5 PFNA	100		25 - 150	10/05/19 09:53	10/10/19 08:55	1
13C2 PFDA	97		25 - 150	10/05/19 09:53	10/10/19 08:55	1
13C2 PFUnA	99		25 - 150	10/05/19 09:53	10/10/19 08:55	1
13C2 PFDoA	95		25 - 150	10/05/19 09:53	10/10/19 08:55	1
13C2 PFTeDA	89		25 - 150	10/05/19 09:53	10/10/19 08:55	1
18O2 PFHxS	100		25 - 150	10/05/19 09:53	10/10/19 08:55	1
13C4 PFOS	96		25 - 150	10/05/19 09:53	10/10/19 08:55	1
13C8 FOSA	96		25 - 150	10/05/19 09:53	10/10/19 08:55	1
d3-NMeFOSAA	104		25 - 150	10/05/19 09:53	10/10/19 08:55	1
d5-NEtFOSAA	96		25 - 150	10/05/19 09:53	10/10/19 08:55	1
M2-6:2 FTS	112		25 - 150	10/05/19 09:53	10/10/19 08:55	1
M2-8:2 FTS	114		25 - 150	10/05/19 09:53	10/10/19 08:55	1
13C3 HFPO-DA	87		25 - 150	10/05/19 09:53	10/10/19 08:55	1

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54940-1

Client Sample ID: SB-1901-40

Lab Sample ID: 320-54940-8

Date Collected: 09/22/19 11:00

Matrix: Solid

Date Received: 10/03/19 10:45

Percent Solids: 90.2

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	0.055	J	0.22	0.046	ug/Kg	☼	10/05/19 09:53	10/10/19 09:05	1
Perfluoroheptanoic acid (PFHpA)	ND		0.22	0.032	ug/Kg	☼	10/05/19 09:53	10/10/19 09:05	1
Perfluorooctanoic acid (PFOA)	ND		0.22	0.094	ug/Kg	☼	10/05/19 09:53	10/10/19 09:05	1
Perfluorononanoic acid (PFNA)	ND		0.22	0.040	ug/Kg	☼	10/05/19 09:53	10/10/19 09:05	1
Perfluorodecanoic acid (PFDA)	ND		0.22	0.024	ug/Kg	☼	10/05/19 09:53	10/10/19 09:05	1
Perfluoroundecanoic acid (PFUnA)	ND		0.22	0.040	ug/Kg	☼	10/05/19 09:53	10/10/19 09:05	1
Perfluorododecanoic acid (PFDoA)	ND		0.22	0.074	ug/Kg	☼	10/05/19 09:53	10/10/19 09:05	1
Perfluorotridecanoic acid (PFTriA)	ND		0.22	0.056	ug/Kg	☼	10/05/19 09:53	10/10/19 09:05	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.22	0.059	ug/Kg	☼	10/05/19 09:53	10/10/19 09:05	1
Perfluorobutanesulfonic acid (PFBS)	0.034	J	0.22	0.027	ug/Kg	☼	10/05/19 09:53	10/10/19 09:05	1
Perfluorohexanesulfonic acid (PFHxS)	0.092	J	0.22	0.034	ug/Kg	☼	10/05/19 09:53	10/10/19 09:05	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.55	0.22	ug/Kg	☼	10/05/19 09:53	10/10/19 09:05	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.2	0.43	ug/Kg	☼	10/05/19 09:53	10/10/19 09:05	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.2	0.41	ug/Kg	☼	10/05/19 09:53	10/10/19 09:05	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.22	0.030	ug/Kg	☼	10/05/19 09:53	10/10/19 09:05	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.27	0.12	ug/Kg	☼	10/05/19 09:53	10/10/19 09:05	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.22	0.024	ug/Kg	☼	10/05/19 09:53	10/10/19 09:05	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.22	0.020	ug/Kg	☼	10/05/19 09:53	10/10/19 09:05	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	99		25 - 150	10/05/19 09:53	10/10/19 09:05	1
13C5 PFPeA	102		25 - 150	10/05/19 09:53	10/10/19 09:05	1
13C2 PFHxA	99		25 - 150	10/05/19 09:53	10/10/19 09:05	1
13C4 PFHpA	108		25 - 150	10/05/19 09:53	10/10/19 09:05	1
13C4 PFOA	106		25 - 150	10/05/19 09:53	10/10/19 09:05	1
13C5 PFNA	106		25 - 150	10/05/19 09:53	10/10/19 09:05	1
13C2 PFDA	102		25 - 150	10/05/19 09:53	10/10/19 09:05	1
13C2 PFUnA	96		25 - 150	10/05/19 09:53	10/10/19 09:05	1
13C2 PFDoA	98		25 - 150	10/05/19 09:53	10/10/19 09:05	1
13C2 PFTeDA	90		25 - 150	10/05/19 09:53	10/10/19 09:05	1
18O2 PFHxS	106		25 - 150	10/05/19 09:53	10/10/19 09:05	1
13C4 PFOS	105		25 - 150	10/05/19 09:53	10/10/19 09:05	1
13C8 FOSA	95		25 - 150	10/05/19 09:53	10/10/19 09:05	1
d3-NMeFOSAA	95		25 - 150	10/05/19 09:53	10/10/19 09:05	1
d5-NEtFOSAA	95		25 - 150	10/05/19 09:53	10/10/19 09:05	1
M2-6:2 FTS	101		25 - 150	10/05/19 09:53	10/10/19 09:05	1
M2-8:2 FTS	93		25 - 150	10/05/19 09:53	10/10/19 09:05	1
13C3 HFPO-DA	95		25 - 150	10/05/19 09:53	10/10/19 09:05	1

Eurofins TestAmerica, Sacramento

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54940-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Solid

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	PFHpA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
320-54940-1	SB-1902-15	94	94	94	100	103	102	102	97
320-54940-1 MS	SB-1902-15	95	96	94	104	102	101	95	100
320-54940-1 MSD	SB-1902-15	96	99	99	107	104	102	101	99
320-54940-2	SB-2902-15	96	101	97	102	104	104	102	98
320-54940-3	SB-1902-40	98	99	95	104	104	103	100	100
320-54940-4	SB-1902-80	92	96	94	102	104	106	103	106
320-54940-5	SB-1902-150	94	100	96	108	104	103	101	95
320-54940-6	SB-1901-15	91	93	93	99	100	97	95	91
320-54940-7	SB-2001-15	92	96	97	99	100	100	97	99
320-54940-8	SB-1901-40	99	102	99	108	106	106	102	96
LCS 320-328722/2-A	Lab Control Sample	98	99	95	105	105	104	102	103
MB 320-328722/1-A	Method Blank	86	92	89	95	96	92	96	90

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (25-150)	-NMeFOS/ (25-150)	-NEtFOS/ (25-150)	M262FTS (25-150)
320-54940-1	SB-1902-15	104	97	100	99	91	114	92	99
320-54940-1 MS	SB-1902-15	99	91	101	98	94	89	98	95
320-54940-1 MSD	SB-1902-15	95	101	106	103	97	91	99	95
320-54940-2	SB-2902-15	102	96	106	102	102	96	98	103
320-54940-3	SB-1902-40	108	95	106	102	95	100	100	105
320-54940-4	SB-1902-80	97	93	98	98	95	124	107	111
320-54940-5	SB-1902-150	98	93	103	100	93	94	96	99
320-54940-6	SB-1901-15	92	93	100	96	88	96	89	101
320-54940-7	SB-2001-15	95	89	100	96	96	104	96	112
320-54940-8	SB-1901-40	98	90	106	105	95	95	95	101
LCS 320-328722/2-A	Lab Control Sample	106	100	106	104	94	93	88	100
MB 320-328722/1-A	Method Blank	94	94	97	95	83	83	87	94

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	M282FTS (25-150)	HFPODA (25-150)
320-54940-1	SB-1902-15	99	95
320-54940-1 MS	SB-1902-15	95	94
320-54940-1 MSD	SB-1902-15	99	90
320-54940-2	SB-2902-15	99	98
320-54940-3	SB-1902-40	99	89
320-54940-4	SB-1902-80	120	84
320-54940-5	SB-1902-150	97	88
320-54940-6	SB-1901-15	111	86
320-54940-7	SB-2001-15	114	87
320-54940-8	SB-1901-40	93	95
LCS 320-328722/2-A	Lab Control Sample	96	93
MB 320-328722/1-A	Method Blank	88	89

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
PFHpA = 13C4 PFHpA
PFOA = 13C4 PFOA

Isotope Dilution Summary

Job ID: 320-54940-1

Client: Shannon & Wilson, Inc

Project/Site: FAI PFAS

PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
PFOSA = 13C8 FOSA
d3-NMeFOSAA = d3-NMeFOSAA
d5-NEtFOSAA = d5-NEtFOSAA
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
HFPODA = 13C3 HFPO-DA

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54940-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-328722/1-A

Matrix: Solid

Analysis Batch: 329779

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 328722

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		0.20	0.042	ug/Kg		10/05/19 09:53	10/10/19 07:00	1
Perfluoroheptanoic acid (PFHpA)	ND		0.20	0.029	ug/Kg		10/05/19 09:53	10/10/19 07:00	1
Perfluorooctanoic acid (PFOA)	ND		0.20	0.086	ug/Kg		10/05/19 09:53	10/10/19 07:00	1
Perfluorononanoic acid (PFNA)	ND		0.20	0.036	ug/Kg		10/05/19 09:53	10/10/19 07:00	1
Perfluorodecanoic acid (PFDA)	ND		0.20	0.022	ug/Kg		10/05/19 09:53	10/10/19 07:00	1
Perfluoroundecanoic acid (PFUnA)	ND		0.20	0.036	ug/Kg		10/05/19 09:53	10/10/19 07:00	1
Perfluorododecanoic acid (PFDoA)	ND		0.20	0.067	ug/Kg		10/05/19 09:53	10/10/19 07:00	1
Perfluorotridecanoic acid (PFTriA)	ND		0.20	0.051	ug/Kg		10/05/19 09:53	10/10/19 07:00	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.20	0.054	ug/Kg		10/05/19 09:53	10/10/19 07:00	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.20	0.025	ug/Kg		10/05/19 09:53	10/10/19 07:00	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.20	0.031	ug/Kg		10/05/19 09:53	10/10/19 07:00	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.50	0.20	ug/Kg		10/05/19 09:53	10/10/19 07:00	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.0	0.39	ug/Kg		10/05/19 09:53	10/10/19 07:00	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.0	0.37	ug/Kg		10/05/19 09:53	10/10/19 07:00	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.20	0.027	ug/Kg		10/05/19 09:53	10/10/19 07:00	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.25	0.11	ug/Kg		10/05/19 09:53	10/10/19 07:00	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.20	0.022	ug/Kg		10/05/19 09:53	10/10/19 07:00	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.20	0.018	ug/Kg		10/05/19 09:53	10/10/19 07:00	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	86		25 - 150	10/05/19 09:53	10/10/19 07:00	1
13C5 PFPeA	92		25 - 150	10/05/19 09:53	10/10/19 07:00	1
13C2 PFHxA	89		25 - 150	10/05/19 09:53	10/10/19 07:00	1
13C4 PFHpA	95		25 - 150	10/05/19 09:53	10/10/19 07:00	1
13C4 PFOA	96		25 - 150	10/05/19 09:53	10/10/19 07:00	1
13C5 PFNA	92		25 - 150	10/05/19 09:53	10/10/19 07:00	1
13C2 PFDA	96		25 - 150	10/05/19 09:53	10/10/19 07:00	1
13C2 PFUnA	90		25 - 150	10/05/19 09:53	10/10/19 07:00	1
13C2 PFDoA	94		25 - 150	10/05/19 09:53	10/10/19 07:00	1
13C2 PFTeDA	94		25 - 150	10/05/19 09:53	10/10/19 07:00	1
18O2 PFHxS	97		25 - 150	10/05/19 09:53	10/10/19 07:00	1
13C4 PFOS	95		25 - 150	10/05/19 09:53	10/10/19 07:00	1
13C8 FOSA	83		25 - 150	10/05/19 09:53	10/10/19 07:00	1
d3-NMeFOSAA	83		25 - 150	10/05/19 09:53	10/10/19 07:00	1
d5-NEtFOSAA	87		25 - 150	10/05/19 09:53	10/10/19 07:00	1
M2-6:2 FTS	94		25 - 150	10/05/19 09:53	10/10/19 07:00	1
M2-8:2 FTS	88		25 - 150	10/05/19 09:53	10/10/19 07:00	1
13C3 HFPO-DA	89		25 - 150	10/05/19 09:53	10/10/19 07:00	1

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54940-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-328722/2-A
Matrix: Solid
Analysis Batch: 329779

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 328722
%Rec. Limits

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorohexanoic acid (PFHxA)	2.00	2.11		ug/Kg		105	75 - 125
Perfluoroheptanoic acid (PFHpA)	2.00	2.05		ug/Kg		102	76 - 124
Perfluorooctanoic acid (PFOA)	2.00	2.00		ug/Kg		100	76 - 121
Perfluorononanoic acid (PFNA)	2.00	2.12		ug/Kg		106	74 - 126
Perfluorodecanoic acid (PFDA)	2.00	2.12		ug/Kg		106	74 - 124
Perfluoroundecanoic acid (PFUnA)	2.00	2.04		ug/Kg		102	74 - 114
Perfluorododecanoic acid (PFDoA)	2.00	2.04		ug/Kg		102	75 - 123
Perfluorotridecanoic acid (PFTriA)	2.00	2.09		ug/Kg		104	43 - 116
Perfluorotetradecanoic acid (PFTeA)	2.00	1.91		ug/Kg		95	22 - 129
Perfluorobutanesulfonic acid (PFBS)	1.77	1.69		ug/Kg		96	73 - 142
Perfluorohexanesulfonic acid (PFHxS)	1.82	1.64		ug/Kg		90	75 - 121
Perfluorooctanesulfonic acid (PFOS)	1.86	2.06		ug/Kg		111	69 - 131
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	2.00	2.03		ug/Kg		101	65 - 135
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	2.00	2.09		ug/Kg		104	65 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	1.86	1.83		ug/Kg		98	70 - 130
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	2.00	2.10		ug/Kg		105	70 - 130
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	1.88	1.50		ug/Kg		80	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.88	2.04		ug/Kg		108	70 - 130

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C4 PFBA	98		25 - 150
13C5 PFPeA	99		25 - 150
13C2 PFHxA	95		25 - 150
13C4 PFHpA	105		25 - 150
13C4 PFOA	105		25 - 150
13C5 PFNA	104		25 - 150
13C2 PFDA	102		25 - 150
13C2 PFUnA	103		25 - 150
13C2 PFDoA	106		25 - 150
13C2 PFTeDA	100		25 - 150
18O2 PFHxS	106		25 - 150
13C4 PFOS	104		25 - 150
13C8 FOSA	94		25 - 150
d3-NMeFOSAA	93		25 - 150
d5-NEtFOSAA	88		25 - 150
M2-6:2 FTS	100		25 - 150
M2-8:2 FTS	96		25 - 150
13C3 HFPO-DA	93		25 - 150

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54940-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: 320-54940-1 MS

Matrix: Solid

Analysis Batch: 329779

Client Sample ID: SB-1902-15

Prep Type: Total/NA

Prep Batch: 328722

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Perfluorohexanoic acid (PFHxA)	ND		2.35	2.43		ug/Kg	☼	103	75 - 125
Perfluoroheptanoic acid (PFHpA)	ND		2.35	2.44		ug/Kg	☼	104	76 - 124
Perfluorooctanoic acid (PFOA)	ND		2.35	2.27		ug/Kg	☼	96	76 - 121
Perfluorononanoic acid (PFNA)	ND		2.35	2.39		ug/Kg	☼	101	74 - 126
Perfluorodecanoic acid (PFDA)	ND		2.35	2.51		ug/Kg	☼	107	74 - 124
Perfluoroundecanoic acid (PFUnA)	ND		2.35	2.32		ug/Kg	☼	99	74 - 114
Perfluorododecanoic acid (PFDoA)	ND		2.35	2.41		ug/Kg	☼	102	75 - 123
Perfluorotridecanoic acid (PFTriA)	ND		2.35	2.45		ug/Kg	☼	104	43 - 116
Perfluorotetradecanoic acid (PFTeA)	ND		2.35	2.45		ug/Kg	☼	104	22 - 129
Perfluorobutanesulfonic acid (PFBS)	ND		2.08	1.96		ug/Kg	☼	94	73 - 142
Perfluorohexanesulfonic acid (PFHxS)	0.057	J	2.14	2.01		ug/Kg	☼	91	75 - 121
Perfluorooctanesulfonic acid (PFOS)	ND		2.19	2.20		ug/Kg	☼	100	69 - 131
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.35	2.42		ug/Kg	☼	103	65 - 135
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.35	2.47		ug/Kg	☼	105	65 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.19	2.16		ug/Kg	☼	99	70 - 130
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		2.35	2.34		ug/Kg	☼	99	70 - 130
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.22	1.78		ug/Kg	☼	80	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.22	2.45		ug/Kg	☼	111	70 - 130

Isotope Dilution	MS %Recovery	MS Qualifier	Limits
13C4 PFBA	95		25 - 150
13C5 PFPeA	96		25 - 150
13C2 PFHxA	94		25 - 150
13C4 PFHpA	104		25 - 150
13C4 PFOA	102		25 - 150
13C5 PFNA	101		25 - 150
13C2 PFDA	95		25 - 150
13C2 PFUnA	100		25 - 150
13C2 PFDoA	99		25 - 150
13C2 PFTeDA	91		25 - 150
18O2 PFHxS	101		25 - 150
13C4 PFOS	98		25 - 150
13C8 FOSA	94		25 - 150
d3-NMeFOSAA	89		25 - 150
d5-NEtFOSAA	98		25 - 150
M2-6:2 FTS	95		25 - 150
M2-8:2 FTS	95		25 - 150
13C3 HFPO-DA	94		25 - 150

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54940-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: 320-54940-1 MSD

Matrix: Solid

Analysis Batch: 329779

Client Sample ID: SB-1902-15

Prep Type: Total/NA

Prep Batch: 328722

Analyte	Sample	Sample Qualifier	Spike Added	MSD	MSD	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
	Result			Result	Qualifier						
Perfluorohexanoic acid (PFHxA)	ND		2.36	2.39		ug/Kg	☼	101	75 - 125	2	30
Perfluoroheptanoic acid (PFHpA)	ND		2.36	2.39		ug/Kg	☼	101	76 - 124	2	30
Perfluorooctanoic acid (PFOA)	ND		2.36	2.29		ug/Kg	☼	97	76 - 121	1	30
Perfluorononanoic acid (PFNA)	ND		2.36	2.46		ug/Kg	☼	104	74 - 126	3	30
Perfluorodecanoic acid (PFDA)	ND		2.36	2.47		ug/Kg	☼	105	74 - 124	2	30
Perfluoroundecanoic acid (PFUnA)	ND		2.36	2.30		ug/Kg	☼	97	74 - 114	1	30
Perfluorododecanoic acid (PFDoA)	ND		2.36	2.47		ug/Kg	☼	105	75 - 123	2	30
Perfluorotridecanoic acid (PFTriA)	ND		2.36	2.62		ug/Kg	☼	111	43 - 116	7	30
Perfluorotetradecanoic acid (PFTeA)	ND		2.36	2.41		ug/Kg	☼	102	22 - 129	1	30
Perfluorobutanesulfonic acid (PFBS)	ND		2.09	1.91		ug/Kg	☼	91	73 - 142	3	30
Perfluorohexanesulfonic acid (PFHxS)	0.057	J	2.15	1.93		ug/Kg	☼	87	75 - 121	4	30
Perfluorooctanesulfonic acid (PFOS)	ND		2.19	2.11		ug/Kg	☼	96	69 - 131	4	30
N-methylperfluorooctanesulfonamide doacetic acid (NMeFOSAA)	ND		2.36	2.46		ug/Kg	☼	104	65 - 135	1	30
N-ethylperfluorooctanesulfonamide doacetic acid (NEtFOSAA)	ND		2.36	2.39	J	ug/Kg	☼	101	65 - 135	3	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.20	2.16		ug/Kg	☼	98	70 - 130	0	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		2.36	2.63		ug/Kg	☼	111	70 - 130	11	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.22	1.71		ug/Kg	☼	77	70 - 130	4	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.22	2.36		ug/Kg	☼	106	70 - 130	4	30

Isotope Dilution	MSD	MSD	Limits
	%Recovery	Qualifier	
13C4 PFBA	96		25 - 150
13C5 PFPeA	99		25 - 150
13C2 PFHxA	99		25 - 150
13C4 PFHpA	107		25 - 150
13C4 PFOA	104		25 - 150
13C5 PFNA	102		25 - 150
13C2 PFDA	101		25 - 150
13C2 PFUnA	99		25 - 150
13C2 PFDoA	95		25 - 150
13C2 PFTeDA	101		25 - 150
18O2 PFHxS	106		25 - 150
13C4 PFOS	103		25 - 150
13C8 FOSA	97		25 - 150
d3-NMeFOSAA	91		25 - 150
d5-NEtFOSAA	99		25 - 150
M2-6:2 FTS	95		25 - 150
M2-8:2 FTS	99		25 - 150
13C3 HFPO-DA	90		25 - 150

Eurofins TestAmerica, Sacramento

QC Association Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54940-1

LCMS

Prep Batch: 328722

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-54940-1	SB-1902-15	Total/NA	Solid	SHAKE	
320-54940-2	SB-2902-15	Total/NA	Solid	SHAKE	
320-54940-3	SB-1902-40	Total/NA	Solid	SHAKE	
320-54940-4	SB-1902-80	Total/NA	Solid	SHAKE	
320-54940-5	SB-1902-150	Total/NA	Solid	SHAKE	
320-54940-6	SB-1901-15	Total/NA	Solid	SHAKE	
320-54940-7	SB-2001-15	Total/NA	Solid	SHAKE	
320-54940-8	SB-1901-40	Total/NA	Solid	SHAKE	
MB 320-328722/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 320-328722/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	
320-54940-1 MS	SB-1902-15	Total/NA	Solid	SHAKE	
320-54940-1 MSD	SB-1902-15	Total/NA	Solid	SHAKE	

Analysis Batch: 329779

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-54940-1	SB-1902-15	Total/NA	Solid	537 (modified)	328722
320-54940-2	SB-2902-15	Total/NA	Solid	537 (modified)	328722
320-54940-3	SB-1902-40	Total/NA	Solid	537 (modified)	328722
320-54940-4	SB-1902-80	Total/NA	Solid	537 (modified)	328722
320-54940-5	SB-1902-150	Total/NA	Solid	537 (modified)	328722
320-54940-6	SB-1901-15	Total/NA	Solid	537 (modified)	328722
320-54940-7	SB-2001-15	Total/NA	Solid	537 (modified)	328722
320-54940-8	SB-1901-40	Total/NA	Solid	537 (modified)	328722
MB 320-328722/1-A	Method Blank	Total/NA	Solid	537 (modified)	328722
LCS 320-328722/2-A	Lab Control Sample	Total/NA	Solid	537 (modified)	328722
320-54940-1 MS	SB-1902-15	Total/NA	Solid	537 (modified)	328722
320-54940-1 MSD	SB-1902-15	Total/NA	Solid	537 (modified)	328722

General Chemistry

Analysis Batch: 328893

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-54940-6	SB-1901-15	Total/NA	Solid	D 2216	
320-54940-7	SB-2001-15	Total/NA	Solid	D 2216	
320-54940-8	SB-1901-40	Total/NA	Solid	D 2216	

Analysis Batch: 328951

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-54940-5	SB-1902-150	Total/NA	Solid	D 2216	
320-54940-5 DU	SB-1902-150	Total/NA	Solid	D 2216	

Analysis Batch: 330140

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-54940-3	SB-1902-40	Total/NA	Solid	D 2216	
320-54940-4	SB-1902-80	Total/NA	Solid	D 2216	

Analysis Batch: 330691

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-54940-1	SB-1902-15	Total/NA	Solid	D 2216	
320-54940-2	SB-2902-15	Total/NA	Solid	D 2216	

Eurofins TestAmerica, Sacramento

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54940-1

Client Sample ID: SB-1902-15

Lab Sample ID: 320-54940-1

Date Collected: 09/30/19 23:30

Matrix: Solid

Date Received: 10/03/19 10:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			330691	10/14/19 09:51	MC	TAL SAC

Client Sample ID: SB-1902-15

Lab Sample ID: 320-54940-1

Date Collected: 09/30/19 23:30

Matrix: Solid

Date Received: 10/03/19 10:45

Percent Solids: 81.8

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.14 g	10.00 mL	328722	10/05/19 09:53	AEC	TAL SAC
Total/NA	Analysis	537 (modified)		1			329779	10/10/19 07:19	GMK	TAL SAC

Client Sample ID: SB-2902-15

Lab Sample ID: 320-54940-2

Date Collected: 09/30/19 23:20

Matrix: Solid

Date Received: 10/03/19 10:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			330691	10/14/19 09:51	MC	TAL SAC

Client Sample ID: SB-2902-15

Lab Sample ID: 320-54940-2

Date Collected: 09/30/19 23:20

Matrix: Solid

Date Received: 10/03/19 10:45

Percent Solids: 83.4

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.04 g	10.00 mL	328722	10/05/19 09:53	AEC	TAL SAC
Total/NA	Analysis	537 (modified)		1			329779	10/10/19 07:48	GMK	TAL SAC

Client Sample ID: SB-1902-40

Lab Sample ID: 320-54940-3

Date Collected: 09/30/19 04:55

Matrix: Solid

Date Received: 10/03/19 10:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			330140	10/10/19 17:32	HRB	TAL SAC

Client Sample ID: SB-1902-40

Lab Sample ID: 320-54940-3

Date Collected: 09/30/19 04:55

Matrix: Solid

Date Received: 10/03/19 10:45

Percent Solids: 75.6

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.16 g	10.00 mL	328722	10/05/19 09:53	AEC	TAL SAC
Total/NA	Analysis	537 (modified)		1			329779	10/10/19 07:57	GMK	TAL SAC

Client Sample ID: SB-1902-80

Lab Sample ID: 320-54940-4

Date Collected: 09/29/19 23:40

Matrix: Solid

Date Received: 10/03/19 10:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			330140	10/10/19 17:32	HRB	TAL SAC

Eurofins TestAmerica, Sacramento

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54940-1

Client Sample ID: SB-1902-80

Date Collected: 09/29/19 23:40

Date Received: 10/03/19 10:45

Lab Sample ID: 320-54940-4

Matrix: Solid

Percent Solids: 86.6

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.45 g	10.00 mL	328722	10/05/19 09:53	AEC	TAL SAC
Total/NA	Analysis	537 (modified)		1			329779	10/10/19 08:07	GMK	TAL SAC

Client Sample ID: SB-1902-150

Date Collected: 09/28/19 04:17

Date Received: 10/03/19 10:45

Lab Sample ID: 320-54940-5

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			328951	10/07/19 12:23	HRB	TAL SAC

Client Sample ID: SB-1902-150

Date Collected: 09/28/19 04:17

Date Received: 10/03/19 10:45

Lab Sample ID: 320-54940-5

Matrix: Solid

Percent Solids: 87.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.06 g	10.00 mL	328722	10/05/19 09:53	AEC	TAL SAC
Total/NA	Analysis	537 (modified)		1			329779	10/10/19 08:17	GMK	TAL SAC

Client Sample ID: SB-1901-15

Date Collected: 09/21/19 16:20

Date Received: 10/03/19 10:45

Lab Sample ID: 320-54940-6

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			328893	10/07/19 09:51	MC	TAL SAC

Client Sample ID: SB-1901-15

Date Collected: 09/21/19 16:20

Date Received: 10/03/19 10:45

Lab Sample ID: 320-54940-6

Matrix: Solid

Percent Solids: 81.8

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.19 g	10.00 mL	328722	10/05/19 09:53	AEC	TAL SAC
Total/NA	Analysis	537 (modified)		1			329779	10/10/19 08:26	GMK	TAL SAC

Client Sample ID: SB-2001-15

Date Collected: 09/21/19 16:10

Date Received: 10/03/19 10:45

Lab Sample ID: 320-54940-7

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			328893	10/07/19 09:51	MC	TAL SAC

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54940-1

Client Sample ID: SB-2001-15

Date Collected: 09/21/19 16:10

Date Received: 10/03/19 10:45

Lab Sample ID: 320-54940-7

Matrix: Solid

Percent Solids: 81.9

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.33 g	10.00 mL	328722	10/05/19 09:53	AEC	TAL SAC
Total/NA	Analysis	537 (modified)		1			329779	10/10/19 08:55	GMK	TAL SAC

Client Sample ID: SB-1901-40

Date Collected: 09/22/19 11:00

Date Received: 10/03/19 10:45

Lab Sample ID: 320-54940-8

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			328893	10/07/19 09:51	MC	TAL SAC

Client Sample ID: SB-1901-40

Date Collected: 09/22/19 11:00

Date Received: 10/03/19 10:45

Lab Sample ID: 320-54940-8

Matrix: Solid

Percent Solids: 90.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.05 g	10.00 mL	328722	10/05/19 09:53	AEC	TAL SAC
Total/NA	Analysis	537 (modified)		1			329779	10/10/19 09:05	GMK	TAL SAC

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: Shannon & Wilson, Inc
 Project/Site: FAI PFAS

Job ID: 320-54940-1

Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
California	State	2897	01-31-20
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Georgia	State	4040	01-29-20
Hawaii	State	<cert No.>	01-29-20
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-19
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Michigan	State	9947	01-29-20
Michigan	State Program	9947	01-31-20
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19
Wyoming	State Program	8TMS-L	01-28-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54940-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
D 2216	Percent Moisture	ASTM	TAL SAC
SHAKE	Shake Extraction with Ultrasonic Bath Extraction	SW846	TAL SAC

Protocol References:

ASTM = ASTM International

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600



Sample Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54940-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-54940-1	SB-1902-15	Solid	09/30/19 23:30	10/03/19 10:45	
320-54940-2	SB-2902-15	Solid	09/30/19 23:20	10/03/19 10:45	
320-54940-3	SB-1902-40	Solid	09/30/19 04:55	10/03/19 10:45	
320-54940-4	SB-1902-80	Solid	09/29/19 23:40	10/03/19 10:45	
320-54940-5	SB-1902-150	Solid	09/28/19 04:17	10/03/19 10:45	
320-54940-6	SB-1901-15	Solid	09/21/19 16:20	10/03/19 10:45	
320-54940-7	SB-2001-15	Solid	09/21/19 16:10	10/03/19 10:45	
320-54940-8	SB-1901-40	Solid	09/22/19 11:00	10/03/19 10:45	

CHAIN-OF-CUSTODY RECORD

Laboratory Page 1 of 1
TEST AMERICA
 Attn: DAVID MITCHELL

Analytical Methods (include preservative if used)

Turn Around Time:
 Normal Rush
 Please Specify

Quote No: _____

J-Flags: Yes No

PROS FROM (MAY) 11/11 BY SPC
 PROS CHECKED BY SPC

Remarks/Matrix Composition/Grab? Sample Containers

Total Number of Containers

Sample Identity	Lab No.	Time	Date Sampled		Remarks/Matrix Composition/Grab? Sample Containers
SB-1902-15		2330	9/30/19	X	
SB-2902-15		2320		X	
SB-1902-40		0453		X	
SB-1902-80		2340	9/29/19	X	
SB-1902-150		0417	9/28/19	X	
SB-1901-15		1620	9/21/19	X	
SB-2001-15		1610		X	
SB-1901-40		1100	9/22/19	X	



Project Information	Sample Receipt	Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Number: 102519-010	Total No. of Containers:	Signature: _____	Signature: _____	Signature: _____
Name: FAI PDS	COC Seals/Intact? Y/N/NA	Time: 1422	Time: _____	Time: _____
Contact: MDN	Received Good Cond./Cold	Date: 10/24/19	Date: _____	Date: _____
Ongoing Project? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Temp:	Printed Name: A. Masters	Printed Name: _____	Printed Name: _____
Sampler: ARW/CAB/FLG	Delivery Method: 10/10/19	Company: Shannon + Wilson, Inc.	Company: _____	Company: _____
Notes:		Received By: 1.	Received By: 2.	Received By: 3.
		Signature: _____	Signature: _____	Signature: _____
		Time: 1045	Time: 1044	Time: _____
		Date: 10/23/19	Date: _____	Date: _____
		Printed Name: Pauline Kimaudi	Printed Name: _____	Printed Name: _____
		Company: ETA - SAC	Company: _____	Company: _____

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
 Yellow - w/shipment - for consignee files
 Pink - Shannon & Wilson - job file



Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-54940-1

Login Number: 54940

List Source: Eurofins TestAmerica, Sacramento

List Number: 1

Creator: Thompson, Sarah W

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	Seals on cooler but date and time not filled out.
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	ice packs
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Laboratory Data Review Checklist

Completed By:

Brittany Blood

Title:

Environmental Professional I

Date:

11/25/2019

Consultant Firm:

Shannon and Wilson, Inc.

Laboratory Name:

Eurofins TestAmerica

Laboratory Report Number:

320-54940-1

Laboratory Report Date:

11/5/2019

CS Site Name:

Fairbanks Fire Training Pit

ADEC File Number:

100.38.277

Hazard Identification Number:

26816

320-54940-1

Laboratory Report Date:

11/5/2019

CS Site Name:

Fairbanks Fire Training Pit

Note: Any N/A or No box checked must have an explanation in the comments box.

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes No N/A Comments:

The ADEC certified the TestAmerica/Eurofins Laboratories West Sacramento, CA location for the analysis of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) on February 6, 2018. These compounds were included in the ADEC's Contaminated Sites Laboratory Approval 17-020.

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes No N/A Comments:

Samples were not transferred to another laboratory.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes No N/A Comments:

b. Correct analyses requested?

Yes No N/A Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes No N/A Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes No N/A Comments:

Analysis of PFAS compounds does not require chemical preservation.

320-54940-1

Laboratory Report Date:

11/5/2019

CS Site Name:

Fairbanks Fire Training Pit

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes No N/A Comments:

The sample receipt form notes that the samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes No N/A Comments:

There were not any discrepancies indicated on this work order.

e. Data quality or usability affected?

Comments:

Data quality and/or usability was not affected; see above.

4. Case Narrative

a. Present and understandable?

Yes No N/A Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

Yes No N/A Comments:

The “I” qualifier means the transition mass ratio for the indicated analyte was outside of the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty. However, analyst judgement was used to positively identify PFHxS in sample *SB-1902-80*. This analyte was flagged J* due to the uncertainty

There is no regulatory holding time for percent moisture analysis. The H flag for the following samples, *SB-1901-15*, *SB-2001-15* and *SB-1901-40*, have been removed in analytical batch 320-328893. This non-conformance indicates that the samples were analyzed out of 14 days of collection.

The sample duplicate (DUP) precision for analytical batch 320-328951 was outside control limits. Sample non-homogeneity is suspected. Samples were not re-extracted and reanalyzed because the moisture content for the parent sample and its duplicate was less than 10%. (320-54940-A-5 DU)

320-54940-1

Laboratory Report Date:

11/5/2019

CS Site Name:

Fairbanks Fire Training Pit

c. Were all corrective actions documented?

Yes No N/A Comments:

See above.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

Data quality and or usability was not affected; see above.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes No N/A Comments:

b. All applicable holding times met?

Yes No N/A Comments:

c. All soils reported on a dry weight basis?

Yes No N/A Comments:

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes No N/A Comments:

e. Data quality or usability affected?

Data quality and/or usability was not affected; see above.

320-54940-1

Laboratory Report Date:

11/5/2019

CS Site Name:

Fairbanks Fire Training Pit

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes No N/A Comments:

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

Not applicable, no analytes were detected in the method blank samples.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

No samples were affected.

v. Data quality or usability affected?

Comments:

Data quality and/or usability was not affected; see above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes No N/A Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

N/A; metals and/or inorganics were not analyzed as part of this work order.

320-54940-1

Laboratory Report Date:

11/5/2019

CS Site Name:

Fairbanks Fire Training Pit

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

A LCSD was not reported in this analysis.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

No samples were affected as all %R values were within acceptable limits.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Data quality, and/or usability were not affected; see above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Note: Leave blank if not required for project

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

320-54940-1

Laboratory Report Date:

11/5/2019

CS Site Name:

Fairbanks Fire Training Pit

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

N/A; metals and/or inorganics were not analyzed as part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Not applicable, no samples were affected as all %R and RPD values were within acceptable limits.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

No samples were affected as all %R and RPD values were within acceptable limits.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Data quality and or usability were not affected.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes No N/A Comments:

320-54940-1

Laboratory Report Date:

11/5/2019

CS Site Name:

Fairbanks Fire Training Pit

- ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

Yes No N/A Comments:

- iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

- iv. Data quality or usability affected?

Comments:

Data quality and or usability was not affected.

- e. Trip Blanks

- i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes No N/A Comments:

PFAS are not volatile compounds; therefore, a trip blank is not required.

- ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes No N/A Comments:

N/A a trip blank was not required.

- iii. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

See above.

- iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

Not applicable, see above.

320-54940-1

Laboratory Report Date:

11/5/2019

CS Site Name:

Fairbanks Fire Training Pit

v. Data quality or usability affected?

Comments:

Data quality and/or usability was not affected; see above.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No N/A Comments:

ii. Submitted blind to lab?

Yes No N/A Comments:

Field duplicate pairs *SB-1901-15* and *SB-2001-15*; and *SB-1902-15* and *SB-2902-15* were submitted blindly to the lab.

iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water, 50% soil)

$$RPD (\%) = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2) / 2)} \times 100$$

Where R_1 = Sample Concentration
 R_2 = Field Duplicate Concentration

Yes No N/A Comments:

All RPD values were less than specified project objectives where calculable.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Data quality and/or usability was not affected; see above.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes No N/A Comments:

Equipment blank *EB-SB-1901-40* was submitted and analyzed with work order J54947-1 and is discussed below.

320-54940-1

Laboratory Report Date:

11/5/2019

CS Site Name:

Fairbanks Fire Training Pit

i. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

No results were detected above the LOQ in equipment blank sample *EB-SB-1901-40*, however, PFHxS was detected below the LOQ. The detection of PFHxS is most likely caused by method blank contamination as evidenced by the similar concentration of PFHxS detected in the method blank sample. No qualification necessary. See the LDRC for work order J54947 for complete discussion of the equipment blank detection's impact on the associated project samples.

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

Not applicable, see above.

iii. Data quality or usability affected?

Comments:

Data quality and/or usability were not affected; see above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes No N/A Comments:

See section 4b.

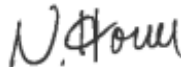
ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-54947-1
Client Project/Site: FAI PFAS
Revision: 1

For:
Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

Attn: Marcy Nadel



Authorized for release by:
12/11/2019 4:35:15 PM
Nathaniel Horner, Project Management Assistant I
nathaniel.horner@testamericainc.com

Designee for
David Alltucker, Project Manager I
(916)374-4383
david.alltucker@testamericainc.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:
www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



Table of Contents

Cover Page	1
Table of Contents	2
Definitions/Glossary	3
Case Narrative	4
Detection Summary	5
Client Sample Results	7
Isotope Dilution Summary	14
QC Sample Results	15
QC Association Summary	18
Lab Chronicle	19
Certification Summary	21
Method Summary	22
Sample Summary	23
Chain of Custody	24
Receipt Checklists	25

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54947-1

Qualifiers

LCMS

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
E	Result exceeded calibration range.
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54947-1

Job ID: 320-54947-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative 320-54947-1 Rev(1)

Revision 1

This report was revised on 12/11/2019 to update the method 537 analyte list.

Receipt

The samples were received on 10/3/2019 10:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 6.0° C.

LCMS

Method 537 (modified): Due to a shortage in the marketplace for 13C3-PFBS, the target analyte PFBS and/or Perfluoropentanesulfonic acid (PFPeS) could not be quantitated against 13C3-PFBS (its labeled variant) as listed in the SOP. PFBS and Perfluoropentanesulfonic acid (PFPeS) was quantitated versus 18O2-PFHxS instead.

Method 537 (modified): The laboratory control sample (LCS) for preparation batch 320-328702 and analytical batch 320-329120 recovered outside control limits for the following analytes: 11-Chloroheicosafuoro-3-oxaundecane-1-sulfonic acid. This analyte was biased high in the LCS and was not detected in the associated samples; therefore, the data have been reported.

Method 537 (modified): The "1" qualifier means the transition mass ratio for the indicated analyte(s) was outside of the established ratio limits. The qualitative identification of the analyte(s) has/have some degree of uncertainty. However, analyst judgement was used to positively identify the analyte(s). MW--1901-15 (320-54947-5) and MW--1901-115 (320-54947-6)

Method 537 (modified): The concentration of Perfluorohexanoic acid (PFHxA) and Perfluorohexanesulfonic acid (PFHxS) associated with the following samples exceeded the instrument calibration range: MW-1901-40 (320-54947-2), MW--1901-15 (320-54947-5) and MW--1901-115 (320-54947-6). These analytes have been qualified; however, the peak(s) did not saturate the instrument detector. Historical data indicate that for the isotope dilution method, dilution and re-analysis will not produce significantly different results from those reported above the calibration range.

Method 537 (modified): Results for sample FTP-PRE003 (320-54947-7) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits

Method 537 (modified): Due to high targets for Perfluorohexanesulfonic acid (PFHxS) and Perfluorooctanesulfonic acid (PFOS) in the original extract, the following sample required a 5000x dilution: FTP-PRE003 (320-54947-7). Internal standard and isotope dilution analyte solutions were reformed into the extract after dilution so quantitation could be performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-328702.

Method 3535: The following samples were observed to be a yellow color, contained sediment, and a thin layer of mud at the bottom of the container prior to extraction: MW-1901-40 (320-54947-2), MW--1901-15 (320-54947-5), MW--1901-115 (320-54947-6) and FTP-PRE003 (320-54947-7).

Method 3535: The following samples contain non-settleable particulate matter which clogged the solid-phase extraction column: MW--1901-15 (320-54947-5), MW--1901-115 (320-54947-6) and FTP-PRE003 (320-54947-7).

Method 3535: The following sample was observed to be a yellow color after final voluming: FTP-PRE003 (320-54947-7).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54947-1

Client Sample ID: MW-1901-40

Lab Sample ID: 320-54947-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	570	E	2.0	0.58	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	59		2.0	0.25	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	72		2.0	0.85	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1000	E B	2.0	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	180		2.0	0.54	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	340		2.0	0.20	ng/L	1		537 (modified)	Total/NA

Client Sample ID: FB-MW-1901-40

Lab Sample ID: 320-54947-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.44	J B	1.9	0.16	ng/L	1		537 (modified)	Total/NA
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	1.8	J	3.9	1.4	ng/L	1		537 (modified)	Total/NA

Client Sample ID: EB-MW-1901-40

Lab Sample ID: 320-54947-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.64	J	1.9	0.55	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.91	J B	1.9	0.16	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW--1901-15

Lab Sample ID: 320-54947-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	740	E	1.9	0.56	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	86		1.9	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	120		1.9	0.82	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	12	I	1.9	0.26	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1700	E B	1.9	0.16	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	87	I	1.9	0.52	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	410	E	1.9	0.19	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW--1901-115

Lab Sample ID: 320-54947-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	750	E	1.9	0.56	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	84		1.9	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	120		1.9	0.82	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	12	I	1.9	0.26	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1700	E B	1.9	0.16	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	95	I	1.9	0.52	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	410	E	1.9	0.19	ng/L	1		537 (modified)	Total/NA

Client Sample ID: FTP-PRE003

Lab Sample ID: 320-54947-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	34000		190	55	ng/L	100		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	5000		190	24	ng/L	100		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	8800		190	80	ng/L	100		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	430		190	25	ng/L	100		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	160	J	190	29	ng/L	100		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	13000		190	19	ng/L	100		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	100000	B	9400	800	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54947-1

Client Sample ID: FTP-PRE003 (Continued)

Lab Sample ID: 320-54947-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS) - DL	900000		9400	2500	ng/L	1		537 (modified)	Total/NA

Client Sample ID: EB-SB-1901-40

Lab Sample ID: 320-54947-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.40	J B	1.9	0.16	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54947-1

Client Sample ID: MW-1901-40

Lab Sample ID: 320-54947-2

Date Collected: 09/27/19 16:19

Matrix: Water

Date Received: 10/03/19 10:45

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	570	E	2.0	0.58	ng/L		10/05/19 06:01	10/07/19 12:42	1
Perfluoroheptanoic acid (PFHpA)	59		2.0	0.25	ng/L		10/05/19 06:01	10/07/19 12:42	1
Perfluorooctanoic acid (PFOA)	72		2.0	0.85	ng/L		10/05/19 06:01	10/07/19 12:42	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		10/05/19 06:01	10/07/19 12:42	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		10/05/19 06:01	10/07/19 12:42	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		10/05/19 06:01	10/07/19 12:42	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		10/05/19 06:01	10/07/19 12:42	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		10/05/19 06:01	10/07/19 12:42	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.29	ng/L		10/05/19 06:01	10/07/19 12:42	1
Perfluorohexanesulfonic acid (PFHxS)	1000	E B	2.0	0.17	ng/L		10/05/19 06:01	10/07/19 12:42	1
Perfluorooctanesulfonic acid (PFOS)	180		2.0	0.54	ng/L		10/05/19 06:01	10/07/19 12:42	1
N-methylperfluorooctanesulfonamideacetic acid (NMeFOSAA)	ND		20	3.1	ng/L		10/05/19 06:01	10/07/19 12:42	1
N-ethylperfluorooctanesulfonamideacetic acid (NEtFOSAA)	ND		20	1.9	ng/L		10/05/19 06:01	10/07/19 12:42	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		10/05/19 06:01	10/07/19 12:42	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.18	ng/L		10/05/19 06:01	10/07/19 12:42	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		10/05/19 06:01	10/07/19 12:42	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		10/05/19 06:01	10/07/19 12:42	1
Perfluorobutanesulfonic acid (PFBS)	340		2.0	0.20	ng/L		10/05/19 06:01	10/07/19 12:42	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	95		25 - 150	10/05/19 06:01	10/07/19 12:42	1
13C4 PFHpA	93		25 - 150	10/05/19 06:01	10/07/19 12:42	1
13C4 PFOA	100		25 - 150	10/05/19 06:01	10/07/19 12:42	1
13C5 PFNA	99		25 - 150	10/05/19 06:01	10/07/19 12:42	1
13C2 PFDA	98		25 - 150	10/05/19 06:01	10/07/19 12:42	1
13C2 PFUnA	100		25 - 150	10/05/19 06:01	10/07/19 12:42	1
13C2 PFDoA	99		25 - 150	10/05/19 06:01	10/07/19 12:42	1
13C2 PFTeDA	100		25 - 150	10/05/19 06:01	10/07/19 12:42	1
18O2 PFHxS	98		25 - 150	10/05/19 06:01	10/07/19 12:42	1
13C4 PFOS	97		25 - 150	10/05/19 06:01	10/07/19 12:42	1
d3-NMeFOSAA	96		25 - 150	10/05/19 06:01	10/07/19 12:42	1
d5-NEtFOSAA	104		25 - 150	10/05/19 06:01	10/07/19 12:42	1
13C3 HFPO-DA	93		25 - 150	10/05/19 06:01	10/07/19 12:42	1

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54947-1

Client Sample ID: FB-MW-1901-40

Lab Sample ID: 320-54947-3

Date Collected: 09/27/19 16:21

Matrix: Water

Date Received: 10/03/19 10:45

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.56	ng/L		10/05/19 06:01	10/07/19 12:52	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		10/05/19 06:01	10/07/19 12:52	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.82	ng/L		10/05/19 06:01	10/07/19 12:52	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		10/05/19 06:01	10/07/19 12:52	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		10/05/19 06:01	10/07/19 12:52	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		10/05/19 06:01	10/07/19 12:52	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		10/05/19 06:01	10/07/19 12:52	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.3	ng/L		10/05/19 06:01	10/07/19 12:52	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.28	ng/L		10/05/19 06:01	10/07/19 12:52	1
Perfluorohexanesulfonic acid (PFHxS)	0.44	J B	1.9	0.16	ng/L		10/05/19 06:01	10/07/19 12:52	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.52	ng/L		10/05/19 06:01	10/07/19 12:52	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		19	3.0	ng/L		10/05/19 06:01	10/07/19 12:52	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		19	1.8	ng/L		10/05/19 06:01	10/07/19 12:52	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		10/05/19 06:01	10/07/19 12:52	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.17	ng/L		10/05/19 06:01	10/07/19 12:52	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	1.8	J	3.9	1.4	ng/L		10/05/19 06:01	10/07/19 12:52	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		10/05/19 06:01	10/07/19 12:52	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		10/05/19 06:01	10/07/19 12:52	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PFHxA	101		25 - 150				10/05/19 06:01	10/07/19 12:52	1
13C4 PFHpA	104		25 - 150				10/05/19 06:01	10/07/19 12:52	1
13C4 PFOA	103		25 - 150				10/05/19 06:01	10/07/19 12:52	1
13C5 PFNA	103		25 - 150				10/05/19 06:01	10/07/19 12:52	1
13C2 PFDA	102		25 - 150				10/05/19 06:01	10/07/19 12:52	1
13C2 PFUnA	99		25 - 150				10/05/19 06:01	10/07/19 12:52	1
13C2 PFDoA	103		25 - 150				10/05/19 06:01	10/07/19 12:52	1
13C2 PFTeDA	105		25 - 150				10/05/19 06:01	10/07/19 12:52	1
18O2 PFHxS	112		25 - 150				10/05/19 06:01	10/07/19 12:52	1
13C4 PFOS	99		25 - 150				10/05/19 06:01	10/07/19 12:52	1
d3-NMeFOSAA	100		25 - 150				10/05/19 06:01	10/07/19 12:52	1
d5-NEtFOSAA	102		25 - 150				10/05/19 06:01	10/07/19 12:52	1
13C3 HFPO-DA	110		25 - 150				10/05/19 06:01	10/07/19 12:52	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54947-1

Client Sample ID: EB-MW-1901-40

Lab Sample ID: 320-54947-4

Date Collected: 09/27/19 16:35

Matrix: Water

Date Received: 10/03/19 10:45

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	0.64	J	1.9	0.55	ng/L		10/05/19 06:01	10/07/19 13:01	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		10/05/19 06:01	10/07/19 13:01	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.80	ng/L		10/05/19 06:01	10/07/19 13:01	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		10/05/19 06:01	10/07/19 13:01	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		10/05/19 06:01	10/07/19 13:01	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		10/05/19 06:01	10/07/19 13:01	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		10/05/19 06:01	10/07/19 13:01	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		10/05/19 06:01	10/07/19 13:01	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.27	ng/L		10/05/19 06:01	10/07/19 13:01	1
Perfluorohexanesulfonic acid (PFHxS)	0.91	J B	1.9	0.16	ng/L		10/05/19 06:01	10/07/19 13:01	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		10/05/19 06:01	10/07/19 13:01	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		19	2.9	ng/L		10/05/19 06:01	10/07/19 13:01	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		19	1.8	ng/L		10/05/19 06:01	10/07/19 13:01	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		10/05/19 06:01	10/07/19 13:01	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.17	ng/L		10/05/19 06:01	10/07/19 13:01	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		10/05/19 06:01	10/07/19 13:01	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		10/05/19 06:01	10/07/19 13:01	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		10/05/19 06:01	10/07/19 13:01	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>13C2 PFHxA</i>	109		25 - 150				10/05/19 06:01	10/07/19 13:01	1
<i>13C4 PFHpA</i>	111		25 - 150				10/05/19 06:01	10/07/19 13:01	1
<i>13C4 PFOA</i>	108		25 - 150				10/05/19 06:01	10/07/19 13:01	1
<i>13C5 PFNA</i>	109		25 - 150				10/05/19 06:01	10/07/19 13:01	1
<i>13C2 PFDA</i>	107		25 - 150				10/05/19 06:01	10/07/19 13:01	1
<i>13C2 PFUnA</i>	112		25 - 150				10/05/19 06:01	10/07/19 13:01	1
<i>13C2 PFDoA</i>	116		25 - 150				10/05/19 06:01	10/07/19 13:01	1
<i>13C2 PFTeDA</i>	117		25 - 150				10/05/19 06:01	10/07/19 13:01	1
<i>18O2 PFHxS</i>	119		25 - 150				10/05/19 06:01	10/07/19 13:01	1
<i>13C4 PFOS</i>	109		25 - 150				10/05/19 06:01	10/07/19 13:01	1
<i>d3-NMeFOSAA</i>	95		25 - 150				10/05/19 06:01	10/07/19 13:01	1
<i>d5-NEtFOSAA</i>	125		25 - 150				10/05/19 06:01	10/07/19 13:01	1
<i>13C3 HFPO-DA</i>	114		25 - 150				10/05/19 06:01	10/07/19 13:01	1

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54947-1

Client Sample ID: MW--1901-15

Lab Sample ID: 320-54947-5

Date Collected: 09/27/19 15:46

Matrix: Water

Date Received: 10/03/19 10:45

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	740	E	1.9	0.56	ng/L		10/05/19 06:01	10/07/19 13:11	1
Perfluoroheptanoic acid (PFHpA)	86		1.9	0.24	ng/L		10/05/19 06:01	10/07/19 13:11	1
Perfluorooctanoic acid (PFOA)	120		1.9	0.82	ng/L		10/05/19 06:01	10/07/19 13:11	1
Perfluorononanoic acid (PFNA)	12	I	1.9	0.26	ng/L		10/05/19 06:01	10/07/19 13:11	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		10/05/19 06:01	10/07/19 13:11	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		10/05/19 06:01	10/07/19 13:11	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		10/05/19 06:01	10/07/19 13:11	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.3	ng/L		10/05/19 06:01	10/07/19 13:11	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.28	ng/L		10/05/19 06:01	10/07/19 13:11	1
Perfluorohexanesulfonic acid (PFHxS)	1700	E B	1.9	0.16	ng/L		10/05/19 06:01	10/07/19 13:11	1
Perfluorooctanesulfonic acid (PFOS)	87	I	1.9	0.52	ng/L		10/05/19 06:01	10/07/19 13:11	1
N-methylperfluorooctanesulfonamideacetic acid (NMeFOSAA)	ND		19	3.0	ng/L		10/05/19 06:01	10/07/19 13:11	1
N-ethylperfluorooctanesulfonamideacetic acid (NEtFOSAA)	ND		19	1.8	ng/L		10/05/19 06:01	10/07/19 13:11	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		10/05/19 06:01	10/07/19 13:11	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.17	ng/L		10/05/19 06:01	10/07/19 13:11	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.4	ng/L		10/05/19 06:01	10/07/19 13:11	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		10/05/19 06:01	10/07/19 13:11	1
Perfluorobutanesulfonic acid (PFBS)	410	E	1.9	0.19	ng/L		10/05/19 06:01	10/07/19 13:11	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	99		25 - 150	10/05/19 06:01	10/07/19 13:11	1
13C4 PFHpA	94		25 - 150	10/05/19 06:01	10/07/19 13:11	1
13C4 PFOA	105		25 - 150	10/05/19 06:01	10/07/19 13:11	1
13C5 PFNA	103		25 - 150	10/05/19 06:01	10/07/19 13:11	1
13C2 PFDA	98		25 - 150	10/05/19 06:01	10/07/19 13:11	1
13C2 PFUnA	100		25 - 150	10/05/19 06:01	10/07/19 13:11	1
13C2 PFDoA	96		25 - 150	10/05/19 06:01	10/07/19 13:11	1
13C2 PFTeDA	87		25 - 150	10/05/19 06:01	10/07/19 13:11	1
18O2 PFHxS	102		25 - 150	10/05/19 06:01	10/07/19 13:11	1
13C4 PFOS	99		25 - 150	10/05/19 06:01	10/07/19 13:11	1
d3-NMeFOSAA	91		25 - 150	10/05/19 06:01	10/07/19 13:11	1
d5-NEtFOSAA	96		25 - 150	10/05/19 06:01	10/07/19 13:11	1
13C3 HFPO-DA	103		25 - 150	10/05/19 06:01	10/07/19 13:11	1

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54947-1

Client Sample ID: MW--1901-115

Lab Sample ID: 320-54947-6

Date Collected: 09/27/19 15:36

Matrix: Water

Date Received: 10/03/19 10:45

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	750	E	1.9	0.56	ng/L		10/05/19 06:01	10/07/19 13:39	1
Perfluoroheptanoic acid (PFHpA)	84		1.9	0.24	ng/L		10/05/19 06:01	10/07/19 13:39	1
Perfluorooctanoic acid (PFOA)	120		1.9	0.82	ng/L		10/05/19 06:01	10/07/19 13:39	1
Perfluorononanoic acid (PFNA)	12	I	1.9	0.26	ng/L		10/05/19 06:01	10/07/19 13:39	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		10/05/19 06:01	10/07/19 13:39	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		10/05/19 06:01	10/07/19 13:39	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		10/05/19 06:01	10/07/19 13:39	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.3	ng/L		10/05/19 06:01	10/07/19 13:39	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.28	ng/L		10/05/19 06:01	10/07/19 13:39	1
Perfluorohexanesulfonic acid (PFHxS)	1700	E B	1.9	0.16	ng/L		10/05/19 06:01	10/07/19 13:39	1
Perfluorooctanesulfonic acid (PFOS)	95	I	1.9	0.52	ng/L		10/05/19 06:01	10/07/19 13:39	1
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	ND		19	3.0	ng/L		10/05/19 06:01	10/07/19 13:39	1
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	ND		19	1.8	ng/L		10/05/19 06:01	10/07/19 13:39	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		10/05/19 06:01	10/07/19 13:39	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.17	ng/L		10/05/19 06:01	10/07/19 13:39	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.4	ng/L		10/05/19 06:01	10/07/19 13:39	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		10/05/19 06:01	10/07/19 13:39	1
Perfluorobutanesulfonic acid (PFBS)	410	E	1.9	0.19	ng/L		10/05/19 06:01	10/07/19 13:39	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	93		25 - 150	10/05/19 06:01	10/07/19 13:39	1
13C4 PFHpA	90		25 - 150	10/05/19 06:01	10/07/19 13:39	1
13C4 PFOA	103		25 - 150	10/05/19 06:01	10/07/19 13:39	1
13C5 PFNA	101		25 - 150	10/05/19 06:01	10/07/19 13:39	1
13C2 PFDA	98		25 - 150	10/05/19 06:01	10/07/19 13:39	1
13C2 PFUnA	100		25 - 150	10/05/19 06:01	10/07/19 13:39	1
13C2 PFDoA	98		25 - 150	10/05/19 06:01	10/07/19 13:39	1
13C2 PFTeDA	86		25 - 150	10/05/19 06:01	10/07/19 13:39	1
18O2 PFHxS	97		25 - 150	10/05/19 06:01	10/07/19 13:39	1
13C4 PFOS	96		25 - 150	10/05/19 06:01	10/07/19 13:39	1
d3-NMeFOSAA	87		25 - 150	10/05/19 06:01	10/07/19 13:39	1
d5-NEtFOSAA	94		25 - 150	10/05/19 06:01	10/07/19 13:39	1
13C3 HFPO-DA	109		25 - 150	10/05/19 06:01	10/07/19 13:39	1

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54947-1

Client Sample ID: FTP-PRE003

Lab Sample ID: 320-54947-7

Date Collected: 09/30/19 17:40

Matrix: Water

Date Received: 10/03/19 10:45

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	34000		190	55	ng/L		10/05/19 06:01	11/06/19 04:28	100
Perfluoroheptanoic acid (PFHpA)	5000		190	24	ng/L		10/05/19 06:01	11/06/19 04:28	100
Perfluorooctanoic acid (PFOA)	8800		190	80	ng/L		10/05/19 06:01	11/06/19 04:28	100
Perfluorononanoic acid (PFNA)	430		190	25	ng/L		10/05/19 06:01	11/06/19 04:28	100
Perfluorodecanoic acid (PFDA)	160	J	190	29	ng/L		10/05/19 06:01	11/06/19 04:28	100
Perfluoroundecanoic acid (PFUnA)	ND		190	100	ng/L		10/05/19 06:01	11/06/19 04:28	100
Perfluorododecanoic acid (PFDoA)	ND		190	52	ng/L		10/05/19 06:01	11/06/19 04:28	100
Perfluorotridecanoic acid (PFTriA)	ND		190	120	ng/L		10/05/19 06:01	11/06/19 04:28	100
Perfluorotetradecanoic acid (PFTeA)	ND		190	27	ng/L		10/05/19 06:01	11/06/19 04:28	100
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1900	290	ng/L		10/05/19 06:01	11/06/19 04:28	100
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1900	180	ng/L		10/05/19 06:01	11/06/19 04:28	100
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		190	23	ng/L		10/05/19 06:01	11/06/19 04:28	100
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		190	17	ng/L		10/05/19 06:01	11/06/19 04:28	100
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		380	140	ng/L		10/05/19 06:01	11/06/19 04:28	100
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid	ND		190	30	ng/L		10/05/19 06:01	11/06/19 04:28	100
Perfluorobutanesulfonic acid (PFBS)	13000		190	19	ng/L		10/05/19 06:01	11/06/19 04:28	100

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	83		25 - 150	10/05/19 06:01	11/06/19 04:28	100
13C4 PFHpA	56		25 - 150	10/05/19 06:01	11/06/19 04:28	100
13C4 PFOA	65		25 - 150	10/05/19 06:01	11/06/19 04:28	100
13C5 PFNA	45		25 - 150	10/05/19 06:01	11/06/19 04:28	100
13C2 PFDA	61		25 - 150	10/05/19 06:01	11/06/19 04:28	100
13C2 PFUnA	52		25 - 150	10/05/19 06:01	11/06/19 04:28	100
13C2 PFDoA	38		25 - 150	10/05/19 06:01	11/06/19 04:28	100
13C2 PFTeDA	32		25 - 150	10/05/19 06:01	11/06/19 04:28	100
18O2 PFHxS	106		25 - 150	10/05/19 06:01	11/06/19 04:28	100
13C4 PFOS	44		25 - 150	10/05/19 06:01	11/06/19 04:28	100
d3-NMeFOSAA	69		25 - 150	10/05/19 06:01	11/06/19 04:28	100
d5-NEtFOSAA	65		25 - 150	10/05/19 06:01	11/06/19 04:28	100
13C3 HFPO-DA	87		25 - 150	10/05/19 06:01	11/06/19 04:28	100

Method: 537 (modified) - Fluorinated Alkyl Substances - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanesulfonic acid (PFHxS)	100000	B	9400	800	ng/L		10/05/19 06:01	11/07/19 12:10	1
Perfluorooctanesulfonic acid (PFOS)	90000		9400	2500	ng/L		10/05/19 06:01	11/07/19 12:10	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	98		25 - 150	10/05/19 06:01	11/07/19 12:10	1
13C4 PFOS	92		25 - 150	10/05/19 06:01	11/07/19 12:10	1

Eurolins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54947-1

Client Sample ID: EB-SB-1901-40

Lab Sample ID: 320-54947-8

Date Collected: 09/22/19 10:33

Matrix: Water

Date Received: 10/03/19 10:45

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		10/05/19 06:01	11/06/19 04:18	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		10/05/19 06:01	11/06/19 04:18	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.80	ng/L		10/05/19 06:01	11/06/19 04:18	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		10/05/19 06:01	11/06/19 04:18	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		10/05/19 06:01	11/06/19 04:18	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		10/05/19 06:01	11/06/19 04:18	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		10/05/19 06:01	11/06/19 04:18	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		10/05/19 06:01	11/06/19 04:18	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.27	ng/L		10/05/19 06:01	11/06/19 04:18	1
Perfluorohexanesulfonic acid (PFHxS)	0.40	J B	1.9	0.16	ng/L		10/05/19 06:01	11/06/19 04:18	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		10/05/19 06:01	11/06/19 04:18	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		19	2.9	ng/L		10/05/19 06:01	11/06/19 04:18	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		19	1.8	ng/L		10/05/19 06:01	11/06/19 04:18	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		10/05/19 06:01	11/06/19 04:18	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.17	ng/L		10/05/19 06:01	11/06/19 04:18	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		10/05/19 06:01	11/06/19 04:18	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		10/05/19 06:01	11/06/19 04:18	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		10/05/19 06:01	11/06/19 04:18	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PFHxA	100		25 - 150				10/05/19 06:01	11/06/19 04:18	1
13C4 PFHpA	106		25 - 150				10/05/19 06:01	11/06/19 04:18	1
13C4 PFOA	112		25 - 150				10/05/19 06:01	11/06/19 04:18	1
13C5 PFNA	108		25 - 150				10/05/19 06:01	11/06/19 04:18	1
13C2 PFDA	103		25 - 150				10/05/19 06:01	11/06/19 04:18	1
13C2 PFUnA	102		25 - 150				10/05/19 06:01	11/06/19 04:18	1
13C2 PFDoA	100		25 - 150				10/05/19 06:01	11/06/19 04:18	1
13C2 PFTeDA	102		25 - 150				10/05/19 06:01	11/06/19 04:18	1
18O2 PFHxS	122		25 - 150				10/05/19 06:01	11/06/19 04:18	1
13C4 PFOS	110		25 - 150				10/05/19 06:01	11/06/19 04:18	1
d3-NMeFOSAA	90		25 - 150				10/05/19 06:01	11/06/19 04:18	1
d5-NEtFOSAA	91		25 - 150				10/05/19 06:01	11/06/19 04:18	1
13C3 HFPO-DA	115		25 - 150				10/05/19 06:01	11/06/19 04:18	1

Eurofins TestAmerica, Sacramento

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54947-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxA (25-150)	PFHpA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)	PFDaA (25-150)	PFTDA (25-150)
320-54947-2	MW-1901-40	95	93	100	99	98	100	99	100
320-54947-3	FB-MW-1901-40	101	104	103	103	102	99	103	105
320-54947-4	EB-MW-1901-40	109	111	108	109	107	112	116	117
320-54947-5	MW--1901-15	99	94	105	103	98	100	96	87
320-54947-6	MW--1901-115	93	90	103	101	98	100	98	86
320-54947-7	FTP-PRE003	83	56	65	45	61	52	38	32
320-54947-7 - DL	FTP-PRE003								
320-54947-8	EB-SB-1901-40	100	106	112	108	103	102	100	102
LCS 320-328702/2-A	Lab Control Sample	101	104	106	104	115	116	119	119
LCS 320-328702/3-A	Lab Control Sample Dup	100	104	106	102	103	105	108	110
MB 320-328702/1-A	Method Blank	101	107	107	105	106	109	114	117

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxS (25-150)	PFOS (25-150)	d3-NMeFOS (25-150)	d5-NEtFOS (25-150)	HFPODA (25-150)
320-54947-2	MW-1901-40	98	97	96	104	93
320-54947-3	FB-MW-1901-40	112	99	100	102	110
320-54947-4	EB-MW-1901-40	119	109	95	125	114
320-54947-5	MW--1901-15	102	99	91	96	103
320-54947-6	MW--1901-115	97	96	87	94	109
320-54947-7	FTP-PRE003	106	44	69	65	87
320-54947-7 - DL	FTP-PRE003	98	92			
320-54947-8	EB-SB-1901-40	122	110	90	91	115
LCS 320-328702/2-A	Lab Control Sample	112	101	105	109	97
LCS 320-328702/3-A	Lab Control Sample Dup	107	100	98	92	100
MB 320-328702/1-A	Method Blank	118	102	101	102	98

Surrogate Legend

PFHxA = 13C2 PFHxA
 PFHpA = 13C4 PFHpA
 PFOA = 13C4 PFOA
 PFNA = 13C5 PFNA
 PFDA = 13C2 PFDA
 PFUnA = 13C2 PFUnA
 PFDaA = 13C2 PFDaA
 PFTDA = 13C2 PFTeDA
 PFHxS = 18O2 PFHxS
 PFOS = 13C4 PFOS
 d3-NMeFOSAA = d3-NMeFOSAA
 d5-NEtFOSAA = d5-NEtFOSAA
 HFPODA = 13C3 HFPO-DA

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54947-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-328702/1-A
Matrix: Water
Analysis Batch: 333143

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 328702

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		10/05/19 06:01	10/23/19 21:03	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		10/05/19 06:01	10/23/19 21:03	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		10/05/19 06:01	10/23/19 21:03	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		10/05/19 06:01	10/23/19 21:03	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		10/05/19 06:01	10/23/19 21:03	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		10/05/19 06:01	10/23/19 21:03	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		10/05/19 06:01	10/23/19 21:03	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		10/05/19 06:01	10/23/19 21:03	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.29	ng/L		10/05/19 06:01	10/23/19 21:03	1
Perfluorohexanesulfonic acid (PFHxS)	0.317	J	2.0	0.17	ng/L		10/05/19 06:01	10/23/19 21:03	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		10/05/19 06:01	10/23/19 21:03	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		20	3.1	ng/L		10/05/19 06:01	10/23/19 21:03	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		20	1.9	ng/L		10/05/19 06:01	10/23/19 21:03	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		10/05/19 06:01	10/23/19 21:03	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.18	ng/L		10/05/19 06:01	10/23/19 21:03	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		10/05/19 06:01	10/23/19 21:03	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		10/05/19 06:01	10/23/19 21:03	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		10/05/19 06:01	10/23/19 21:03	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	101		25 - 150	10/05/19 06:01	10/23/19 21:03	1
13C4 PFHpA	107		25 - 150	10/05/19 06:01	10/23/19 21:03	1
13C4 PFOA	107		25 - 150	10/05/19 06:01	10/23/19 21:03	1
13C5 PFNA	105		25 - 150	10/05/19 06:01	10/23/19 21:03	1
13C2 PFDA	106		25 - 150	10/05/19 06:01	10/23/19 21:03	1
13C2 PFUnA	109		25 - 150	10/05/19 06:01	10/23/19 21:03	1
13C2 PFDoA	114		25 - 150	10/05/19 06:01	10/23/19 21:03	1
13C2 PFTeDA	117		25 - 150	10/05/19 06:01	10/23/19 21:03	1
18O2 PFHxS	118		25 - 150	10/05/19 06:01	10/23/19 21:03	1
13C4 PFOS	102		25 - 150	10/05/19 06:01	10/23/19 21:03	1
d3-NMeFOSAA	101		25 - 150	10/05/19 06:01	10/23/19 21:03	1
d5-NEtFOSAA	102		25 - 150	10/05/19 06:01	10/23/19 21:03	1
13C3 HFPO-DA	98		25 - 150	10/05/19 06:01	10/23/19 21:03	1

Lab Sample ID: LCS 320-328702/2-A
Matrix: Water
Analysis Batch: 333143

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 328702

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorohexanoic acid (PFHxA)	40.0	41.9		ng/L		105	66 - 126
Perfluoroheptanoic acid (PFHpA)	40.0	42.3		ng/L		106	66 - 126
Perfluorooctanoic acid (PFOA)	40.0	41.0		ng/L		102	64 - 124
Perfluorononanoic acid (PFNA)	40.0	42.6		ng/L		107	68 - 128
Perfluorodecanoic acid (PFDA)	40.0	39.8		ng/L		99	69 - 129

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54947-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-328702/2-A
Matrix: Water
Analysis Batch: 333143

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 328702

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoroundecanoic acid (PFUnA)	40.0	40.1		ng/L		100	60 - 120
Perfluorododecanoic acid (PFDoA)	40.0	41.8		ng/L		104	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	41.1		ng/L		103	72 - 132
Perfluorotetradecanoic acid (PFTeA)	40.0	40.6		ng/L		102	68 - 128
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.2		ng/L		94	63 - 123
Perfluorooctanesulfonic acid (PFOS)	37.1	37.0		ng/L		100	67 - 127
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	44.8		ng/L		112	67 - 127
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	41.1		ng/L		103	65 - 125
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	40.6		ng/L		109	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	45.1		ng/L		120	70 - 130
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	44.5		ng/L		111	70 - 130
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.7	39.0		ng/L		104	70 - 130
Perfluorobutanesulfonic acid (PFBS)	35.4	36.2		ng/L		103	73 - 133

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	101		25 - 150
13C4 PFHpA	104		25 - 150
13C4 PFOA	106		25 - 150
13C5 PFNA	104		25 - 150
13C2 PFDA	115		25 - 150
13C2 PFUnA	116		25 - 150
13C2 PFDoA	119		25 - 150
13C2 PFTeDA	119		25 - 150
18O2 PFHxS	112		25 - 150
13C4 PFOS	101		25 - 150
d3-NMeFOSAA	105		25 - 150
d5-NEtFOSAA	109		25 - 150
13C3 HFPO-DA	97		25 - 150

Lab Sample ID: LCSD 320-328702/3-A
Matrix: Water
Analysis Batch: 333143

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 328702

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	42.9		ng/L		107	66 - 126	2	30
Perfluoroheptanoic acid (PFHpA)	40.0	40.3		ng/L		101	66 - 126	5	30
Perfluorooctanoic acid (PFOA)	40.0	39.1		ng/L		98	64 - 124	5	30
Perfluorononanoic acid (PFNA)	40.0	43.0		ng/L		108	68 - 128	1	30
Perfluorodecanoic acid (PFDA)	40.0	40.8		ng/L		102	69 - 129	2	30

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
 Project/Site: FAI PFAS

Job ID: 320-54947-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-328702/3-A
Matrix: Water
Analysis Batch: 333143

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 328702

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoroundecanoic acid (PFUnA)	40.0	38.5		ng/L		96	60 - 120	4	30
Perfluorododecanoic acid (PFDoA)	40.0	41.5		ng/L		104	71 - 131	1	30
Perfluorotridecanoic acid (PFTriA)	40.0	40.6		ng/L		101	72 - 132	1	30
Perfluorotetradecanoic acid (PFTeA)	40.0	38.4		ng/L		96	68 - 128	6	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.9		ng/L		96	63 - 123	2	30
Perfluorooctanesulfonic acid (PFOS)	37.1	36.0		ng/L		97	67 - 127	3	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	43.7		ng/L		109	67 - 127	2	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	43.2		ng/L		108	65 - 125	5	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	38.4		ng/L		103	70 - 130	5	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	42.8		ng/L		113	70 - 130	5	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	41.7		ng/L		104	70 - 130	6	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	33.9		ng/L		90	70 - 130	14	30
Perfluorobutanesulfonic acid (PFBS)	35.4	36.9		ng/L		104	73 - 133	2	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	100		25 - 150
13C4 PFHpA	104		25 - 150
13C4 PFOA	106		25 - 150
13C5 PFNA	102		25 - 150
13C2 PFDA	103		25 - 150
13C2 PFUnA	105		25 - 150
13C2 PFDoA	108		25 - 150
13C2 PFTeDA	110		25 - 150
18O2 PFHxS	107		25 - 150
13C4 PFOS	100		25 - 150
d3-NMeFOSAA	98		25 - 150
d5-NEtFOSAA	92		25 - 150
13C3 HFPO-DA	100		25 - 150

QC Association Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54947-1

LCMS

Prep Batch: 328702

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-54947-2	MW-1901-40	Total/NA	Water	3535	
320-54947-3	FB-MW-1901-40	Total/NA	Water	3535	
320-54947-4	EB-MW-1901-40	Total/NA	Water	3535	
320-54947-5	MW--1901-15	Total/NA	Water	3535	
320-54947-6	MW--1901-115	Total/NA	Water	3535	
320-54947-7 - DL	FTP-PRE003	Total/NA	Water	3535	
320-54947-7	FTP-PRE003	Total/NA	Water	3535	
320-54947-8	EB-SB-1901-40	Total/NA	Water	3535	
MB 320-328702/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-328702/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-328702/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 329120

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-54947-2	MW-1901-40	Total/NA	Water	537 (modified)	328702
320-54947-3	FB-MW-1901-40	Total/NA	Water	537 (modified)	328702
320-54947-4	EB-MW-1901-40	Total/NA	Water	537 (modified)	328702
320-54947-5	MW--1901-15	Total/NA	Water	537 (modified)	328702
320-54947-6	MW--1901-115	Total/NA	Water	537 (modified)	328702

Analysis Batch: 333143

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-328702/1-A	Method Blank	Total/NA	Water	537 (modified)	328702
LCS 320-328702/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	328702
LCSD 320-328702/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	328702

Analysis Batch: 336327

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-54947-7	FTP-PRE003	Total/NA	Water	537 (modified)	328702
320-54947-8	EB-SB-1901-40	Total/NA	Water	537 (modified)	328702

Cleanup Batch: 336576

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-54947-7 - DL	FTP-PRE003	Total/NA	Water	Dilution	328702

Analysis Batch: 336677

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-54947-7 - DL	FTP-PRE003	Total/NA	Water	537 (modified)	336576

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54947-1

Client Sample ID: MW-1901-40

Lab Sample ID: 320-54947-2

Date Collected: 09/27/19 16:19

Matrix: Water

Date Received: 10/03/19 10:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			251.1 mL	10.00 mL	328702	10/05/19 06:01	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1			329120	10/07/19 12:42	RS1	TAL SAC

Client Sample ID: FB-MW-1901-40

Lab Sample ID: 320-54947-3

Date Collected: 09/27/19 16:21

Matrix: Water

Date Received: 10/03/19 10:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			259 mL	10.00 mL	328702	10/05/19 06:01	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1			329120	10/07/19 12:52	RS1	TAL SAC

Client Sample ID: EB-MW-1901-40

Lab Sample ID: 320-54947-4

Date Collected: 09/27/19 16:35

Matrix: Water

Date Received: 10/03/19 10:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			264.5 mL	10.00 mL	328702	10/05/19 06:01	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1			329120	10/07/19 13:01	RS1	TAL SAC

Client Sample ID: MW--1901-15

Lab Sample ID: 320-54947-5

Date Collected: 09/27/19 15:46

Matrix: Water

Date Received: 10/03/19 10:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			259.4 mL	10.00 mL	328702	10/05/19 06:01	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1			329120	10/07/19 13:11	RS1	TAL SAC

Client Sample ID: MW--1901-115

Lab Sample ID: 320-54947-6

Date Collected: 09/27/19 15:36

Matrix: Water

Date Received: 10/03/19 10:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			259.4 mL	10.00 mL	328702	10/05/19 06:01	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1			329120	10/07/19 13:39	RS1	TAL SAC

Client Sample ID: FTP-PRE003

Lab Sample ID: 320-54947-7

Date Collected: 09/30/19 17:40

Matrix: Water

Date Received: 10/03/19 10:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			265.9 mL	10.00 mL	328702	10/05/19 06:01	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		100			336327	11/06/19 04:28	VPM	TAL SAC
Total/NA	Prep	3535	DL		265.9 mL	10.00 mL	328702	10/05/19 06:01	MYV	TAL SAC
Total/NA	Cleanup	Dilution	DL		0.3 uL	1500 uL	336576	11/06/19 18:36	VPM	TAL SAC
Total/NA	Analysis	537 (modified)	DL	1			336677	11/07/19 12:10	D1R	TAL SAC

Eurofins TestAmerica, Sacramento

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54947-1

Client Sample ID: EB-SB-1901-40

Lab Sample ID: 320-54947-8

Date Collected: 09/22/19 10:33

Matrix: Water

Date Received: 10/03/19 10:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			265.3 mL	10.00 mL	328702	10/05/19 06:01	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1			336327	11/06/19 04:18	VPM	TAL SAC

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54947-1

Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
California	State	2897	01-31-20
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Georgia	State	4040	01-29-20
Hawaii	State	<cert No.>	01-29-20
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-20 *
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Michigan	State	9947	01-29-20
Michigan	State Program	9947	01-31-20
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19
Wyoming	State Program	8TMS-L	01-28-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins TestAmerica, Sacramento

Method Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54947-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
3535	Solid-Phase Extraction (SPE)	SW846	TAL SAC
Dilution	Dilution and Re-fortification of Standards	None	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

None = None

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI PFAS

Job ID: 320-54947-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-54947-2	MW-1901-40	Water	09/27/19 16:19	10/03/19 10:45	
320-54947-3	FB-MW-1901-40	Water	09/27/19 16:21	10/03/19 10:45	
320-54947-4	EB-MW-1901-40	Water	09/27/19 16:35	10/03/19 10:45	
320-54947-5	MW--1901-15	Water	09/27/19 15:46	10/03/19 10:45	
320-54947-6	MW--1901-115	Water	09/27/19 15:36	10/03/19 10:45	
320-54947-7	FTP-PRE003	Water	09/30/19 17:40	10/03/19 10:45	
320-54947-8	EB-SB-1901-40	Water	09/22/19 10:33	10/03/19 10:45	



CHAIN-OF-CUSTODY RECORD

Laboratory TestAmerica Page 1 of 1
 Attn: D. Filtricker

Analytical Methods (include preservative if used)

Total Number of Containers
 Remarks/Matrix Composition/Grab? Sample Containers
 ground-water
 ground-water
 field blank
 equipt blank
 ground-water
 ground-water
 surface water requires dilution
 equipt blank

Quote No: _____
 J-Flags: Yes No

Turn Around Time:
 Normal Rush
 Please Specify _____

Sample Identity	Lab No.	Time	Date Sampled	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
485886		1320	9/23/19	X	ground-water
MW-1901-40		1619	9/27/19	X	ground-water
FB-MW-1901-40		1621		X	field blank
EB-MW-1901-40		1635		X	equipt blank
MW-1901-15		1546		X	ground-water
MW-1901-115		1536		X	ground-water
FTP-PRE003		1740	9/30/19	X	surface water requires dilution
EB-SB-1901-40		1033	9/22/19	X	equipt blank



Project Information
 Number: 10Z519-010
 Name: FAE DFAS
 Contact: MW
 Ongoing Project? Yes No
 Sampler: ARW/RW/CWB/BM

Sample Receipt
 Total No. of Containers: _____
 COC Seals/intact? Y/N/NA _____
 Received Good Cond./Cold _____
 Temp: _____
 Delivery Method: goldstreak

Notes:
 Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
 Yellow - w/shipment - for consignee files
 Pink - Shannon & Wilson - job file

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: _____ Printed Name: <u>A. Maskers</u> Company: <u>Shannon Wilson, Inc.</u>	Signature: _____ Printed Name: _____ Company: _____	Signature: _____ Printed Name: _____ Company: _____
Time: <u>1422</u> Date: <u>10/21/19</u>	Time: _____ Date: _____	Time: _____ Date: _____
Received By: 1. Signature: _____ Printed Name: <u>Pauline Kintaudi</u> Company: <u>EIA-sac</u>	Received By: 2. Signature: _____ Printed Name: _____ Company: _____	Received By: 3. Signature: _____ Printed Name: _____ Company: _____
Time: <u>1045</u> Date: <u>10/23/19</u>	Time: _____ Date: _____	Time: _____ Date: _____

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-54947-1

Login Number: 54947

List Source: Eurofins TestAmerica, Sacramento

List Number: 1

Creator: Thompson, Sarah W

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	Seal present with no number.
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	ICE PACKS
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Laboratory Data Review Checklist

Completed By:

Brittany Blood

Title:

Environmental Professional I

Date:

11/25/2019

Consultant Firm:

Shannon and Wilson, Inc.

Laboratory Name:

Eurofins TestAmerica

Laboratory Report Number:

320-54947-1 Rev1

Laboratory Report Date:

12/11/19

CS Site Name:

FAI PFAS

ADEC File Number:

100.38.277

Hazard Identification Number:

26816

Laboratory Report Date:

12/11/19

CS Site Name:

FAI PFAS

Note: Any N/A or No box checked must have an explanation in the comments box.

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes No N/A Comments:

The ADEC certified the TestAmerica/Eurofins Laboratories West Sacramento, CA location for the analysis of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) on February 6, 2018. These compounds were included in the ADEC’s Contaminated Sites Laboratory Approval 17-020.

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes No N/A Comments:

Samples were not transferred to another laboratory.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes No N/A Comments:

b. Correct analyses requested?

Yes No N/A Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes No N/A Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes No N/A Comments:

Analysis of PFAS compounds does not require chemical preservation.

Laboratory Report Date:

12/11/19

CS Site Name:

FAI PFAS

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes No N/A Comments:

The sample receipt form notes that the samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes No N/A Comments:

There were not any discrepancies indicated on this work order.

e. Data quality or usability affected?

Comments:

Data quality and/or usability were not affected; see above.

4. Case Narrative

a. Present and understandable?

Yes No N/A Comments:

Laboratory Report Date:

12/11/19

CS Site Name:

FAI PFAS

b. Discrepancies, errors, or QC failures identified by the lab?

Yes No N/A Comments:

This report was revised on 12/11/2019 to update the method 537 analyte list.

Due to a shortage in the marketplace for 13C3-PFBS, the target analyte PFBS and/or Perfluoropentanesulfonic acid (PFPeS) could not be quantitated against 13C3-PFBS (its labeled variant) as listed in the SOP. PFBS and Perfluoropentanesulfonic acid (PFPeS) was quantitated versus 18O2-PFHxS instead.

The laboratory control sample (LCS) for preparation batch 320-328702 and analytical batch 320-329120 recovered outside control limits for the following analytes: 11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid. This analyte was biased high in the LCS and was not detected in the associated samples; therefore, the data have been reported. Although noted in the case narrative, this information is not included in the reported data.

The "I" qualifier means the transition mass ratio for the indicated analyte(s) was outside of the established ratio limits. The qualitative identification of the analyte(s) has/have some degree of uncertainty. However, analyst judgement was used to positively identify the analyte(s). *MW-1901-15 and MW-1901-115*. PFNA and PFOS in these samples have been qualified 'J'.

The concentration of Perfluorohexanoic acid (PFHxA) and Perfluorohexanesulfonic acid (PFHxS) associated with the following samples exceeded the instrument calibration range: *MW-1901-40, MW-1901-15 and MW-1901-115*. Additionally, PFBS associated with the following sample exceeded the instrument calibration range: *MW-1901-15 and MW-1901-115*. These analytes have been qualified; however, the peak(s) did not saturate the instrument detector. Historical data indicate that for the isotope dilution method, dilution and re-analysis will not produce significantly different results from those reported above the calibration range. Consequently, these analytes in the noted samples have been qualified 'J'.

Results for sample *FTP-PRE003* were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits

Due to high targets for Perfluorohexanesulfonic acid (PFHxS) and Perfluorooctanesulfonic acid (PFOS) in the original extract, the following sample required a 5000x dilution: *FTP-PRE003*.

Laboratory Report Date:

12/11/19

CS Site Name:

FAI PFAS

c. Were all corrective actions documented?

Yes No N/A Comments:

d. What is the effect on data quality/usability according to the case narrative?

Comments:

Data quality and/or usability were not affected; see above.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes No N/A Comments:

b. All applicable holding times met?

Yes No N/A Comments:

c. All soils reported on a dry weight basis?

Yes No N/A Comments:

Samples were water.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes No N/A Comments:

e. Data quality or usability affected?

Data quality and/or usability are not affected; see above.

Laboratory Report Date:

12/11/19

CS Site Name:

FAI PFAS

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes No N/A Comments:

No method blank results were above the LOQ, however, PFHxS was detected below the LOQ.

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

PFHxS was detected within five times the concentration in the method blank sample in samples *FB-MW-1901-40*, *EB-MW-1901-40* and *EB-SB-1901-40*. The PFHxS samples in these samples have been qualified UB due to method blank contamination. However, these samples are field QC samples and are not used for reporting.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

v. Data quality or usability affected?

Comments:

Data quality and/or usability was not affected.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes No N/A Comments:

Laboratory Report Date:

12/11/19

CS Site Name:

FAI PFAS

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

N/A; metals and/or inorganics were not analyzed as part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Not applicable, see above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

No flags or data qualification was required for LCS/LCSD.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability was not affected; see above.

Laboratory Report Date:

12/11/19

CS Site Name:

FAI PFAS

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Note: Leave blank if not required for project

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

There was insufficient sample volume to perform an MS/MD associated with this work order

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

N/A; metals and/or inorganics were not analyzed as part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

See above.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

See above.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Not applicable, see above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

Laboratory Report Date:

12/11/19

CS Site Name:

FAI PFAS

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Data quality and/or usability was not affected; see above.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes No N/A Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

Yes No N/A Comments:

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

There was not a failed IDA recovery.

iv. Data quality or usability affected?

Comments:

Data quality and/or usability was not affected; see above.

e. Trip Blanks

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes No N/A Comments:

PFAS are not volatile compounds; therefore, a trip blank is not required.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes No N/A Comments:

Trip blank was not required.

Laboratory Report Date:

12/11/19

CS Site Name:

FAI PFAS

iii. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

Trip blank was not required.

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

Not applicable, see above.

v. Data quality or usability affected?

Comments:

Data quality and/or usability was not affected; see above.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No N/A Comments:

ii. Submitted blind to lab?

Yes No N/A Comments:Field duplicate pair *MW-1901-115* and *MW-1901-15* were submitted blind to the lab.iii. Precision – All relative percent differences (RPD) less than specified project objectives?
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration R_2 = Field Duplicate ConcentrationYes No N/A Comments:

All RPD values were within the project objectives; where calculable.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Data quality and usability was not affected.

Laboratory Report Date:

12/11/19

CS Site Name:

FAI PFAS

- g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes No N/A Comments:

Yes. Equipment blanks *EB-MW-1901-40* and *EB-SB-1901-40* were submitted with this work order. *EB-SB-1901-40* was a rinsate blank that was associated with samples reported in work order J54940-1.

Additionally, field blank sample, *FB-MW-1901-40*, was included with this work order.

- i. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

No results were detected above the LOQ in equipment blank sample *EB-MW-1901-40*, however, PFHxS and PFHxA were detected below the LOQ. PFHxA results for associated samples were all greater than ten times the detection in the equipment blank sample. No qualification necessary. The detection of PFHxS is most likely caused by method blank contamination as evidenced by the similar concentration of PFHxS detected in the method blank sample. No qualification necessary.

No results were detected above the LOQ in equipment blank sample *EB-SB-1901-40*, however, PFHxS was detected below the LOQ. The detection of PFHxS is most likely caused by method blank contamination as evidenced by the similar concentration of PFHxS detected in the method blank sample. No qualification necessary. See the LDRC for work order J54940 for complete discussion of the equipment blank detection's impact on the associated project samples.

No results were detected above the LOQ in field blank sample *FB-MW-1901-40*, however, PFHxS and HFPO-DA were detected below the LOQ. HFPA-DA was not detected in any associated project sample. No qualification necessary. The detection of PFHxS is most likely caused by method blank contamination as evidenced by the similar concentration of PFHxS detected in the method blank sample. No qualification necessary.

- ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

Not applicable, see above.

- iii. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

320-54947-1 Rev1

Laboratory Report Date:

12/11/19

CS Site Name:

FAI PFAS

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes No N/A

Comments:

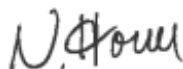
ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-55123-1
Client Project/Site: Fire Training Pit
Revision: 1

For:
Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

Attn: Marcy Nadel



Authorized for release by:
12/11/2019 4:36:12 PM
Nathaniel Horner, Project Management Assistant I
nathaniel.horner@testamericainc.com

Designee for
David Alltucker, Project Manager I
(916)374-4383
david.alltucker@testamericainc.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:
www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



Table of Contents

Cover Page	1
Table of Contents	2
Definitions/Glossary	3
Case Narrative	4
Detection Summary	6
Client Sample Results	8
Isotope Dilution Summary	16
QC Sample Results	17
QC Association Summary	21
Lab Chronicle	23
Certification Summary	26
Method Summary	27
Sample Summary	28
Chain of Custody	29
Receipt Checklists	30

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: Fire Training Pit

Job ID: 320-55123-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
*	Isotope Dilution analyte is outside acceptance limits.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
B	Compound was found in the blank and sample.
E	Result exceeded calibration range.
F1	MS and/or MSD Recovery is outside acceptance limits.
F2	MS/MSD RPD exceeds control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: Shannon & Wilson, Inc
Project/Site: Fire Training Pit

Job ID: 320-55123-1

Job ID: 320-55123-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative 320-55123-1 Rev(1)

Revision 1

This report was revised on 12/11/2019 to update the method 537 analyte list.

Receipt

The samples were received on 10/8/2019 11:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.6° C.

Receipt Exceptions

The Chain-of-Custody (COC) was incomplete as received and/or improperly completed. The COC was not relinquished by the shipper.

GC/MS Semi VOA

Method 537 (modified): The following samples were diluted due to the abundance of target analytes : FTP-001 (320-55123-3[MS]) and FTP-001 (320-55123-3[MSD]). Because of this dilution, the matrix spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

LCMS

Method 537 (modified): Due to a shortage in the marketplace for 13C3-PFBS, the target analyte Perfluorobutanesulfonic acid (PFBS) and/or Perfluoropentanesulfonic acid (PFPeS) could not be quantitated against 13C3-PFBS (its labeled variant) as listed in the SOP. PFBS and PFPeS were quantitated versus 18O2-PFHxS instead.

Method 537 (modified): The laboratory control sample (LCS) for preparation batch 320-330959 and analytical batch 320-334805 recovered outside control limits for the following analytes: Perfluoro(2-propoxypropanoic) acid (HFPO-DA) and Perfluorotridecanoic acid (PFTrIA). These analytes were biased high in the LCS and were not detected in the associated samples; FTP-004 (320-55123-1), FTP-005 (320-55123-2), FTP-001 (320-55123-3), FTP-003 (320-55123-4), FTP-002 (320-55123-5), SB-1901-150 (320-55123-7) and (LCS 320-330959/2-A) therefore, the data has been reported.

Method 537 (modified): The concentration of Perfluorooctanesulfonic acid (PFOS) associated with the following samples exceeded the instrument calibration range: FTP-005 (320-55123-2), FTP-001 (320-55123-3), FTP-001 (320-55123-3[MS]), FTP-001 (320-55123-3[MSD]), FTP-003 (320-55123-4) and FTP-002 (320-55123-5). This analyte has been qualified; however, the peak did not saturate the instrument detector. Historical data indicate that for the isotope dilution method, dilution and re-analysis will not produce significantly different results from those reported above the calibration range. Per client request, the samples were reported with over calibration results.

Method 537 (modified): The following samples were diluted due to the abundance of target analytes : FTP-001 (320-55123-3[MS]) and FTP-001 (320-55123-3[MSD]). Because of this dilution, the matrix spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.

Method 537 (modified): The matrix spike duplicate (MSD) recoveries for preparation batch 320-331247 and analytical batch 320-332278 were outside control limits for Perfluoroundecanoic acid (PFUnA). Non-homogeneity is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method 537 (modified): Due to the high concentrations of several analytes, the matrix spike / matrix spike duplicate (MS/MSD) for preparation batch 320-330959 and analytical batch 320-334805 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria.

Method 537 (modified): The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for preparation batch 320-330959 and analytical batch 320-334805 were outside control limits for Perfluoroundecanoic acid (PFUnA). Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

Case Narrative

Client: Shannon & Wilson, Inc
Project/Site: Fire Training Pit

Job ID: 320-55123-1

Job ID: 320-55123-1 (Continued)

Laboratory: Eurofins TestAmerica, Sacramento (Continued)

Method 537 (modified): Isotope Dilution Analyte (IDA) ¹³C₃ HFPO-DA recovery is above the method recommended limit for the following sample: FTP-001 (320-55123-3[MSD]). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method SHAKE: Extracts are a light reddish-yellow in color. FTP-004 (320-55123-1), FTP-005 (320-55123-2), FTP-001 (320-55123-3), FTP-001 (320-55123-3[MS]), FTP-001 (320-55123-3[MSD]), FTP-003 (320-55123-4) and FTP-002 (320-55123-5)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.



Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: Fire Training Pit

Job ID: 320-55123-1

Client Sample ID: FTP-004

Lab Sample ID: 320-55123-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	17	J	21	4.4	ug/Kg	100	☼	537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	24		21	3.2	ug/Kg	100	☼	537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1800	B	52	21	ug/Kg	100	☼	537 (modified)	Total/NA

Client Sample ID: FTP-005

Lab Sample ID: 320-55123-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	50		21	4.4	ug/Kg	100	☼	537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	5.6	J	21	3.1	ug/Kg	100	☼	537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	36		21	9.1	ug/Kg	100	☼	537 (modified)	Total/NA
Perfluoroundecanoic acid (PFUnA)	6.1	J	21	3.8	ug/Kg	100	☼	537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	160		21	3.3	ug/Kg	100	☼	537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	8400	E B	53	21	ug/Kg	100	☼	537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	6.2	J	21	2.6	ug/Kg	100	☼	537 (modified)	Total/NA

Client Sample ID: FTP-001

Lab Sample ID: 320-55123-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	47		21	4.4	ug/Kg	100	☼	537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.6	J F 1	21	3.0	ug/Kg	100	☼	537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	16	J	21	9.0	ug/Kg	100	☼	537 (modified)	Total/NA
Perfluoroundecanoic acid (PFUnA)	6.8	J F 2 F 1	21	3.8	ug/Kg	100	☼	537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	110	F 2	21	3.2	ug/Kg	100	☼	537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	6500	F 2 E B	52	21	ug/Kg	100	☼	537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	4.6	J F 1	21	2.6	ug/Kg	100	☼	537 (modified)	Total/NA

Client Sample ID: FTP-003

Lab Sample ID: 320-55123-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	26		22	4.5	ug/Kg	100	☼	537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	14	J	22	9.2	ug/Kg	100	☼	537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	130		22	3.3	ug/Kg	100	☼	537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2400	E B	54	22	ug/Kg	100	☼	537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	3.9	J	22	2.7	ug/Kg	100	☼	537 (modified)	Total/NA

Client Sample ID: FTP-002

Lab Sample ID: 320-55123-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	23		22	4.6	ug/Kg	100	☼	537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	12	J	22	9.4	ug/Kg	100	☼	537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	83		22	3.4	ug/Kg	100	☼	537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2100	E B	55	22	ug/Kg	100	☼	537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.7	J	22	2.7	ug/Kg	100	☼	537 (modified)	Total/NA

Client Sample ID: SB-1901-80

Lab Sample ID: 320-55123-6

No Detections.

Client Sample ID: SB-1901-150

Lab Sample ID: 320-55123-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	0.24	J B	0.56	0.22	ug/Kg	1	☼	537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: Fire Training Pit

Job ID: 320-55123-1

Client Sample ID: MW-1901-Drum

Lab Sample ID: 320-55123-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctane sulfonate (PFOS)	0.40	J	0.64	0.26	ug/Kg	1	☼	537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento



Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Fire Training Pit

Job ID: 320-55123-1

Client Sample ID: FTP-004

Lab Sample ID: 320-55123-1

Date Collected: 10/01/19 12:40

Matrix: Solid

Date Received: 10/08/19 11:30

Percent Solids: 91.7

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	17	J	21	4.4	ug/Kg	☼	10/15/19 06:31	11/01/19 03:55	100
Perfluoroheptanoic acid (PFHpA)	ND		21	3.0	ug/Kg	☼	10/15/19 06:31	11/01/19 03:55	100
Perfluorooctanoic acid (PFOA)	ND		21	8.9	ug/Kg	☼	10/15/19 06:31	11/01/19 03:55	100
Perfluorononanoic acid (PFNA)	ND		21	3.7	ug/Kg	☼	10/15/19 06:31	11/01/19 03:55	100
Perfluorodecanoic acid (PFDA)	ND		21	2.3	ug/Kg	☼	10/15/19 06:31	11/01/19 03:55	100
Perfluoroundecanoic acid (PFUnA)	ND		21	3.7	ug/Kg	☼	10/15/19 06:31	11/01/19 03:55	100
Perfluorododecanoic acid (PFDoA)	ND		21	7.0	ug/Kg	☼	10/15/19 06:31	11/01/19 03:55	100
Perfluorotridecanoic acid (PFTriA)	ND *		21	5.3	ug/Kg	☼	10/15/19 06:31	11/01/19 03:55	100
Perfluorotetradecanoic acid (PFTeA)	ND		21	5.6	ug/Kg	☼	10/15/19 06:31	11/01/19 03:55	100
Perfluorohexanesulfonic acid (PFHxS)	24		21	3.2	ug/Kg	☼	10/15/19 06:31	11/01/19 03:55	100
Perfluorooctanesulfonic acid (PFOS)	1800	B	52	21	ug/Kg	☼	10/15/19 06:31	11/01/19 03:55	100
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		210	40	ug/Kg	☼	10/15/19 06:31	11/01/19 03:55	100
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		210	38	ug/Kg	☼	10/15/19 06:31	11/01/19 03:55	100
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		21	2.8	ug/Kg	☼	10/15/19 06:31	11/01/19 03:55	100
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		21	1.9	ug/Kg	☼	10/15/19 06:31	11/01/19 03:55	100
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND *		26	11	ug/Kg	☼	10/15/19 06:31	11/01/19 03:55	100
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		21	2.3	ug/Kg	☼	10/15/19 06:31	11/01/19 03:55	100
Perfluorobutanesulfonic acid (PFBS)	ND		21	2.6	ug/Kg	☼	10/15/19 06:31	11/01/19 03:55	100

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	81		25 - 150	10/15/19 06:31	11/01/19 03:55	100
13C4 PFHpA	88		25 - 150	10/15/19 06:31	11/01/19 03:55	100
13C4 PFOA	95		25 - 150	10/15/19 06:31	11/01/19 03:55	100
13C5 PFNA	92		25 - 150	10/15/19 06:31	11/01/19 03:55	100
13C2 PFDA	91		25 - 150	10/15/19 06:31	11/01/19 03:55	100
13C2 PFUnA	98		25 - 150	10/15/19 06:31	11/01/19 03:55	100
13C2 PFDoA	101		25 - 150	10/15/19 06:31	11/01/19 03:55	100
13C2 PFTeDA	103		25 - 150	10/15/19 06:31	11/01/19 03:55	100
18O2 PFHxS	95		25 - 150	10/15/19 06:31	11/01/19 03:55	100
13C4 PFOS	79		25 - 150	10/15/19 06:31	11/01/19 03:55	100
d3-NMeFOSAA	72		25 - 150	10/15/19 06:31	11/01/19 03:55	100
d5-NEtFOSAA	97		25 - 150	10/15/19 06:31	11/01/19 03:55	100
13C3 HFPO-DA	83		25 - 150	10/15/19 06:31	11/01/19 03:55	100

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Fire Training Pit

Job ID: 320-55123-1

Client Sample ID: FTP-005

Lab Sample ID: 320-55123-2

Date Collected: 10/01/19 12:55

Matrix: Solid

Date Received: 10/08/19 11:30

Percent Solids: 91.6

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	50		21	4.4	ug/Kg	☼	10/15/19 06:31	11/01/19 04:04	100
Perfluoroheptanoic acid (PFHpA)	5.6	J	21	3.1	ug/Kg	☼	10/15/19 06:31	11/01/19 04:04	100
Perfluorooctanoic acid (PFOA)	36		21	9.1	ug/Kg	☼	10/15/19 06:31	11/01/19 04:04	100
Perfluorononanoic acid (PFNA)	ND		21	3.8	ug/Kg	☼	10/15/19 06:31	11/01/19 04:04	100
Perfluorodecanoic acid (PFDA)	ND		21	2.3	ug/Kg	☼	10/15/19 06:31	11/01/19 04:04	100
Perfluoroundecanoic acid (PFUnA)	6.1	J	21	3.8	ug/Kg	☼	10/15/19 06:31	11/01/19 04:04	100
Perfluorododecanoic acid (PFDoA)	ND		21	7.1	ug/Kg	☼	10/15/19 06:31	11/01/19 04:04	100
Perfluorotridecanoic acid (PFTriA)	ND	*	21	5.4	ug/Kg	☼	10/15/19 06:31	11/01/19 04:04	100
Perfluorotetradecanoic acid (PFTeA)	ND		21	5.7	ug/Kg	☼	10/15/19 06:31	11/01/19 04:04	100
Perfluorohexanesulfonic acid (PFHxS)	160		21	3.3	ug/Kg	☼	10/15/19 06:31	11/01/19 04:04	100
Perfluorooctanesulfonic acid (PFOS)	8400	E B	53	21	ug/Kg	☼	10/15/19 06:31	11/01/19 04:04	100
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		210	41	ug/Kg	☼	10/15/19 06:31	11/01/19 04:04	100
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		210	39	ug/Kg	☼	10/15/19 06:31	11/01/19 04:04	100
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		21	2.9	ug/Kg	☼	10/15/19 06:31	11/01/19 04:04	100
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		21	1.9	ug/Kg	☼	10/15/19 06:31	11/01/19 04:04	100
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	*	26	12	ug/Kg	☼	10/15/19 06:31	11/01/19 04:04	100
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		21	2.3	ug/Kg	☼	10/15/19 06:31	11/01/19 04:04	100
Perfluorobutanesulfonic acid (PFBS)	6.2	J	21	2.6	ug/Kg	☼	10/15/19 06:31	11/01/19 04:04	100

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	88		25 - 150	10/15/19 06:31	11/01/19 04:04	100
13C4 PFHpA	97		25 - 150	10/15/19 06:31	11/01/19 04:04	100
13C4 PFOA	94		25 - 150	10/15/19 06:31	11/01/19 04:04	100
13C5 PFNA	85		25 - 150	10/15/19 06:31	11/01/19 04:04	100
13C2 PFDA	90		25 - 150	10/15/19 06:31	11/01/19 04:04	100
13C2 PFUnA	96		25 - 150	10/15/19 06:31	11/01/19 04:04	100
13C2 PFDoA	96		25 - 150	10/15/19 06:31	11/01/19 04:04	100
13C2 PFTeDA	103		25 - 150	10/15/19 06:31	11/01/19 04:04	100
18O2 PFHxS	90		25 - 150	10/15/19 06:31	11/01/19 04:04	100
13C4 PFOS	78		25 - 150	10/15/19 06:31	11/01/19 04:04	100
d3-NMeFOSAA	97		25 - 150	10/15/19 06:31	11/01/19 04:04	100
d5-NEtFOSAA	103		25 - 150	10/15/19 06:31	11/01/19 04:04	100
13C3 HFPO-DA	59		25 - 150	10/15/19 06:31	11/01/19 04:04	100

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Fire Training Pit

Job ID: 320-55123-1

Client Sample ID: FTP-001

Lab Sample ID: 320-55123-3

Date Collected: 10/01/19 11:25

Matrix: Solid

Date Received: 10/08/19 11:30

Percent Solids: 88.6

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	47		21	4.4	ug/Kg	☼	10/15/19 06:31	11/01/19 04:14	100
Perfluoroheptanoic acid (PFHpA)	3.6	J F1	21	3.0	ug/Kg	☼	10/15/19 06:31	11/01/19 04:14	100
Perfluorooctanoic acid (PFOA)	16	J	21	9.0	ug/Kg	☼	10/15/19 06:31	11/01/19 04:14	100
Perfluorononanoic acid (PFNA)	ND		21	3.8	ug/Kg	☼	10/15/19 06:31	11/01/19 04:14	100
Perfluorodecanoic acid (PFDA)	ND		21	2.3	ug/Kg	☼	10/15/19 06:31	11/01/19 04:14	100
Perfluoroundecanoic acid (PFUnA)	6.8	J F2 F1	21	3.8	ug/Kg	☼	10/15/19 06:31	11/01/19 04:14	100
Perfluorododecanoic acid (PFDoA)	ND		21	7.0	ug/Kg	☼	10/15/19 06:31	11/01/19 04:14	100
Perfluorotridecanoic acid (PFTriA)	ND *		21	5.3	ug/Kg	☼	10/15/19 06:31	11/01/19 04:14	100
Perfluorotetradecanoic acid (PFTeA)	ND		21	5.7	ug/Kg	☼	10/15/19 06:31	11/01/19 04:14	100
Perfluorohexanesulfonic acid (PFHxS)	110	F2	21	3.2	ug/Kg	☼	10/15/19 06:31	11/01/19 04:14	100
Perfluorooctanesulfonic acid (PFOS)	6500	F2 E B	52	21	ug/Kg	☼	10/15/19 06:31	11/01/19 04:14	100
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		210	41	ug/Kg	☼	10/15/19 06:31	11/01/19 04:14	100
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		210	39	ug/Kg	☼	10/15/19 06:31	11/01/19 04:14	100
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		21	2.8	ug/Kg	☼	10/15/19 06:31	11/01/19 04:14	100
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		21	1.9	ug/Kg	☼	10/15/19 06:31	11/01/19 04:14	100
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND *		26	12	ug/Kg	☼	10/15/19 06:31	11/01/19 04:14	100
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		21	2.3	ug/Kg	☼	10/15/19 06:31	11/01/19 04:14	100
Perfluorobutanesulfonic acid (PFBS)	4.6	J F1	21	2.6	ug/Kg	☼	10/15/19 06:31	11/01/19 04:14	100

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	92		25 - 150	10/15/19 06:31	11/01/19 04:14	100
13C4 PFHpA	99		25 - 150	10/15/19 06:31	11/01/19 04:14	100
13C4 PFOA	103		25 - 150	10/15/19 06:31	11/01/19 04:14	100
13C5 PFNA	84		25 - 150	10/15/19 06:31	11/01/19 04:14	100
13C2 PFDA	97		25 - 150	10/15/19 06:31	11/01/19 04:14	100
13C2 PFUnA	99		25 - 150	10/15/19 06:31	11/01/19 04:14	100
13C2 PFDoA	98		25 - 150	10/15/19 06:31	11/01/19 04:14	100
13C2 PFTeDA	107		25 - 150	10/15/19 06:31	11/01/19 04:14	100
18O2 PFHxS	91		25 - 150	10/15/19 06:31	11/01/19 04:14	100
13C4 PFOS	87		25 - 150	10/15/19 06:31	11/01/19 04:14	100
d3-NMeFOSAA	92		25 - 150	10/15/19 06:31	11/01/19 04:14	100
d5-NEtFOSAA	96		25 - 150	10/15/19 06:31	11/01/19 04:14	100
13C3 HFPO-DA	148		25 - 150	10/15/19 06:31	11/01/19 04:14	100

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Fire Training Pit

Job ID: 320-55123-1

Client Sample ID: FTP-003

Lab Sample ID: 320-55123-4

Date Collected: 10/01/19 12:00

Matrix: Solid

Date Received: 10/08/19 11:30

Percent Solids: 90.6

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	26		22	4.5	ug/Kg	☼	10/15/19 06:31	11/01/19 04:43	100
Perfluoroheptanoic acid (PFHpA)	ND		22	3.1	ug/Kg	☼	10/15/19 06:31	11/01/19 04:43	100
Perfluorooctanoic acid (PFOA)	14 J		22	9.2	ug/Kg	☼	10/15/19 06:31	11/01/19 04:43	100
Perfluorononanoic acid (PFNA)	ND		22	3.9	ug/Kg	☼	10/15/19 06:31	11/01/19 04:43	100
Perfluorodecanoic acid (PFDA)	ND		22	2.4	ug/Kg	☼	10/15/19 06:31	11/01/19 04:43	100
Perfluoroundecanoic acid (PFUnA)	ND		22	3.9	ug/Kg	☼	10/15/19 06:31	11/01/19 04:43	100
Perfluorododecanoic acid (PFDoA)	ND		22	7.2	ug/Kg	☼	10/15/19 06:31	11/01/19 04:43	100
Perfluorotridecanoic acid (PFTriA)	ND *		22	5.5	ug/Kg	☼	10/15/19 06:31	11/01/19 04:43	100
Perfluorotetradecanoic acid (PFTeA)	ND		22	5.8	ug/Kg	☼	10/15/19 06:31	11/01/19 04:43	100
Perfluorohexanesulfonic acid (PFHxS)	130		22	3.3	ug/Kg	☼	10/15/19 06:31	11/01/19 04:43	100
Perfluorooctanesulfonic acid (PFOS)	2400 E B		54	22	ug/Kg	☼	10/15/19 06:31	11/01/19 04:43	100
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		220	42	ug/Kg	☼	10/15/19 06:31	11/01/19 04:43	100
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		220	40	ug/Kg	☼	10/15/19 06:31	11/01/19 04:43	100
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		22	2.9	ug/Kg	☼	10/15/19 06:31	11/01/19 04:43	100
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		22	1.9	ug/Kg	☼	10/15/19 06:31	11/01/19 04:43	100
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND *		27	12	ug/Kg	☼	10/15/19 06:31	11/01/19 04:43	100
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		22	2.4	ug/Kg	☼	10/15/19 06:31	11/01/19 04:43	100
Perfluorobutanesulfonic acid (PFBS)	3.9 J		22	2.7	ug/Kg	☼	10/15/19 06:31	11/01/19 04:43	100

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	97		25 - 150	10/15/19 06:31	11/01/19 04:43	100
13C4 PFHpA	104		25 - 150	10/15/19 06:31	11/01/19 04:43	100
13C4 PFOA	97		25 - 150	10/15/19 06:31	11/01/19 04:43	100
13C5 PFNA	97		25 - 150	10/15/19 06:31	11/01/19 04:43	100
13C2 PFDA	101		25 - 150	10/15/19 06:31	11/01/19 04:43	100
13C2 PFUnA	110		25 - 150	10/15/19 06:31	11/01/19 04:43	100
13C2 PFDoA	104		25 - 150	10/15/19 06:31	11/01/19 04:43	100
13C2 PFTeDA	118		25 - 150	10/15/19 06:31	11/01/19 04:43	100
18O2 PFHxS	101		25 - 150	10/15/19 06:31	11/01/19 04:43	100
13C4 PFOS	99		25 - 150	10/15/19 06:31	11/01/19 04:43	100
d3-NMeFOSAA	69		25 - 150	10/15/19 06:31	11/01/19 04:43	100
d5-NEtFOSAA	96		25 - 150	10/15/19 06:31	11/01/19 04:43	100
13C3 HFPO-DA	102		25 - 150	10/15/19 06:31	11/01/19 04:43	100

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Fire Training Pit

Job ID: 320-55123-1

Client Sample ID: FTP-002

Lab Sample ID: 320-55123-5

Date Collected: 10/01/19 12:10

Matrix: Solid

Date Received: 10/08/19 11:30

Percent Solids: 90.5

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	23		22	4.6	ug/Kg	☼	10/15/19 06:31	11/01/19 04:52	100
Perfluoroheptanoic acid (PFHpA)	ND		22	3.2	ug/Kg	☼	10/15/19 06:31	11/01/19 04:52	100
Perfluorooctanoic acid (PFOA)	12 J		22	9.4	ug/Kg	☼	10/15/19 06:31	11/01/19 04:52	100
Perfluorononanoic acid (PFNA)	ND		22	3.9	ug/Kg	☼	10/15/19 06:31	11/01/19 04:52	100
Perfluorodecanoic acid (PFDA)	ND		22	2.4	ug/Kg	☼	10/15/19 06:31	11/01/19 04:52	100
Perfluoroundecanoic acid (PFUnA)	ND		22	3.9	ug/Kg	☼	10/15/19 06:31	11/01/19 04:52	100
Perfluorododecanoic acid (PFDoA)	ND		22	7.3	ug/Kg	☼	10/15/19 06:31	11/01/19 04:52	100
Perfluorotridecanoic acid (PFTriA)	ND *		22	5.6	ug/Kg	☼	10/15/19 06:31	11/01/19 04:52	100
Perfluorotetradecanoic acid (PFTeA)	ND		22	5.9	ug/Kg	☼	10/15/19 06:31	11/01/19 04:52	100
Perfluorohexanesulfonic acid (PFHxS)	83		22	3.4	ug/Kg	☼	10/15/19 06:31	11/01/19 04:52	100
Perfluorooctanesulfonic acid (PFOS)	2100 E B		55	22	ug/Kg	☼	10/15/19 06:31	11/01/19 04:52	100
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		220	43	ug/Kg	☼	10/15/19 06:31	11/01/19 04:52	100
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		220	41	ug/Kg	☼	10/15/19 06:31	11/01/19 04:52	100
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		22	3.0	ug/Kg	☼	10/15/19 06:31	11/01/19 04:52	100
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		22	2.0	ug/Kg	☼	10/15/19 06:31	11/01/19 04:52	100
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND *		27	12	ug/Kg	☼	10/15/19 06:31	11/01/19 04:52	100
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		22	2.4	ug/Kg	☼	10/15/19 06:31	11/01/19 04:52	100
Perfluorobutanesulfonic acid (PFBS)	2.7 J		22	2.7	ug/Kg	☼	10/15/19 06:31	11/01/19 04:52	100

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	79		25 - 150	10/15/19 06:31	11/01/19 04:52	100
13C4 PFHpA	89		25 - 150	10/15/19 06:31	11/01/19 04:52	100
13C4 PFOA	93		25 - 150	10/15/19 06:31	11/01/19 04:52	100
13C5 PFNA	89		25 - 150	10/15/19 06:31	11/01/19 04:52	100
13C2 PFDA	100		25 - 150	10/15/19 06:31	11/01/19 04:52	100
13C2 PFUnA	96		25 - 150	10/15/19 06:31	11/01/19 04:52	100
13C2 PFDoA	98		25 - 150	10/15/19 06:31	11/01/19 04:52	100
13C2 PFTeDA	98		25 - 150	10/15/19 06:31	11/01/19 04:52	100
18O2 PFHxS	91		25 - 150	10/15/19 06:31	11/01/19 04:52	100
13C4 PFOS	80		25 - 150	10/15/19 06:31	11/01/19 04:52	100
d3-NMeFOSAA	86		25 - 150	10/15/19 06:31	11/01/19 04:52	100
d5-NEtFOSAA	87		25 - 150	10/15/19 06:31	11/01/19 04:52	100
13C3 HFPO-DA	90		25 - 150	10/15/19 06:31	11/01/19 04:52	100

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Fire Training Pit

Job ID: 320-55123-1

Client Sample ID: SB-1901-80

Lab Sample ID: 320-55123-6

Date Collected: 10/03/19 01:15

Matrix: Solid

Date Received: 10/08/19 11:30

Percent Solids: 89.8

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		0.21	0.045	ug/Kg	☼	10/16/19 06:37	10/28/19 16:26	1
Perfluoroheptanoic acid (PFHpA)	ND		0.21	0.031	ug/Kg	☼	10/16/19 06:37	10/28/19 16:26	1
Perfluorooctanoic acid (PFOA)	ND		0.21	0.092	ug/Kg	☼	10/16/19 06:37	10/28/19 16:26	1
Perfluorononanoic acid (PFNA)	ND		0.21	0.038	ug/Kg	☼	10/16/19 06:37	10/28/19 16:26	1
Perfluorodecanoic acid (PFDA)	ND		0.21	0.023	ug/Kg	☼	10/16/19 06:37	10/28/19 16:26	1
Perfluoroundecanoic acid (PFUnA)	ND		0.21	0.038	ug/Kg	☼	10/16/19 06:37	10/28/19 16:26	1
Perfluorododecanoic acid (PFDoA)	ND		0.21	0.071	ug/Kg	☼	10/16/19 06:37	10/28/19 16:26	1
Perfluorotridecanoic acid (PFTriA)	ND		0.21	0.054	ug/Kg	☼	10/16/19 06:37	10/28/19 16:26	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.21	0.057	ug/Kg	☼	10/16/19 06:37	10/28/19 16:26	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.21	0.033	ug/Kg	☼	10/16/19 06:37	10/28/19 16:26	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.53	0.21	ug/Kg	☼	10/16/19 06:37	10/28/19 16:26	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.1	0.41	ug/Kg	☼	10/16/19 06:37	10/28/19 16:26	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.1	0.39	ug/Kg	☼	10/16/19 06:37	10/28/19 16:26	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.21	0.029	ug/Kg	☼	10/16/19 06:37	10/28/19 16:26	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.21	0.019	ug/Kg	☼	10/16/19 06:37	10/28/19 16:26	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.27	0.12	ug/Kg	☼	10/16/19 06:37	10/28/19 16:26	1
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid	ND		0.21	0.023	ug/Kg	☼	10/16/19 06:37	10/28/19 16:26	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.21	0.027	ug/Kg	☼	10/16/19 06:37	10/28/19 16:26	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	92		25 - 150	10/16/19 06:37	10/28/19 16:26	1
13C4 PFHpA	94		25 - 150	10/16/19 06:37	10/28/19 16:26	1
13C4 PFOA	91		25 - 150	10/16/19 06:37	10/28/19 16:26	1
13C5 PFNA	95		25 - 150	10/16/19 06:37	10/28/19 16:26	1
13C2 PFDA	106		25 - 150	10/16/19 06:37	10/28/19 16:26	1
13C2 PFUnA	98		25 - 150	10/16/19 06:37	10/28/19 16:26	1
13C2 PFDoA	102		25 - 150	10/16/19 06:37	10/28/19 16:26	1
13C2 PFTeDA	90		25 - 150	10/16/19 06:37	10/28/19 16:26	1
18O2 PFHxS	106		25 - 150	10/16/19 06:37	10/28/19 16:26	1
13C4 PFOS	110		25 - 150	10/16/19 06:37	10/28/19 16:26	1
d3-NMeFOSAA	115		25 - 150	10/16/19 06:37	10/28/19 16:26	1
d5-NEtFOSAA	116		25 - 150	10/16/19 06:37	10/28/19 16:26	1
13C3 HFPO-DA	72		25 - 150	10/16/19 06:37	10/28/19 16:26	1

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Fire Training Pit

Job ID: 320-55123-1

Client Sample ID: SB-1901-150

Lab Sample ID: 320-55123-7

Date Collected: 10/02/19 15:33

Matrix: Solid

Date Received: 10/08/19 11:30

Percent Solids: 88.8

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		0.22	0.047	ug/Kg	☼	10/15/19 06:31	11/01/19 01:51	1
Perfluoroheptanoic acid (PFHpA)	ND		0.22	0.033	ug/Kg	☼	10/15/19 06:31	11/01/19 01:51	1
Perfluorooctanoic acid (PFOA)	ND		0.22	0.096	ug/Kg	☼	10/15/19 06:31	11/01/19 01:51	1
Perfluorononanoic acid (PFNA)	ND		0.22	0.040	ug/Kg	☼	10/15/19 06:31	11/01/19 01:51	1
Perfluorodecanoic acid (PFDA)	ND		0.22	0.025	ug/Kg	☼	10/15/19 06:31	11/01/19 01:51	1
Perfluoroundecanoic acid (PFUnA)	ND		0.22	0.040	ug/Kg	☼	10/15/19 06:31	11/01/19 01:51	1
Perfluorododecanoic acid (PFDoA)	ND		0.22	0.075	ug/Kg	☼	10/15/19 06:31	11/01/19 01:51	1
Perfluorotridecanoic acid (PFTriA)	ND *		0.22	0.057	ug/Kg	☼	10/15/19 06:31	11/01/19 01:51	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.22	0.061	ug/Kg	☼	10/15/19 06:31	11/01/19 01:51	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.22	0.035	ug/Kg	☼	10/15/19 06:31	11/01/19 01:51	1
Perfluorooctanesulfonic acid (PFOS)	0.24	J B	0.56	0.22	ug/Kg	☼	10/15/19 06:31	11/01/19 01:51	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.2	0.44	ug/Kg	☼	10/15/19 06:31	11/01/19 01:51	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.2	0.42	ug/Kg	☼	10/15/19 06:31	11/01/19 01:51	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.22	0.030	ug/Kg	☼	10/15/19 06:31	11/01/19 01:51	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.22	0.020	ug/Kg	☼	10/15/19 06:31	11/01/19 01:51	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND *		0.28	0.12	ug/Kg	☼	10/15/19 06:31	11/01/19 01:51	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		0.22	0.025	ug/Kg	☼	10/15/19 06:31	11/01/19 01:51	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.22	0.028	ug/Kg	☼	10/15/19 06:31	11/01/19 01:51	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	96		25 - 150				10/15/19 06:31	11/01/19 01:51	1
13C4 PFHpA	102		25 - 150				10/15/19 06:31	11/01/19 01:51	1
13C4 PFOA	100		25 - 150				10/15/19 06:31	11/01/19 01:51	1
13C5 PFNA	101		25 - 150				10/15/19 06:31	11/01/19 01:51	1
13C2 PFDA	101		25 - 150				10/15/19 06:31	11/01/19 01:51	1
13C2 PFUnA	111		25 - 150				10/15/19 06:31	11/01/19 01:51	1
13C2 PFDoA	109		25 - 150				10/15/19 06:31	11/01/19 01:51	1
13C2 PFTeDA	110		25 - 150				10/15/19 06:31	11/01/19 01:51	1
18O2 PFHxS	104		25 - 150				10/15/19 06:31	11/01/19 01:51	1
13C4 PFOS	94		25 - 150				10/15/19 06:31	11/01/19 01:51	1
d3-NMeFOSAA	88		25 - 150				10/15/19 06:31	11/01/19 01:51	1
d5-NEtFOSAA	90		25 - 150				10/15/19 06:31	11/01/19 01:51	1
13C3 HFPO-DA	104		25 - 150				10/15/19 06:31	11/01/19 01:51	1

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
 Project/Site: Fire Training Pit

Job ID: 320-55123-1

Client Sample ID: MW-1901-Drum

Lab Sample ID: 320-55123-8

Date Collected: 10/07/19 14:10

Matrix: Solid

Date Received: 10/08/19 11:30

Percent Solids: 74.8

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	ND		0.26	0.11	ug/Kg	☼	10/16/19 06:37	10/28/19 16:35	1
Perfluorooctane sulfonate (PFOS)	0.40	J	0.64	0.26	ug/Kg	☼	10/16/19 06:37	10/28/19 16:35	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFOS	105		25 - 150				10/16/19 06:37	10/28/19 16:35	1
13C4 PFOA	96		25 - 150				10/16/19 06:37	10/28/19 16:35	1

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
 Project/Site: Fire Training Pit

Job ID: 320-55123-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Solid

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxA (25-150)	PFHpA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)	PFDoA (25-150)	PFTDA (25-150)
320-55123-1	FTP-004	81	88	95	92	91	98	101	103
320-55123-2	FTP-005	88	97	94	85	90	96	96	103
320-55123-3	FTP-001	92	99	103	84	97	99	98	107
320-55123-3 MS	FTP-001	95	106	97	81	94	92	95	101
320-55123-3 MSD	FTP-001	88	93	97	84	94	101	93	102
320-55123-4	FTP-003	97	104	97	97	101	110	104	118
320-55123-5	FTP-002	79	89	93	89	100	96	98	98
320-55123-6	SB-1901-80	92	94	91	95	106	98	102	90
320-55123-7	SB-1901-150	96	102	100	101	101	111	109	110
320-55123-8	MW-1901-Drum			96					
LCS 320-330959/2-A	Lab Control Sample	71	75	74	74	69	87	79	97
MB 320-330959/1-A	Method Blank	81	91	90	91	88	110	98	105

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxS (25-150)	PFOS (25-150)	d3-NMeFOS (25-150)	d5-NEtFOS (25-150)	HFPODA (25-150)
320-55123-1	FTP-004	95	79	72	97	83
320-55123-2	FTP-005	90	78	97	103	59
320-55123-3	FTP-001	91	87	92	96	148
320-55123-3 MS	FTP-001	97	77	85	96	82
320-55123-3 MSD	FTP-001	98	81	90	90	154 *
320-55123-4	FTP-003	101	99	69	96	102
320-55123-5	FTP-002	91	80	86	87	90
320-55123-6	SB-1901-80	106	110	115	116	72
320-55123-7	SB-1901-150	104	94	88	90	104
320-55123-8	MW-1901-Drum		105			
LCS 320-330959/2-A	Lab Control Sample	71	64	60	65	81
MB 320-330959/1-A	Method Blank	87	78	71	79	105

Surrogate Legend

- PFHxA = 13C2 PFHxA
- PFHpA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDoA = 13C2 PFDoA
- PFTDA = 13C2 PFTeDA
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- d3-NMeFOSAA = d3-NMeFOSAA
- d5-NEtFOSAA = d5-NEtFOSAA
- HFPODA = 13C3 HFPO-DA

QC Sample Results

Client: Shannon & Wilson, Inc
 Project/Site: Fire Training Pit

Job ID: 320-55123-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-330959/1-A
Matrix: Solid
Analysis Batch: 334805

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 330959

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		0.20	0.042	ug/Kg		10/15/19 06:31	11/01/19 01:32	1
Perfluoroheptanoic acid (PFHpA)	ND		0.20	0.029	ug/Kg		10/15/19 06:31	11/01/19 01:32	1
Perfluorooctanoic acid (PFOA)	ND		0.20	0.086	ug/Kg		10/15/19 06:31	11/01/19 01:32	1
Perfluorononanoic acid (PFNA)	ND		0.20	0.036	ug/Kg		10/15/19 06:31	11/01/19 01:32	1
Perfluorodecanoic acid (PFDA)	ND		0.20	0.022	ug/Kg		10/15/19 06:31	11/01/19 01:32	1
Perfluoroundecanoic acid (PFUnA)	ND		0.20	0.036	ug/Kg		10/15/19 06:31	11/01/19 01:32	1
Perfluorododecanoic acid (PFDoA)	ND		0.20	0.067	ug/Kg		10/15/19 06:31	11/01/19 01:32	1
Perfluorotridecanoic acid (PFTriA)	ND		0.20	0.051	ug/Kg		10/15/19 06:31	11/01/19 01:32	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.20	0.054	ug/Kg		10/15/19 06:31	11/01/19 01:32	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.20	0.031	ug/Kg		10/15/19 06:31	11/01/19 01:32	1
Perfluorooctanesulfonic acid (PFOS)	0.297	J	0.50	0.20	ug/Kg		10/15/19 06:31	11/01/19 01:32	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.0	0.39	ug/Kg		10/15/19 06:31	11/01/19 01:32	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.0	0.37	ug/Kg		10/15/19 06:31	11/01/19 01:32	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.20	0.027	ug/Kg		10/15/19 06:31	11/01/19 01:32	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.20	0.018	ug/Kg		10/15/19 06:31	11/01/19 01:32	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.25	0.11	ug/Kg		10/15/19 06:31	11/01/19 01:32	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		0.20	0.022	ug/Kg		10/15/19 06:31	11/01/19 01:32	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.20	0.025	ug/Kg		10/15/19 06:31	11/01/19 01:32	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	81		25 - 150	10/15/19 06:31	11/01/19 01:32	1
13C4 PFHpA	91		25 - 150	10/15/19 06:31	11/01/19 01:32	1
13C4 PFOA	90		25 - 150	10/15/19 06:31	11/01/19 01:32	1
13C5 PFNA	91		25 - 150	10/15/19 06:31	11/01/19 01:32	1
13C2 PFDA	88		25 - 150	10/15/19 06:31	11/01/19 01:32	1
13C2 PFUnA	110		25 - 150	10/15/19 06:31	11/01/19 01:32	1
13C2 PFDoA	98		25 - 150	10/15/19 06:31	11/01/19 01:32	1
13C2 PFTeDA	105		25 - 150	10/15/19 06:31	11/01/19 01:32	1
18O2 PFHxS	87		25 - 150	10/15/19 06:31	11/01/19 01:32	1
13C4 PFOS	78		25 - 150	10/15/19 06:31	11/01/19 01:32	1
d3-NMeFOSAA	71		25 - 150	10/15/19 06:31	11/01/19 01:32	1
d5-NEtFOSAA	79		25 - 150	10/15/19 06:31	11/01/19 01:32	1
13C3 HFPO-DA	105		25 - 150	10/15/19 06:31	11/01/19 01:32	1

Lab Sample ID: LCS 320-330959/2-A
Matrix: Solid
Analysis Batch: 334805

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 330959

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorohexanoic acid (PFHxA)	2.00	2.10		ug/Kg		105	75 - 125
Perfluoroheptanoic acid (PFHpA)	2.00	2.28		ug/Kg		114	76 - 124
Perfluorooctanoic acid (PFOA)	2.00	2.15		ug/Kg		108	76 - 121
Perfluorononanoic acid (PFNA)	2.00	2.36		ug/Kg		118	74 - 126
Perfluorodecanoic acid (PFDA)	2.00	2.45		ug/Kg		123	74 - 124

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Fire Training Pit

Job ID: 320-55123-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-330959/2-A
Matrix: Solid
Analysis Batch: 334805

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 330959

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoroundecanoic acid (PFUnA)	2.00	2.16		ug/Kg		108	74 - 114
Perfluorododecanoic acid (PFDoA)	2.00	2.06		ug/Kg		103	75 - 123
Perfluorotridecanoic acid (PFTriA)	2.00	2.44	*	ug/Kg		122	43 - 116
Perfluorotetradecanoic acid (PFTeA)	2.00	2.03		ug/Kg		102	22 - 129
Perfluorohexanesulfonic acid (PFHxS)	1.82	1.80		ug/Kg		99	75 - 121
Perfluorooctanesulfonic acid (PFOS)	1.86	2.21		ug/Kg		119	69 - 131
N-methylperfluorooctanesulfonamide doacetic acid (NMeFOSAA)	2.00	2.41		ug/Kg		120	65 - 135
N-ethylperfluorooctanesulfonamide doacetic acid (NEtFOSAA)	2.00	2.32		ug/Kg		116	65 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	1.86	2.17		ug/Kg		117	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.88	2.29		ug/Kg		122	70 - 130
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	2.00	2.97	*	ug/Kg		149	70 - 130
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	1.88	1.73		ug/Kg		92	70 - 130
Perfluorobutanesulfonic acid (PFBS)	1.77	1.81		ug/Kg		102	73 - 142

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	71		25 - 150
13C4 PFHpA	75		25 - 150
13C4 PFOA	74		25 - 150
13C5 PFNA	74		25 - 150
13C2 PFDA	69		25 - 150
13C2 PFUnA	87		25 - 150
13C2 PFDoA	79		25 - 150
13C2 PFTeDA	97		25 - 150
18O2 PFHxS	71		25 - 150
13C4 PFOS	64		25 - 150
d3-NMeFOSAA	60		25 - 150
d5-NEtFOSAA	65		25 - 150
13C3 HFPO-DA	81		25 - 150

Lab Sample ID: 320-55123-3 MS
Matrix: Solid
Analysis Batch: 334805

Client Sample ID: FTP-001
Prep Type: Total/NA
Prep Batch: 330959

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid (PFHxA)	47		2.18	42.9	4	ug/Kg	☼	-196	75 - 125
Perfluoroheptanoic acid (PFHpA)	3.6	J F1	2.18	5.37	J	ug/Kg	☼	81	76 - 124
Perfluorooctanoic acid (PFOA)	16	J	2.18	17.9	J 4	ug/Kg	☼	72	76 - 121
Perfluorononanoic acid (PFNA)	ND		2.18	ND		ug/Kg	☼	NC	74 - 126
Perfluorodecanoic acid (PFDA)	ND		2.18	4.35	J	ug/Kg	☼	NC	74 - 124

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Fire Training Pit

Job ID: 320-55123-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: 320-55123-3 MS
Matrix: Solid
Analysis Batch: 334805

Client Sample ID: FTP-001
Prep Type: Total/NA
Prep Batch: 330959

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Perfluoroundecanoic acid (PFUnA)	6.8	J F2 F1	2.18	10.9	J F1	ug/Kg	☼	186	74 - 114
Perfluorododecanoic acid (PFDoA)	ND		2.18	ND		ug/Kg	☼	NC	75 - 123
Perfluorotridecanoic acid (PFTriA)	ND	*	2.18	ND		ug/Kg	☼	NC	43 - 116
Perfluorotetradecanoic acid (PFTeA)	ND		2.18	ND		ug/Kg	☼	NC	22 - 129
Perfluorohexanesulfonic acid (PFHxS)	110	F2	1.99	110	4	ug/Kg	☼	255	75 - 121
Perfluorooctanesulfonic acid (PFOS)	6500	F2 E B	2.03	6640	E 4	ug/Kg	☼	7646	69 - 131
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.18	ND		ug/Kg	☼	NC	65 - 135
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.18	ND		ug/Kg	☼	NC	65 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.03	ND		ug/Kg	☼	NC	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.06	2.61	J	ug/Kg	☼	127	70 - 130
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	*	2.18	ND		ug/Kg	☼	NC	70 - 130
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		2.06	ND		ug/Kg	☼	NC	70 - 130
Perfluorobutanesulfonic acid (PFBS)	4.6	J F1	1.93	6.21	J	ug/Kg	☼	82	73 - 142

Isotope Dilution	%Recovery	Qualifier	Limits
13C2 PFHxA	95		25 - 150
13C4 PFHpA	106		25 - 150
13C4 PFOA	97		25 - 150
13C5 PFNA	81		25 - 150
13C2 PFDA	94		25 - 150
13C2 PFUnA	92		25 - 150
13C2 PFDoA	95		25 - 150
13C2 PFTeDA	101		25 - 150
18O2 PFHxS	97		25 - 150
13C4 PFOS	77		25 - 150
d3-NMeFOSAA	85		25 - 150
d5-NEtFOSAA	96		25 - 150
13C3 HFPO-DA	82		25 - 150

Lab Sample ID: 320-55123-3 MSD
Matrix: Solid
Analysis Batch: 334805

Client Sample ID: FTP-001
Prep Type: Total/NA
Prep Batch: 330959

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Perfluorohexanoic acid (PFHxA)	47		2.18	33.9	4	ug/Kg	☼	-608	75 - 125	23	30
Perfluoroheptanoic acid (PFHpA)	3.6	J F1	2.18	4.45	J F1	ug/Kg	☼	39	76 - 124	19	30
Perfluorooctanoic acid (PFOA)	16	J	2.18	13.9	J 4	ug/Kg	☼	-109	76 - 121	25	30
Perfluorononanoic acid (PFNA)	ND		2.18	ND		ug/Kg	☼	NC	74 - 126	NC	30
Perfluorodecanoic acid (PFDA)	ND		2.18	ND		ug/Kg	☼	NC	74 - 124	NC	30

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
 Project/Site: Fire Training Pit

Job ID: 320-55123-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: 320-55123-3 MSD
Matrix: Solid
Analysis Batch: 334805

Client Sample ID: FTP-001
Prep Type: Total/NA
Prep Batch: 330959

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier		Result	Qualifier							Limits
Perfluoroundecanoic acid (PFUnA)	6.8	J F2 F1	2.18	6.22	J F2 F1	ug/Kg	☼	-26	74 - 114	54	30
Perfluorododecanoic acid (PFDoA)	ND		2.18	ND		ug/Kg	☼	NC	75 - 123	NC	30
Perfluorotridecanoic acid (PFTriA)	ND	*	2.18	ND		ug/Kg	☼	NC	43 - 116	NC	30
Perfluorotetradecanoic acid (PFTeA)	ND		2.18	ND		ug/Kg	☼	NC	22 - 129	NC	30
Perfluorohexanesulfonic acid (PFHxS)	110	F2	1.98	76.2	4 F2	ug/Kg	☼	-1453	75 - 121	36	30
Perfluorooctanesulfonic acid (PFOS)	6500	F2 E B	2.02	4630	E 4 F2	ug/Kg	☼	-9175	69 - 131	36	30
N-methylperfluorooctanesulfonamide (NMeFOSAA)	ND		2.18	ND		ug/Kg	☼	NC	65 - 135	NC	30
N-ethylperfluorooctanesulfonamide (NEtFOSAA)	ND		2.18	ND		ug/Kg	☼	NC	65 - 135	NC	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.03	ND		ug/Kg	☼	NC	70 - 130	NC	30
4,8-Dioxo-3H-perfluorononanoic acid (ADONA)	ND		2.05	2.50	J	ug/Kg	☼	122	70 - 130	4	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	*	2.18	ND		ug/Kg	☼	NC	70 - 130	NC	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		2.05	ND		ug/Kg	☼	NC	70 - 130	NC	30
Perfluorobutanesulfonic acid (PFBS)	4.6	J F1	1.93	5.23	J F1	ug/Kg	☼	31	73 - 142	17	30

Isotope Dilution	MSD	MSD	Limits
	%Recovery	Qualifier	
13C2 PFHxA	88		25 - 150
13C4 PFHpA	93		25 - 150
13C4 PFOA	97		25 - 150
13C5 PFNA	84		25 - 150
13C2 PFDA	94		25 - 150
13C2 PFUnA	101		25 - 150
13C2 PFDoA	93		25 - 150
13C2 PFTeDA	102		25 - 150
18O2 PFHxS	98		25 - 150
13C4 PFOS	81		25 - 150
d3-NMeFOSAA	90		25 - 150
d5-NEtFOSAA	90		25 - 150
13C3 HFPO-DA	154	*	25 - 150

QC Association Summary

Client: Shannon & Wilson, Inc
Project/Site: Fire Training Pit

Job ID: 320-55123-1

LCMS

Prep Batch: 330959

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-55123-1	FTP-004	Total/NA	Solid	SHAKE	
320-55123-2	FTP-005	Total/NA	Solid	SHAKE	
320-55123-3	FTP-001	Total/NA	Solid	SHAKE	
320-55123-4	FTP-003	Total/NA	Solid	SHAKE	
320-55123-5	FTP-002	Total/NA	Solid	SHAKE	
320-55123-7	SB-1901-150	Total/NA	Solid	SHAKE	
MB 320-330959/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 320-330959/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	
320-55123-3 MS	FTP-001	Total/NA	Solid	SHAKE	
320-55123-3 MSD	FTP-001	Total/NA	Solid	SHAKE	

Prep Batch: 331247

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-55123-6	SB-1901-80	Total/NA	Solid	SHAKE	
320-55123-8	MW-1901-Drum	Total/NA	Solid	SHAKE	

Analysis Batch: 334183

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-55123-6	SB-1901-80	Total/NA	Solid	537 (modified)	331247
320-55123-8	MW-1901-Drum	Total/NA	Solid	537 (modified)	331247

Analysis Batch: 334805

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-55123-1	FTP-004	Total/NA	Solid	537 (modified)	330959
320-55123-2	FTP-005	Total/NA	Solid	537 (modified)	330959
320-55123-3	FTP-001	Total/NA	Solid	537 (modified)	330959
320-55123-4	FTP-003	Total/NA	Solid	537 (modified)	330959
320-55123-5	FTP-002	Total/NA	Solid	537 (modified)	330959
320-55123-7	SB-1901-150	Total/NA	Solid	537 (modified)	330959
MB 320-330959/1-A	Method Blank	Total/NA	Solid	537 (modified)	330959
LCS 320-330959/2-A	Lab Control Sample	Total/NA	Solid	537 (modified)	330959
320-55123-3 MS	FTP-001	Total/NA	Solid	537 (modified)	330959
320-55123-3 MSD	FTP-001	Total/NA	Solid	537 (modified)	330959

General Chemistry

Analysis Batch: 330691

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-55123-1	FTP-004	Total/NA	Solid	D 2216	
320-55123-2	FTP-005	Total/NA	Solid	D 2216	
320-55123-3	FTP-001	Total/NA	Solid	D 2216	
320-55123-4	FTP-003	Total/NA	Solid	D 2216	
320-55123-5	FTP-002	Total/NA	Solid	D 2216	

Analysis Batch: 330898

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-55123-6	SB-1901-80	Total/NA	Solid	D 2216	
320-55123-7	SB-1901-150	Total/NA	Solid	D 2216	
320-55123-6 DU	SB-1901-80	Total/NA	Solid	D 2216	

Eurofins TestAmerica, Sacramento

QC Association Summary

Client: Shannon & Wilson, Inc
Project/Site: Fire Training Pit

Job ID: 320-55123-1

General Chemistry

Analysis Batch: 330991

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-55123-8	MW-1901-Drum	Total/NA	Solid	D 2216	

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: Fire Training Pit

Job ID: 320-55123-1

Client Sample ID: FTP-004

Date Collected: 10/01/19 12:40

Date Received: 10/08/19 11:30

Lab Sample ID: 320-55123-1

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			330691	10/14/19 09:51	MC	TAL SAC

Client Sample ID: FTP-004

Date Collected: 10/01/19 12:40

Date Received: 10/08/19 11:30

Lab Sample ID: 320-55123-1

Matrix: Solid

Percent Solids: 91.7

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.25 g	10.00 mL	330959	10/15/19 06:31	AEC	TAL SAC
Total/NA	Analysis	537 (modified)		100			334805	11/01/19 03:55	P1N	TAL SAC

Client Sample ID: FTP-005

Date Collected: 10/01/19 12:55

Date Received: 10/08/19 11:30

Lab Sample ID: 320-55123-2

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			330691	10/14/19 09:51	MC	TAL SAC

Client Sample ID: FTP-005

Date Collected: 10/01/19 12:55

Date Received: 10/08/19 11:30

Lab Sample ID: 320-55123-2

Matrix: Solid

Percent Solids: 91.6

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.17 g	10.00 mL	330959	10/15/19 06:31	AEC	TAL SAC
Total/NA	Analysis	537 (modified)		100			334805	11/01/19 04:04	P1N	TAL SAC

Client Sample ID: FTP-001

Date Collected: 10/01/19 11:25

Date Received: 10/08/19 11:30

Lab Sample ID: 320-55123-3

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			330691	10/14/19 09:51	MC	TAL SAC

Client Sample ID: FTP-001

Date Collected: 10/01/19 11:25

Date Received: 10/08/19 11:30

Lab Sample ID: 320-55123-3

Matrix: Solid

Percent Solids: 88.6

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.39 g	10.00 mL	330959	10/15/19 06:31	AEC	TAL SAC
Total/NA	Analysis	537 (modified)		100			334805	11/01/19 04:14	P1N	TAL SAC

Client Sample ID: FTP-003

Date Collected: 10/01/19 12:00

Date Received: 10/08/19 11:30

Lab Sample ID: 320-55123-4

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			330691	10/14/19 09:51	MC	TAL SAC

Eurofins TestAmerica, Sacramento

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: Fire Training Pit

Job ID: 320-55123-1

Client Sample ID: FTP-003

Date Collected: 10/01/19 12:00

Date Received: 10/08/19 11:30

Lab Sample ID: 320-55123-4

Matrix: Solid

Percent Solids: 90.6

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.13 g	10.00 mL	330959	10/15/19 06:31	AEC	TAL SAC
Total/NA	Analysis	537 (modified)		100			334805	11/01/19 04:43	P1N	TAL SAC

Client Sample ID: FTP-002

Date Collected: 10/01/19 12:10

Date Received: 10/08/19 11:30

Lab Sample ID: 320-55123-5

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			330691	10/14/19 09:51	MC	TAL SAC

Client Sample ID: FTP-002

Date Collected: 10/01/19 12:10

Date Received: 10/08/19 11:30

Lab Sample ID: 320-55123-5

Matrix: Solid

Percent Solids: 90.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.04 g	10.00 mL	330959	10/15/19 06:31	AEC	TAL SAC
Total/NA	Analysis	537 (modified)		100			334805	11/01/19 04:52	P1N	TAL SAC

Client Sample ID: SB-1901-80

Date Collected: 10/03/19 01:15

Date Received: 10/08/19 11:30

Lab Sample ID: 320-55123-6

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			330898	10/14/19 16:37	HRB	TAL SAC

Client Sample ID: SB-1901-80

Date Collected: 10/03/19 01:15

Date Received: 10/08/19 11:30

Lab Sample ID: 320-55123-6

Matrix: Solid

Percent Solids: 89.8

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.23 g	10.00 mL	331247	10/16/19 06:37	AEC	TAL SAC
Total/NA	Analysis	537 (modified)		1			334183	10/28/19 16:26	GMK	TAL SAC

Client Sample ID: SB-1901-150

Date Collected: 10/02/19 15:33

Date Received: 10/08/19 11:30

Lab Sample ID: 320-55123-7

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			330898	10/14/19 16:37	HRB	TAL SAC

Eurofins TestAmerica, Sacramento

Lab Chronicle

Client: Shannon & Wilson, Inc
 Project/Site: Fire Training Pit

Job ID: 320-55123-1

Client Sample ID: SB-1901-150

Lab Sample ID: 320-55123-7

Date Collected: 10/02/19 15:33

Matrix: Solid

Date Received: 10/08/19 11:30

Percent Solids: 88.8

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.02 g	10.00 mL	330959	10/15/19 06:31	AEC	TAL SAC
Total/NA	Analysis	537 (modified)		1			334805	11/01/19 01:51	P1N	TAL SAC

Client Sample ID: MW-1901-Drum

Lab Sample ID: 320-55123-8

Date Collected: 10/07/19 14:10

Matrix: Solid

Date Received: 10/08/19 11:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			330991	10/15/19 10:05	MC	TAL SAC

Client Sample ID: MW-1901-Drum

Lab Sample ID: 320-55123-8

Date Collected: 10/07/19 14:10

Matrix: Solid

Date Received: 10/08/19 11:30

Percent Solids: 74.8

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.24 g	10.00 mL	331247	10/16/19 06:37	AEC	TAL SAC
Total/NA	Analysis	537 (modified)		1			334183	10/28/19 16:35	GMK	TAL SAC

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: Shannon & Wilson, Inc
 Project/Site: Fire Training Pit

Job ID: 320-55123-1

Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
California	State	2897	01-31-20
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Georgia	State	4040	01-29-20
Hawaii	State	<cert No.>	01-29-20
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-20 *
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Michigan	State	9947	01-29-20
Michigan	State Program	9947	01-31-20
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19
Wyoming	State Program	8TMS-L	01-28-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Shannon & Wilson, Inc
Project/Site: Fire Training Pit

Job ID: 320-55123-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
D 2216	Percent Moisture	ASTM	TAL SAC
SHAKE	Shake Extraction with Ultrasonic Bath Extraction	SW846	TAL SAC

Protocol References:

ASTM = ASTM International

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600



Sample Summary

Client: Shannon & Wilson, Inc
Project/Site: Fire Training Pit

Job ID: 320-55123-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-55123-1	FTP-004	Solid	10/01/19 12:40	10/08/19 11:30	
320-55123-2	FTP-005	Solid	10/01/19 12:55	10/08/19 11:30	
320-55123-3	FTP-001	Solid	10/01/19 11:25	10/08/19 11:30	
320-55123-4	FTP-003	Solid	10/01/19 12:00	10/08/19 11:30	
320-55123-5	FTP-002	Solid	10/01/19 12:10	10/08/19 11:30	
320-55123-6	SB-1901-80	Solid	10/03/19 01:15	10/08/19 11:30	
320-55123-7	SB-1901-150	Solid	10/02/19 15:33	10/08/19 11:30	
320-55123-8	MW-1901-Drum	Solid	10/07/19 14:10	10/08/19 11:30	

CHAIN-OF-CUSTODY RECORD

Laboratory Test America Page 1 of 1
 Attn: David Hunter

Analytical Methods (include preservative if used)

PTAS EXTRA LIST	PTAS BY SITE (K-27)	PTAS / PTRA ONLY
-----------------	---------------------	------------------

Quote No: _____

J-Flags: Yes No

Turn Around Time:
 Normal Rush

Please Specify _____

Sample Identity	Lab No.	Time	Date Sampled
FTP-004		1240	10/1/19
FTP-005		1255	10/1/19
FTP-001		1125	10/1/19
FTP-003		1200	10/1/19
FTP-002		1210	10/1/19
FTP-003		5:40pm	9/30/19
SB-1901-80		0115	10/2/19
SB-1901-150		1533	10/2/19
MW-1901-DRUM		1410	10/7/19

Project Information	Sample Receipt
Number: <u>102519-00300</u>	Total No. of Containers: <u>029</u>
Name: <u>Fire Training Pit</u>	COC Seals/Intact? <u>Y/N/A</u>
Contact: <u>MDN</u>	Received Good Cont./Cold
Ongoing Project? <u>Yes</u> <input checked="" type="checkbox"/> No <input type="checkbox"/>	Temp: <u>ICE</u>
Sampler: <u>MDN, ACF</u>	Delivery Method: <u>Gold streak</u>

Notes:
 Please run MS/MSD. Expect x5 samples beginning in "FTP" will require dilution.

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
 Yellow - w/shipment - for consignee files
 Pink - Shannon & Wilson - job file

* Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: _____ Printed Name: _____ Company: _____	Signature: _____ Printed Name: _____ Company: _____	Signature: _____ Printed Name: _____ Company: _____
Time: _____ Date: _____	Time: _____ Date: _____	Time: _____ Date: _____
Received By: 1.	Received By: 2.	Received By: 3.
Signature: _____ Printed Name: <u>Pauline Kintaudi</u> Company: _____	Signature: _____ Printed Name: _____ Company: _____	Signature: _____ Printed Name: _____ Company: _____
Time: <u>11:30</u> Date: <u>10/2/19</u>	Time: _____ Date: _____	Time: _____ Date: _____



320-55123 Chain of Custody

* COC is not relinquished. PK 10/1/19

4.5°C or 4.6°C

No. 411519

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-55123-1

Login Number: 55123

List Source: Eurofins TestAmerica, Sacramento

List Number: 1

Creator: Oropeza, Salvador

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	Seal present with no number.
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	only gel packs
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	False	COC not relinquished.
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Laboratory Data Review Checklist

Completed By:

Brittany Blood

Title:

Environmental Professional I

Date:

11/22/2019

Consultant Firm:

Shannon and Wilson, Inc.

Laboratory Name:

Eurofins TestAmerica

Laboratory Report Number:

320-55123-1

Laboratory Report Date:

11/11/2019

CS Site Name:

Fire Training Pit

ADEC File Number:

100.38.277

Hazard Identification Number:

26816

320-55123-1

Laboratory Report Date:

11/11/2019

CS Site Name:

Fire Training Pit

Note: Any N/A or No box checked must have an explanation in the comments box.

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes No N/A Comments:

The ADEC certified the TestAmerica/Eurofins Laboratories West Sacramento, CA location for the analysis of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) on February 6, 2018. These compounds were included in the ADEC’s Contaminated Sites Laboratory Approval 17-020.

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes No N/A Comments:

Samples were not transferred to another laboratory.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes No N/A Comments:

COC was not relinquished. Samples were analyzed as requested and data is not impacted by this inadvertent oversight.

b. Correct analyses requested?

Yes No N/A Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes No N/A Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes No N/A Comments:

320-55123-1

Laboratory Report Date:

11/11/2019

CS Site Name:

Fire Training Pit

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes No N/A Comments:

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes No N/A Comments:

No sample discrepancies were noted at sample login.

e. Data quality or usability affected?

Comments:

Data quality and/or usability was not affected.

4. Case Narrative

a. Present and understandable?

Yes No N/A Comments:

320-55123-1

Laboratory Report Date:

11/11/2019

CS Site Name:

Fire Training Pit

b. Discrepancies, errors, or QC failures identified by the lab?

Yes No N/A Comments:

320-55123-1

Laboratory Report Date:

11/11/2019

CS Site Name:

Fire Training Pit

The following samples were diluted due to the abundance of target analytes: FTP-001 (320-55123-3[MS]) and FTP-001 (320-55123-3[MSD]). Because of this dilution, the matrix spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.

Due to a shortage in the marketplace for 13C3-PFBS, the target analyte Perfluorobutanesulfonic acid (PFBS) and/or Perfluoropentanesulfonic acid (PFPeS) could not be quantitated against 13C3-PFBS (its labeled variant) as listed in the SOP. PFBS and PFPeS were quantitated versus 18O2-PFHxS instead.

The laboratory control sample (LCS) for preparation batch 320-330959 and analytical batch 320-334805 recovered outside control limits for the following analytes: Perfluoro(2-propoxypropanoic) acid (HFPO-DA) and Perfluorotridecanoic acid (PFTriA). These analytes were biased high in the LCS and were not detected in the associated samples; *FTP-004*, *FTP-005*, *FTP-001*, *FTP-003*, *FTP-002*, *SB-1901-150* and (LCS 320-330959/2-A) therefore, the data has been reported.

The concentration of Perfluorooctanesulfonic acid (PFOS) associated with the following samples exceeded the instrument calibration range: *FTP-005*, *FTP-001* (including 320-55123-3[MS/MSD]), *FTP-003* and *FTP-002*. This analyte has been qualified; however, the peak did not saturate the instrument detector. Historical data indicate that for the isotope dilution method, dilution and re-analysis will not produce significantly different results from those reported above the calibration range. Per client request, the samples were reported with over calibration results. Samples *FTP-001*, *FTP-002*, *FTP-003*, and *FTP-005* were qualified 'J'.

The following samples were diluted due to the abundance of target analytes: *FTP-001* (320-55123-3[MS]) and *FTP-001* (320-55123-3[MSD]). Because of this dilution, the matrix spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.

The matrix spike duplicate (MSD) recoveries for preparation batch 320-331247 and analytical batch 320-332278 were outside control limits for Perfluoroundecanoic acid (PFUnA). Non-homogeneity is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits. However, no MS/MSD was reported in this work order for this preparation batch.

Due to the high concentrations of several analytes, the matrix spike / matrix spike duplicate (MS/MSD) for preparation batch 320-330959 and analytical batch 320-334805 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria.

The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for preparation batch 320-330959 and analytical batch 320-334805 were outside control limits for Perfluoroundecanoic acid (PFUnA). Sample matrix interference and/or non-homogeneity are suspected because the associated

320-55123-1

Laboratory Report Date:

11/11/2019

CS Site Name:

Fire Training Pit

laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

Isotope Dilution Analyte (IDA) 13C3 HFPO-DA recovery is above the method recommended limit for the following sample: *FTP-001 (320-55123-3[MSD])*. Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Extracts are a light reddish-yellow in color. *FTP-004, FTP-005, FTP-001 (including 320-55123-3[MS/MSD]), FTP-003 and FTP-002*.

c. Were all corrective actions documented?

Yes No N/A Comments:

See above.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The case narrative does not discuss effect on data quality, it only discusses discrepancies and what was done in light of them. Any notable data quality issues mentioned in the case narrative are discussed above in 4b or elsewhere within this ADEC checklist.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes No N/A Comments:

b. All applicable holding times met?

Yes No N/A Comments:

c. All soils reported on a dry weight basis?

Yes No N/A Comments:

320-55123-1

Laboratory Report Date:

11/11/2019

CS Site Name:

Fire Training Pit

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes No N/A Comments:

Sample FTP-004: the MDL for PFOA exceeded the ADEC soil-cleanup level due to sample dilution. The PFOA result is bolded as an exceedance in the analytical data table.

e. Data quality or usability affected?

See above.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

No method blank was reported for preparatory batch 320-331247. Project samples associated with this preparatory batch include *SB-1901-80* and *MW-1901-Drum*. We cannot assess potential contamination introduced by the lab during sample preparation in this batch.

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes No N/A Comments:

No analytes were detected in the method blank sample above the LOQ, however, PFOS was detected in the method blank sample at a concentration below the LOQ. All method blank results were less than the limit of quantification, however the results were above the detection limit for PFOS.

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

Sample *SB-1901-150* was affected.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

Sample *SB-1901-150* was flagged UB at the LOQ. Samples flagged with a 'UB' flag are considered not detected due to sample-contamination identified in the blank.

v. Data quality or usability affected?

Comments:

Data quality and/or usability was not affected

320-55123-1

Laboratory Report Date:

11/11/2019

CS Site Name:

Fire Training Pit

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes No N/A Comments:

No LCS/LCSD sample was included for preparatory batch 320-331247.

- ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

N/A; metals and/or inorganics were not analyzed as part of this work order.

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

The %R for Hexafluoropropylene Oxide Dimer Acid (HFPO-DA) and Perfluorotridecanoic acid (PFTriA) were above laboratory recovery limits.

- iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

There is not an LCSD sample to determine precision.

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

No samples were affected as HFPO-DA and PFTriA were recovered high and not detected in associated project samples.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

320-55123-1

Laboratory Report Date:

11/11/2019

CS Site Name:

Fire Training Pit

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Data quality and/or usability was not affected; see above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Note: Leave blank if not required for project

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

No MS/MSD sample was included for preparatory batch 320-331247.

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

N/A; metals and/or inorganics were not analyzed as part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Multiple %R and RPD failures and/or discrepancies were reported for the MS/MSD (parent sample FTP-001) analysis in preparatory batch 320-330959. However, these samples were diluted due to the abundance of target analytes. Because of this dilution, the matrix spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information. Therefore, no data qualification is necessary.

320-55123-1

Laboratory Report Date:

11/11/2019

CS Site Name:

Fire Training Pit

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Not applicable, data quality and/or usability was not affected; see above.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes No N/A Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

Yes No N/A Comments:

All IDA analytes were within acceptable limits with the exception of ¹³C₃ HFPO-DA in sample FTP-001 MSD. The IDA recovery did not affect the MS/MSD sample. The MS/MSD sample was diluted, reducing the level of the matrix spike concentrations. QC issues relating to the MS/MSD samples are due to the dilution of the sample and not IDA recovery issues.

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

The IDA failure did not result in any required flagging. See above.

iv. Data quality or usability affected?

Comments:

Data quality and/or usability was not affected.

320-55123-1

Laboratory Report Date:

11/11/2019

CS Site Name:

Fire Training Pit

e. Trip Blanks

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes No N/A Comments:

PFAS are not volatile compounds; therefore, a trip blank is not required.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes No N/A Comments:

See above.

iii. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

See above.

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

Not applicable, see above.

v. Data quality or usability affected?

Comments:

Data quality and/or usability were not affected.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No N/A Comments:

ii. Submitted blind to lab?

Yes No N/A Comments:

Sample FTP-003 is the field duplicate pair to sample FTP-002.

320-55123-1

Laboratory Report Date:

11/11/2019

CS Site Name:

Fire Training Pit

iii. Precision – All relative percent differences (RPD) less than specified project objectives?
(Recommended: 30% water, 50% soil)

$$RPD (\%) = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2) / 2)} \times 100$$

Where R₁ = Sample Concentration
R₂ = Field Duplicate Concentration

Yes No N/A Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Not applicable, see above.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes No N/A Comments:

No reusable equipment was used for the collection of these samples, therefore an equipment blank was not submitted.

i. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

See above.

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

Not applicable, see above.

iii. Data quality or usability affected?

Comments:

Not applicable, see above.

320-55123-1

Laboratory Report Date:

11/11/2019

CS Site Name:

Fire Training Pit

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes No N/A

Comments:

See section 4b above.

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-55128-1
Client Project/Site: FTP (FIA)

For:

Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

Attn: Marcy Nadel



Authorized for release by:
11/4/2019 8:26:35 AM

David Alltucker, Project Manager I
(916)374-4383
david.alltucker@testamericainc.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:
www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



Table of Contents

Cover Page	1
Table of Contents	2
Definitions/Glossary	3
Case Narrative	4
Detection Summary	5
Client Sample Results	6
Isotope Dilution Summary	12
QC Sample Results	13
QC Association Summary	17
Lab Chronicle	18
Certification Summary	19
Method Summary	20
Sample Summary	21
Chain of Custody	22
Receipt Checklists	23

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: FTP (FIA)

Job ID: 320-55128-1

Qualifiers

LCMS

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: Shannon & Wilson, Inc
Project/Site: FTP (FIA)

Job ID: 320-55128-1

Job ID: 320-55128-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

**Job Narrative
320-55128-1**

Receipt

The samples were received on 10/8/2019 11:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.6° C.

LCMS
Methods 537 (modified), EPA 537 (Mod): Due to a shortage in the marketplace for 13C3-PFBS, the target analyte PFBS and/or Perfluoropentanesulfonic acid (PFPeS) could not be quantitated against 13C3-PFBS (its labeled variant) as listed in the SOP. PFBS and Perfluoropentanesulfonic acid (PFPeS) was quantitated versus 18O2-PFHxS instead.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method 3535: Insufficient sample volume was available to perform a matrix spike duplicate (MSD) associated with preparation batch 320-330479.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: FTP (FIA)

Job ID: 320-55128-1

Client Sample ID: MW-1902-150

Lab Sample ID: 320-55128-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.33	J	1.9	0.33	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.93	J B	1.9	0.16	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.57	J	1.9	0.51	ng/L	1		537 (modified)	Total/NA

Client Sample ID: FB-MW-1902-150

Lab Sample ID: 320-55128-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.28	J B	1.9	0.16	ng/L	1		537 (modified)	Total/NA

Client Sample ID: EB-MW-1902-150

Lab Sample ID: 320-55128-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.28	J B	1.9	0.16	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FTP (FIA)

Job ID: 320-55128-1

Client Sample ID: MW-1902-150

Lab Sample ID: 320-55128-1

Date Collected: 10/02/19 16:18

Matrix: Water

Date Received: 10/08/19 11:30

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.33	J	1.9	0.33	ng/L		10/12/19 06:46	10/14/19 15:03	1
Perfluoropentanoic acid (PFPeA)	ND		1.9	0.46	ng/L		10/12/19 06:46	10/14/19 15:03	1
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		10/12/19 06:46	10/14/19 15:03	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		10/12/19 06:46	10/14/19 15:03	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.80	ng/L		10/12/19 06:46	10/14/19 15:03	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		10/12/19 06:46	10/14/19 15:03	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		10/12/19 06:46	10/14/19 15:03	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		10/12/19 06:46	10/14/19 15:03	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		10/12/19 06:46	10/14/19 15:03	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		10/12/19 06:46	10/14/19 15:03	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.27	ng/L		10/12/19 06:46	10/14/19 15:03	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		10/12/19 06:46	10/14/19 15:03	1
Perfluorohexanesulfonic acid (PFHxS)	0.93	J B	1.9	0.16	ng/L		10/12/19 06:46	10/14/19 15:03	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.18	ng/L		10/12/19 06:46	10/14/19 15:03	1
Perfluorooctanesulfonic acid (PFOS)	0.57	J	1.9	0.51	ng/L		10/12/19 06:46	10/14/19 15:03	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	0.30	ng/L		10/12/19 06:46	10/14/19 15:03	1
Perfluorooctanesulfonamide (FOSA)	ND		1.9	0.33	ng/L		10/12/19 06:46	10/14/19 15:03	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		19	2.9	ng/L		10/12/19 06:46	10/14/19 15:03	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		19	1.8	ng/L		10/12/19 06:46	10/14/19 15:03	1
6:2 FTS	ND		19	1.9	ng/L		10/12/19 06:46	10/14/19 15:03	1
8:2 FTS	ND		19	1.9	ng/L		10/12/19 06:46	10/14/19 15:03	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		10/12/19 06:46	10/14/19 15:03	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.17	ng/L		10/12/19 06:46	10/14/19 15:03	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		10/12/19 06:46	10/14/19 15:03	1
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		10/12/19 06:46	10/14/19 15:03	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	83		25 - 150	10/12/19 06:46	10/14/19 15:03	1
13C5-PFPeA DNU	99		25 - 150	10/12/19 06:46	10/14/19 15:03	1
13C2 PFHxA	95		25 - 150	10/12/19 06:46	10/14/19 15:03	1
13C4 PFHpA	100		25 - 150	10/12/19 06:46	10/14/19 15:03	1
13C4 PFOA	103		25 - 150	10/12/19 06:46	10/14/19 15:03	1
13C5 PFNA	103		25 - 150	10/12/19 06:46	10/14/19 15:03	1
13C2 PFDA	98		25 - 150	10/12/19 06:46	10/14/19 15:03	1
13C2 PFUnA	95		25 - 150	10/12/19 06:46	10/14/19 15:03	1
13C2 PFDoA	93		25 - 150	10/12/19 06:46	10/14/19 15:03	1
13C2 PFTeDA	95		25 - 150	10/12/19 06:46	10/14/19 15:03	1
18O2 PFHxS	104		25 - 150	10/12/19 06:46	10/14/19 15:03	1
13C4 PFOS	95		25 - 150	10/12/19 06:46	10/14/19 15:03	1
13C8 FOSA	92		25 - 150	10/12/19 06:46	10/14/19 15:03	1
d3-NMeFOSAA	81		25 - 150	10/12/19 06:46	10/14/19 15:03	1
d5-NEtFOSAA	87		25 - 150	10/12/19 06:46	10/14/19 15:03	1
M2-6:2 FTS	122		25 - 150	10/12/19 06:46	10/14/19 15:03	1

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FTP (FIA)

Job ID: 320-55128-1

Client Sample ID: MW-1902-150

Lab Sample ID: 320-55128-1

Date Collected: 10/02/19 16:18

Matrix: Water

Date Received: 10/08/19 11:30

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
M2-8:2 FTS	111		25 - 150	10/12/19 06:46	10/14/19 15:03	1
13C3 HFPO-DA	86		25 - 150	10/12/19 06:46	10/14/19 15:03	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FTP (FIA)

Job ID: 320-55128-1

Client Sample ID: FB-MW-1902-150

Lab Sample ID: 320-55128-2

Date Collected: 10/02/19 16:13

Matrix: Water

Date Received: 10/08/19 11:30

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		1.9	0.33	ng/L		10/12/19 06:46	10/14/19 15:11	1
Perfluoropentanoic acid (PFPeA)	ND		1.9	0.46	ng/L		10/12/19 06:46	10/14/19 15:11	1
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		10/12/19 06:46	10/14/19 15:11	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		10/12/19 06:46	10/14/19 15:11	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.81	ng/L		10/12/19 06:46	10/14/19 15:11	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		10/12/19 06:46	10/14/19 15:11	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		10/12/19 06:46	10/14/19 15:11	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		10/12/19 06:46	10/14/19 15:11	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		10/12/19 06:46	10/14/19 15:11	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		10/12/19 06:46	10/14/19 15:11	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.27	ng/L		10/12/19 06:46	10/14/19 15:11	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		10/12/19 06:46	10/14/19 15:11	1
Perfluorohexanesulfonic acid (PFHxS)	0.28	J B	1.9	0.16	ng/L		10/12/19 06:46	10/14/19 15:11	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.18	ng/L		10/12/19 06:46	10/14/19 15:11	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		10/12/19 06:46	10/14/19 15:11	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	0.30	ng/L		10/12/19 06:46	10/14/19 15:11	1
Perfluorooctanesulfonamide (FOSA)	ND		1.9	0.33	ng/L		10/12/19 06:46	10/14/19 15:11	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		19	2.9	ng/L		10/12/19 06:46	10/14/19 15:11	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		19	1.8	ng/L		10/12/19 06:46	10/14/19 15:11	1
6:2 FTS	ND		19	1.9	ng/L		10/12/19 06:46	10/14/19 15:11	1
8:2 FTS	ND		19	1.9	ng/L		10/12/19 06:46	10/14/19 15:11	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		10/12/19 06:46	10/14/19 15:11	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.17	ng/L		10/12/19 06:46	10/14/19 15:11	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		10/12/19 06:46	10/14/19 15:11	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		10/12/19 06:46	10/14/19 15:11	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFBA	100		25 - 150				10/12/19 06:46	10/14/19 15:11	1
13C5-PFPeA DNU	101		25 - 150				10/12/19 06:46	10/14/19 15:11	1
13C2 PFHxA	98		25 - 150				10/12/19 06:46	10/14/19 15:11	1
13C4 PFHpA	107		25 - 150				10/12/19 06:46	10/14/19 15:11	1
13C4 PFOA	106		25 - 150				10/12/19 06:46	10/14/19 15:11	1
13C5 PFNA	103		25 - 150				10/12/19 06:46	10/14/19 15:11	1
13C2 PFDA	102		25 - 150				10/12/19 06:46	10/14/19 15:11	1
13C2 PFUnA	104		25 - 150				10/12/19 06:46	10/14/19 15:11	1
13C2 PFDoA	109		25 - 150				10/12/19 06:46	10/14/19 15:11	1
13C2 PFTeDA	115		25 - 150				10/12/19 06:46	10/14/19 15:11	1
18O2 PFHxS	110		25 - 150				10/12/19 06:46	10/14/19 15:11	1
13C4 PFOS	98		25 - 150				10/12/19 06:46	10/14/19 15:11	1
13C8 FOSA	95		25 - 150				10/12/19 06:46	10/14/19 15:11	1
d3-NMeFOSAA	92		25 - 150				10/12/19 06:46	10/14/19 15:11	1
d5-NEtFOSAA	96		25 - 150				10/12/19 06:46	10/14/19 15:11	1
M2-6:2 FTS	115		25 - 150				10/12/19 06:46	10/14/19 15:11	1
M2-8:2 FTS	119		25 - 150				10/12/19 06:46	10/14/19 15:11	1

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FTP (FIA)

Job ID: 320-55128-1

Client Sample ID: FB-MW-1902-150

Date Collected: 10/02/19 16:13

Date Received: 10/08/19 11:30

Lab Sample ID: 320-55128-2

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	98		25 - 150	10/12/19 06:46	10/14/19 15:11	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FTP (FIA)

Job ID: 320-55128-1

Client Sample ID: EB-MW-1902-150

Lab Sample ID: 320-55128-3

Date Collected: 10/02/19 16:50

Matrix: Water

Date Received: 10/08/19 11:30

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		1.9	0.33	ng/L		10/12/19 06:46	10/14/19 15:19	1
Perfluoropentanoic acid (PFPeA)	ND		1.9	0.46	ng/L		10/12/19 06:46	10/14/19 15:19	1
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		10/12/19 06:46	10/14/19 15:19	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		10/12/19 06:46	10/14/19 15:19	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.80	ng/L		10/12/19 06:46	10/14/19 15:19	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		10/12/19 06:46	10/14/19 15:19	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		10/12/19 06:46	10/14/19 15:19	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		10/12/19 06:46	10/14/19 15:19	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		10/12/19 06:46	10/14/19 15:19	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		10/12/19 06:46	10/14/19 15:19	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.27	ng/L		10/12/19 06:46	10/14/19 15:19	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		10/12/19 06:46	10/14/19 15:19	1
Perfluorohexanesulfonic acid (PFHxS)	0.28	J B	1.9	0.16	ng/L		10/12/19 06:46	10/14/19 15:19	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.18	ng/L		10/12/19 06:46	10/14/19 15:19	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		10/12/19 06:46	10/14/19 15:19	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	0.30	ng/L		10/12/19 06:46	10/14/19 15:19	1
Perfluorooctanesulfonamide (FOSA)	ND		1.9	0.33	ng/L		10/12/19 06:46	10/14/19 15:19	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		19	2.9	ng/L		10/12/19 06:46	10/14/19 15:19	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		19	1.8	ng/L		10/12/19 06:46	10/14/19 15:19	1
6:2 FTS	ND		19	1.9	ng/L		10/12/19 06:46	10/14/19 15:19	1
8:2 FTS	ND		19	1.9	ng/L		10/12/19 06:46	10/14/19 15:19	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		10/12/19 06:46	10/14/19 15:19	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.17	ng/L		10/12/19 06:46	10/14/19 15:19	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		10/12/19 06:46	10/14/19 15:19	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		10/12/19 06:46	10/14/19 15:19	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	99		25 - 150	10/12/19 06:46	10/14/19 15:19	1
13C5-PFPeA DNU	100		25 - 150	10/12/19 06:46	10/14/19 15:19	1
13C2 PFHxA	98		25 - 150	10/12/19 06:46	10/14/19 15:19	1
13C4 PFHpA	109		25 - 150	10/12/19 06:46	10/14/19 15:19	1
13C4 PFOA	105		25 - 150	10/12/19 06:46	10/14/19 15:19	1
13C5 PFNA	106		25 - 150	10/12/19 06:46	10/14/19 15:19	1
13C2 PFDA	104		25 - 150	10/12/19 06:46	10/14/19 15:19	1
13C2 PFUnA	107		25 - 150	10/12/19 06:46	10/14/19 15:19	1
13C2 PFDoA	104		25 - 150	10/12/19 06:46	10/14/19 15:19	1
13C2 PFTeDA	113		25 - 150	10/12/19 06:46	10/14/19 15:19	1
18O2 PFHxS	112		25 - 150	10/12/19 06:46	10/14/19 15:19	1
13C4 PFOS	100		25 - 150	10/12/19 06:46	10/14/19 15:19	1
13C8 FOSA	97		25 - 150	10/12/19 06:46	10/14/19 15:19	1
d3-NMeFOSAA	92		25 - 150	10/12/19 06:46	10/14/19 15:19	1
d5-NEtFOSAA	97		25 - 150	10/12/19 06:46	10/14/19 15:19	1
M2-6:2 FTS	114		25 - 150	10/12/19 06:46	10/14/19 15:19	1
M2-8:2 FTS	118		25 - 150	10/12/19 06:46	10/14/19 15:19	1

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FTP (FIA)

Job ID: 320-55128-1

Client Sample ID: EB-MW-1902-150

Lab Sample ID: 320-55128-3

Date Collected: 10/02/19 16:50

Matrix: Water

Date Received: 10/08/19 11:30

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	100		25 - 150	10/12/19 06:46	10/14/19 15:19	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: FTP (FIA)

Job ID: 320-55128-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	PFHpA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
320-55128-1	MW-1902-150	83	99	95	100	103	103	98	95
320-55128-2	FB-MW-1902-150	100	101	98	107	106	103	102	104
320-55128-3	EB-MW-1902-150	99	100	98	109	105	106	104	107
LCS 320-330479/2-A	Lab Control Sample	103	105	106	112	107	105	104	104
LCSD 320-330479/3-A	Lab Control Sample Dup	107	106	106	110	106	106	104	110
MB 320-330479/1-A	Method Blank	99	98	101	102	102	100	100	101

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFDaA (25-150)	PFTDA (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (25-150)	-NMeFOS _i (25-150)	-NEtFOS _i (25-150)	M262FTS (25-150)
320-55128-1	MW-1902-150	93	95	104	95	92	81	87	122
320-55128-2	FB-MW-1902-150	109	115	110	98	95	92	96	115
320-55128-3	EB-MW-1902-150	104	113	112	100	97	92	97	114
LCS 320-330479/2-A	Lab Control Sample	108	103	117	101	97	94	93	107
LCSD 320-330479/3-A	Lab Control Sample Dup	106	104	116	102	98	98	93	105
MB 320-330479/1-A	Method Blank	103	101	111	97	92	87	93	106

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	M282FTS (25-150)	HFPODA (25-150)
320-55128-1	MW-1902-150	111	86
320-55128-2	FB-MW-1902-150	119	98
320-55128-3	EB-MW-1902-150	118	100
LCS 320-330479/2-A	Lab Control Sample	105	
LCSD 320-330479/3-A	Lab Control Sample Dup	105	
MB 320-330479/1-A	Method Blank	98	

Surrogate Legend

PFBA = 13C4 PFBA
 PFPeA = 13C5-PFPeA DNU
 PFHxA = 13C2 PFHxA
 PFHpA = 13C4 PFHpA
 PFOA = 13C4 PFOA
 PFNA = 13C5 PFNA
 PFDA = 13C2 PFDA
 PFUnA = 13C2 PFUnA
 PFDaA = 13C2 PFDaA
 PFTDA = 13C2 PFTeDA
 PFHxS = 18O2 PFHxS
 PFOS = 13C4 PFOS
 PFOSA = 13C8 FOSA
 d3-NMeFOSAA = d3-NMeFOSAA
 d5-NEtFOSAA = d5-NEtFOSAA
 M262FTS = M2-6:2 FTS
 M282FTS = M2-8:2 FTS
 HFPODA = 13C3 HFPO-DA

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FTP (FIA)

Job ID: 320-55128-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-330479/1-A
Matrix: Water
Analysis Batch: 330797

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 330479

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		2.0	0.35	ng/L		10/12/19 06:46	10/14/19 14:31	1
Perfluoropentanoic acid (PFPeA)	ND		2.0	0.49	ng/L		10/12/19 06:46	10/14/19 14:31	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		10/12/19 06:46	10/14/19 14:31	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		10/12/19 06:46	10/14/19 14:31	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		10/12/19 06:46	10/14/19 14:31	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		10/12/19 06:46	10/14/19 14:31	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		10/12/19 06:46	10/14/19 14:31	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		10/12/19 06:46	10/14/19 14:31	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		10/12/19 06:46	10/14/19 14:31	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		10/12/19 06:46	10/14/19 14:31	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.29	ng/L		10/12/19 06:46	10/14/19 14:31	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		10/12/19 06:46	10/14/19 14:31	1
Perfluorohexanesulfonic acid (PFHxS)	0.283	J	2.0	0.17	ng/L		10/12/19 06:46	10/14/19 14:31	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.19	ng/L		10/12/19 06:46	10/14/19 14:31	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		10/12/19 06:46	10/14/19 14:31	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	0.32	ng/L		10/12/19 06:46	10/14/19 14:31	1
Perfluorooctanesulfonamide (FOSA)	ND		2.0	0.35	ng/L		10/12/19 06:46	10/14/19 14:31	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		20	3.1	ng/L		10/12/19 06:46	10/14/19 14:31	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		20	1.9	ng/L		10/12/19 06:46	10/14/19 14:31	1
6:2 FTS	ND		20	2.0	ng/L		10/12/19 06:46	10/14/19 14:31	1
8:2 FTS	ND		20	2.0	ng/L		10/12/19 06:46	10/14/19 14:31	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		10/12/19 06:46	10/14/19 14:31	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.18	ng/L		10/12/19 06:46	10/14/19 14:31	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		10/12/19 06:46	10/14/19 14:31	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		10/12/19 06:46	10/14/19 14:31	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	99		25 - 150	10/12/19 06:46	10/14/19 14:31	1
13C5-PFPeA DNU	98		25 - 150	10/12/19 06:46	10/14/19 14:31	1
13C2 PFHxA	101		25 - 150	10/12/19 06:46	10/14/19 14:31	1
13C4 PFHpA	102		25 - 150	10/12/19 06:46	10/14/19 14:31	1
13C4 PFOA	102		25 - 150	10/12/19 06:46	10/14/19 14:31	1
13C5 PFNA	100		25 - 150	10/12/19 06:46	10/14/19 14:31	1
13C2 PFDA	100		25 - 150	10/12/19 06:46	10/14/19 14:31	1
13C2 PFUnA	101		25 - 150	10/12/19 06:46	10/14/19 14:31	1
13C2 PFDoA	103		25 - 150	10/12/19 06:46	10/14/19 14:31	1
13C2 PFTeDA	101		25 - 150	10/12/19 06:46	10/14/19 14:31	1
18O2 PFHxS	111		25 - 150	10/12/19 06:46	10/14/19 14:31	1
13C4 PFOS	97		25 - 150	10/12/19 06:46	10/14/19 14:31	1
13C8 FOSA	92		25 - 150	10/12/19 06:46	10/14/19 14:31	1
d3-NMeFOSAA	87		25 - 150	10/12/19 06:46	10/14/19 14:31	1
d5-NEtFOSAA	93		25 - 150	10/12/19 06:46	10/14/19 14:31	1
M2-6:2 FTS	106		25 - 150	10/12/19 06:46	10/14/19 14:31	1

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FTP (FIA)

Job ID: 320-55128-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 320-330479/1-A
Matrix: Water
Analysis Batch: 330797

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 330479

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
M2-8:2 FTS	98		25 - 150	10/12/19 06:46	10/14/19 14:31	1

Lab Sample ID: LCS 320-330479/2-A
Matrix: Water
Analysis Batch: 330797

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 330479

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoropentanoic acid (PFPeA)	40.0	38.5		ng/L		96	66 - 126
Perfluorohexanoic acid (PFHxA)	40.0	40.4		ng/L		101	66 - 126
Perfluoroheptanoic acid (PFHpA)	40.0	39.3		ng/L		98	66 - 126
Perfluorooctanoic acid (PFOA)	40.0	41.4		ng/L		103	64 - 124
Perfluorononanoic acid (PFNA)	40.0	41.2		ng/L		103	68 - 128
Perfluorodecanoic acid (PFDA)	40.0	42.5		ng/L		106	69 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	39.9		ng/L		100	60 - 120
Perfluorododecanoic acid (PFDoA)	40.0	39.1		ng/L		98	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	38.2		ng/L		96	72 - 132
Perfluorotetradecanoic acid (PFTeA)	40.0	39.4		ng/L		99	68 - 128
Perfluorobutanesulfonic acid (PFBS)	35.4	32.2		ng/L		91	73 - 133
Perfluorohexanesulfonic acid (PFHxS)	36.4	32.0		ng/L		88	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	42.6		ng/L		112	68 - 128
Perfluorooctanesulfonic acid (PFOS)	37.1	37.5		ng/L		101	67 - 127
Perfluorodecanesulfonic acid (PFDS)	38.6	38.7		ng/L		100	68 - 128
Perfluorooctanesulfonamide (FOSA)	40.0	39.2		ng/L		98	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	41.0		ng/L		102	67 - 127
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	42.9		ng/L		107	65 - 125
6:2 FTS	37.9	38.0		ng/L		100	66 - 126
8:2 FTS	38.3	39.8		ng/L		104	67 - 127
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	39.1		ng/L		105	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	41.0		ng/L		109	70 - 130
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	39.4		ng/L		98	70 - 130
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	30.0		ng/L		80	70 - 130

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	103		25 - 150
13C5-PFPeA DNU	105		25 - 150
13C2 PFHxA	106		25 - 150

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FTP (FIA)

Job ID: 320-55128-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-330479/2-A

Matrix: Water

Analysis Batch: 330797

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 330479

<i>Isotope Dilution</i>	<i>LCS %Recovery</i>	<i>LCS Qualifier</i>	<i>Limits</i>
13C4 PFHpA	112		25 - 150
13C4 PFOA	107		25 - 150
13C5 PFNA	105		25 - 150
13C2 PFDA	104		25 - 150
13C2 PFUnA	104		25 - 150
13C2 PFDoA	108		25 - 150
13C2 PFTeDA	103		25 - 150
18O2 PFHxS	117		25 - 150
13C4 PFOS	101		25 - 150
13C8 FOSA	97		25 - 150
d3-NMeFOSAA	94		25 - 150
d5-NEtFOSAA	93		25 - 150
M2-6:2 FTS	107		25 - 150
M2-8:2 FTS	105		25 - 150

Lab Sample ID: LCSD 320-330479/3-A

Matrix: Water

Analysis Batch: 330797

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 330479

<i>Analyte</i>	<i>Spike Added</i>	<i>LCSD Result</i>	<i>LCSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec. Limits</i>	<i>RPD</i>	<i>RPD Limit</i>
Perfluorobutanoic acid (PFBA)	40.0	41.7		ng/L		104	70 - 130	2	30
Perfluoropentanoic acid (PFPeA)	40.0	39.4		ng/L		99	66 - 126	2	30
Perfluorohexanoic acid (PFHxA)	40.0	42.9		ng/L		107	66 - 126	6	30
Perfluoroheptanoic acid (PFHpA)	40.0	40.0		ng/L		100	66 - 126	2	30
Perfluorooctanoic acid (PFOA)	40.0	41.7		ng/L		104	64 - 124	1	30
Perfluorononanoic acid (PFNA)	40.0	42.8		ng/L		107	68 - 128	4	30
Perfluorodecanoic acid (PFDA)	40.0	42.8		ng/L		107	69 - 129	1	30
Perfluoroundecanoic acid (PFUnA)	40.0	39.5		ng/L		99	60 - 120	1	30
Perfluorododecanoic acid (PFDoA)	40.0	40.0		ng/L		100	71 - 131	2	30
Perfluorotridecanoic acid (PFTriA)	40.0	40.3		ng/L		101	72 - 132	5	30
Perfluorotetradecanoic acid (PFTeA)	40.0	40.2		ng/L		100	68 - 128	2	30
Perfluorobutanesulfonic acid (PFBS)	35.4	34.8		ng/L		98	73 - 133	8	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	32.6		ng/L		90	63 - 123	2	30
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	42.9		ng/L		113	68 - 128	1	30
Perfluorooctanesulfonic acid (PFOS)	37.1	38.2		ng/L		103	67 - 127	2	30
Perfluorodecanesulfonic acid (PFDS)	38.6	37.3		ng/L		97	68 - 128	4	30
Perfluorooctanesulfonamide (FOSA)	40.0	40.3		ng/L		101	70 - 130	3	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	43.3		ng/L		108	67 - 127	6	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	43.2		ng/L		108	65 - 125	1	30
6:2 FTS	37.9	41.2		ng/L		109	66 - 126	8	30

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
 Project/Site: FTP (FIA)

Job ID: 320-55128-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-330479/3-A
Matrix: Water
Analysis Batch: 330797

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 330479

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
8:2 FTS	38.3	41.4		ng/L		108	67 - 127	4	30
9-Chlorohexadecafluoro-3-oxan onane-1-sulfonic acid	37.3	40.7		ng/L		109	70 - 130	4	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	42.3		ng/L		112	70 - 130	3	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	42.7		ng/L		107	70 - 130	8	30
11-Chloroeicosafluoro-3-oxaund ecane-1-sulfonic acid	37.7	32.1		ng/L		85	70 - 130	7	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C4 PFBA	107		25 - 150
13C5-PFPeA DNU	106		25 - 150
13C2 PFHxA	106		25 - 150
13C4 PFHpA	110		25 - 150
13C4 PFOA	106		25 - 150
13C5 PFNA	106		25 - 150
13C2 PFDA	104		25 - 150
13C2 PFUnA	110		25 - 150
13C2 PFDoA	106		25 - 150
13C2 PFTeDA	104		25 - 150
18O2 PFHxS	116		25 - 150
13C4 PFOS	102		25 - 150
13C8 FOSA	98		25 - 150
d3-NMeFOSAA	98		25 - 150
d5-NEtFOSAA	93		25 - 150
M2-6:2 FTS	105		25 - 150
M2-8:2 FTS	105		25 - 150

QC Association Summary

Client: Shannon & Wilson, Inc
Project/Site: FTP (FIA)

Job ID: 320-55128-1

LCMS

Prep Batch: 330479

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-55128-1	MW-1902-150	Total/NA	Water	3535	
320-55128-2	FB-MW-1902-150	Total/NA	Water	3535	
320-55128-3	EB-MW-1902-150	Total/NA	Water	3535	
MB 320-330479/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-330479/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-330479/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 330797

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-55128-1	MW-1902-150	Total/NA	Water	537 (modified)	330479
320-55128-2	FB-MW-1902-150	Total/NA	Water	537 (modified)	330479
320-55128-3	EB-MW-1902-150	Total/NA	Water	537 (modified)	330479
MB 320-330479/1-A	Method Blank	Total/NA	Water	537 (modified)	330479
LCS 320-330479/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	330479
LCSD 320-330479/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	330479

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: FTP (FIA)

Job ID: 320-55128-1

Client Sample ID: MW-1902-150

Date Collected: 10/02/19 16:18

Date Received: 10/08/19 11:30

Lab Sample ID: 320-55128-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			266.5 mL	10 mL	330479	10/12/19 06:46	AF	TAL SAC
Total/NA	Analysis	537 (modified)		1			330797	10/14/19 15:03	D1R	TAL SAC

Client Sample ID: FB-MW-1902-150

Date Collected: 10/02/19 16:13

Date Received: 10/08/19 11:30

Lab Sample ID: 320-55128-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			263.8 mL	10 mL	330479	10/12/19 06:46	AF	TAL SAC
Total/NA	Analysis	537 (modified)		1			330797	10/14/19 15:11	D1R	TAL SAC

Client Sample ID: EB-MW-1902-150

Date Collected: 10/02/19 16:50

Date Received: 10/08/19 11:30

Lab Sample ID: 320-55128-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			264.9 mL	10 mL	330479	10/12/19 06:46	AF	TAL SAC
Total/NA	Analysis	537 (modified)		1			330797	10/14/19 15:19	D1R	TAL SAC

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: Shannon & Wilson, Inc
 Project/Site: FTP (FIA)

Job ID: 320-55128-1

Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
California	State	2897	01-31-20
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Georgia	State	4040	01-29-20
Hawaii	State	<cert No.>	01-29-20
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-19
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Michigan	State	9947	01-29-20
Michigan	State Program	9947	01-31-20
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
USEPA UCMR	Federal	CA00044	12-31-20
Utah	NELAP	CA000442019-01	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19
Wyoming	State Program	8TMS-L	01-28-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Shannon & Wilson, Inc
Project/Site: FTP (FIA)

Job ID: 320-55128-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
3535	Solid-Phase Extraction (SPE)	SW846	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

Sample Summary

Client: Shannon & Wilson, Inc
Project/Site: FTP (FIA)

Job ID: 320-55128-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-55128-1	MW-1902-150	Water	10/02/19 16:18	10/08/19 11:30	
320-55128-2	FB-MW-1902-150	Water	10/02/19 16:13	10/08/19 11:30	
320-55128-3	EB-MW-1902-150	Water	10/02/19 16:50	10/08/19 11:30	

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

CHAIN-OF-CUSTODY RECORD

Analytical Methods (include preservative if used)

PPSH PPSH MW (21 PPSH)
 PPSH PPSH MW (21 PPSH)

Quote No: _____

J-Flags: Yes No

Turn Around Time:
 Normal Rush
 Please Specify _____

Sample Identity	Lab No.	Time	Date Sampled	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
MW-1902-150		1618	10/02/19	2	Groundwater
FB-MW-1902-150		1613	10/02/19	2	Groundwater Field BIK
EB-MW-1902-150		1650	10/02/19	2	Groundwater Equipt BIK
MW-1902-150					Groundwater

Project Information

Number: 102519-010
 Name: FTP (FIA)
 Contact: MDN
 Ongoing Project? Yes No
 Sampler: RLW

Sample Receipt

Total No. of Containers: 6
 COC Seals/Intact? Y/N/NA
 Received Good Cond./Cold
 Temp:
 Delivery Method: Goldstein

Notes:

320-55128 Chain of Custody

Distribution: _____ laboratory report

Yellow - w/shipment - for consignee files
 Pink - Shannon & Wilson - job file

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: _____ Printed Name: _____ Company: _____	Signature: _____ Printed Name: _____ Company: _____	Signature: _____ Printed Name: _____ Company: _____
Time: _____ Date: _____	Time: _____ Date: _____	Time: _____ Date: _____
Received By: 1.	Received By: 2.	Received By: 3.
Signature: _____ Printed Name: <u>Pauline Kintaudi</u> Company: _____	Signature: _____ Printed Name: _____ Company: _____	Signature: _____ Printed Name: _____ Company: _____
Time: <u>11:30</u> Date: <u>10/3/19</u>	Time: _____ Date: _____	Time: _____ Date: _____

* COC is not being relinquished. PL 10/3/19

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-55128-1

Login Number: 55128

List Source: Eurofins TestAmerica, Sacramento

List Number: 1

Creator: Oropeza, Salvador

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	Seal present with no number.
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Laboratory Data Review Checklist

Completed By:

Brittany Blood

Title:

Environmental Professional I

Date:

11/25/2019

Consultant Firm:

Shannon and Wilson, Inc.

Laboratory Name:

Eurofins TestAmerica

Laboratory Report Number:

320-55128-1

Laboratory Report Date:

11/4/2019

CS Site Name:

FTP, Fairbanks

ADEC File Number:

100.38.277

Hazard Identification Number:

26816

320-55128-1

Laboratory Report Date:

11/4/2019

CS Site Name:

FTP, Fairbanks

Note: Any N/A or No box checked must have an explanation in the comments box.

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes No N/A Comments:

The ADEC certified the TestAmerica/Eurofins Laboratories West Sacramento, CA location for the analysis of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) on February 6, 2018. These compounds were included in the ADEC’s Contaminated Sites Laboratory Approval 17-020.

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes No N/A Comments:

Samples were not transferred to another laboratory.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes No N/A Comments:

CoC was not completed, signed and dated when it was relinquished. Samples were analyzed as requested and data is not impacted by this inadvertent oversight.

b. Correct analyses requested?

Yes No N/A Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes No N/A Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes No N/A Comments:

Analysis of PFAS compounds does not require chemical preservation.

320-55128-1

Laboratory Report Date:

11/4/2019

CS Site Name:

FTP, Fairbanks

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes No N/A Comments:

The sample receipt form notes that the samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes No N/A Comments:

There were not any discrepancies indicated on this work order.

e. Data quality or usability affected?

Comments:

Data quality and/or usability was not affected.

4. Case Narrative

a. Present and understandable?

Yes No N/A Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

Yes No N/A Comments:

Due to a shortage in the marketplace for 13C3-PFBS, the target analyte PFBS and/or Perfluoropentanesulfonic acid (PFPeS) could not be quantitated against 13C3-PFBS (its labeled variant) as listed in the SOP. PFBS and Perfluoropentanesulfonic acid (PFPeS) was quantitated versus 18O2-PFHxS instead.

There was insufficient sample volume available to perform a MSD associated with the preparation batch 320-330479.

c. Were all corrective actions documented?

Yes No N/A Comments:

See above.

320-55128-1

Laboratory Report Date:

11/4/2019

CS Site Name:

FTP, Fairbanks

d. What is the effect on data quality/usability according to the case narrative?

Comments:

Data quality and/or usability was not affected; see above.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes No N/A Comments:

b. All applicable holding times met?

Yes No N/A Comments:

c. All soils reported on a dry weight basis?

Yes No N/A Comments:

Samples were water samples.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes No N/A Comments:

e. Data quality or usability affected?

Data quality and or usability was not affected; see above.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

320-55128-1

Laboratory Report Date:

11/4/2019

CS Site Name:

FTP, Fairbanks

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes No N/A Comments:

No method blank results were above the LOQ, however, PFHxS was detected below the LOQ in the method blank sample.

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

MW-1902-150, FB-MW-1902-150 and EB-MW-1902-150 were affected.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

MW-1902-150 is flagged UB. Samples flagged with a 'UB' flag are considered not detected due to sample-contamination identified in the method blank. *FB-MW-1902-150* and *EB-MW-1902-150* are the field and equipment blank, respectively. PFHxS was detected in these samples, but as these are not project samples the results have not been qualified.

v. Data quality or usability affected?

Comments:

Data quality and/or usability are not affected.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes No N/A Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

N/A; metals and/or inorganics were not analyzed as part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

320-55128-1

Laboratory Report Date:

11/4/2019

CS Site Name:

FTP, Fairbanks

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Not applicable, see above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Data quality and/or usability was not affected; see above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Note: Leave blank if not required for project

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

There was not a sufficient amount of sample volume available to perform an MSD.

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

N/A; metals and/or inorganics were not analyzed as part of this work order.

320-55128-1

Laboratory Report Date:

11/4/2019

CS Site Name:

FTP, Fairbanks

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

See above.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

See above.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Not applicable, see above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Data quality and/or usability was not affected; see above.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes No N/A Comments:

320-55128-1

Laboratory Report Date:

11/4/2019

CS Site Name:

FTP, Fairbanks

- ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

Yes No N/A Comments:

- iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

No data qualification was required.

- iv. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

e. Trip Blanks

- i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes No N/A Comments:

PFAS are not volatile compounds; therefore, a trip blank is not required.

- ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes No N/A Comments:

N/A a trip blank was not required.

- iii. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

No samples were affected.

- iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

No samples were affected.

320-55128-1

Laboratory Report Date:

11/4/2019

CS Site Name:

FTP, Fairbanks

v. Data quality or usability affected?

Comments:

Data quality and/or usability were not affected; see above.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No N/A Comments:

A field-duplicate was not collected for the samples submitted in this work order. However, field-duplicate samples are submitted at the appropriate frequency for the overall project.

ii. Submitted blind to lab?

Yes No N/A Comments:

See above.

iii. Precision – All relative percent differences (RPD) less than specified project objectives?
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Yes No N/A Comments:

See above.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Data quality and/or usability was not affected; see above.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes No N/A Comments:

An equipment blank sample, *EB-MW-1902-150*, and a field blank sample, *FB-MW-1902-150*, were submitted.

320-55128-1

Laboratory Report Date:

11/4/2019

CS Site Name:

FTP, Fairbanks

i. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

No equipment and field blank results were above the LOQ, however, PFHxS was detected below the LOQ in both samples. The PFHxS detection in the equipment and field blank samples is attributed to method blank contamination as evidenced by the similar concentration of PFHxS detected in the method blank samples. See section 6a, above.

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

Not applicable, see above.

iii. Data quality or usability affected?

Comments:

Data quality and or usability were not affected; see above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes No N/A Comments:

There were no other data flags necessary.

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-55546-1
Client Project/Site: FAI Fire Tr. Pit

For:

Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

Attn: Marcy Nadel



Authorized for release by:
11/18/2019 11:59:19 AM

David Alltucker, Project Manager I
(916)374-4383
david.alltucker@testamericainc.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:
www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



Table of Contents

Cover Page	1
Table of Contents	2
Definitions/Glossary	3
Case Narrative	4
Detection Summary	5
Client Sample Results	7
Isotope Dilution Summary	17
QC Sample Results	18
QC Association Summary	21
Lab Chronicle	22
Certification Summary	24
Method Summary	25
Sample Summary	26
Chain of Custody	27
Receipt Checklists	28

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: FAI Fire Tr. Pit

Job ID: 320-55546-1

Qualifiers

LCMS

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: Shannon & Wilson, Inc
Project/Site: FAI Fire Tr. Pit

Job ID: 320-55546-1

Job ID: 320-55546-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative 320-55546-1

Receipt

The samples were received on 10/22/2019 10:35 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.2° C.

LCMS

Method 537 (modified): Due to a shortage in the marketplace for 13C3-PFBS, the target analyte PFBS and/or Perfluoropentanesulfonic acid (PFPeS) could not be quantitated against 13C3-PFBS (its labeled variant) as listed in the SOP. PFBS and Perfluoropentanesulfonic acid (PFPeS) was quantitated versus 18O2-PFHxS instead.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-333937.

Method 3535: Samples contain a small amount of reddish colored sediment. MW-1902-15 (320-55546-1), MW-1902-80 (320-55546-4), MW-1902-40 (320-55546-5), MW-1901-80 (320-55546-7) and MW-1901-150 (320-55546-9)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI Fire Tr. Pit

Job ID: 320-55546-1

Client Sample ID: MW-1902-15

Lab Sample ID: 320-55546-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	60		1.8	0.52	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	8.0		1.8	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	14		1.8	0.76	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	22		1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	110	B	1.8	0.15	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	25		1.8	0.48	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-1902-15-FB

Lab Sample ID: 320-55546-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.23	J B	1.8	0.15	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-1902-80-FB

Lab Sample ID: 320-55546-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.22	J B	1.8	0.15	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-1902-80

Lab Sample ID: 320-55546-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	1.0	J B	1.9	0.16	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.2		1.9	0.50	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-1902-40

Lab Sample ID: 320-55546-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.4	J	1.9	0.54	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.50	J	1.9	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.91	J	1.9	0.79	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.65	J	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.3	B	1.9	0.16	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.2		1.9	0.50	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-1901-80-FB

Lab Sample ID: 320-55546-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.25	J B	1.8	0.15	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-1901-80

Lab Sample ID: 320-55546-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.2	J	1.8	0.52	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.55	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.7	B	1.8	0.15	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.6	J	1.8	0.49	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-1901-80-EB

Lab Sample ID: 320-55546-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.24	J B	1.7	0.15	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-1901-150

Lab Sample ID: 320-55546-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.27	J	1.7	0.21	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI Fire Tr. Pit

Job ID: 320-55546-1

Client Sample ID: MW-1901-150 (Continued)

Lab Sample ID: 320-55546-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.73	J B	1.7	0.14	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-1901-150-FB

Lab Sample ID: 320-55546-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.25	J B	1.8	0.15	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI Fire Tr. Pit

Job ID: 320-55546-1

Client Sample ID: MW-1902-15

Lab Sample ID: 320-55546-1

Date Collected: 10/14/19 16:00

Matrix: Water

Date Received: 10/22/19 10:35

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	60		1.8	0.52	ng/L		10/26/19 13:23	11/12/19 17:33	1
Perfluoroheptanoic acid (PFHpA)	8.0		1.8	0.22	ng/L		10/26/19 13:23	11/12/19 17:33	1
Perfluorooctanoic acid (PFOA)	14		1.8	0.76	ng/L		10/26/19 13:23	11/12/19 17:33	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		10/26/19 13:23	11/12/19 17:33	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		10/26/19 13:23	11/12/19 17:33	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		10/26/19 13:23	11/12/19 17:33	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		10/26/19 13:23	11/12/19 17:33	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		10/26/19 13:23	11/12/19 17:33	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.26	ng/L		10/26/19 13:23	11/12/19 17:33	1
Perfluorobutanesulfonic acid (PFBS)	22		1.8	0.18	ng/L		10/26/19 13:23	11/12/19 17:33	1
Perfluorohexanesulfonic acid (PFHxS)	110	B	1.8	0.15	ng/L		10/26/19 13:23	11/12/19 17:33	1
Perfluorooctanesulfonic acid (PFOS)	25		1.8	0.48	ng/L		10/26/19 13:23	11/12/19 17:33	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		18	1.7	ng/L		10/26/19 13:23	11/12/19 17:33	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		18	2.8	ng/L		10/26/19 13:23	11/12/19 17:33	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		10/26/19 13:23	11/12/19 17:33	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		10/26/19 13:23	11/12/19 17:33	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		10/26/19 13:23	11/12/19 17:33	1
4,8-Dioxo-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.16	ng/L		10/26/19 13:23	11/12/19 17:33	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	94		25 - 150	10/26/19 13:23	11/12/19 17:33	1
13C4 PFHpA	103		25 - 150	10/26/19 13:23	11/12/19 17:33	1
13C4 PFOA	115		25 - 150	10/26/19 13:23	11/12/19 17:33	1
13C5 PFNA	105		25 - 150	10/26/19 13:23	11/12/19 17:33	1
13C2 PFDA	110		25 - 150	10/26/19 13:23	11/12/19 17:33	1
13C2 PFUnA	102		25 - 150	10/26/19 13:23	11/12/19 17:33	1
13C2 PFDoA	99		25 - 150	10/26/19 13:23	11/12/19 17:33	1
13C2 PFTeDA	105		25 - 150	10/26/19 13:23	11/12/19 17:33	1
18O2 PFHxS	104		25 - 150	10/26/19 13:23	11/12/19 17:33	1
13C4 PFOS	94		25 - 150	10/26/19 13:23	11/12/19 17:33	1
d3-NMeFOSAA	87		25 - 150	10/26/19 13:23	11/12/19 17:33	1
d5-NEtFOSAA	94		25 - 150	10/26/19 13:23	11/12/19 17:33	1
13C3 HFPO-DA	99		25 - 150	10/26/19 13:23	11/12/19 17:33	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI Fire Tr. Pit

Job ID: 320-55546-1

Client Sample ID: MW-1902-15-FB

Lab Sample ID: 320-55546-2

Date Collected: 10/14/19 16:20

Matrix: Water

Date Received: 10/22/19 10:35

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		10/26/19 13:23	11/03/19 20:19	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		10/26/19 13:23	11/03/19 20:19	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.76	ng/L		10/26/19 13:23	11/03/19 20:19	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		10/26/19 13:23	11/03/19 20:19	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		10/26/19 13:23	11/03/19 20:19	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		10/26/19 13:23	11/03/19 20:19	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		10/26/19 13:23	11/03/19 20:19	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		10/26/19 13:23	11/03/19 20:19	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.26	ng/L		10/26/19 13:23	11/03/19 20:19	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		10/26/19 13:23	11/03/19 20:19	1
Perfluorohexanesulfonic acid (PFHxS)	0.23	J B	1.8	0.15	ng/L		10/26/19 13:23	11/03/19 20:19	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.48	ng/L		10/26/19 13:23	11/03/19 20:19	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		18	1.7	ng/L		10/26/19 13:23	11/03/19 20:19	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		18	2.8	ng/L		10/26/19 13:23	11/03/19 20:19	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		10/26/19 13:23	11/03/19 20:19	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		10/26/19 13:23	11/03/19 20:19	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		10/26/19 13:23	11/03/19 20:19	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.16	ng/L		10/26/19 13:23	11/03/19 20:19	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	120		25 - 150	10/26/19 13:23	11/03/19 20:19	1
13C4 PFHpA	121		25 - 150	10/26/19 13:23	11/03/19 20:19	1
13C4 PFOA	114		25 - 150	10/26/19 13:23	11/03/19 20:19	1
13C5 PFNA	109		25 - 150	10/26/19 13:23	11/03/19 20:19	1
13C2 PFDA	95		25 - 150	10/26/19 13:23	11/03/19 20:19	1
13C2 PFUnA	110		25 - 150	10/26/19 13:23	11/03/19 20:19	1
13C2 PFDoA	87		25 - 150	10/26/19 13:23	11/03/19 20:19	1
13C2 PFTeDA	99		25 - 150	10/26/19 13:23	11/03/19 20:19	1
18O2 PFHxS	130		25 - 150	10/26/19 13:23	11/03/19 20:19	1
13C4 PFOS	114		25 - 150	10/26/19 13:23	11/03/19 20:19	1
d3-NMeFOSAA	98		25 - 150	10/26/19 13:23	11/03/19 20:19	1
d5-NEtFOSAA	97		25 - 150	10/26/19 13:23	11/03/19 20:19	1
13C3 HFPO-DA	121		25 - 150	10/26/19 13:23	11/03/19 20:19	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI Fire Tr. Pit

Job ID: 320-55546-1

Client Sample ID: MW-1902-80-FB

Lab Sample ID: 320-55546-3

Date Collected: 10/15/19 16:18

Matrix: Water

Date Received: 10/22/19 10:35

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.51	ng/L		10/26/19 13:23	11/03/19 20:29	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		10/26/19 13:23	11/03/19 20:29	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.75	ng/L		10/26/19 13:23	11/03/19 20:29	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		10/26/19 13:23	11/03/19 20:29	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		10/26/19 13:23	11/03/19 20:29	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.97	ng/L		10/26/19 13:23	11/03/19 20:29	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.48	ng/L		10/26/19 13:23	11/03/19 20:29	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.1	ng/L		10/26/19 13:23	11/03/19 20:29	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.25	ng/L		10/26/19 13:23	11/03/19 20:29	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		10/26/19 13:23	11/03/19 20:29	1
Perfluorohexanesulfonic acid (PFHxS)	0.22	J B	1.8	0.15	ng/L		10/26/19 13:23	11/03/19 20:29	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.47	ng/L		10/26/19 13:23	11/03/19 20:29	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		18	1.7	ng/L		10/26/19 13:23	11/03/19 20:29	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		18	2.7	ng/L		10/26/19 13:23	11/03/19 20:29	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		10/26/19 13:23	11/03/19 20:29	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		10/26/19 13:23	11/03/19 20:29	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		10/26/19 13:23	11/03/19 20:29	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.16	ng/L		10/26/19 13:23	11/03/19 20:29	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	109		25 - 150	10/26/19 13:23	11/03/19 20:29	1
13C4 PFHpA	110		25 - 150	10/26/19 13:23	11/03/19 20:29	1
13C4 PFOA	109		25 - 150	10/26/19 13:23	11/03/19 20:29	1
13C5 PFNA	103		25 - 150	10/26/19 13:23	11/03/19 20:29	1
13C2 PFDA	94		25 - 150	10/26/19 13:23	11/03/19 20:29	1
13C2 PFUnA	122		25 - 150	10/26/19 13:23	11/03/19 20:29	1
13C2 PFDoA	105		25 - 150	10/26/19 13:23	11/03/19 20:29	1
13C2 PFTeDA	116		25 - 150	10/26/19 13:23	11/03/19 20:29	1
18O2 PFHxS	125		25 - 150	10/26/19 13:23	11/03/19 20:29	1
13C4 PFOS	112		25 - 150	10/26/19 13:23	11/03/19 20:29	1
d3-NMeFOSAA	101		25 - 150	10/26/19 13:23	11/03/19 20:29	1
d5-NEtFOSAA	104		25 - 150	10/26/19 13:23	11/03/19 20:29	1
13C3 HFPO-DA	99		25 - 150	10/26/19 13:23	11/03/19 20:29	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI Fire Tr. Pit

Job ID: 320-55546-1

Client Sample ID: MW-1902-80

Lab Sample ID: 320-55546-4

Date Collected: 10/15/19 16:13

Matrix: Water

Date Received: 10/22/19 10:35

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		10/26/19 13:23	11/12/19 17:43	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		10/26/19 13:23	11/12/19 17:43	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		10/26/19 13:23	11/12/19 17:43	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		10/26/19 13:23	11/12/19 17:43	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		10/26/19 13:23	11/12/19 17:43	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		10/26/19 13:23	11/12/19 17:43	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		10/26/19 13:23	11/12/19 17:43	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		10/26/19 13:23	11/12/19 17:43	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.27	ng/L		10/26/19 13:23	11/12/19 17:43	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		10/26/19 13:23	11/12/19 17:43	1
Perfluorohexanesulfonic acid (PFHxS)	1.0	J B	1.9	0.16	ng/L		10/26/19 13:23	11/12/19 17:43	1
Perfluorooctanesulfonic acid (PFOS)	2.2		1.9	0.50	ng/L		10/26/19 13:23	11/12/19 17:43	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		19	1.8	ng/L		10/26/19 13:23	11/12/19 17:43	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		19	2.9	ng/L		10/26/19 13:23	11/12/19 17:43	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		10/26/19 13:23	11/12/19 17:43	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		10/26/19 13:23	11/12/19 17:43	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		10/26/19 13:23	11/12/19 17:43	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.17	ng/L		10/26/19 13:23	11/12/19 17:43	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	104		25 - 150	10/26/19 13:23	11/12/19 17:43	1
13C4 PFHpA	97		25 - 150	10/26/19 13:23	11/12/19 17:43	1
13C4 PFOA	114		25 - 150	10/26/19 13:23	11/12/19 17:43	1
13C5 PFNA	124		25 - 150	10/26/19 13:23	11/12/19 17:43	1
13C2 PFDA	113		25 - 150	10/26/19 13:23	11/12/19 17:43	1
13C2 PFUnA	118		25 - 150	10/26/19 13:23	11/12/19 17:43	1
13C2 PFDoA	96		25 - 150	10/26/19 13:23	11/12/19 17:43	1
13C2 PFTeDA	113		25 - 150	10/26/19 13:23	11/12/19 17:43	1
18O2 PFHxS	105		25 - 150	10/26/19 13:23	11/12/19 17:43	1
13C4 PFOS	97		25 - 150	10/26/19 13:23	11/12/19 17:43	1
d3-NMeFOSAA	91		25 - 150	10/26/19 13:23	11/12/19 17:43	1
d5-NEtFOSAA	96		25 - 150	10/26/19 13:23	11/12/19 17:43	1
13C3 HFPO-DA	85		25 - 150	10/26/19 13:23	11/12/19 17:43	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI Fire Tr. Pit

Job ID: 320-55546-1

Client Sample ID: MW-1902-40

Lab Sample ID: 320-55546-5

Date Collected: 10/15/19 15:06

Matrix: Water

Date Received: 10/22/19 10:35

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	1.4	J	1.9	0.54	ng/L		10/26/19 13:23	11/12/19 17:52	1
Perfluoroheptanoic acid (PFHpA)	0.50	J	1.9	0.23	ng/L		10/26/19 13:23	11/12/19 17:52	1
Perfluorooctanoic acid (PFOA)	0.91	J	1.9	0.79	ng/L		10/26/19 13:23	11/12/19 17:52	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		10/26/19 13:23	11/12/19 17:52	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		10/26/19 13:23	11/12/19 17:52	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		10/26/19 13:23	11/12/19 17:52	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		10/26/19 13:23	11/12/19 17:52	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		10/26/19 13:23	11/12/19 17:52	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.27	ng/L		10/26/19 13:23	11/12/19 17:52	1
Perfluorobutanesulfonic acid (PFBS)	0.65	J	1.9	0.19	ng/L		10/26/19 13:23	11/12/19 17:52	1
Perfluorohexanesulfonic acid (PFHxS)	2.3	B	1.9	0.16	ng/L		10/26/19 13:23	11/12/19 17:52	1
Perfluorooctanesulfonic acid (PFOS)	3.2		1.9	0.50	ng/L		10/26/19 13:23	11/12/19 17:52	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		19	1.8	ng/L		10/26/19 13:23	11/12/19 17:52	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		19	2.9	ng/L		10/26/19 13:23	11/12/19 17:52	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		10/26/19 13:23	11/12/19 17:52	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		10/26/19 13:23	11/12/19 17:52	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		10/26/19 13:23	11/12/19 17:52	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.17	ng/L		10/26/19 13:23	11/12/19 17:52	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	100		25 - 150	10/26/19 13:23	11/12/19 17:52	1
13C4 PFHpA	98		25 - 150	10/26/19 13:23	11/12/19 17:52	1
13C4 PFOA	101		25 - 150	10/26/19 13:23	11/12/19 17:52	1
13C5 PFNA	134		25 - 150	10/26/19 13:23	11/12/19 17:52	1
13C2 PFDA	113		25 - 150	10/26/19 13:23	11/12/19 17:52	1
13C2 PFUnA	118		25 - 150	10/26/19 13:23	11/12/19 17:52	1
13C2 PFDoA	91		25 - 150	10/26/19 13:23	11/12/19 17:52	1
13C2 PFTeDA	118		25 - 150	10/26/19 13:23	11/12/19 17:52	1
18O2 PFHxS	106		25 - 150	10/26/19 13:23	11/12/19 17:52	1
13C4 PFOS	98		25 - 150	10/26/19 13:23	11/12/19 17:52	1
d3-NMeFOSAA	90		25 - 150	10/26/19 13:23	11/12/19 17:52	1
d5-NEtFOSAA	92		25 - 150	10/26/19 13:23	11/12/19 17:52	1
13C3 HFPO-DA	130		25 - 150	10/26/19 13:23	11/12/19 17:52	1

Client Sample Results

Client: Shannon & Wilson, Inc
 Project/Site: FAI Fire Tr. Pit

Job ID: 320-55546-1

Client Sample ID: MW-1901-80-FB

Lab Sample ID: 320-55546-6

Date Collected: 10/16/19 14:45

Matrix: Water

Date Received: 10/22/19 10:35

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.51	ng/L		10/26/19 13:23	11/03/19 20:38	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		10/26/19 13:23	11/03/19 20:38	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.75	ng/L		10/26/19 13:23	11/03/19 20:38	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		10/26/19 13:23	11/03/19 20:38	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		10/26/19 13:23	11/03/19 20:38	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.98	ng/L		10/26/19 13:23	11/03/19 20:38	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		10/26/19 13:23	11/03/19 20:38	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		10/26/19 13:23	11/03/19 20:38	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.26	ng/L		10/26/19 13:23	11/03/19 20:38	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		10/26/19 13:23	11/03/19 20:38	1
Perfluorohexanesulfonic acid (PFHxS)	0.25	J B	1.8	0.15	ng/L		10/26/19 13:23	11/03/19 20:38	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.48	ng/L		10/26/19 13:23	11/03/19 20:38	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		18	1.7	ng/L		10/26/19 13:23	11/03/19 20:38	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		18	2.7	ng/L		10/26/19 13:23	11/03/19 20:38	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		10/26/19 13:23	11/03/19 20:38	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		10/26/19 13:23	11/03/19 20:38	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		10/26/19 13:23	11/03/19 20:38	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.16	ng/L		10/26/19 13:23	11/03/19 20:38	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	104		25 - 150	10/26/19 13:23	11/03/19 20:38	1
13C4 PFHpA	106		25 - 150	10/26/19 13:23	11/03/19 20:38	1
13C4 PFOA	112		25 - 150	10/26/19 13:23	11/03/19 20:38	1
13C5 PFNA	101		25 - 150	10/26/19 13:23	11/03/19 20:38	1
13C2 PFDA	97		25 - 150	10/26/19 13:23	11/03/19 20:38	1
13C2 PFUnA	95		25 - 150	10/26/19 13:23	11/03/19 20:38	1
13C2 PFDoA	102		25 - 150	10/26/19 13:23	11/03/19 20:38	1
13C2 PFTeDA	101		25 - 150	10/26/19 13:23	11/03/19 20:38	1
18O2 PFHxS	114		25 - 150	10/26/19 13:23	11/03/19 20:38	1
13C4 PFOS	106		25 - 150	10/26/19 13:23	11/03/19 20:38	1
d3-NMeFOSAA	95		25 - 150	10/26/19 13:23	11/03/19 20:38	1
d5-NEtFOSAA	102		25 - 150	10/26/19 13:23	11/03/19 20:38	1
13C3 HFPO-DA	100		25 - 150	10/26/19 13:23	11/03/19 20:38	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI Fire Tr. Pit

Job ID: 320-55546-1

Client Sample ID: MW-1901-80

Lab Sample ID: 320-55546-7

Date Collected: 10/16/19 13:49

Matrix: Water

Date Received: 10/22/19 10:35

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	1.2	J	1.8	0.52	ng/L		10/26/19 13:23	11/03/19 20:48	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		10/26/19 13:23	11/03/19 20:48	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		10/26/19 13:23	11/03/19 20:48	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		10/26/19 13:23	11/03/19 20:48	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		10/26/19 13:23	11/03/19 20:48	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		10/26/19 13:23	11/03/19 20:48	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		10/26/19 13:23	11/03/19 20:48	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		10/26/19 13:23	11/03/19 20:48	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.26	ng/L		10/26/19 13:23	11/03/19 20:48	1
Perfluorobutanesulfonic acid (PFBS)	0.55	J	1.8	0.18	ng/L		10/26/19 13:23	11/03/19 20:48	1
Perfluorohexanesulfonic acid (PFHxS)	2.7	B	1.8	0.15	ng/L		10/26/19 13:23	11/03/19 20:48	1
Perfluorooctanesulfonic acid (PFOS)	1.6	J	1.8	0.49	ng/L		10/26/19 13:23	11/03/19 20:48	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		18	1.7	ng/L		10/26/19 13:23	11/03/19 20:48	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		18	2.8	ng/L		10/26/19 13:23	11/03/19 20:48	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		10/26/19 13:23	11/03/19 20:48	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		10/26/19 13:23	11/03/19 20:48	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		10/26/19 13:23	11/03/19 20:48	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.16	ng/L		10/26/19 13:23	11/03/19 20:48	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	104		25 - 150				10/26/19 13:23	11/03/19 20:48	1
13C4 PFHpA	108		25 - 150				10/26/19 13:23	11/03/19 20:48	1
13C4 PFOA	114		25 - 150				10/26/19 13:23	11/03/19 20:48	1
13C5 PFNA	101		25 - 150				10/26/19 13:23	11/03/19 20:48	1
13C2 PFDA	95		25 - 150				10/26/19 13:23	11/03/19 20:48	1
13C2 PFUnA	109		25 - 150				10/26/19 13:23	11/03/19 20:48	1
13C2 PFDoA	85		25 - 150				10/26/19 13:23	11/03/19 20:48	1
13C2 PFTeDA	99		25 - 150				10/26/19 13:23	11/03/19 20:48	1
18O2 PFHxS	121		25 - 150				10/26/19 13:23	11/03/19 20:48	1
13C4 PFOS	107		25 - 150				10/26/19 13:23	11/03/19 20:48	1
d3-NMeFOSAA	98		25 - 150				10/26/19 13:23	11/03/19 20:48	1
d5-NEtFOSAA	105		25 - 150				10/26/19 13:23	11/03/19 20:48	1
13C3 HFPO-DA	103		25 - 150				10/26/19 13:23	11/03/19 20:48	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI Fire Tr. Pit

Job ID: 320-55546-1

Client Sample ID: MW-1901-80-EB

Lab Sample ID: 320-55546-8

Date Collected: 10/16/19 14:31

Matrix: Water

Date Received: 10/22/19 10:35

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.51	ng/L		10/26/19 13:23	11/03/19 20:58	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.22	ng/L		10/26/19 13:23	11/03/19 20:58	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.74	ng/L		10/26/19 13:23	11/03/19 20:58	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.24	ng/L		10/26/19 13:23	11/03/19 20:58	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		10/26/19 13:23	11/03/19 20:58	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.96	ng/L		10/26/19 13:23	11/03/19 20:58	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		10/26/19 13:23	11/03/19 20:58	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		10/26/19 13:23	11/03/19 20:58	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.25	ng/L		10/26/19 13:23	11/03/19 20:58	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		10/26/19 13:23	11/03/19 20:58	1
Perfluorohexanesulfonic acid (PFHxS)	0.24	J B	1.7	0.15	ng/L		10/26/19 13:23	11/03/19 20:58	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.47	ng/L		10/26/19 13:23	11/03/19 20:58	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		17	1.7	ng/L		10/26/19 13:23	11/03/19 20:58	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		17	2.7	ng/L		10/26/19 13:23	11/03/19 20:58	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		10/26/19 13:23	11/03/19 20:58	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		10/26/19 13:23	11/03/19 20:58	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		10/26/19 13:23	11/03/19 20:58	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.16	ng/L		10/26/19 13:23	11/03/19 20:58	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	114		25 - 150	10/26/19 13:23	11/03/19 20:58	1
13C4 PFHpA	116		25 - 150	10/26/19 13:23	11/03/19 20:58	1
13C4 PFOA	114		25 - 150	10/26/19 13:23	11/03/19 20:58	1
13C5 PFNA	105		25 - 150	10/26/19 13:23	11/03/19 20:58	1
13C2 PFDA	109		25 - 150	10/26/19 13:23	11/03/19 20:58	1
13C2 PFUnA	118		25 - 150	10/26/19 13:23	11/03/19 20:58	1
13C2 PFDoA	100		25 - 150	10/26/19 13:23	11/03/19 20:58	1
13C2 PFTeDA	102		25 - 150	10/26/19 13:23	11/03/19 20:58	1
18O2 PFHxS	126		25 - 150	10/26/19 13:23	11/03/19 20:58	1
13C4 PFOS	114		25 - 150	10/26/19 13:23	11/03/19 20:58	1
d3-NMeFOSAA	101		25 - 150	10/26/19 13:23	11/03/19 20:58	1
d5-NEtFOSAA	107		25 - 150	10/26/19 13:23	11/03/19 20:58	1
13C3 HFPO-DA	96		25 - 150	10/26/19 13:23	11/03/19 20:58	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI Fire Tr. Pit

Job ID: 320-55546-1

Client Sample ID: MW-1901-150

Lab Sample ID: 320-55546-9

Date Collected: 10/18/19 10:27

Matrix: Water

Date Received: 10/22/19 10:35

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.49	ng/L		10/26/19 13:23	11/03/19 21:07	1
Perfluoroheptanoic acid (PFHpA)	0.27	J	1.7	0.21	ng/L		10/26/19 13:23	11/03/19 21:07	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.72	ng/L		10/26/19 13:23	11/03/19 21:07	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		10/26/19 13:23	11/03/19 21:07	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		10/26/19 13:23	11/03/19 21:07	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.93	ng/L		10/26/19 13:23	11/03/19 21:07	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.46	ng/L		10/26/19 13:23	11/03/19 21:07	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		10/26/19 13:23	11/03/19 21:07	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.25	ng/L		10/26/19 13:23	11/03/19 21:07	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		10/26/19 13:23	11/03/19 21:07	1
Perfluorohexanesulfonic acid (PFHxS)	0.73	J B	1.7	0.14	ng/L		10/26/19 13:23	11/03/19 21:07	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.46	ng/L		10/26/19 13:23	11/03/19 21:07	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		17	1.6	ng/L		10/26/19 13:23	11/03/19 21:07	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		17	2.6	ng/L		10/26/19 13:23	11/03/19 21:07	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		10/26/19 13:23	11/03/19 21:07	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		10/26/19 13:23	11/03/19 21:07	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		10/26/19 13:23	11/03/19 21:07	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.15	ng/L		10/26/19 13:23	11/03/19 21:07	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	109		25 - 150	10/26/19 13:23	11/03/19 21:07	1
13C4 PFHpA	113		25 - 150	10/26/19 13:23	11/03/19 21:07	1
13C4 PFOA	113		25 - 150	10/26/19 13:23	11/03/19 21:07	1
13C5 PFNA	108		25 - 150	10/26/19 13:23	11/03/19 21:07	1
13C2 PFDA	98		25 - 150	10/26/19 13:23	11/03/19 21:07	1
13C2 PFUnA	94		25 - 150	10/26/19 13:23	11/03/19 21:07	1
13C2 PFDoA	104		25 - 150	10/26/19 13:23	11/03/19 21:07	1
13C2 PFTeDA	102		25 - 150	10/26/19 13:23	11/03/19 21:07	1
18O2 PFHxS	124		25 - 150	10/26/19 13:23	11/03/19 21:07	1
13C4 PFOS	112		25 - 150	10/26/19 13:23	11/03/19 21:07	1
d3-NMeFOSAA	100		25 - 150	10/26/19 13:23	11/03/19 21:07	1
d5-NEtFOSAA	109		25 - 150	10/26/19 13:23	11/03/19 21:07	1
13C3 HFPO-DA	108		25 - 150	10/26/19 13:23	11/03/19 21:07	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI Fire Tr. Pit

Job ID: 320-55546-1

Client Sample ID: MW-1901-150-FB

Lab Sample ID: 320-55546-10

Date Collected: 10/18/19 10:30

Matrix: Water

Date Received: 10/22/19 10:35

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		10/26/19 13:23	11/03/19 21:17	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		10/26/19 13:23	11/03/19 21:17	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.76	ng/L		10/26/19 13:23	11/03/19 21:17	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		10/26/19 13:23	11/03/19 21:17	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		10/26/19 13:23	11/03/19 21:17	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.98	ng/L		10/26/19 13:23	11/03/19 21:17	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		10/26/19 13:23	11/03/19 21:17	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		10/26/19 13:23	11/03/19 21:17	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.26	ng/L		10/26/19 13:23	11/03/19 21:17	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		10/26/19 13:23	11/03/19 21:17	1
Perfluorohexanesulfonic acid (PFHxS)	0.25	J B	1.8	0.15	ng/L		10/26/19 13:23	11/03/19 21:17	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.48	ng/L		10/26/19 13:23	11/03/19 21:17	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		18	1.7	ng/L		10/26/19 13:23	11/03/19 21:17	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		18	2.8	ng/L		10/26/19 13:23	11/03/19 21:17	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		10/26/19 13:23	11/03/19 21:17	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		10/26/19 13:23	11/03/19 21:17	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		10/26/19 13:23	11/03/19 21:17	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.16	ng/L		10/26/19 13:23	11/03/19 21:17	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	118		25 - 150	10/26/19 13:23	11/03/19 21:17	1
13C4 PFHpA	120		25 - 150	10/26/19 13:23	11/03/19 21:17	1
13C4 PFOA	114		25 - 150	10/26/19 13:23	11/03/19 21:17	1
13C5 PFNA	119		25 - 150	10/26/19 13:23	11/03/19 21:17	1
13C2 PFDA	97		25 - 150	10/26/19 13:23	11/03/19 21:17	1
13C2 PFUnA	125		25 - 150	10/26/19 13:23	11/03/19 21:17	1
13C2 PFDoA	96		25 - 150	10/26/19 13:23	11/03/19 21:17	1
13C2 PFTeDA	125		25 - 150	10/26/19 13:23	11/03/19 21:17	1
18O2 PFHxS	129		25 - 150	10/26/19 13:23	11/03/19 21:17	1
13C4 PFOS	120		25 - 150	10/26/19 13:23	11/03/19 21:17	1
d3-NMeFOSAA	102		25 - 150	10/26/19 13:23	11/03/19 21:17	1
d5-NEtFOSAA	103		25 - 150	10/26/19 13:23	11/03/19 21:17	1
13C3 HFPO-DA	97		25 - 150	10/26/19 13:23	11/03/19 21:17	1

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI Fire Tr. Pit

Job ID: 320-55546-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxA (25-150)	PFHpA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)	PFDoA (25-150)	PFTDA (25-150)
320-55546-1	MW-1902-15	94	103	115	105	110	102	99	105
320-55546-2	MW-1902-15-FB	120	121	114	109	95	110	87	99
320-55546-3	MW-1902-80-FB	109	110	109	103	94	122	105	116
320-55546-4	MW-1902-80	104	97	114	124	113	118	96	113
320-55546-5	MW-1902-40	100	98	101	134	113	118	91	118
320-55546-6	MW-1901-80-FB	104	106	112	101	97	95	102	101
320-55546-7	MW-1901-80	104	108	114	101	95	109	85	99
320-55546-8	MW-1901-80-EB	114	116	114	105	109	118	100	102
320-55546-9	MW-1901-150	109	113	113	108	98	94	104	102
320-55546-10	MW-1901-150-FB	118	120	114	119	97	125	96	125
LCS 320-333937/2-A	Lab Control Sample	107	110	110	104	99	121	101	109
LCS 320-333937/3-A	Lab Control Sample Dup	109	110	113	100	98	107	110	108
MB 320-333937/1-A	Method Blank	108	109	105	101	107	105	103	100

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxS (25-150)	PFOS (25-150)	-NMeFOS/ (25-150)	-NEtFOS/ (25-150)	HFPODA (25-150)
320-55546-1	MW-1902-15	104	94	87	94	99
320-55546-2	MW-1902-15-FB	130	114	98	97	121
320-55546-3	MW-1902-80-FB	125	112	101	104	99
320-55546-4	MW-1902-80	105	97	91	96	85
320-55546-5	MW-1902-40	106	98	90	92	130
320-55546-6	MW-1901-80-FB	114	106	95	102	100
320-55546-7	MW-1901-80	121	107	98	105	103
320-55546-8	MW-1901-80-EB	126	114	101	107	96
320-55546-9	MW-1901-150	124	112	100	109	108
320-55546-10	MW-1901-150-FB	129	120	102	103	97
LCS 320-333937/2-A	Lab Control Sample	122	112	102	100	93
LCS 320-333937/3-A	Lab Control Sample Dup	124	114	100	96	94
MB 320-333937/1-A	Method Blank	120	110	97	103	98

Surrogate Legend

PFHxA = 13C2 PFHxA
 PFHpA = 13C4 PFHpA
 PFOA = 13C4 PFOA
 PFNA = 13C5 PFNA
 PFDA = 13C2 PFDA
 PFUnA = 13C2 PFUnA
 PFDoA = 13C2 PFDoA
 PFTDA = 13C2 PFTeDA
 PFHxS = 18O2 PFHxS
 PFOS = 13C4 PFOS
 d3-NMeFOSAA = d3-NMeFOSAA
 d5-NEtFOSAA = d5-NEtFOSAA
 HFPODA = 13C3 HFPO-DA

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI Fire Tr. Pit

Job ID: 320-55546-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-333937/1-A
Matrix: Water
Analysis Batch: 335633

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 333937

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		10/26/19 13:23	11/03/19 19:51	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		10/26/19 13:23	11/03/19 19:51	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		10/26/19 13:23	11/03/19 19:51	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		10/26/19 13:23	11/03/19 19:51	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		10/26/19 13:23	11/03/19 19:51	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		10/26/19 13:23	11/03/19 19:51	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		10/26/19 13:23	11/03/19 19:51	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		10/26/19 13:23	11/03/19 19:51	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.29	ng/L		10/26/19 13:23	11/03/19 19:51	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		10/26/19 13:23	11/03/19 19:51	1
Perfluorohexanesulfonic acid (PFHxS)	0.274	J	2.0	0.17	ng/L		10/26/19 13:23	11/03/19 19:51	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		10/26/19 13:23	11/03/19 19:51	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		20	1.9	ng/L		10/26/19 13:23	11/03/19 19:51	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		20	3.1	ng/L		10/26/19 13:23	11/03/19 19:51	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		10/26/19 13:23	11/03/19 19:51	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		10/26/19 13:23	11/03/19 19:51	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		10/26/19 13:23	11/03/19 19:51	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.18	ng/L		10/26/19 13:23	11/03/19 19:51	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	108		25 - 150	10/26/19 13:23	11/03/19 19:51	1
13C4 PFHpA	109		25 - 150	10/26/19 13:23	11/03/19 19:51	1
13C4 PFOA	105		25 - 150	10/26/19 13:23	11/03/19 19:51	1
13C5 PFNA	101		25 - 150	10/26/19 13:23	11/03/19 19:51	1
13C2 PFDA	107		25 - 150	10/26/19 13:23	11/03/19 19:51	1
13C2 PFUnA	105		25 - 150	10/26/19 13:23	11/03/19 19:51	1
13C2 PFDoA	103		25 - 150	10/26/19 13:23	11/03/19 19:51	1
13C2 PFTeDA	100		25 - 150	10/26/19 13:23	11/03/19 19:51	1
18O2 PFHxS	120		25 - 150	10/26/19 13:23	11/03/19 19:51	1
13C4 PFOS	110		25 - 150	10/26/19 13:23	11/03/19 19:51	1
d3-NMeFOSAA	97		25 - 150	10/26/19 13:23	11/03/19 19:51	1
d5-NEtFOSAA	103		25 - 150	10/26/19 13:23	11/03/19 19:51	1
13C3 HFPO-DA	98		25 - 150	10/26/19 13:23	11/03/19 19:51	1

Lab Sample ID: LCS 320-333937/2-A
Matrix: Water
Analysis Batch: 335633

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 333937

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorohexanoic acid (PFHxA)	40.0	41.2		ng/L		103	73 - 133
Perfluoroheptanoic acid (PFHpA)	40.0	44.1		ng/L		110	72 - 132
Perfluorooctanoic acid (PFOA)	40.0	42.0		ng/L		105	70 - 130
Perfluorononanoic acid (PFNA)	40.0	40.7		ng/L		102	75 - 135
Perfluorodecanoic acid (PFDA)	40.0	37.8		ng/L		94	76 - 136

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI Fire Tr. Pit

Job ID: 320-55546-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-333937/2-A
Matrix: Water
Analysis Batch: 335633

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 333937

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoroundecanoic acid (PFUnA)	40.0	34.9		ng/L		87	68 - 128
Perfluorododecanoic acid (PFDoA)	40.0	46.5		ng/L		116	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	39.5		ng/L		99	71 - 131
Perfluorotetradecanoic acid (PFTeA)	40.0	38.6		ng/L		97	70 - 130
Perfluorobutanesulfonic acid (PFBS)	35.4	35.5		ng/L		100	67 - 127
Perfluorohexanesulfonic acid (PFHxS)	36.4	33.9		ng/L		93	59 - 119
Perfluorooctanesulfonic acid (PFOS)	37.1	37.8		ng/L		102	70 - 130
9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid	37.3	38.4		ng/L		103	75 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	42.3		ng/L		106	51 - 173
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	31.2		ng/L		83	54 - 114
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	41.9		ng/L		111	79 - 139

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C2 PFHxA	107		25 - 150
13C4 PFHpA	110		25 - 150
13C4 PFOA	110		25 - 150
13C5 PFNA	104		25 - 150
13C2 PFDA	99		25 - 150
13C2 PFUnA	121		25 - 150
13C2 PFDoA	101		25 - 150
13C2 PFTeDA	109		25 - 150
18O2 PFHxS	122		25 - 150
13C4 PFOS	112		25 - 150
d3-NMeFOSAA	102		25 - 150
d5-NEtFOSAA	100		25 - 150
13C3 HFPO-DA	93		25 - 150

Lab Sample ID: LCSD 320-333937/3-A
Matrix: Water
Analysis Batch: 335633

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 333937

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	41.2		ng/L		103	73 - 133	0	30
Perfluoroheptanoic acid (PFHpA)	40.0	41.5		ng/L		104	72 - 132	6	30
Perfluorooctanoic acid (PFOA)	40.0	39.4		ng/L		98	70 - 130	6	30
Perfluorononanoic acid (PFNA)	40.0	43.4		ng/L		108	75 - 135	6	30
Perfluorodecanoic acid (PFDA)	40.0	41.1		ng/L		103	76 - 136	8	30
Perfluoroundecanoic acid (PFUnA)	40.0	39.6		ng/L		99	68 - 128	13	30
Perfluorododecanoic acid (PFDoA)	40.0	35.9		ng/L		90	71 - 131	26	30

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
 Project/Site: FAI Fire Tr. Pit

Job ID: 320-55546-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-333937/3-A
Matrix: Water
Analysis Batch: 335633

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 333937

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorotridecanoic acid (PFTriA)	40.0	37.7		ng/L		94	71 - 131	5	30
Perfluorotetradecanoic acid (PFTeA)	40.0	39.7		ng/L		99	70 - 130	3	30
Perfluorobutanesulfonic acid (PFBS)	35.4	33.6		ng/L		95	67 - 127	5	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	33.1		ng/L		91	59 - 119	2	30
Perfluorooctanesulfonic acid (PFOS)	37.1	37.5		ng/L		101	70 - 130	1	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	37.2		ng/L		100	75 - 135	3	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	48.2		ng/L		121	51 - 173	13	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	29.2		ng/L		78	54 - 114	7	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	42.6		ng/L		113	79 - 139	2	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C2 PFHxA	109		25 - 150
13C4 PFHpA	110		25 - 150
13C4 PFOA	113		25 - 150
13C5 PFNA	100		25 - 150
13C2 PFDA	98		25 - 150
13C2 PFUnA	107		25 - 150
13C2 PFDoA	110		25 - 150
13C2 PFTeDA	108		25 - 150
18O2 PFHxS	124		25 - 150
13C4 PFOS	114		25 - 150
d3-NMeFOSAA	100		25 - 150
d5-NEtFOSAA	96		25 - 150
13C3 HFPO-DA	94		25 - 150

QC Association Summary

Client: Shannon & Wilson, Inc
 Project/Site: FAI Fire Tr. Pit

Job ID: 320-55546-1

LCMS

Prep Batch: 333937

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-55546-1	MW-1902-15	Total/NA	Water	3535	
320-55546-2	MW-1902-15-FB	Total/NA	Water	3535	
320-55546-3	MW-1902-80-FB	Total/NA	Water	3535	
320-55546-4	MW-1902-80	Total/NA	Water	3535	
320-55546-5	MW-1902-40	Total/NA	Water	3535	
320-55546-6	MW-1901-80-FB	Total/NA	Water	3535	
320-55546-7	MW-1901-80	Total/NA	Water	3535	
320-55546-8	MW-1901-80-EB	Total/NA	Water	3535	
320-55546-9	MW-1901-150	Total/NA	Water	3535	
320-55546-10	MW-1901-150-FB	Total/NA	Water	3535	
MB 320-333937/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-333937/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-333937/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 335633

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-55546-2	MW-1902-15-FB	Total/NA	Water	537 (modified)	333937
320-55546-3	MW-1902-80-FB	Total/NA	Water	537 (modified)	333937
320-55546-6	MW-1901-80-FB	Total/NA	Water	537 (modified)	333937
320-55546-7	MW-1901-80	Total/NA	Water	537 (modified)	333937
320-55546-8	MW-1901-80-EB	Total/NA	Water	537 (modified)	333937
320-55546-9	MW-1901-150	Total/NA	Water	537 (modified)	333937
320-55546-10	MW-1901-150-FB	Total/NA	Water	537 (modified)	333937
MB 320-333937/1-A	Method Blank	Total/NA	Water	537 (modified)	333937
LCS 320-333937/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	333937
LCSD 320-333937/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	333937

Analysis Batch: 338034

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-55546-1	MW-1902-15	Total/NA	Water	537 (modified)	333937
320-55546-4	MW-1902-80	Total/NA	Water	537 (modified)	333937
320-55546-5	MW-1902-40	Total/NA	Water	537 (modified)	333937

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: FAI Fire Tr. Pit

Job ID: 320-55546-1

Client Sample ID: MW-1902-15

Date Collected: 10/14/19 16:00

Date Received: 10/22/19 10:35

Lab Sample ID: 320-55546-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			278.8 mL	10.00 mL	333937	10/26/19 13:23	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			338034	11/12/19 17:33	MNV	TAL SAC

Client Sample ID: MW-1902-15-FB

Date Collected: 10/14/19 16:20

Date Received: 10/22/19 10:35

Lab Sample ID: 320-55546-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			279 mL	10.00 mL	333937	10/26/19 13:23	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			335633	11/03/19 20:19	P1N	TAL SAC

Client Sample ID: MW-1902-80-FB

Date Collected: 10/15/19 16:18

Date Received: 10/22/19 10:35

Lab Sample ID: 320-55546-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			284.4 mL	10.00 mL	333937	10/26/19 13:23	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			335633	11/03/19 20:29	P1N	TAL SAC

Client Sample ID: MW-1902-80

Date Collected: 10/15/19 16:13

Date Received: 10/22/19 10:35

Lab Sample ID: 320-55546-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			268.5 mL	10.00 mL	333937	10/26/19 13:23	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			338034	11/12/19 17:43	MNV	TAL SAC

Client Sample ID: MW-1902-40

Date Collected: 10/15/19 15:06

Date Received: 10/22/19 10:35

Lab Sample ID: 320-55546-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			268.2 mL	10.00 mL	333937	10/26/19 13:23	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			338034	11/12/19 17:52	MNV	TAL SAC

Client Sample ID: MW-1901-80-FB

Date Collected: 10/16/19 14:45

Date Received: 10/22/19 10:35

Lab Sample ID: 320-55546-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			281.9 mL	10.00 mL	333937	10/26/19 13:23	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			335633	11/03/19 20:38	P1N	TAL SAC

Lab Chronicle

Client: Shannon & Wilson, Inc
 Project/Site: FAI Fire Tr. Pit

Job ID: 320-55546-1

Client Sample ID: MW-1901-80

Lab Sample ID: 320-55546-7

Date Collected: 10/16/19 13:49

Matrix: Water

Date Received: 10/22/19 10:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			276.5 mL	10.00 mL	333937	10/26/19 13:23	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			335633	11/03/19 20:48	P1N	TAL SAC

Client Sample ID: MW-1901-80-EB

Lab Sample ID: 320-55546-8

Date Collected: 10/16/19 14:31

Matrix: Water

Date Received: 10/22/19 10:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			286.4 mL	10.00 mL	333937	10/26/19 13:23	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			335633	11/03/19 20:58	P1N	TAL SAC

Client Sample ID: MW-1901-150

Lab Sample ID: 320-55546-9

Date Collected: 10/18/19 10:27

Matrix: Water

Date Received: 10/22/19 10:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			295.8 mL	10.00 mL	333937	10/26/19 13:23	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			335633	11/03/19 21:07	P1N	TAL SAC

Client Sample ID: MW-1901-150-FB

Lab Sample ID: 320-55546-10

Date Collected: 10/18/19 10:30

Matrix: Water

Date Received: 10/22/19 10:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			279.5 mL	10.00 mL	333937	10/26/19 13:23	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			335633	11/03/19 21:17	P1N	TAL SAC

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: Shannon & Wilson, Inc
 Project/Site: FAI Fire Tr. Pit

Job ID: 320-55546-1

Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
California	State	2897	01-31-20
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Georgia	State	4040	01-29-20
Hawaii	State	<cert No.>	01-29-20
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-20 *
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Michigan	State	9947	01-29-20
Michigan	State Program	9947	01-31-20
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19
Wyoming	State Program	8TMS-L	01-28-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI Fire Tr. Pit

Job ID: 320-55546-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
3535	Solid-Phase Extraction (SPE)	SW846	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600



Sample Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI Fire Tr. Pit

Job ID: 320-55546-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-55546-1	MW-1902-15	Water	10/14/19 16:00	10/22/19 10:35	
320-55546-2	MW-1902-15-FB	Water	10/14/19 16:20	10/22/19 10:35	
320-55546-3	MW-1902-80-FB	Water	10/15/19 16:18	10/22/19 10:35	
320-55546-4	MW-1902-80	Water	10/15/19 16:13	10/22/19 10:35	
320-55546-5	MW-1902-40	Water	10/15/19 15:06	10/22/19 10:35	
320-55546-6	MW-1901-80-FB	Water	10/16/19 14:45	10/22/19 10:35	
320-55546-7	MW-1901-80	Water	10/16/19 13:49	10/22/19 10:35	
320-55546-8	MW-1901-80-EB	Water	10/16/19 14:31	10/22/19 10:35	
320-55546-9	MW-1901-150	Water	10/18/19 10:27	10/22/19 10:35	
320-55546-10	MW-1901-150-FB	Water	10/18/19 10:30	10/22/19 10:35	

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

CHAIN-OF-CUSTODY RECORD

Laboratory TEST AMERICA Page 1 of 1
 Attn: DAVID HATTEKER

Analytical Methods (include preservative if used)

Quote No: _____
 Turn Around Time:
 Normal Rush
 J-Flags: Yes No



EPA Method 531.1 (X18 PFAS)

Number of Containers

Remarks/Matrix Composition/Grab? Sample Containers

Sample Identity	Lab No.	Time	Date Sampled	Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
MW-1902-15		1600	10/14/19	X	2	Groundwater, expect dilution
MW-1902-15-FB		1620	10/14/19	X	2	Field Blank
MW-1902-80-FB		1618	10/15/19	X	2	Field Blank
MW-1902-80		1613	10/15/19	X	2	Groundwater, expect dilution
MW-1902-40		15:06	10/15/19	X	2	Field Blank
MW-1901-80-FB		14:45	10/16/19	X	2	Groundwater
MW-1901-80		13:49	10/16/19	X	2	Egypte Blank
MW-1901-40-EF		14:31	10/16/19	X	2	Groundwater
MW-1901-150		10:27	10/16/19	X	2	Groundwater
MW-1901-150-FB		10:30	10/16/19	X	2	Field Blank

Project Information
 Number: 102519-010
 Name: FAI Fire Tr. Pit
 Contact: MDN
 Ongoing Project? Yes No
 Sampler: BABAJ/ARM

Sample Receipt
 Total No. of Containers: 20
 COC Seals/Intact? Y/N/NA
 Received Good Cond./Cold Temp:
 Delivery Method: Goldstreak

Notes:
 Please analyze x18 PFAS, not x21 per sample labels

Relinquished By: 1.
 Signature: _____
 Printed Name: Marcy Model
 Date: 10/15/19
 Company: Shannon & Wilson

Relinquished By: 2.
 Signature: _____
 Printed Name: _____
 Date: _____
 Company: _____

Relinquished By: 3.
 Signature: _____
 Printed Name: _____
 Date: _____
 Company: _____

Received By: 1.
 Signature: _____
 Printed Name: Touline Kinraudi
 Date: 10/23/19
 Company: ETA-SAC

Received By: 2.
 Signature: _____
 Printed Name: _____
 Date: _____
 Company: _____

Received By: 3.
 Signature: _____
 Printed Name: _____
 Date: _____
 Company: _____

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
 Yellow - w/shipment - for consignee files
 Pink - Shannon & Wilson - job file



Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-55546-1

Login Number: 55546

List Source: Eurofins TestAmerica, Sacramento

List Number: 1

Creator: Oropeza, Salvador

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	Seal present with no number.
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Laboratory Data Review Checklist

Completed By:

Brittany Blood

Title:

Environmental Professional I

Date:

11/22/2019

Consultant Firm:

Shannon and Wilson, Inc.

Laboratory Name:

TestAmerica

Laboratory Report Number:

320-55546-1

Laboratory Report Date:

11/18/2019

CS Site Name:

Fairbanks Fire Training Pit

ADEC File Number:

100.38.277

Hazard Identification Number:

26816

320-55546-1

Laboratory Report Date:

11/18/2019

CS Site Name:

Fairbanks Fire Training Pit

Note: Any N/A or No box checked must have an explanation in the comments box.

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes No N/A Comments:

The ADEC certified the TestAmerica/Eurofins Laboratories West Sacramento, CA location for the analysis of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) on February 6, 2018. These compounds were included in the ADEC’s Contaminated Sites Laboratory Approval 17-020.

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes No N/A Comments:

Samples were not transferred to another laboratory.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes No N/A Comments:

b. Correct analyses requested?

Yes No N/A Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes No N/A Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes No N/A Comments:

Analysis of PFAS compounds does not require chemical preservation.

320-55546-1

Laboratory Report Date:

11/18/2019

CS Site Name:

Fairbanks Fire Training Pit

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes No N/A Comments:

The sample receipt form notes that the samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes No N/A Comments:

There were no discrepancies noted in this work order.

e. Data quality or usability affected?

Comments:

Data quality and or usability are not affected; see above.

4. Case Narrative

a. Present and understandable?

Yes No N/A Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

Yes No N/A Comments:

Due to a shortage in the marketplace for 13C3-PFBS, the target analyte PFBS and/or Perfluoropentanesulfonic acid (PFPeS) could not be quantitated against 13C3-PFBS (its labeled variant) as listed in the SOP. PFBS and Perfluoropentanesulfonic acid (PFPeS) was quantitated versus 18O2-PFHxS instead.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-333937.

Samples MW-1902-15, MW-1902-80, MW-1902-40, MW-1901-80 and MW-1901-150 contain a small amount of reddish colored sediment.

c. Were all corrective actions documented?

Yes No N/A Comments:

See above

320-55546-1

Laboratory Report Date:

11/18/2019

CS Site Name:

Fairbanks Fire Training Pit

d. What is the effect on data quality/usability according to the case narrative?

Comments:

There is no affect on data quality and/or usability; see above.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes No N/A Comments:

b. All applicable holding times met?

Yes No N/A Comments:

c. All soils reported on a dry weight basis?

Yes No N/A Comments:

All samples in this work order had a water matrix.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes No N/A Comments:

e. Data quality or usability affected?

Data quality and/or usability were not affected; see above.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

320-55546-1

Laboratory Report Date:

11/18/2019

CS Site Name:

Fairbanks Fire Training Pit

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes No N/A Comments:

The results for Method Blank 320-333937/1-A were all less than the limit of quantitation for PFAS. However, Perfluorohexansulfonic acid (PFHxS) was detected above the LOQ.

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

MW-1902-15, MW-1902-150-FB, MW-1902-15-FB, MW-1902-80-FB, MW-1902-80, MW-1901-80-FB, MW-1901-80-EB, MW-1901-150, MW-1902-40 and MW-1901-80 were affected.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

MW-1902-15, MW-1902-150-FB, MW-1902-15-FB, MW-1902-80-FB, MW-1902-80, MW-1901-80-FB, MW-1901-80-EB, and MW-1901-150 were qualified as B* at the LOQ and are considered not detected due to sample-contamination identified in the blank. However, the -FB and -EB samples are considered field QC samples and are not included in reporting tables. *Samples MW-1902-40 and MW-1901-80* were qualified JH* as high biased estimates.

v. Data quality or usability affected?

Comments:

Data quality and or usability was not affected.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes No N/A Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

N/A; metals and/or inorganics were not analyzed as part of this work order.

320-55546-1

Laboratory Report Date:

11/18/2019

CS Site Name:

Fairbanks Fire Training Pit

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

No samples were affected.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

Qualification of the data was not necessary; see above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability was not affected.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Note: Leave blank if not required for project

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

Insufficient sample volume was available to perform a MS/MSD with the associated preparatory batch.

320-55546-1

Laboratory Report Date:

11/18/2019

CS Site Name:

Fairbanks Fire Training Pit

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

N/A; metals and/or inorganics were not analyzed as a part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

See above.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

See above.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Not applicable, see above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Data quality and/or usability was not affected.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes No N/A Comments:

320-55546-1

Laboratory Report Date:

11/18/2019

CS Site Name:

Fairbanks Fire Training Pit

- ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

Yes No N/A Comments:

- iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

There were not any failed recoveries.

- iv. Data quality or usability affected?

Comments:

Data quality and/or usability were not affected; see above.

e. Trip Blanks

- i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes No N/A Comments:

PFAS are not volatile compounds; therefore, a trip blank is not required.

- ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes No N/A Comments:

N/A; a trip blank is not required.

- iii. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

No samples were affected.

- iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

No samples were affected.

320-55546-1

Laboratory Report Date:

11/18/2019

CS Site Name:

Fairbanks Fire Training Pit

v. Data quality or usability affected?

Comments:

Data quality and/or usability were not affected; see above.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No N/A Comments:

A field-duplicate was not collected for the samples submitted in this work order. However, field-duplicate samples are submitted at the appropriate frequency for the overall project.

ii. Submitted blind to lab?

Yes No N/A Comments:

See above.

iii. Precision – All relative percent differences (RPD) less than specified project objectives?
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Yes No N/A Comments:

See above.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Data quality and/or usability are not affected; see above.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes No N/A Comments:

Additionally, four field blank samples were submitted.

320-55546-1

Laboratory Report Date:

11/18/2019

CS Site Name:

Fairbanks Fire Training Pit

i. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

The equipment blank sample, *MW-1901-80-EB*, had a detection of PFHxS below the LOQ. However, the detection in the equipment blank sample is most likely cause by method blank contamination as similar concentrations of PFHxS were detected in the associated method blank sample.

The field blank sample, *MW-1902-15-FB*, had a detection of PFHxS below the LOQ. However, the detection in the equipment blank sample is most likely cause by method blank contamination as similar concentrations of PFHxS were detected in the associated method blank sample.

The field blank sample, *MW-1902-80-FB*, had a detection of PFHxS below the LOQ. However, the detection in the equipment blank sample is most likely cause by method blank contamination as similar concentrations of PFHxS were detected in the associated method blank sample.

The field blank sample, *MW-1901-80-FB*, had a detection of PFHxS below the LOQ. However, the detection in the equipment blank sample is most likely cause by method blank contamination as similar concentrations of PFHxS were detected in the associated method blank sample.

The field blank sample, *MW-1901-150-FB*, had a detection of PFHxS below the LOQ. However, the detection in the equipment blank sample is most likely cause by method blank contamination as similar concentrations of PFHxS were detected in the associated method blank sample.

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

Not applicable, see above.

iii. Data quality or usability affected?

Comments:

Data quality and/or usability are not affected; see above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes No N/A Comments:

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-62395-1
Client Project/Site: FAI Burn Pit

For:

Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

Attn: Marcy Nadel



*Authorized for release by:
7/10/2020 4:26:29 PM*

David Alltucker, Project Manager I
(916)374-4383
David.Alltucker@Eurofinset.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:

www.eurofinsus.com/Env

The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



Table of Contents

Cover Page	1
Table of Contents	2
Definitions/Glossary	3
Case Narrative	4
Detection Summary	5
Client Sample Results	7
Isotope Dilution Summary	19
QC Sample Results	20
QC Association Summary	23
Lab Chronicle	24
Certification Summary	26
Method Summary	27
Sample Summary	28
Chain of Custody	29
Receipt Checklists	31

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-62395-1

Qualifiers

LCMS

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-62395-1

Job ID: 320-62395-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative 320-62395-1

Receipt

The samples were received on 7/2/2020 12:30 PM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.2° C.

LCMS

Method 537 (modified): Results for samples MW-1901-40 (320-62395-3) and MW-1901-15 (320-62395-4) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-392447.

Method 3535: The following sample contained non-settable particulates/sediments which clogged the cartridge during extraction process: MW-1901-15 (320-62395-4)

Method 3535: The following samples were light brown prior to extraction: MW-1901-40 (320-62395-3), MW-1902-40 (320-62395-8), MW-2002-15 (320-62395-9) and MW-1902-15 (320-62395-10)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-62395-1

Client Sample ID: MW-1901-150

Lab Sample ID: 320-62395-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.99	J B	1.9	0.16	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.58	J	1.9	0.51	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-1901-80

Lab Sample ID: 320-62395-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorotetradecanoic acid (PFTeA)	0.30	J	1.8	0.26	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.28	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.2	J B	1.8	0.15	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.98	J	1.8	0.49	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-1901-40

Lab Sample ID: 320-62395-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	760		180	53	ng/L	100		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	57	J	180	23	ng/L	100		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	470		180	18	ng/L	100		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1000	B	180	16	ng/L	100		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	170	J	180	50	ng/L	100		537 (modified)	Total/NA

Client Sample ID: MW-1901-15

Lab Sample ID: 320-62395-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1000		170	50	ng/L	100		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	89	J	170	21	ng/L	100		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	150	J	170	73	ng/L	100		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	520		170	17	ng/L	100		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	3400	B	170	15	ng/L	100		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	64	J	170	46	ng/L	100		537 (modified)	Total/NA

Client Sample ID: FB-1902-150

Lab Sample ID: 320-62395-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.49	J B	2.0	0.17	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-1902-150

Lab Sample ID: 320-62395-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.20	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.1	J B	1.8	0.15	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.49	J	1.8	0.49	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-1902-80

Lab Sample ID: 320-62395-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.23	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.94	J B	1.8	0.15	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.73	J	1.8	0.48	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-1902-40

Lab Sample ID: 320-62395-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.71	J	1.8	0.53	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.26	J	1.8	0.23	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-62395-1

Client Sample ID: MW-1902-40 (Continued)

Lab Sample ID: 320-62395-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.38	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.6	J B	1.8	0.16	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.8		1.8	0.49	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-2002-15

Lab Sample ID: 320-62395-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	8.4		1.9	0.54	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.5	J	1.9	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	2.6		1.9	0.80	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	3.6		1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	22	B	1.9	0.16	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	12		1.9	0.51	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-1902-15

Lab Sample ID: 320-62395-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	8.2		1.8	0.53	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.4	J	1.8	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	2.7		1.8	0.77	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.40	J	1.8	0.26	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	3.5		1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	22	B	1.8	0.15	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	12		1.8	0.49	ng/L	1		537 (modified)	Total/NA

Client Sample ID: EB-1902-15

Lab Sample ID: 320-62395-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.25	J B	1.7	0.15	ng/L	1		537 (modified)	Total/NA

Client Sample ID: FB-1902-15

Lab Sample ID: 320-62395-12

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-62395-1

Client Sample ID: MW-1901-150

Lab Sample ID: 320-62395-1

Date Collected: 06/25/20 12:10

Matrix: Water

Date Received: 07/02/20 12:30

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		07/06/20 19:54	07/08/20 21:38	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		07/06/20 19:54	07/08/20 21:38	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.80	ng/L		07/06/20 19:54	07/08/20 21:38	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		07/06/20 19:54	07/08/20 21:38	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		07/06/20 19:54	07/08/20 21:38	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		07/06/20 19:54	07/08/20 21:38	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		07/06/20 19:54	07/08/20 21:38	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		07/06/20 19:54	07/08/20 21:38	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.27	ng/L		07/06/20 19:54	07/08/20 21:38	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		07/06/20 19:54	07/08/20 21:38	1
Perfluorohexanesulfonic acid (PFHxS)	0.99	J B	1.9	0.16	ng/L		07/06/20 19:54	07/08/20 21:38	1
Perfluorooctanesulfonic acid (PFOS)	0.58	J	1.9	0.51	ng/L		07/06/20 19:54	07/08/20 21:38	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		19	1.8	ng/L		07/06/20 19:54	07/08/20 21:38	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		19	2.9	ng/L		07/06/20 19:54	07/08/20 21:38	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		07/06/20 19:54	07/08/20 21:38	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		07/06/20 19:54	07/08/20 21:38	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		07/06/20 19:54	07/08/20 21:38	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.17	ng/L		07/06/20 19:54	07/08/20 21:38	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	87		25 - 150	07/06/20 19:54	07/08/20 21:38	1
13C4 PFHpA	94		25 - 150	07/06/20 19:54	07/08/20 21:38	1
13C4 PFOA	88		25 - 150	07/06/20 19:54	07/08/20 21:38	1
13C5 PFNA	95		25 - 150	07/06/20 19:54	07/08/20 21:38	1
13C2 PFDA	82		25 - 150	07/06/20 19:54	07/08/20 21:38	1
13C2 PFUnA	83		25 - 150	07/06/20 19:54	07/08/20 21:38	1
13C2 PFDoA	74		25 - 150	07/06/20 19:54	07/08/20 21:38	1
13C2 PFTeDA	76		25 - 150	07/06/20 19:54	07/08/20 21:38	1
13C3 PFBS	88		25 - 150	07/06/20 19:54	07/08/20 21:38	1
18O2 PFHxS	91		25 - 150	07/06/20 19:54	07/08/20 21:38	1
13C4 PFOS	82		25 - 150	07/06/20 19:54	07/08/20 21:38	1
d3-NMeFOSAA	72		25 - 150	07/06/20 19:54	07/08/20 21:38	1
d5-NEtFOSAA	75		25 - 150	07/06/20 19:54	07/08/20 21:38	1
13C3 HFPO-DA	88		25 - 150	07/06/20 19:54	07/08/20 21:38	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-62395-1

Client Sample ID: MW-1901-80

Lab Sample ID: 320-62395-2

Date Collected: 06/25/20 13:22

Matrix: Water

Date Received: 07/02/20 12:30

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		07/06/20 19:54	07/08/20 21:47	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		07/06/20 19:54	07/08/20 21:47	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		07/06/20 19:54	07/08/20 21:47	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		07/06/20 19:54	07/08/20 21:47	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		07/06/20 19:54	07/08/20 21:47	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		07/06/20 19:54	07/08/20 21:47	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		07/06/20 19:54	07/08/20 21:47	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		07/06/20 19:54	07/08/20 21:47	1
Perfluorotetradecanoic acid (PFTeA)	0.30	J	1.8	0.26	ng/L		07/06/20 19:54	07/08/20 21:47	1
Perfluorobutanesulfonic acid (PFBS)	0.28	J	1.8	0.18	ng/L		07/06/20 19:54	07/08/20 21:47	1
Perfluorohexanesulfonic acid (PFHxS)	1.2	J B	1.8	0.15	ng/L		07/06/20 19:54	07/08/20 21:47	1
Perfluorooctanesulfonic acid (PFOS)	0.98	J	1.8	0.49	ng/L		07/06/20 19:54	07/08/20 21:47	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		18	1.7	ng/L		07/06/20 19:54	07/08/20 21:47	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		18	2.8	ng/L		07/06/20 19:54	07/08/20 21:47	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		07/06/20 19:54	07/08/20 21:47	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		07/06/20 19:54	07/08/20 21:47	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		07/06/20 19:54	07/08/20 21:47	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.16	ng/L		07/06/20 19:54	07/08/20 21:47	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	89		25 - 150				07/06/20 19:54	07/08/20 21:47	1
13C4 PFHpA	89		25 - 150				07/06/20 19:54	07/08/20 21:47	1
13C4 PFOA	89		25 - 150				07/06/20 19:54	07/08/20 21:47	1
13C5 PFNA	99		25 - 150				07/06/20 19:54	07/08/20 21:47	1
13C2 PFDA	86		25 - 150				07/06/20 19:54	07/08/20 21:47	1
13C2 PFUnA	75		25 - 150				07/06/20 19:54	07/08/20 21:47	1
13C2 PFDoA	78		25 - 150				07/06/20 19:54	07/08/20 21:47	1
13C2 PFTeDA	68		25 - 150				07/06/20 19:54	07/08/20 21:47	1
13C3 PFBS	89		25 - 150				07/06/20 19:54	07/08/20 21:47	1
18O2 PFHxS	95		25 - 150				07/06/20 19:54	07/08/20 21:47	1
13C4 PFOS	84		25 - 150				07/06/20 19:54	07/08/20 21:47	1
d3-NMeFOSAA	74		25 - 150				07/06/20 19:54	07/08/20 21:47	1
d5-NEtFOSAA	75		25 - 150				07/06/20 19:54	07/08/20 21:47	1
13C3 HFPO-DA	89		25 - 150				07/06/20 19:54	07/08/20 21:47	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-62395-1

Client Sample ID: MW-1901-40

Lab Sample ID: 320-62395-3

Date Collected: 06/25/20 14:15

Matrix: Water

Date Received: 07/02/20 12:30

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	760		180	53	ng/L		07/06/20 19:54	07/07/20 17:23	100
Perfluoroheptanoic acid (PFHpA)	57	J	180	23	ng/L		07/06/20 19:54	07/07/20 17:23	100
Perfluorooctanoic acid (PFOA)	ND		180	78	ng/L		07/06/20 19:54	07/07/20 17:23	100
Perfluorononanoic acid (PFNA)	ND		180	25	ng/L		07/06/20 19:54	07/07/20 17:23	100
Perfluorodecanoic acid (PFDA)	ND		180	28	ng/L		07/06/20 19:54	07/07/20 17:23	100
Perfluoroundecanoic acid (PFUnA)	ND		180	100	ng/L		07/06/20 19:54	07/07/20 17:23	100
Perfluorododecanoic acid (PFDoA)	ND		180	50	ng/L		07/06/20 19:54	07/07/20 17:23	100
Perfluorotridecanoic acid (PFTriA)	ND		180	120	ng/L		07/06/20 19:54	07/07/20 17:23	100
Perfluorotetradecanoic acid (PFTeA)	ND		180	27	ng/L		07/06/20 19:54	07/07/20 17:23	100
Perfluorobutanesulfonic acid (PFBS)	470		180	18	ng/L		07/06/20 19:54	07/07/20 17:23	100
Perfluorohexanesulfonic acid (PFHxS)	1000	B	180	16	ng/L		07/06/20 19:54	07/07/20 17:23	100
Perfluorooctanesulfonic acid (PFOS)	170	J	180	50	ng/L		07/06/20 19:54	07/07/20 17:23	100
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1800	170	ng/L		07/06/20 19:54	07/07/20 17:23	100
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1800	280	ng/L		07/06/20 19:54	07/07/20 17:23	100
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		180	22	ng/L		07/06/20 19:54	07/07/20 17:23	100
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		370	140	ng/L		07/06/20 19:54	07/07/20 17:23	100
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		180	29	ng/L		07/06/20 19:54	07/07/20 17:23	100
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		180	17	ng/L		07/06/20 19:54	07/07/20 17:23	100
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	76		25 - 150				07/06/20 19:54	07/07/20 17:23	100
13C4 PFHpA	86		25 - 150				07/06/20 19:54	07/07/20 17:23	100
13C4 PFOA	79		25 - 150				07/06/20 19:54	07/07/20 17:23	100
13C5 PFNA	84		25 - 150				07/06/20 19:54	07/07/20 17:23	100
13C2 PFDA	77		25 - 150				07/06/20 19:54	07/07/20 17:23	100
13C2 PFUnA	91		25 - 150				07/06/20 19:54	07/07/20 17:23	100
13C2 PFDoA	84		25 - 150				07/06/20 19:54	07/07/20 17:23	100
13C2 PFTeDA	67		25 - 150				07/06/20 19:54	07/07/20 17:23	100
13C3 PFBS	84		25 - 150				07/06/20 19:54	07/07/20 17:23	100
18O2 PFHxS	81		25 - 150				07/06/20 19:54	07/07/20 17:23	100
13C4 PFOS	83		25 - 150				07/06/20 19:54	07/07/20 17:23	100
d3-NMeFOSAA	77		25 - 150				07/06/20 19:54	07/07/20 17:23	100
d5-NEtFOSAA	90		25 - 150				07/06/20 19:54	07/07/20 17:23	100
13C3 HFPO-DA	80		25 - 150				07/06/20 19:54	07/07/20 17:23	100

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-62395-1

Client Sample ID: MW-1901-15

Lab Sample ID: 320-62395-4

Date Collected: 06/25/20 15:02

Matrix: Water

Date Received: 07/02/20 12:30

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	1000		170	50	ng/L		07/06/20 19:54	07/07/20 17:32	100
Perfluoroheptanoic acid (PFHpA)	89	J	170	21	ng/L		07/06/20 19:54	07/07/20 17:32	100
Perfluorooctanoic acid (PFOA)	150	J	170	73	ng/L		07/06/20 19:54	07/07/20 17:32	100
Perfluorononanoic acid (PFNA)	ND		170	23	ng/L		07/06/20 19:54	07/07/20 17:32	100
Perfluorodecanoic acid (PFDA)	ND		170	27	ng/L		07/06/20 19:54	07/07/20 17:32	100
Perfluoroundecanoic acid (PFUnA)	ND		170	95	ng/L		07/06/20 19:54	07/07/20 17:32	100
Perfluorododecanoic acid (PFDoA)	ND		170	47	ng/L		07/06/20 19:54	07/07/20 17:32	100
Perfluorotridecanoic acid (PFTriA)	ND		170	110	ng/L		07/06/20 19:54	07/07/20 17:32	100
Perfluorotetradecanoic acid (PFTeA)	ND		170	25	ng/L		07/06/20 19:54	07/07/20 17:32	100
Perfluorobutanesulfonic acid (PFBS)	520		170	17	ng/L		07/06/20 19:54	07/07/20 17:32	100
Perfluorohexanesulfonic acid (PFHxS)	3400	B	170	15	ng/L		07/06/20 19:54	07/07/20 17:32	100
Perfluorooctanesulfonic acid (PFOS)	64	J	170	46	ng/L		07/06/20 19:54	07/07/20 17:32	100
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1700	160	ng/L		07/06/20 19:54	07/07/20 17:32	100
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1700	270	ng/L		07/06/20 19:54	07/07/20 17:32	100
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		170	21	ng/L		07/06/20 19:54	07/07/20 17:32	100
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		340	130	ng/L		07/06/20 19:54	07/07/20 17:32	100
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		170	28	ng/L		07/06/20 19:54	07/07/20 17:32	100
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		170	15	ng/L		07/06/20 19:54	07/07/20 17:32	100
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	76		25 - 150				07/06/20 19:54	07/07/20 17:32	100
13C4 PFHpA	83		25 - 150				07/06/20 19:54	07/07/20 17:32	100
13C4 PFOA	80		25 - 150				07/06/20 19:54	07/07/20 17:32	100
13C5 PFNA	72		25 - 150				07/06/20 19:54	07/07/20 17:32	100
13C2 PFDA	72		25 - 150				07/06/20 19:54	07/07/20 17:32	100
13C2 PFUnA	68		25 - 150				07/06/20 19:54	07/07/20 17:32	100
13C2 PFDoA	66		25 - 150				07/06/20 19:54	07/07/20 17:32	100
13C2 PFTeDA	50		25 - 150				07/06/20 19:54	07/07/20 17:32	100
13C3 PFBS	80		25 - 150				07/06/20 19:54	07/07/20 17:32	100
18O2 PFHxS	81		25 - 150				07/06/20 19:54	07/07/20 17:32	100
13C4 PFOS	76		25 - 150				07/06/20 19:54	07/07/20 17:32	100
d3-NMeFOSAA	62		25 - 150				07/06/20 19:54	07/07/20 17:32	100
d5-NEtFOSAA	65		25 - 150				07/06/20 19:54	07/07/20 17:32	100
13C3 HFPO-DA	85		25 - 150				07/06/20 19:54	07/07/20 17:32	100

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-62395-1

Client Sample ID: FB-1902-150

Lab Sample ID: 320-62395-5

Date Collected: 06/25/20 16:26

Matrix: Water

Date Received: 07/02/20 12:30

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.57	ng/L		07/06/20 19:54	07/07/20 16:38	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.24	ng/L		07/06/20 19:54	07/07/20 16:38	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.83	ng/L		07/06/20 19:54	07/07/20 16:38	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.26	ng/L		07/06/20 19:54	07/07/20 16:38	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.30	ng/L		07/06/20 19:54	07/07/20 16:38	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		07/06/20 19:54	07/07/20 16:38	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.54	ng/L		07/06/20 19:54	07/07/20 16:38	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		07/06/20 19:54	07/07/20 16:38	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.28	ng/L		07/06/20 19:54	07/07/20 16:38	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		07/06/20 19:54	07/07/20 16:38	1
Perfluorohexanesulfonic acid (PFHxS)	0.49	J B	2.0	0.17	ng/L		07/06/20 19:54	07/07/20 16:38	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.53	ng/L		07/06/20 19:54	07/07/20 16:38	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		20	1.9	ng/L		07/06/20 19:54	07/07/20 16:38	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		20	3.0	ng/L		07/06/20 19:54	07/07/20 16:38	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.23	ng/L		07/06/20 19:54	07/07/20 16:38	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		07/06/20 19:54	07/07/20 16:38	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.31	ng/L		07/06/20 19:54	07/07/20 16:38	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.18	ng/L		07/06/20 19:54	07/07/20 16:38	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	82		25 - 150	07/06/20 19:54	07/07/20 16:38	1
13C4 PFHpA	86		25 - 150	07/06/20 19:54	07/07/20 16:38	1
13C4 PFOA	86		25 - 150	07/06/20 19:54	07/07/20 16:38	1
13C5 PFNA	83		25 - 150	07/06/20 19:54	07/07/20 16:38	1
13C2 PFDA	86		25 - 150	07/06/20 19:54	07/07/20 16:38	1
13C2 PFUnA	90		25 - 150	07/06/20 19:54	07/07/20 16:38	1
13C2 PFDoA	84		25 - 150	07/06/20 19:54	07/07/20 16:38	1
13C2 PFTeDA	78		25 - 150	07/06/20 19:54	07/07/20 16:38	1
13C3 PFBS	83		25 - 150	07/06/20 19:54	07/07/20 16:38	1
18O2 PFHxS	86		25 - 150	07/06/20 19:54	07/07/20 16:38	1
13C4 PFOS	82		25 - 150	07/06/20 19:54	07/07/20 16:38	1
d3-NMeFOSAA	78		25 - 150	07/06/20 19:54	07/07/20 16:38	1
d5-NEtFOSAA	84		25 - 150	07/06/20 19:54	07/07/20 16:38	1
13C3 HFPO-DA	86		25 - 150	07/06/20 19:54	07/07/20 16:38	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-62395-1

Client Sample ID: MW-1902-150

Lab Sample ID: 320-62395-6

Date Collected: 06/25/20 16:38

Matrix: Water

Date Received: 07/02/20 12:30

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		07/06/20 19:54	07/08/20 21:56	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		07/06/20 19:54	07/08/20 21:56	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		07/06/20 19:54	07/08/20 21:56	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		07/06/20 19:54	07/08/20 21:56	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		07/06/20 19:54	07/08/20 21:56	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		07/06/20 19:54	07/08/20 21:56	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		07/06/20 19:54	07/08/20 21:56	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		07/06/20 19:54	07/08/20 21:56	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.26	ng/L		07/06/20 19:54	07/08/20 21:56	1
Perfluorobutanesulfonic acid (PFBS)	0.20	J	1.8	0.18	ng/L		07/06/20 19:54	07/08/20 21:56	1
Perfluorohexanesulfonic acid (PFHxS)	1.1	J B	1.8	0.15	ng/L		07/06/20 19:54	07/08/20 21:56	1
Perfluorooctanesulfonic acid (PFOS)	0.49	J	1.8	0.49	ng/L		07/06/20 19:54	07/08/20 21:56	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		18	1.7	ng/L		07/06/20 19:54	07/08/20 21:56	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		18	2.8	ng/L		07/06/20 19:54	07/08/20 21:56	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		07/06/20 19:54	07/08/20 21:56	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		07/06/20 19:54	07/08/20 21:56	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		07/06/20 19:54	07/08/20 21:56	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.16	ng/L		07/06/20 19:54	07/08/20 21:56	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	86		25 - 150	07/06/20 19:54	07/08/20 21:56	1
13C4 PFHpA	88		25 - 150	07/06/20 19:54	07/08/20 21:56	1
13C4 PFOA	88		25 - 150	07/06/20 19:54	07/08/20 21:56	1
13C5 PFNA	105		25 - 150	07/06/20 19:54	07/08/20 21:56	1
13C2 PFDA	86		25 - 150	07/06/20 19:54	07/08/20 21:56	1
13C2 PFUnA	83		25 - 150	07/06/20 19:54	07/08/20 21:56	1
13C2 PFDoA	71		25 - 150	07/06/20 19:54	07/08/20 21:56	1
13C2 PFTeDA	75		25 - 150	07/06/20 19:54	07/08/20 21:56	1
13C3 PFBS	88		25 - 150	07/06/20 19:54	07/08/20 21:56	1
18O2 PFHxS	93		25 - 150	07/06/20 19:54	07/08/20 21:56	1
13C4 PFOS	85		25 - 150	07/06/20 19:54	07/08/20 21:56	1
d3-NMeFOSAA	80		25 - 150	07/06/20 19:54	07/08/20 21:56	1
d5-NEtFOSAA	79		25 - 150	07/06/20 19:54	07/08/20 21:56	1
13C3 HFPO-DA	87		25 - 150	07/06/20 19:54	07/08/20 21:56	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-62395-1

Client Sample ID: MW-1902-80

Lab Sample ID: 320-62395-7

Date Collected: 06/26/20 13:04

Matrix: Water

Date Received: 07/02/20 12:30

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.51	ng/L		07/06/20 19:54	07/08/20 22:06	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		07/06/20 19:54	07/08/20 22:06	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.75	ng/L		07/06/20 19:54	07/08/20 22:06	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		07/06/20 19:54	07/08/20 22:06	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		07/06/20 19:54	07/08/20 22:06	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.98	ng/L		07/06/20 19:54	07/08/20 22:06	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		07/06/20 19:54	07/08/20 22:06	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		07/06/20 19:54	07/08/20 22:06	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.26	ng/L		07/06/20 19:54	07/08/20 22:06	1
Perfluorobutanesulfonic acid (PFBS)	0.23	J	1.8	0.18	ng/L		07/06/20 19:54	07/08/20 22:06	1
Perfluorohexanesulfonic acid (PFHxS)	0.94	J B	1.8	0.15	ng/L		07/06/20 19:54	07/08/20 22:06	1
Perfluorooctanesulfonic acid (PFOS)	0.73	J	1.8	0.48	ng/L		07/06/20 19:54	07/08/20 22:06	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		18	1.7	ng/L		07/06/20 19:54	07/08/20 22:06	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		18	2.8	ng/L		07/06/20 19:54	07/08/20 22:06	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		07/06/20 19:54	07/08/20 22:06	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		07/06/20 19:54	07/08/20 22:06	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		07/06/20 19:54	07/08/20 22:06	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.16	ng/L		07/06/20 19:54	07/08/20 22:06	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	86		25 - 150				07/06/20 19:54	07/08/20 22:06	1
13C4 PFHpA	93		25 - 150				07/06/20 19:54	07/08/20 22:06	1
13C4 PFOA	94		25 - 150				07/06/20 19:54	07/08/20 22:06	1
13C5 PFNA	91		25 - 150				07/06/20 19:54	07/08/20 22:06	1
13C2 PFDA	89		25 - 150				07/06/20 19:54	07/08/20 22:06	1
13C2 PFUnA	82		25 - 150				07/06/20 19:54	07/08/20 22:06	1
13C2 PFDoA	82		25 - 150				07/06/20 19:54	07/08/20 22:06	1
13C2 PFTeDA	82		25 - 150				07/06/20 19:54	07/08/20 22:06	1
13C3 PFBS	94		25 - 150				07/06/20 19:54	07/08/20 22:06	1
18O2 PFHxS	99		25 - 150				07/06/20 19:54	07/08/20 22:06	1
13C4 PFOS	89		25 - 150				07/06/20 19:54	07/08/20 22:06	1
d3-NMeFOSAA	81		25 - 150				07/06/20 19:54	07/08/20 22:06	1
d5-NEtFOSAA	83		25 - 150				07/06/20 19:54	07/08/20 22:06	1
13C3 HFPO-DA	93		25 - 150				07/06/20 19:54	07/08/20 22:06	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-62395-1

Client Sample ID: MW-1902-40

Lab Sample ID: 320-62395-8

Date Collected: 06/26/20 14:26

Matrix: Water

Date Received: 07/02/20 12:30

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	0.71	J	1.8	0.53	ng/L		07/06/20 19:54	07/08/20 22:15	1
Perfluoroheptanoic acid (PFHpA)	0.26	J	1.8	0.23	ng/L		07/06/20 19:54	07/08/20 22:15	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		07/06/20 19:54	07/08/20 22:15	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		07/06/20 19:54	07/08/20 22:15	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		07/06/20 19:54	07/08/20 22:15	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		07/06/20 19:54	07/08/20 22:15	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		07/06/20 19:54	07/08/20 22:15	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		07/06/20 19:54	07/08/20 22:15	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.27	ng/L		07/06/20 19:54	07/08/20 22:15	1
Perfluorobutanesulfonic acid (PFBS)	0.38	J	1.8	0.18	ng/L		07/06/20 19:54	07/08/20 22:15	1
Perfluorohexanesulfonic acid (PFHxS)	1.6	J B	1.8	0.16	ng/L		07/06/20 19:54	07/08/20 22:15	1
Perfluorooctanesulfonic acid (PFOS)	1.8		1.8	0.49	ng/L		07/06/20 19:54	07/08/20 22:15	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		18	1.7	ng/L		07/06/20 19:54	07/08/20 22:15	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		18	2.8	ng/L		07/06/20 19:54	07/08/20 22:15	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		07/06/20 19:54	07/08/20 22:15	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		07/06/20 19:54	07/08/20 22:15	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		07/06/20 19:54	07/08/20 22:15	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.16	ng/L		07/06/20 19:54	07/08/20 22:15	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	77		25 - 150				07/06/20 19:54	07/08/20 22:15	1
13C4 PFHpA	82		25 - 150				07/06/20 19:54	07/08/20 22:15	1
13C4 PFOA	79		25 - 150				07/06/20 19:54	07/08/20 22:15	1
13C5 PFNA	86		25 - 150				07/06/20 19:54	07/08/20 22:15	1
13C2 PFDA	80		25 - 150				07/06/20 19:54	07/08/20 22:15	1
13C2 PFUnA	77		25 - 150				07/06/20 19:54	07/08/20 22:15	1
13C2 PFDoA	66		25 - 150				07/06/20 19:54	07/08/20 22:15	1
13C2 PFTeDA	67		25 - 150				07/06/20 19:54	07/08/20 22:15	1
13C3 PFBS	82		25 - 150				07/06/20 19:54	07/08/20 22:15	1
18O2 PFHxS	86		25 - 150				07/06/20 19:54	07/08/20 22:15	1
13C4 PFOS	77		25 - 150				07/06/20 19:54	07/08/20 22:15	1
d3-NMeFOSAA	69		25 - 150				07/06/20 19:54	07/08/20 22:15	1
d5-NEtFOSAA	69		25 - 150				07/06/20 19:54	07/08/20 22:15	1
13C3 HFPO-DA	77		25 - 150				07/06/20 19:54	07/08/20 22:15	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-62395-1

Client Sample ID: MW-2002-15

Lab Sample ID: 320-62395-9

Date Collected: 06/26/20 15:10

Matrix: Water

Date Received: 07/02/20 12:30

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	8.4		1.9	0.54	ng/L		07/06/20 19:54	07/08/20 22:24	1
Perfluoroheptanoic acid (PFHpA)	1.5	J	1.9	0.23	ng/L		07/06/20 19:54	07/08/20 22:24	1
Perfluorooctanoic acid (PFOA)	2.6		1.9	0.80	ng/L		07/06/20 19:54	07/08/20 22:24	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		07/06/20 19:54	07/08/20 22:24	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		07/06/20 19:54	07/08/20 22:24	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		07/06/20 19:54	07/08/20 22:24	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		07/06/20 19:54	07/08/20 22:24	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		07/06/20 19:54	07/08/20 22:24	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.27	ng/L		07/06/20 19:54	07/08/20 22:24	1
Perfluorobutanesulfonic acid (PFBS)	3.6		1.9	0.19	ng/L		07/06/20 19:54	07/08/20 22:24	1
Perfluorohexanesulfonic acid (PFHxS)	22	B	1.9	0.16	ng/L		07/06/20 19:54	07/08/20 22:24	1
Perfluorooctanesulfonic acid (PFOS)	12		1.9	0.51	ng/L		07/06/20 19:54	07/08/20 22:24	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		19	1.8	ng/L		07/06/20 19:54	07/08/20 22:24	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		19	2.9	ng/L		07/06/20 19:54	07/08/20 22:24	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		07/06/20 19:54	07/08/20 22:24	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		07/06/20 19:54	07/08/20 22:24	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		07/06/20 19:54	07/08/20 22:24	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.17	ng/L		07/06/20 19:54	07/08/20 22:24	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	73		25 - 150				07/06/20 19:54	07/08/20 22:24	1
13C4 PFHpA	80		25 - 150				07/06/20 19:54	07/08/20 22:24	1
13C4 PFOA	79		25 - 150				07/06/20 19:54	07/08/20 22:24	1
13C5 PFNA	76		25 - 150				07/06/20 19:54	07/08/20 22:24	1
13C2 PFDA	74		25 - 150				07/06/20 19:54	07/08/20 22:24	1
13C2 PFUnA	74		25 - 150				07/06/20 19:54	07/08/20 22:24	1
13C2 PFDoA	66		25 - 150				07/06/20 19:54	07/08/20 22:24	1
13C2 PFTeDA	63		25 - 150				07/06/20 19:54	07/08/20 22:24	1
13C3 PFBS	77		25 - 150				07/06/20 19:54	07/08/20 22:24	1
18O2 PFHxS	83		25 - 150				07/06/20 19:54	07/08/20 22:24	1
13C4 PFOS	73		25 - 150				07/06/20 19:54	07/08/20 22:24	1
d3-NMeFOSAA	66		25 - 150				07/06/20 19:54	07/08/20 22:24	1
d5-NEtFOSAA	69		25 - 150				07/06/20 19:54	07/08/20 22:24	1
13C3 HFPO-DA	76		25 - 150				07/06/20 19:54	07/08/20 22:24	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-62395-1

Client Sample ID: MW-1902-15

Lab Sample ID: 320-62395-10

Date Collected: 06/26/20 15:20

Matrix: Water

Date Received: 07/02/20 12:30

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	8.2		1.8	0.53	ng/L		07/06/20 19:54	07/08/20 22:33	1
Perfluoroheptanoic acid (PFHpA)	1.4	J	1.8	0.23	ng/L		07/06/20 19:54	07/08/20 22:33	1
Perfluorooctanoic acid (PFOA)	2.7		1.8	0.77	ng/L		07/06/20 19:54	07/08/20 22:33	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		07/06/20 19:54	07/08/20 22:33	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		07/06/20 19:54	07/08/20 22:33	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		07/06/20 19:54	07/08/20 22:33	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		07/06/20 19:54	07/08/20 22:33	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		07/06/20 19:54	07/08/20 22:33	1
Perfluorotetradecanoic acid (PFTeA)	0.40	J	1.8	0.26	ng/L		07/06/20 19:54	07/08/20 22:33	1
Perfluorobutanesulfonic acid (PFBS)	3.5		1.8	0.18	ng/L		07/06/20 19:54	07/08/20 22:33	1
Perfluorohexanesulfonic acid (PFHxS)	22	B	1.8	0.15	ng/L		07/06/20 19:54	07/08/20 22:33	1
Perfluorooctanesulfonic acid (PFOS)	12		1.8	0.49	ng/L		07/06/20 19:54	07/08/20 22:33	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		18	1.7	ng/L		07/06/20 19:54	07/08/20 22:33	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		18	2.8	ng/L		07/06/20 19:54	07/08/20 22:33	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		07/06/20 19:54	07/08/20 22:33	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		07/06/20 19:54	07/08/20 22:33	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		07/06/20 19:54	07/08/20 22:33	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.16	ng/L		07/06/20 19:54	07/08/20 22:33	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	81		25 - 150	07/06/20 19:54	07/08/20 22:33	1
13C4 PFHpA	91		25 - 150	07/06/20 19:54	07/08/20 22:33	1
13C4 PFOA	82		25 - 150	07/06/20 19:54	07/08/20 22:33	1
13C5 PFNA	84		25 - 150	07/06/20 19:54	07/08/20 22:33	1
13C2 PFDA	81		25 - 150	07/06/20 19:54	07/08/20 22:33	1
13C2 PFUnA	79		25 - 150	07/06/20 19:54	07/08/20 22:33	1
13C2 PFDoA	80		25 - 150	07/06/20 19:54	07/08/20 22:33	1
13C2 PFTeDA	69		25 - 150	07/06/20 19:54	07/08/20 22:33	1
13C3 PFBS	86		25 - 150	07/06/20 19:54	07/08/20 22:33	1
18O2 PFHxS	89		25 - 150	07/06/20 19:54	07/08/20 22:33	1
13C4 PFOS	81		25 - 150	07/06/20 19:54	07/08/20 22:33	1
d3-NMeFOSAA	79		25 - 150	07/06/20 19:54	07/08/20 22:33	1
d5-NEtFOSAA	82		25 - 150	07/06/20 19:54	07/08/20 22:33	1
13C3 HFPO-DA	85		25 - 150	07/06/20 19:54	07/08/20 22:33	1

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-62395-1

Client Sample ID: EB-1902-15

Lab Sample ID: 320-62395-11

Date Collected: 06/26/20 15:30

Matrix: Water

Date Received: 07/02/20 12:30

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.50	ng/L		07/06/20 19:54	07/07/20 16:47	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.21	ng/L		07/06/20 19:54	07/07/20 16:47	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.73	ng/L		07/06/20 19:54	07/07/20 16:47	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		07/06/20 19:54	07/07/20 16:47	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		07/06/20 19:54	07/07/20 16:47	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.94	ng/L		07/06/20 19:54	07/07/20 16:47	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47	ng/L		07/06/20 19:54	07/07/20 16:47	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		07/06/20 19:54	07/07/20 16:47	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.25	ng/L		07/06/20 19:54	07/07/20 16:47	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		07/06/20 19:54	07/07/20 16:47	1
Perfluorohexanesulfonic acid (PFHxS)	0.25	J B	1.7	0.15	ng/L		07/06/20 19:54	07/07/20 16:47	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.46	ng/L		07/06/20 19:54	07/07/20 16:47	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		17	1.6	ng/L		07/06/20 19:54	07/07/20 16:47	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		17	2.6	ng/L		07/06/20 19:54	07/07/20 16:47	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		07/06/20 19:54	07/07/20 16:47	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		07/06/20 19:54	07/07/20 16:47	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		07/06/20 19:54	07/07/20 16:47	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.15	ng/L		07/06/20 19:54	07/07/20 16:47	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	80		25 - 150	07/06/20 19:54	07/07/20 16:47	1
13C4 PFHpA	86		25 - 150	07/06/20 19:54	07/07/20 16:47	1
13C4 PFOA	79		25 - 150	07/06/20 19:54	07/07/20 16:47	1
13C5 PFNA	80		25 - 150	07/06/20 19:54	07/07/20 16:47	1
13C2 PFDA	88		25 - 150	07/06/20 19:54	07/07/20 16:47	1
13C2 PFUnA	95		25 - 150	07/06/20 19:54	07/07/20 16:47	1
13C2 PFDoA	75		25 - 150	07/06/20 19:54	07/07/20 16:47	1
13C2 PFTeDA	77		25 - 150	07/06/20 19:54	07/07/20 16:47	1
13C3 PFBS	85		25 - 150	07/06/20 19:54	07/07/20 16:47	1
18O2 PFHxS	91		25 - 150	07/06/20 19:54	07/07/20 16:47	1
13C4 PFOS	84		25 - 150	07/06/20 19:54	07/07/20 16:47	1
d3-NMeFOSAA	76		25 - 150	07/06/20 19:54	07/07/20 16:47	1
d5-NEtFOSAA	87		25 - 150	07/06/20 19:54	07/07/20 16:47	1
13C3 HFPO-DA	81		25 - 150	07/06/20 19:54	07/07/20 16:47	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-62395-1

Client Sample ID: FB-1902-15

Lab Sample ID: 320-62395-12

Date Collected: 06/26/20 15:40

Matrix: Water

Date Received: 07/02/20 12:30

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.57	ng/L		07/06/20 19:54	07/07/20 16:56	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.24	ng/L		07/06/20 19:54	07/07/20 16:56	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.83	ng/L		07/06/20 19:54	07/07/20 16:56	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.26	ng/L		07/06/20 19:54	07/07/20 16:56	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.30	ng/L		07/06/20 19:54	07/07/20 16:56	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		07/06/20 19:54	07/07/20 16:56	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.54	ng/L		07/06/20 19:54	07/07/20 16:56	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		07/06/20 19:54	07/07/20 16:56	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.28	ng/L		07/06/20 19:54	07/07/20 16:56	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		07/06/20 19:54	07/07/20 16:56	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.17	ng/L		07/06/20 19:54	07/07/20 16:56	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.53	ng/L		07/06/20 19:54	07/07/20 16:56	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		20	1.9	ng/L		07/06/20 19:54	07/07/20 16:56	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		20	3.0	ng/L		07/06/20 19:54	07/07/20 16:56	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.23	ng/L		07/06/20 19:54	07/07/20 16:56	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		07/06/20 19:54	07/07/20 16:56	1
11-Chloroeicosadecafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.31	ng/L		07/06/20 19:54	07/07/20 16:56	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.18	ng/L		07/06/20 19:54	07/07/20 16:56	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	88		25 - 150	07/06/20 19:54	07/07/20 16:56	1
13C4 PFHpA	91		25 - 150	07/06/20 19:54	07/07/20 16:56	1
13C4 PFOA	97		25 - 150	07/06/20 19:54	07/07/20 16:56	1
13C5 PFNA	94		25 - 150	07/06/20 19:54	07/07/20 16:56	1
13C2 PFDA	87		25 - 150	07/06/20 19:54	07/07/20 16:56	1
13C2 PFUnA	88		25 - 150	07/06/20 19:54	07/07/20 16:56	1
13C2 PFDoA	96		25 - 150	07/06/20 19:54	07/07/20 16:56	1
13C2 PFTeDA	85		25 - 150	07/06/20 19:54	07/07/20 16:56	1
13C3 PFBS	97		25 - 150	07/06/20 19:54	07/07/20 16:56	1
18O2 PFHxS	97		25 - 150	07/06/20 19:54	07/07/20 16:56	1
13C4 PFOS	90		25 - 150	07/06/20 19:54	07/07/20 16:56	1
d3-NMeFOSAA	90		25 - 150	07/06/20 19:54	07/07/20 16:56	1
d5-NEtFOSAA	95		25 - 150	07/06/20 19:54	07/07/20 16:56	1
13C3 HFPO-DA	92		25 - 150	07/06/20 19:54	07/07/20 16:56	1

Eurofins TestAmerica, Sacramento

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-62395-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)	PFDoA (25-150)	PFTDA (25-150)
320-62395-1	MW-1901-150	87	94	88	95	82	83	74	76
320-62395-2	MW-1901-80	89	89	89	99	86	75	78	68
320-62395-3	MW-1901-40	76	86	79	84	77	91	84	67
320-62395-4	MW-1901-15	76	83	80	72	72	68	66	50
320-62395-5	FB-1902-150	82	86	86	83	86	90	84	78
320-62395-6	MW-1902-150	86	88	88	105	86	83	71	75
320-62395-7	MW-1902-80	86	93	94	91	89	82	82	82
320-62395-8	MW-1902-40	77	82	79	86	80	77	66	67
320-62395-9	MW-2002-15	73	80	79	76	74	74	66	63
320-62395-10	MW-1902-15	81	91	82	84	81	79	80	69
320-62395-11	EB-1902-15	80	86	79	80	88	95	75	77
320-62395-12	FB-1902-15	88	91	97	94	87	88	96	85
LCS 320-392447/2-A	Lab Control Sample	81	87	85	88	90	86	81	82
LCS D 320-392447/3-A	Lab Control Sample Dup	85	88	93	90	89	94	92	84
MB 320-392447/1-A	Method Blank	89	94	94	92	99	101	105	85

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	d3NMFOS (25-150)	d5NEFOS (25-150)	HFPODA (25-150)
320-62395-1	MW-1901-150	88	91	82	72	75	88
320-62395-2	MW-1901-80	89	95	84	74	75	89
320-62395-3	MW-1901-40	84	81	83	77	90	80
320-62395-4	MW-1901-15	80	81	76	62	65	85
320-62395-5	FB-1902-150	83	86	82	78	84	86
320-62395-6	MW-1902-150	88	93	85	80	79	87
320-62395-7	MW-1902-80	94	99	89	81	83	93
320-62395-8	MW-1902-40	82	86	77	69	69	77
320-62395-9	MW-2002-15	77	83	73	66	69	76
320-62395-10	MW-1902-15	86	89	81	79	82	85
320-62395-11	EB-1902-15	85	91	84	76	87	81
320-62395-12	FB-1902-15	97	97	90	90	95	92
LCS 320-392447/2-A	Lab Control Sample	90	92	91	83	87	87
LCS D 320-392447/3-A	Lab Control Sample Dup	94	97	89	79	83	91
MB 320-392447/1-A	Method Blank	97	101	96	87	95	93

Surrogate Legend

- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDoA = 13C2 PFDoA
- PFTDA = 13C2 PFTeDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- HFPODA = 13C3 HFPO-DA

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-62395-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-392447/1-A
Matrix: Water
Analysis Batch: 392569

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 392447

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		07/06/20 19:54	07/07/20 16:09	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		07/06/20 19:54	07/07/20 16:09	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		07/06/20 19:54	07/07/20 16:09	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		07/06/20 19:54	07/07/20 16:09	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		07/06/20 19:54	07/07/20 16:09	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		07/06/20 19:54	07/07/20 16:09	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		07/06/20 19:54	07/07/20 16:09	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		07/06/20 19:54	07/07/20 16:09	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.29	ng/L		07/06/20 19:54	07/07/20 16:09	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		07/06/20 19:54	07/07/20 16:09	1
Perfluorohexanesulfonic acid (PFHxS)	0.308	J	2.0	0.17	ng/L		07/06/20 19:54	07/07/20 16:09	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		07/06/20 19:54	07/07/20 16:09	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		20	1.9	ng/L		07/06/20 19:54	07/07/20 16:09	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		20	3.1	ng/L		07/06/20 19:54	07/07/20 16:09	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		07/06/20 19:54	07/07/20 16:09	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		07/06/20 19:54	07/07/20 16:09	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		07/06/20 19:54	07/07/20 16:09	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.18	ng/L		07/06/20 19:54	07/07/20 16:09	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	89		25 - 150	07/06/20 19:54	07/07/20 16:09	1
13C4 PFHpA	94		25 - 150	07/06/20 19:54	07/07/20 16:09	1
13C4 PFOA	94		25 - 150	07/06/20 19:54	07/07/20 16:09	1
13C5 PFNA	92		25 - 150	07/06/20 19:54	07/07/20 16:09	1
13C2 PFDA	99		25 - 150	07/06/20 19:54	07/07/20 16:09	1
13C2 PFUnA	101		25 - 150	07/06/20 19:54	07/07/20 16:09	1
13C2 PFDoA	105		25 - 150	07/06/20 19:54	07/07/20 16:09	1
13C2 PFTeDA	85		25 - 150	07/06/20 19:54	07/07/20 16:09	1
13C3 PFBS	97		25 - 150	07/06/20 19:54	07/07/20 16:09	1
18O2 PFHxS	101		25 - 150	07/06/20 19:54	07/07/20 16:09	1
13C4 PFOS	96		25 - 150	07/06/20 19:54	07/07/20 16:09	1
d3-NMeFOSAA	87		25 - 150	07/06/20 19:54	07/07/20 16:09	1
d5-NEtFOSAA	95		25 - 150	07/06/20 19:54	07/07/20 16:09	1
13C3 HFPO-DA	93		25 - 150	07/06/20 19:54	07/07/20 16:09	1

Lab Sample ID: LCS 320-392447/2-A
Matrix: Water
Analysis Batch: 392569

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 392447

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorohexanoic acid (PFHxA)	40.0	42.6		ng/L		107	73 - 133
Perfluoroheptanoic acid (PFHpA)	40.0	37.8		ng/L		95	72 - 132
Perfluorooctanoic acid (PFOA)	40.0	39.7		ng/L		99	70 - 130
Perfluorononanoic acid (PFNA)	40.0	38.2		ng/L		96	75 - 135

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-62395-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-392447/2-A
Matrix: Water
Analysis Batch: 392569

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 392447

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorodecanoic acid (PFDA)	40.0	40.0		ng/L		100	76 - 136
Perfluoroundecanoic acid (PFUnA)	40.0	42.1		ng/L		105	68 - 128
Perfluorododecanoic acid (PFDoA)	40.0	43.9		ng/L		110	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	37.5		ng/L		94	71 - 131
Perfluorotetradecanoic acid (PFTeA)	40.0	42.1		ng/L		105	70 - 130
Perfluorobutanesulfonic acid (PFBS)	35.4	38.4		ng/L		109	67 - 127
Perfluorohexanesulfonic acid (PFHxS)	36.4	33.9		ng/L		93	59 - 119
Perfluorooctanesulfonic acid (PFOS)	37.1	38.0		ng/L		102	70 - 130
9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid	37.3	38.8		ng/L		104	75 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	42.2		ng/L		105	51 - 173
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	41.2		ng/L		109	54 - 114
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	40.8		ng/L		108	79 - 139

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C2 PFHxA	81		25 - 150
13C4 PFHpA	87		25 - 150
13C4 PFOA	85		25 - 150
13C5 PFNA	88		25 - 150
13C2 PFDA	90		25 - 150
13C2 PFUnA	86		25 - 150
13C2 PFDoA	81		25 - 150
13C2 PFTeDA	82		25 - 150
13C3 PFBS	90		25 - 150
18O2 PFHxS	92		25 - 150
13C4 PFOS	91		25 - 150
d3-NMeFOSAA	83		25 - 150
d5-NEtFOSAA	87		25 - 150
13C3 HFPO-DA	87		25 - 150

Lab Sample ID: LCSD 320-392447/3-A
Matrix: Water
Analysis Batch: 392569

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 392447

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	42.3		ng/L		106	73 - 133	1	30
Perfluoroheptanoic acid (PFHpA)	40.0	40.0		ng/L		100	72 - 132	6	30
Perfluorooctanoic acid (PFOA)	40.0	35.7		ng/L		89	70 - 130	11	30
Perfluorononanoic acid (PFNA)	40.0	42.6		ng/L		106	75 - 135	11	30
Perfluorodecanoic acid (PFDA)	40.0	44.2		ng/L		110	76 - 136	10	30
Perfluoroundecanoic acid (PFUnA)	40.0	37.1		ng/L		93	68 - 128	13	30

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
 Project/Site: FAI Burn Pit

Job ID: 320-62395-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-392447/3-A
Matrix: Water
Analysis Batch: 392569

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 392447

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorododecanoic acid (PFDoA)	40.0	37.4		ng/L		94	71 - 131	16	30
Perfluorotridecanoic acid (PFTriA)	40.0	37.6		ng/L		94	71 - 131	0	30
Perfluorotetradecanoic acid (PFTeA)	40.0	41.7		ng/L		104	70 - 130	1	30
Perfluorobutanesulfonic acid (PFBS)	35.4	35.1		ng/L		99	67 - 127	9	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	31.9		ng/L		88	59 - 119	6	30
Perfluorooctanesulfonic acid (PFOS)	37.1	38.0		ng/L		102	70 - 130	0	30
9-Chlorohexadecafluoro-3-oxan onane-1-sulfonic acid	37.3	39.4		ng/L		106	75 - 135	1	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	40.6		ng/L		102	51 - 173	4	30
11-Chloroeicosafluoro-3-oxaund ecane-1-sulfonic acid	37.7	40.1		ng/L		106	54 - 114	3	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	40.9		ng/L		108	79 - 139	0	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	85		25 - 150
13C4 PFHpA	88		25 - 150
13C4 PFOA	93		25 - 150
13C5 PFNA	90		25 - 150
13C2 PFDA	89		25 - 150
13C2 PFUnA	94		25 - 150
13C2 PFDoA	92		25 - 150
13C2 PFTeDA	84		25 - 150
13C3 PFBS	94		25 - 150
18O2 PFHxS	97		25 - 150
13C4 PFOS	89		25 - 150
d3-NMeFOSAA	79		25 - 150
d5-NEtFOSAA	83		25 - 150
13C3 HFPO-DA	91		25 - 150

QC Association Summary

Client: Shannon & Wilson, Inc
 Project/Site: FAI Burn Pit

Job ID: 320-62395-1

LCMS

Prep Batch: 392447

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-62395-1	MW-1901-150	Total/NA	Water	3535	
320-62395-2	MW-1901-80	Total/NA	Water	3535	
320-62395-3	MW-1901-40	Total/NA	Water	3535	
320-62395-4	MW-1901-15	Total/NA	Water	3535	
320-62395-5	FB-1902-150	Total/NA	Water	3535	
320-62395-6	MW-1902-150	Total/NA	Water	3535	
320-62395-7	MW-1902-80	Total/NA	Water	3535	
320-62395-8	MW-1902-40	Total/NA	Water	3535	
320-62395-9	MW-2002-15	Total/NA	Water	3535	
320-62395-10	MW-1902-15	Total/NA	Water	3535	
320-62395-11	EB-1902-15	Total/NA	Water	3535	
320-62395-12	FB-1902-15	Total/NA	Water	3535	
MB 320-392447/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-392447/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-392447/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 392569

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-62395-3	MW-1901-40	Total/NA	Water	537 (modified)	392447
320-62395-4	MW-1901-15	Total/NA	Water	537 (modified)	392447
320-62395-5	FB-1902-150	Total/NA	Water	537 (modified)	392447
320-62395-11	EB-1902-15	Total/NA	Water	537 (modified)	392447
320-62395-12	FB-1902-15	Total/NA	Water	537 (modified)	392447
MB 320-392447/1-A	Method Blank	Total/NA	Water	537 (modified)	392447
LCS 320-392447/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	392447
LCSD 320-392447/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	392447

Analysis Batch: 393097

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-62395-1	MW-1901-150	Total/NA	Water	537 (modified)	392447
320-62395-2	MW-1901-80	Total/NA	Water	537 (modified)	392447
320-62395-6	MW-1902-150	Total/NA	Water	537 (modified)	392447
320-62395-7	MW-1902-80	Total/NA	Water	537 (modified)	392447
320-62395-8	MW-1902-40	Total/NA	Water	537 (modified)	392447
320-62395-9	MW-2002-15	Total/NA	Water	537 (modified)	392447
320-62395-10	MW-1902-15	Total/NA	Water	537 (modified)	392447

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-62395-1

Client Sample ID: MW-1901-150

Date Collected: 06/25/20 12:10

Date Received: 07/02/20 12:30

Lab Sample ID: 320-62395-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			265.7 mL	10.00 mL	392447	07/06/20 19:54	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			393097	07/08/20 21:38	RS1	TAL SAC

Client Sample ID: MW-1901-80

Date Collected: 06/25/20 13:22

Date Received: 07/02/20 12:30

Lab Sample ID: 320-62395-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			275.9 mL	10.00 mL	392447	07/06/20 19:54	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			393097	07/08/20 21:47	RS1	TAL SAC

Client Sample ID: MW-1901-40

Date Collected: 06/25/20 14:15

Date Received: 07/02/20 12:30

Lab Sample ID: 320-62395-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			272.6 mL	10.00 mL	392447	07/06/20 19:54	VP	TAL SAC
Total/NA	Analysis	537 (modified)		100			392569	07/07/20 17:23	K1S	TAL SAC

Client Sample ID: MW-1901-15

Date Collected: 06/25/20 15:02

Date Received: 07/02/20 12:30

Lab Sample ID: 320-62395-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			290.7 mL	10.00 mL	392447	07/06/20 19:54	VP	TAL SAC
Total/NA	Analysis	537 (modified)		100			392569	07/07/20 17:32	K1S	TAL SAC

Client Sample ID: FB-1902-150

Date Collected: 06/25/20 16:26

Date Received: 07/02/20 12:30

Lab Sample ID: 320-62395-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			256.3 mL	10.00 mL	392447	07/06/20 19:54	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			392569	07/07/20 16:38	K1S	TAL SAC

Client Sample ID: MW-1902-150

Date Collected: 06/25/20 16:38

Date Received: 07/02/20 12:30

Lab Sample ID: 320-62395-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			276.5 mL	10.00 mL	392447	07/06/20 19:54	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			393097	07/08/20 21:56	RS1	TAL SAC

Eurofins TestAmerica, Sacramento

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-62395-1

Client Sample ID: MW-1902-80

Lab Sample ID: 320-62395-7

Date Collected: 06/26/20 13:04

Matrix: Water

Date Received: 07/02/20 12:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			281.7 mL	10.00 mL	392447	07/06/20 19:54	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			393097	07/08/20 22:06	RS1	TAL SAC

Client Sample ID: MW-1902-40

Lab Sample ID: 320-62395-8

Date Collected: 06/26/20 14:26

Matrix: Water

Date Received: 07/02/20 12:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			272.9 mL	10.00 mL	392447	07/06/20 19:54	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			393097	07/08/20 22:15	RS1	TAL SAC

Client Sample ID: MW-2002-15

Lab Sample ID: 320-62395-9

Date Collected: 06/26/20 15:10

Matrix: Water

Date Received: 07/02/20 12:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			266.7 mL	10.00 mL	392447	07/06/20 19:54	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			393097	07/08/20 22:24	RS1	TAL SAC

Client Sample ID: MW-1902-15

Lab Sample ID: 320-62395-10

Date Collected: 06/26/20 15:20

Matrix: Water

Date Received: 07/02/20 12:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			276.1 mL	10.00 mL	392447	07/06/20 19:54	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			393097	07/08/20 22:33	RS1	TAL SAC

Client Sample ID: EB-1902-15

Lab Sample ID: 320-62395-11

Date Collected: 06/26/20 15:30

Matrix: Water

Date Received: 07/02/20 12:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			292.9 mL	10.00 mL	392447	07/06/20 19:54	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			392569	07/07/20 16:47	K1S	TAL SAC

Client Sample ID: FB-1902-15

Lab Sample ID: 320-62395-12

Date Collected: 06/26/20 15:40

Matrix: Water

Date Received: 07/02/20 12:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			256.1 mL	10.00 mL	392447	07/06/20 19:54	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			392569	07/07/20 16:56	K1S	TAL SAC

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Eurofins TestAmerica, Sacramento

Accreditation/Certification Summary

Client: Shannon & Wilson, Inc
 Project/Site: FAI Burn Pit

Job ID: 320-62395-1

Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-21
California	State	2897	01-31-22
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	07-01-21
Georgia	State	4040	01-30-21
Hawaii	State	<cert No.>	01-29-21
Illinois	NELAP	200060	03-17-21
Kansas	NELAP	E-10375	10-31-20
Maine	State	2018009	04-14-22
Michigan	State	9947	01-31-22
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-21
New Jersey	NELAP	CA005	06-30-21
New York	NELAP	11666	04-01-21
Oregon	NELAP	4040	01-29-21
Pennsylvania	NELAP	68-01272	03-31-21
Texas	NELAP	T104704399-19-13	06-01-21
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-28-21
Vermont	State	VT-4040	04-16-21
Virginia	NELAP	460278	03-14-21
Washington	State	C581	05-05-21
West Virginia (DW)	State	9930C	12-31-20
Wyoming	State Program	8TMS-L	01-28-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-62395-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
3535	Solid-Phase Extraction (SPE)	SW846	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600



Sample Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI Burn Pit

Job ID: 320-62395-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-62395-1	MW-1901-150	Water	06/25/20 12:10	07/02/20 12:30	
320-62395-2	MW-1901-80	Water	06/25/20 13:22	07/02/20 12:30	
320-62395-3	MW-1901-40	Water	06/25/20 14:15	07/02/20 12:30	
320-62395-4	MW-1901-15	Water	06/25/20 15:02	07/02/20 12:30	
320-62395-5	FB-1902-150	Water	06/25/20 16:26	07/02/20 12:30	
320-62395-6	MW-1902-150	Water	06/25/20 16:38	07/02/20 12:30	
320-62395-7	MW-1902-80	Water	06/26/20 13:04	07/02/20 12:30	
320-62395-8	MW-1902-40	Water	06/26/20 14:26	07/02/20 12:30	
320-62395-9	MW-2002-15	Water	06/26/20 15:10	07/02/20 12:30	
320-62395-10	MW-1902-15	Water	06/26/20 15:20	07/02/20 12:30	
320-62395-11	EB-1902-15	Water	06/26/20 15:30	07/02/20 12:30	
320-62395-12	FB-1902-15	Water	06/26/20 15:40	07/02/20 12:30	

CHAIN-OF-CUSTODY RECORD

Page 1 of 22
 Laboratory Test America
 Attn: David All Truck

Analytical Methods (include preservative if used)

Quote No:

Turn Around Time:
 Normal Rush

J-Flags: Yes No

Please Specify



Sample Identity	Lab No.	Time	Date Sampled	Remarks/Matrix Composition/Grab? Sample Containers
MW-1901-150		1210	6/29/20	X
MW-1901-80		1322		X
MW-1901-40		1415		X
MW-1901-15		1502		X
FB-1902-150		1626		X
MW-1902-150		1638		X
MW-1902-80		1304	6/24/20	X
MW-1902-40		1426		X
MW-2002-15		1510		X
MW-1902-15		1538		X

2
2
2
2
2
2
2
2
2
2

grand water



Project Information	Sample Receipt	Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Number: <u>102517-013</u>	Total No. of Containers: <u>24</u>	Signature: <u>MM Madel</u>	Signature: _____	Signature: _____
Name: <u>FAI Burn Pit</u>	COC Seals/Intact? <u>Y/N/A</u>	Printed Name: <u>Marcy Madel</u>	Printed Name: _____	Printed Name: _____
Contact: <u>MDN</u>	Received Good Cond./Cold	Date: <u>6/30/20</u>	Date: _____	Date: _____
Ongoing Project? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Temp: _____	Company: <u>Shannon & Wilson</u>	Company: _____	Company: _____
Sampler: <u>CAB/ARM</u>	Delivery Method: <u>Goldstreet</u>	Received By: 1. Signature: <u>[Signature]</u>	Received By: 2. Signature: _____	Received By: 3. Signature: _____
Notes:				

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
 Yellow - w/shipment - for consignee files
 Pink - Shannon & Wilson - job file

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-62395-1

Login Number: 62395

List Source: Eurofins TestAmerica, Sacramento

List Number: 1

Creator: Her, David A

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	SEAL
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Laboratory Data Review Checklist

Completed By:

Marcy Nadel

Title:

Geologist

Date:

July 30, 2020

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins TestAmerica, Sacramento

Laboratory Report Number:

320-62395-1

Laboratory Report Date:

July 10, 2020

CS Site Name:

Fairbanks DOT&PF PFAS

ADEC File Number:

100.38.277

Hazard Identification Number:

26816

320-62395-1

Laboratory Report Date:

July 10, 2020

CS Site Name:

Fairbanks DOT&PF PFAS

Note: Any N/A or No box checked must have an explanation in the comments box.

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes No N/A Comments:

The ADEC certified the TestAmerica/Eurofins Laboratories West Sacramento, CA location for the analysis of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) by method 537 on February 6, 2018. These compounds were included in the ADEC's Contaminated Sites Laboratory Approval 17-020.

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes No N/A Comments:

Analyses were performed by TestAmerica Laboratories, Inc. in West Sacramento, CA.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes No N/A Comments:

b. Correct analyses requested?

Yes No N/A Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes No N/A Comments:

The temperature blank was measured within the acceptable temperature range of 0 °C to 6 °C upon arrival at the laboratory. The temperature of the sample cooler upon receipt was 1.2°C.

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes No N/A Comments:

Analysis of PFAS compounds in groundwater does not require chemical preservation.

320-62395-1

Laboratory Report Date:

July 10, 2020

CS Site Name:

Fairbanks DOT&PF PFAS

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes No N/A Comments:

The sample receipt form notes the samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes No N/A Comments:

There were no discrepancies noted by the laboratory in the sample receipt documentation.

e. Data quality or usability affected?

Comments:

Data quality and/or usability are not affected; see above.

4. Case Narrative

a. Present and understandable?

Yes No N/A Comments:

The samples arrived in good condition, properly preserved, and within the required temperature range.

b. Discrepancies, errors, or QC failures identified by the lab?

Yes No N/A Comments:

The case narrative notes the results for two samples were diluted due to high concentrations. There was insufficient sample volume available to perform a matrix spike (MS) and MS duplicate (MSD) in conjunction with laboratory preparation batch 320-392447.

Several samples were noted to be light brown prior to extraction, and one sample contained non-settable sediment.

c. Were all corrective actions documented?

Yes No N/A Comments:

No corrective actions were documented in the case narrative or necessary.

320-62395-1

Laboratory Report Date:

July 10, 2020

CS Site Name:

Fairbanks DOT&PF PFAS

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The case narrative does not note an effect on data quality.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes No N/A Comments:

b. All applicable holding times met?

Yes No N/A Comments:

The samples were analyzed within the 14-day hold time for extraction and 40-day hold time for analysis using solid phase extraction (SPE).

c. All soils reported on a dry weight basis?

Yes No N/A Comments:

This work order does not include soil samples.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes No N/A Comments:

The LOQ, equivalent to the TestAmerica Reporting Limit (RL), for PFOS and PFOA are less than the DEC groundwater-cleanup levels for these analytes, where detected.

e. Data quality or usability affected?

The data quality and/or usability are not affected.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

320-62395-1

Laboratory Report Date:

July 10, 2020

CS Site Name:

Fairbanks DOT&PF PFAS

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes No N/A Comments:

PFHxS was detected at an estimated concentration in method blank sample 320-392447/1-A. No other project analytes were detected.

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

The PFHxS results for each project sample in the work order are affected because they are in the preparation batch 392447, the same batch as the method blank sample.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

The laboratory has flagged each PFHxS result 'B' indicating the compound was found in the blank and sample.

v. Data quality or usability affected?

Comments:

The PFHxS results for samples *MW-1901-80*, *MW-1901-150*, *MW-1902-40*, *MW-1902-80*, *MW-1902-150*, *EB-1902-15*, and *FB-1902-150* are considered affected because the sample concentration is less than 10 times the method blank concentration. These sample results are considered estimated and not-detected, and are flagged 'UB' at the LOQ. However, because *EB-1902-15*, and *FB-1902-150* are field quality control samples, they have not been flagged.

The PFHxS results for samples *MW-1901-15*, *MW-1901-40*, *MW-1902-15*, and *MW-2002-15* are not considered affected because the sample concentration is over 10 times the method blank concentration. The laboratory-applied 'B' flags are therefore removed.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes No N/A Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

Metals and/or inorganics were not analyzed as part of this work order.

320-62395-1

Laboratory Report Date:

July 10, 2020

CS Site Name:

Fairbanks DOT&PF PFAS

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

None; analytical accuracy and precision were demonstrated to be within acceptable limits.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability are not affected.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Note: Leave blank if not required for project

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

Sufficient volume was not available to complete an MS/MSD for the project sample set. Precision and accuracy were evaluated using the LCS/LCSD samples.

320-62395-1

Laboratory Report Date:

July 10, 2020

CS Site Name:

Fairbanks DOT&PF PFAS

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

Metals and/or inorganics were not analyzed as part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes No N/A Comments:

See above.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes No N/A Comments:

See above.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Not applicable, see above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability are not affected.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes No N/A Comments:

Method 537M uses IDA, which entails adding ¹³C-isotopes of certain target analytes to assess recovery.

320-62395-1

Laboratory Report Date:

July 10, 2020

CS Site Name:

Fairbanks DOT&PF PFAS

- ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes No N/A Comments:

- iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

There were no IDA recovery failures associated with this work order.

- iv. Data quality or usability affected?

Comments:

The data quality and/or usability are not affected.

- e. Trip Blanks

- i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes No N/A Comments:

PFAS are not volatile; therefore, a trip blank is not required.

- ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes No N/A Comments:

See above.

- iii. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

See above.

- iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

None; a trip blank was not submitted with this work order.

320-62395-1

Laboratory Report Date:

July 10, 2020

CS Site Name:

Fairbanks DOT&PF PFAS

v. Data quality or usability affected?

Comments:

The data quality and/or usability are not affected; see above.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No N/A Comments:

ii. Submitted blind to lab?

Yes No N/A Comments:

Field-duplicate pair *MW-1902-15 / MW-2002-15* was submitted in this work order.

iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water, 50% soil)

$$RPD (\%) = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2) / 2)} \times 100$$

Where R_1 = Sample Concentration
 R_2 = Field Duplicate Concentration

Yes No N/A Comments:

Where calculable, the RPD was within laboratory limits for analytes detected in both the original and field-duplicate sample.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The data quality and/or usability are not affected; see above.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes No N/A Comments:

Equipment blank sample *EB-1902-15* was submitted with this work order.

320-62395-1

Laboratory Report Date:

July 10, 2020

CS Site Name:

Fairbanks DOT&PF PFAS

i. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

PFHxS was detected at an estimated concentration in the equipment blank sample. However, the result is less than the method blank detection discussed in Section 6a. The other project analytes were not detected.

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

The project samples are not considered affected because the estimated concentration is below the LOQ and attributed to the method blank detection.

iii. Data quality or usability affected?

Comments:

The data quality and/or usability are not affected; see above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes No N/A Comments:

Two field blank samples were collected as part of this WO, samples *FB-1902-15* and *FB-1902-150*. PFHxS was detected at an estimated concentration in *FB-1902-150*. However, the project samples are not considered affected because the PFHxS field blank concentrations are less than the LOQ and attributed to the method blank detection discussed in Section 6a. Other project analytes were not detected in the field blanks samples.

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-65103-1
Client Project/Site: Fairbanks Airport

For:

Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

Attn: Marcy Nadel



*Authorized for release by:
10/9/2020 7:54:58 AM*

David Alltucker, Project Manager I
(916)374-4383
David.Alltucker@Eurofinset.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:

www.eurofinsus.com/Env

The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



Table of Contents

Cover Page	1
Table of Contents	2
Definitions/Glossary	3
Case Narrative	4
Detection Summary	5
Client Sample Results	6
Surrogate Summary	12
Isotope Dilution Summary	13
QC Sample Results	15
QC Association Summary	24
Lab Chronicle	26
Certification Summary	27
Method Summary	28
Sample Summary	29
Chain of Custody	30
Receipt Checklists	31

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: Fairbanks Airport

Job ID: 320-65103-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*5	Isotope dilution analyte is outside acceptance limits.
E	Result exceeded calibration range.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Shannon & Wilson, Inc
Project/Site: Fairbanks Airport

Job ID: 320-65103-1

Job ID: 320-65103-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative 320-65103-1

Receipt

The samples were received on 9/25/2020 10:55 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.7° C.

LCMS

Method 537 (modified): Results for samples FTP-pre-004 (320-65103-2) and FTP-pre-005 (320-65103-3) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits

Method 537 (modified): The concentration of Perfluorohexanesulfonic acid (PFHxS) and Perfluorooctanesulfonic acid (PFOS) associated with the following samples exceeded the instrument calibration range at the maximum dilution the lab is able to perform on an extract: FTP-pre-004 (320-65103-2) and FTP-pre-005 (320-65103-3). These analytes have been qualified; however, the peaks did not saturate the instrument detector. Historical data indicate that for the isotope dilution method, further dilution and re-analysis will not produce significantly different results from those reported above the calibration range.

Method 537 (modified): The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit for 13C5 PFNA: FTP-pre-004 (320-65103-2) and FTP-pre-005 (320-65103-3). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the samples.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-416491.

Method 3535: A deviation from the Standard Operating Procedure (SOP) occurred. Details are as follows: due to the matrix, the following samples were prepared using a 1.0 mL aliquot without extracting via the SPE process: FAI Drum (320-65103-6). This is the equivalent of a 250x dilution prior to submitting extracts for analysis

Method 3535: The following samples were yellow prior to extraction: FTP-pre-004 (320-65103-2) and FTP-pre-005 (320-65103-3).

Method 3535: The following samples were black prior to extraction: MW-1903-20 (320-65103-4) and MW-2903-20 (320-65103-5).

Method 3535: The following samples contain floating particulates in the bottles prior to extraction: FTP-pre-004 (320-65103-2), FTP-pre-005 (320-65103-3), MW-1903-20 (320-65103-4) and MW-2903-20 (320-65103-5).

Method 3535: Due the excess amount of particulates, the following samples were centrifuged and decanted into new 250 mL container: MW-1903-20 (320-65103-4) and MW-2903-20 (320-65103-5). After centrifuging and decanting, the samples were fortified with IDA and then extracted.

Method 537.1 DW: The following samples 120774 (320-65103-1) in preparation batch 320-416399 were light yellow prior to extraction.

Method 537.1 DW: The following samples 120774 (320-65103-1) in preparation batch 320-416399 were yellow after extraction and final voluming.

Method 537.1 DW: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-416399.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: Fairbanks Airport

Job ID: 320-65103-1

Client Sample ID: 120774

Lab Sample ID: 320-65103-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	2.0		1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluorooctanoic acid (PFOA)	1.5	J	1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.4	J	1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	7.3		1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.8		1.9	0.47	ng/L	1		537.1 DW	Total/NA

Client Sample ID: FTP-pre-004

Lab Sample ID: 320-65103-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	30000		180	54	ng/L	100		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	4300		180	23	ng/L	100		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	7100		180	79	ng/L	100		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	770		180	25	ng/L	100		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	280		180	29	ng/L	100		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	14000		180	18	ng/L	100		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	55000	E	180	53	ng/L	100		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1900000	E	180	50	ng/L	100		537 (modified)	Total/NA

Client Sample ID: FTP-pre-005

Lab Sample ID: 320-65103-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	32000		180	53	ng/L	100		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	4300		180	23	ng/L	100		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	6400		180	78	ng/L	100		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	880		180	25	ng/L	100		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	290		180	29	ng/L	100		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	13000		180	18	ng/L	100		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	55000	E	180	53	ng/L	100		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2000000	E	180	50	ng/L	100		537 (modified)	Total/NA

Client Sample ID: MW-1903-20

Lab Sample ID: 320-65103-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	21		4.4	2.1	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	4.8		1.7	0.43	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.5	J	1.7	0.47	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonamide (FOSA)	1.2	J	1.7	0.85	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-2903-20

Lab Sample ID: 320-65103-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	21		4.4	2.1	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	5.6		1.8	0.43	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.53	J	1.8	0.48	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonamide (FOSA)	1.0	J	1.8	0.87	ng/L	1		537 (modified)	Total/NA

Client Sample ID: FAI Drum

Lab Sample ID: 320-65103-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	480	J	500	150	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	88	J	500	50	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	570		500	140	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1900		500	140	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Fairbanks Airport

Job ID: 320-65103-1

Client Sample ID: 120774

Lab Sample ID: 320-65103-1

Date Collected: 09/15/20 09:31

Matrix: Water

Date Received: 09/25/20 10:55

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	2.0		1.9	0.47	ng/L		09/28/20 12:15	09/29/20 14:12	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.47	ng/L		09/28/20 12:15	09/29/20 14:12	1
Perfluorooctanoic acid (PFOA)	1.5	J	1.9	0.47	ng/L		09/28/20 12:15	09/29/20 14:12	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.47	ng/L		09/28/20 12:15	09/29/20 14:12	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.47	ng/L		09/28/20 12:15	09/29/20 14:12	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.47	ng/L		09/28/20 12:15	09/29/20 14:12	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.47	ng/L		09/28/20 12:15	09/29/20 14:12	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.47	ng/L		09/28/20 12:15	09/29/20 14:12	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.47	ng/L		09/28/20 12:15	09/29/20 14:12	1
Perfluorobutanesulfonic acid (PFBS)	1.4	J	1.9	0.47	ng/L		09/28/20 12:15	09/29/20 14:12	1
Perfluorohexanesulfonic acid (PFHxS)	7.3		1.9	0.47	ng/L		09/28/20 12:15	09/29/20 14:12	1
Perfluorooctanesulfonic acid (PFOS)	2.8		1.9	0.47	ng/L		09/28/20 12:15	09/29/20 14:12	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.47	ng/L		09/28/20 12:15	09/29/20 14:12	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.47	ng/L		09/28/20 12:15	09/29/20 14:12	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O)	ND		1.9	0.47	ng/L		09/28/20 12:15	09/29/20 14:12	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF)	ND		1.9	0.47	ng/L		09/28/20 12:15	09/29/20 14:12	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.47	ng/L		09/28/20 12:15	09/29/20 14:12	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.47	ng/L		09/28/20 12:15	09/29/20 14:12	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	102		70 - 130				09/28/20 12:15	09/29/20 14:12	1
13C2 PFDA	101		70 - 130				09/28/20 12:15	09/29/20 14:12	1
d5-NEtFOSAA	105		70 - 130				09/28/20 12:15	09/29/20 14:12	1
13C3 HFPO-DA	86		70 - 130				09/28/20 12:15	09/29/20 14:12	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Fairbanks Airport

Job ID: 320-65103-1

Client Sample ID: FTP-pre-004

Lab Sample ID: 320-65103-2

Date Collected: 09/17/20 15:15

Matrix: Water

Date Received: 09/25/20 10:55

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	30000		180	54	ng/L		09/28/20 13:40	10/03/20 16:05	100
Perfluoroheptanoic acid (PFHpA)	4300		180	23	ng/L		09/28/20 13:40	10/03/20 16:05	100
Perfluorooctanoic acid (PFOA)	7100		180	79	ng/L		09/28/20 13:40	10/03/20 16:05	100
Perfluorononanoic acid (PFNA)	770		180	25	ng/L		09/28/20 13:40	10/03/20 16:05	100
Perfluorodecanoic acid (PFDA)	280		180	29	ng/L		09/28/20 13:40	10/03/20 16:05	100
Perfluoroundecanoic acid (PFUnA)	ND		180	100	ng/L		09/28/20 13:40	10/03/20 16:05	100
Perfluorododecanoic acid (PFDoA)	ND		180	51	ng/L		09/28/20 13:40	10/03/20 16:05	100
Perfluorotridecanoic acid (PFTriA)	ND		180	120	ng/L		09/28/20 13:40	10/03/20 16:05	100
Perfluorotetradecanoic acid (PFTeA)	ND		180	68	ng/L		09/28/20 13:40	10/03/20 16:05	100
Perfluorobutanesulfonic acid (PFBS)	14000		180	18	ng/L		09/28/20 13:40	10/03/20 16:05	100
Perfluorohexanesulfonic acid (PFHxS)	55000	E	180	53	ng/L		09/28/20 13:40	10/03/20 16:05	100
Perfluorooctanesulfonic acid (PFOS)	1900000	E	180	50	ng/L		09/28/20 13:40	10/03/20 16:05	100
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		460	110	ng/L		09/28/20 13:40	10/03/20 16:05	100
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		460	120	ng/L		09/28/20 13:40	10/03/20 16:05	100
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		180	22	ng/L		09/28/20 13:40	10/03/20 16:05	100
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		370	140	ng/L		09/28/20 13:40	10/03/20 16:05	100
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		180	30	ng/L		09/28/20 13:40	10/03/20 16:05	100
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		180	37	ng/L		09/28/20 13:40	10/03/20 16:05	100

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	97		25 - 150	09/28/20 13:40	10/03/20 16:05	100
13C4 PFHpA	63		25 - 150	09/28/20 13:40	10/03/20 16:05	100
13C4 PFOA	63		25 - 150	09/28/20 13:40	10/03/20 16:05	100
13C5 PFNA	24	*5	25 - 150	09/28/20 13:40	10/03/20 16:05	100
13C2 PFDA	60		25 - 150	09/28/20 13:40	10/03/20 16:05	100
13C2 PFUnA	76		25 - 150	09/28/20 13:40	10/03/20 16:05	100
13C2 PFDoA	62		25 - 150	09/28/20 13:40	10/03/20 16:05	100
13C2 PFTeDA	37		25 - 150	09/28/20 13:40	10/03/20 16:05	100
13C3 PFBS	88		25 - 150	09/28/20 13:40	10/03/20 16:05	100
18O2 PFHxS	91		25 - 150	09/28/20 13:40	10/03/20 16:05	100
13C4 PFOS	27		25 - 150	09/28/20 13:40	10/03/20 16:05	100
d3-NMeFOSAA	77		25 - 150	09/28/20 13:40	10/03/20 16:05	100
d5-NEtFOSAA	114		25 - 150	09/28/20 13:40	10/03/20 16:05	100
13C3 HFPO-DA	71		25 - 150	09/28/20 13:40	10/03/20 16:05	100

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Fairbanks Airport

Job ID: 320-65103-1

Client Sample ID: FTP-pre-005

Lab Sample ID: 320-65103-3

Date Collected: 09/17/20 15:05

Matrix: Water

Date Received: 09/25/20 10:55

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	32000		180	53	ng/L		09/28/20 13:40	10/03/20 16:14	100
Perfluoroheptanoic acid (PFHpA)	4300		180	23	ng/L		09/28/20 13:40	10/03/20 16:14	100
Perfluorooctanoic acid (PFOA)	6400		180	78	ng/L		09/28/20 13:40	10/03/20 16:14	100
Perfluorononanoic acid (PFNA)	880		180	25	ng/L		09/28/20 13:40	10/03/20 16:14	100
Perfluorodecanoic acid (PFDA)	290		180	29	ng/L		09/28/20 13:40	10/03/20 16:14	100
Perfluoroundecanoic acid (PFUnA)	ND		180	100	ng/L		09/28/20 13:40	10/03/20 16:14	100
Perfluorododecanoic acid (PFDoA)	ND		180	51	ng/L		09/28/20 13:40	10/03/20 16:14	100
Perfluorotridecanoic acid (PFTriA)	ND		180	120	ng/L		09/28/20 13:40	10/03/20 16:14	100
Perfluorotetradecanoic acid (PFTeA)	ND		180	67	ng/L		09/28/20 13:40	10/03/20 16:14	100
Perfluorobutanesulfonic acid (PFBS)	13000		180	18	ng/L		09/28/20 13:40	10/03/20 16:14	100
Perfluorohexanesulfonic acid (PFHxS)	55000	E	180	53	ng/L		09/28/20 13:40	10/03/20 16:14	100
Perfluorooctanesulfonic acid (PFOS)	2000000	E	180	50	ng/L		09/28/20 13:40	10/03/20 16:14	100
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		460	110	ng/L		09/28/20 13:40	10/03/20 16:14	100
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		460	120	ng/L		09/28/20 13:40	10/03/20 16:14	100
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		180	22	ng/L		09/28/20 13:40	10/03/20 16:14	100
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		370	140	ng/L		09/28/20 13:40	10/03/20 16:14	100
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		180	30	ng/L		09/28/20 13:40	10/03/20 16:14	100
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		180	37	ng/L		09/28/20 13:40	10/03/20 16:14	100

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	97		25 - 150	09/28/20 13:40	10/03/20 16:14	100
13C4 PFHpA	63		25 - 150	09/28/20 13:40	10/03/20 16:14	100
13C4 PFOA	71		25 - 150	09/28/20 13:40	10/03/20 16:14	100
13C5 PFNA	22	*5	25 - 150	09/28/20 13:40	10/03/20 16:14	100
13C2 PFDA	53		25 - 150	09/28/20 13:40	10/03/20 16:14	100
13C2 PFUnA	65		25 - 150	09/28/20 13:40	10/03/20 16:14	100
13C2 PFDoA	49		25 - 150	09/28/20 13:40	10/03/20 16:14	100
13C2 PFTeDA	34		25 - 150	09/28/20 13:40	10/03/20 16:14	100
13C3 PFBS	91		25 - 150	09/28/20 13:40	10/03/20 16:14	100
18O2 PFHxS	94		25 - 150	09/28/20 13:40	10/03/20 16:14	100
13C4 PFOS	26		25 - 150	09/28/20 13:40	10/03/20 16:14	100
d3-NMeFOSAA	63		25 - 150	09/28/20 13:40	10/03/20 16:14	100
d5-NEtFOSAA	90		25 - 150	09/28/20 13:40	10/03/20 16:14	100
13C3 HFPO-DA	85		25 - 150	09/28/20 13:40	10/03/20 16:14	100

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Fairbanks Airport

Job ID: 320-65103-1

Client Sample ID: MW-1903-20

Lab Sample ID: 320-65103-4

Date Collected: 09/17/20 13:15

Matrix: Water

Date Received: 09/25/20 10:55

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	21		4.4	2.1	ng/L		09/28/20 13:40	10/03/20 15:55	1
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.50	ng/L		09/28/20 13:40	10/03/20 15:55	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.22	ng/L		09/28/20 13:40	10/03/20 15:55	1
Perfluoropentanoic acid (PFPeA)	4.8		1.7	0.43	ng/L		09/28/20 13:40	10/03/20 15:55	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.74	ng/L		09/28/20 13:40	10/03/20 15:55	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		09/28/20 13:40	10/03/20 15:55	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		09/28/20 13:40	10/03/20 15:55	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.96	ng/L		09/28/20 13:40	10/03/20 15:55	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		09/28/20 13:40	10/03/20 15:55	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		09/28/20 13:40	10/03/20 15:55	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.64	ng/L		09/28/20 13:40	10/03/20 15:55	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		09/28/20 13:40	10/03/20 15:55	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.50	ng/L		09/28/20 13:40	10/03/20 15:55	1
Perfluorooctanesulfonic acid (PFOS)	1.5 J		1.7	0.47	ng/L		09/28/20 13:40	10/03/20 15:55	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		09/28/20 13:40	10/03/20 15:55	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.0	ng/L		09/28/20 13:40	10/03/20 15:55	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.7	0.17	ng/L		09/28/20 13:40	10/03/20 15:55	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.28	ng/L		09/28/20 13:40	10/03/20 15:55	1
Perfluorooctanesulfonamide (FOSA)	1.2 J		1.7	0.85	ng/L		09/28/20 13:40	10/03/20 15:55	1
6:2 FTS	ND		4.4	2.2	ng/L		09/28/20 13:40	10/03/20 15:55	1
8:2 FTS	ND		1.7	0.40	ng/L		09/28/20 13:40	10/03/20 15:55	1
9Cl-PF3ONS	ND		1.7	0.21	ng/L		09/28/20 13:40	10/03/20 15:55	1
HFPO-DA (GenX)	ND		3.5	1.3	ng/L		09/28/20 13:40	10/03/20 15:55	1
11Cl-PF3OUdS	ND		1.7	0.28	ng/L		09/28/20 13:40	10/03/20 15:55	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.35	ng/L		09/28/20 13:40	10/03/20 15:55	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	73		25 - 150	09/28/20 13:40	10/03/20 15:55	1
13C4 PFHpA	76		25 - 150	09/28/20 13:40	10/03/20 15:55	1
13C4 PFOA	71		25 - 150	09/28/20 13:40	10/03/20 15:55	1
13C5 PFNA	66		25 - 150	09/28/20 13:40	10/03/20 15:55	1
13C2 PFDA	63		25 - 150	09/28/20 13:40	10/03/20 15:55	1
13C2 PFUnA	67		25 - 150	09/28/20 13:40	10/03/20 15:55	1
13C8 FOSA	65		25 - 150	09/28/20 13:40	10/03/20 15:55	1
13C2 PFDoA	61		25 - 150	09/28/20 13:40	10/03/20 15:55	1
13C4 PFBA	68		25 - 150	09/28/20 13:40	10/03/20 15:55	1
13C2 PFTeDA	40		25 - 150	09/28/20 13:40	10/03/20 15:55	1
13C5 PFPeA	72		25 - 150	09/28/20 13:40	10/03/20 15:55	1
13C3 PFBS	75		25 - 150	09/28/20 13:40	10/03/20 15:55	1
18O2 PFHxS	76		25 - 150	09/28/20 13:40	10/03/20 15:55	1
13C4 PFOS	76		25 - 150	09/28/20 13:40	10/03/20 15:55	1
d3-NMeFOSAA	70		25 - 150	09/28/20 13:40	10/03/20 15:55	1
d5-NEtFOSAA	78		25 - 150	09/28/20 13:40	10/03/20 15:55	1
M2-6:2 FTS	96		25 - 150	09/28/20 13:40	10/03/20 15:55	1
M2-8:2 FTS	90		25 - 150	09/28/20 13:40	10/03/20 15:55	1
13C3 HFPO-DA	69		25 - 150	09/28/20 13:40	10/03/20 15:55	1

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Fairbanks Airport

Job ID: 320-65103-1

Client Sample ID: MW-2903-20

Lab Sample ID: 320-65103-5

Date Collected: 09/17/20 13:05

Matrix: Water

Date Received: 09/25/20 10:55

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	21		4.4	2.1	ng/L		09/28/20 13:40	10/06/20 14:35	1
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.51	ng/L		09/28/20 13:40	10/06/20 14:35	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		09/28/20 13:40	10/06/20 14:35	1
Perfluoropentanoic acid (PFPeA)	5.6		1.8	0.43	ng/L		09/28/20 13:40	10/06/20 14:35	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.75	ng/L		09/28/20 13:40	10/06/20 14:35	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		09/28/20 13:40	10/06/20 14:35	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		09/28/20 13:40	10/06/20 14:35	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.97	ng/L		09/28/20 13:40	10/06/20 14:35	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		09/28/20 13:40	10/06/20 14:35	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		09/28/20 13:40	10/06/20 14:35	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		09/28/20 13:40	10/06/20 14:35	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		09/28/20 13:40	10/06/20 14:35	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.50	ng/L		09/28/20 13:40	10/06/20 14:35	1
Perfluorooctanesulfonic acid (PFOS)	0.53	J	1.8	0.48	ng/L		09/28/20 13:40	10/06/20 14:35	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.2	ng/L		09/28/20 13:40	10/06/20 14:35	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		09/28/20 13:40	10/06/20 14:35	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.8	0.17	ng/L		09/28/20 13:40	10/06/20 14:35	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.8	0.28	ng/L		09/28/20 13:40	10/06/20 14:35	1
Perfluorooctanesulfonamide (FOSA)	1.0	J	1.8	0.87	ng/L		09/28/20 13:40	10/06/20 14:35	1
6:2 FTS	ND		4.4	2.2	ng/L		09/28/20 13:40	10/06/20 14:35	1
8:2 FTS	ND		1.8	0.41	ng/L		09/28/20 13:40	10/06/20 14:35	1
9Cl-PF3ONS	ND		1.8	0.21	ng/L		09/28/20 13:40	10/06/20 14:35	1
HFPO-DA (GenX)	ND		3.5	1.3	ng/L		09/28/20 13:40	10/06/20 14:35	1
11Cl-PF3OUdS	ND		1.8	0.28	ng/L		09/28/20 13:40	10/06/20 14:35	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		09/28/20 13:40	10/06/20 14:35	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	69		25 - 150	09/28/20 13:40	10/06/20 14:35	1
13C4 PFHpA	73		25 - 150	09/28/20 13:40	10/06/20 14:35	1
13C4 PFOA	71		25 - 150	09/28/20 13:40	10/06/20 14:35	1
13C5 PFNA	76		25 - 150	09/28/20 13:40	10/06/20 14:35	1
13C2 PFDA	74		25 - 150	09/28/20 13:40	10/06/20 14:35	1
13C2 PFUnA	72		25 - 150	09/28/20 13:40	10/06/20 14:35	1
13C8 FOSA	63		25 - 150	09/28/20 13:40	10/06/20 14:35	1
13C2 PFDoA	52		25 - 150	09/28/20 13:40	10/06/20 14:35	1
13C4 PFBA	62		25 - 150	09/28/20 13:40	10/06/20 14:35	1
13C2 PFTeDA	32		25 - 150	09/28/20 13:40	10/06/20 14:35	1
13C5 PFPeA	69		25 - 150	09/28/20 13:40	10/06/20 14:35	1
13C3 PFBS	68		25 - 150	09/28/20 13:40	10/06/20 14:35	1
18O2 PFHxS	70		25 - 150	09/28/20 13:40	10/06/20 14:35	1
13C4 PFOS	70		25 - 150	09/28/20 13:40	10/06/20 14:35	1
d3-NMeFOSAA	74		25 - 150	09/28/20 13:40	10/06/20 14:35	1
d5-NEtFOSAA	76		25 - 150	09/28/20 13:40	10/06/20 14:35	1
M2-6:2 FTS	93		25 - 150	09/28/20 13:40	10/06/20 14:35	1
M2-8:2 FTS	93		25 - 150	09/28/20 13:40	10/06/20 14:35	1
13C3 HFPO-DA	69		25 - 150	09/28/20 13:40	10/06/20 14:35	1

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Fairbanks Airport

Job ID: 320-65103-1

Client Sample ID: FAI Drum

Lab Sample ID: 320-65103-6

Date Collected: 09/24/20 11:10

Matrix: Water

Date Received: 09/25/20 10:55

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	480	J	500	150	ng/L		09/28/20 14:52	09/29/20 20:59	1
Perfluoroheptanoic acid (PFHpA)	ND		500	63	ng/L		09/28/20 14:52	09/29/20 20:59	1
Perfluorooctanoic acid (PFOA)	ND		500	210	ng/L		09/28/20 14:52	09/29/20 20:59	1
Perfluorononanoic acid (PFNA)	ND		500	68	ng/L		09/28/20 14:52	09/29/20 20:59	1
Perfluorodecanoic acid (PFDA)	ND		500	78	ng/L		09/28/20 14:52	09/29/20 20:59	1
Perfluoroundecanoic acid (PFUnA)	ND		500	280	ng/L		09/28/20 14:52	09/29/20 20:59	1
Perfluorododecanoic acid (PFDoA)	ND		500	140	ng/L		09/28/20 14:52	09/29/20 20:59	1
Perfluorotridecanoic acid (PFTriA)	ND		500	330	ng/L		09/28/20 14:52	09/29/20 20:59	1
Perfluorotetradecanoic acid (PFTeA)	ND		500	180	ng/L		09/28/20 14:52	09/29/20 20:59	1
Perfluorobutanesulfonic acid (PFBS)	88	J	500	50	ng/L		09/28/20 14:52	09/29/20 20:59	1
Perfluorohexanesulfonic acid (PFHxS)	570		500	140	ng/L		09/28/20 14:52	09/29/20 20:59	1
Perfluorooctanesulfonic acid (PFOS)	1900		500	140	ng/L		09/28/20 14:52	09/29/20 20:59	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1300	300	ng/L		09/28/20 14:52	09/29/20 20:59	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1300	330	ng/L		09/28/20 14:52	09/29/20 20:59	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		500	60	ng/L		09/28/20 14:52	09/29/20 20:59	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1000	380	ng/L		09/28/20 14:52	09/29/20 20:59	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		500	80	ng/L		09/28/20 14:52	09/29/20 20:59	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		500	100	ng/L		09/28/20 14:52	09/29/20 20:59	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	95		25 - 150				09/28/20 14:52	09/29/20 20:59	1
13C4 PFHpA	94		25 - 150				09/28/20 14:52	09/29/20 20:59	1
13C4 PFOA	89		25 - 150				09/28/20 14:52	09/29/20 20:59	1
13C5 PFNA	101		25 - 150				09/28/20 14:52	09/29/20 20:59	1
13C2 PFDA	87		25 - 150				09/28/20 14:52	09/29/20 20:59	1
13C2 PFUnA	102		25 - 150				09/28/20 14:52	09/29/20 20:59	1
13C2 PFDoA	96		25 - 150				09/28/20 14:52	09/29/20 20:59	1
13C2 PFTeDA	102		25 - 150				09/28/20 14:52	09/29/20 20:59	1
13C3 PFBS	102		25 - 150				09/28/20 14:52	09/29/20 20:59	1
18O2 PFHxS	101		25 - 150				09/28/20 14:52	09/29/20 20:59	1
13C4 PFOS	101		25 - 150				09/28/20 14:52	09/29/20 20:59	1
d3-NMeFOSAA	101		25 - 150				09/28/20 14:52	09/29/20 20:59	1
d5-NEtFOSAA	104		25 - 150				09/28/20 14:52	09/29/20 20:59	1
13C3 HFPO-DA	92		25 - 150				09/28/20 14:52	09/29/20 20:59	1

Surrogate Summary

Client: Shannon & Wilson, Inc
Project/Site: Fairbanks Airport

Job ID: 320-65103-1

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxA	PFDA	d5NEFOS	HFPODA
		(70-130)	(70-130)	(70-130)	(70-130)
320-65103-1	120774	102	101	105	86
LCS 320-416399/2-A	Lab Control Sample	102	99	98	86
LCSD 320-416399/3-A	Lab Control Sample Dup	101	103	104	91
MB 320-416399/1-A	Method Blank	92	91	90	76

Surrogate Legend

PFHxA = 13C2 PFHxA

PFDA = 13C2 PFDA

d5NEFOS = d5-NEtFOSAA

HFPODA = 13C3 HFPO-DA

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
 Project/Site: Fairbanks Airport

Job ID: 320-65103-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)	PFDaA (25-150)	PFTDA (25-150)
320-65103-2	FTP-pre-004	97	63	63	24 *5	60	76	62	37
320-65103-3	FTP-pre-005	97	63	71	22 *5	53	65	49	34
320-65103-4	MW-1903-20	73	76	71	66	63	67	61	40
320-65103-5	MW-2903-20	69	73	71	76	74	72	52	32
320-65103-6	FAI Drum	95	94	89	101	87	102	96	102
LCS 320-416469/2-A	Lab Control Sample	66	77	72	78	65	67	59	72
LCS 320-416491/2-A	Lab Control Sample	99	98	96	100	97	102	90	85
LCSD 320-416469/3-A	Lab Control Sample Dup	58	62	61	64	62	64	57	70
LCSD 320-416491/3-A	Lab Control Sample Dup	92	90	87	89	92	87	93	87
MB 320-416469/1-A	Method Blank	77	78	72	76	80	87	63	94
MB 320-416491/1-A	Method Blank	97	97	93	101	99	95	98	99

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	d3NMFS (25-150)	PFOSA (25-150)	d5NEFOS (25-150)	PFBA (25-150)	HFPODA (25-150)
320-65103-2	FTP-pre-004	88	91	27	77		114		71
320-65103-3	FTP-pre-005	91	94	26	63		90		85
320-65103-4	MW-1903-20	75	76	76	70	65	78	68	69
320-65103-5	MW-2903-20	68	70	70	74	63	76	62	69
320-65103-6	FAI Drum	102	101	101	101		104		92
LCS 320-416469/2-A	Lab Control Sample	68	71	73	69		67		67
LCS 320-416491/2-A	Lab Control Sample	103	104	98	106		103		95
LCSD 320-416469/3-A	Lab Control Sample Dup	61	64	66	60	58	62	55	54
LCSD 320-416491/3-A	Lab Control Sample Dup	94	98	90	96		98		88
MB 320-416469/1-A	Method Blank	73	76	79	73		76		70
MB 320-416491/1-A	Method Blank	104	96	98	105		104		98

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFPeA (25-150)	M262FTS (25-150)	M282FTS (25-150)
320-65103-2	FTP-pre-004			
320-65103-3	FTP-pre-005			
320-65103-4	MW-1903-20	72	96	90
320-65103-5	MW-2903-20	69	93	93
320-65103-6	FAI Drum			
LCS 320-416469/2-A	Lab Control Sample			
LCS 320-416491/2-A	Lab Control Sample			
LCSD 320-416469/3-A	Lab Control Sample Dup	60	72	89
LCSD 320-416491/3-A	Lab Control Sample Dup			
MB 320-416469/1-A	Method Blank			
MB 320-416491/1-A	Method Blank			

Surrogate Legend

- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA

Isotope Dilution Summary

Job ID: 320-65103-1

Client: Shannon & Wilson, Inc
Project/Site: Fairbanks Airport

C3PFBS = 13C3 PFBS
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
d3NMFOS = d3-NMeFOSAA
PFOSA = 13C8 FOSA
d5NEFOS = d5-NEtFOSAA
PFBA = 13C4 PFBA
HFPODA = 13C3 HFPO-DA
PFPeA = 13C5 PFPeA
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Fairbanks Airport

Job ID: 320-65103-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-416469/1-A
Matrix: Water
Analysis Batch: 416862

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 416469

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		09/28/20 13:40	09/29/20 22:05	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		09/28/20 13:40	09/29/20 22:05	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		09/28/20 13:40	09/29/20 22:05	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		09/28/20 13:40	09/29/20 22:05	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		09/28/20 13:40	09/29/20 22:05	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		09/28/20 13:40	09/29/20 22:05	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		09/28/20 13:40	09/29/20 22:05	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		09/28/20 13:40	09/29/20 22:05	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		09/28/20 13:40	09/29/20 22:05	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		09/28/20 13:40	09/29/20 22:05	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		09/28/20 13:40	09/29/20 22:05	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		09/28/20 13:40	09/29/20 22:05	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		09/28/20 13:40	09/29/20 22:05	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		09/28/20 13:40	09/29/20 22:05	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		09/28/20 13:40	09/29/20 22:05	1
9Cl-PF3ONS	ND		2.0	0.24	ng/L		09/28/20 13:40	09/29/20 22:05	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		09/28/20 13:40	09/29/20 22:05	1
HFPO-DA (GenX)	ND		4.0	1.5	ng/L		09/28/20 13:40	09/29/20 22:05	1
11-Chloroeicosadecafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		09/28/20 13:40	09/29/20 22:05	1
11Cl-PF3OUdS	ND		2.0	0.32	ng/L		09/28/20 13:40	09/29/20 22:05	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		09/28/20 13:40	09/29/20 22:05	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	77		25 - 150	09/28/20 13:40	09/29/20 22:05	1
13C4 PFHpA	78		25 - 150	09/28/20 13:40	09/29/20 22:05	1
13C4 PFOA	72		25 - 150	09/28/20 13:40	09/29/20 22:05	1
13C5 PFNA	76		25 - 150	09/28/20 13:40	09/29/20 22:05	1
13C2 PFDA	80		25 - 150	09/28/20 13:40	09/29/20 22:05	1
13C2 PFUnA	87		25 - 150	09/28/20 13:40	09/29/20 22:05	1
13C2 PFDoA	63		25 - 150	09/28/20 13:40	09/29/20 22:05	1
13C2 PFTeDA	94		25 - 150	09/28/20 13:40	09/29/20 22:05	1
13C3 PFBS	73		25 - 150	09/28/20 13:40	09/29/20 22:05	1
18O2 PFHxS	76		25 - 150	09/28/20 13:40	09/29/20 22:05	1
13C4 PFOS	79		25 - 150	09/28/20 13:40	09/29/20 22:05	1
d3-NMeFOSAA	73		25 - 150	09/28/20 13:40	09/29/20 22:05	1
d5-NEtFOSAA	76		25 - 150	09/28/20 13:40	09/29/20 22:05	1
13C3 HFPO-DA	70		25 - 150	09/28/20 13:40	09/29/20 22:05	1

Lab Sample ID: LCS 320-416469/2-A
Matrix: Water
Analysis Batch: 416862

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 416469

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorohexanoic acid (PFHxA)	40.0	46.8		ng/L		117	73 - 133

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Fairbanks Airport

Job ID: 320-65103-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-416469/2-A
Matrix: Water
Analysis Batch: 416862

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 416469

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoroheptanoic acid (PFHpA)	40.0	40.9		ng/L		102	72 - 132
Perfluorooctanoic acid (PFOA)	40.0	41.5		ng/L		104	70 - 130
Perfluorononanoic acid (PFNA)	40.0	39.2		ng/L		98	75 - 135
Perfluorodecanoic acid (PFDA)	40.0	51.2		ng/L		128	76 - 136
Perfluoroundecanoic acid (PFUnA)	40.0	45.5		ng/L		114	68 - 128
Perfluorododecanoic acid (PFDoA)	40.0	48.7		ng/L		122	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	50.5		ng/L		126	71 - 131
Perfluorotetradecanoic acid (PFTeA)	40.0	37.8		ng/L		94	70 - 130
Perfluorobutanesulfonic acid (PFBS)	35.4	37.9		ng/L		107	67 - 127
Perfluorohexanesulfonic acid (PFHxS)	36.4	36.7		ng/L		101	59 - 119
Perfluorooctanesulfonic acid (PFOS)	37.1	39.0		ng/L		105	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid 9Cl-PF3ONS	37.3	40.0		ng/L		107	75 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	42.4		ng/L		106	51 - 173
HFPO-DA (GenX)	40.0	42.4		ng/L		106	51 - 173
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid 11Cl-PF3OUdS	37.7	35.9		ng/L		95	54 - 114
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	40.2		ng/L		107	79 - 139

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C2 PFHxA	66		25 - 150
13C4 PFHpA	77		25 - 150
13C4 PFOA	72		25 - 150
13C5 PFNA	78		25 - 150
13C2 PFDA	65		25 - 150
13C2 PFUnA	67		25 - 150
13C2 PFDoA	59		25 - 150
13C2 PFTeDA	72		25 - 150
13C3 PFBS	68		25 - 150
18O2 PFHxS	71		25 - 150
13C4 PFOS	73		25 - 150
d3-NMeFOSAA	69		25 - 150
d5-NEtFOSAA	67		25 - 150
13C3 HFPO-DA	67		25 - 150

Lab Sample ID: LCSD 320-416469/3-A
Matrix: Water
Analysis Batch: 416862

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 416469

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Perfluorobutanoic acid (PFBA)	40.0	45.0		ng/L		113	76 - 136	2	30

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Fairbanks Airport

Job ID: 320-65103-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-416469/3-A

Matrix: Water

Analysis Batch: 416862

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 416469

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	44.3		ng/L		111	73 - 133	6	30
Perfluoroheptanoic acid (PFHpA)	40.0	42.5		ng/L		106	72 - 132	4	30
Perfluoropentanoic acid (PFPeA)	40.0	37.9		ng/L		95	71 - 131	3	30
Perfluorooctanoic acid (PFOA)	40.0	39.9		ng/L		100	70 - 130	4	30
Perfluorononanoic acid (PFNA)	40.0	44.1		ng/L		110	75 - 135	12	30
Perfluorodecanoic acid (PFDA)	40.0	42.2		ng/L		105	76 - 136	19	30
Perfluoroundecanoic acid (PFUnA)	40.0	48.5		ng/L		121	68 - 128	6	30
Perfluorododecanoic acid (PFDoA)	40.0	47.0		ng/L		118	71 - 131	4	30
Perfluorotridecanoic acid (PFTriA)	40.0	41.9		ng/L		105	71 - 131	19	30
Perfluorotetradecanoic acid (PFTeA)	40.0	38.9		ng/L		97	70 - 130	3	30
Perfluorobutanesulfonic acid (PFBS)	35.4	38.4		ng/L		109	67 - 127	1	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	36.0		ng/L		99	59 - 119	2	30
Perfluorooctanesulfonic acid (PFOS)	37.1	38.8		ng/L		105	70 - 130	0	30
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	39.9		ng/L		105	76 - 136	3	30
Perfluorodecanesulfonic acid (PFDS)	38.6	38.4		ng/L		100	71 - 131	3	30
Perfluorooctanesulfonamide (FOSA)	40.0	43.6		ng/L		109	73 - 133	0	30
6:2 FTS	37.9	40.2		ng/L		106	59 - 175	2	30
8:2 FTS	38.3	40.3		ng/L		105	75 - 135	5	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	39.5		ng/L		106	75 - 135	1	30
9Cl-PF3ONS	37.3	39.5		ng/L		106	75 - 135	1	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	45.6		ng/L		114	51 - 173	7	30
HFPO-DA (GenX)	40.0	45.6		ng/L		114	51 - 173	7	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	36.0		ng/L		96	54 - 114	0	30
11Cl-PF3OUdS	37.7	36.0		ng/L		96	54 - 114	0	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	38.1		ng/L		101	79 - 139	5	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	58		25 - 150
13C4 PFHpA	62		25 - 150
13C4 PFOA	61		25 - 150
13C5 PFNA	64		25 - 150
13C2 PFDA	62		25 - 150
13C2 PFUnA	64		25 - 150
13C8 FOSA	58		25 - 150
13C2 PFDoA	57		25 - 150
13C4 PFBA	55		25 - 150
13C2 PFTeDA	70		25 - 150
13C5 PFPeA	60		25 - 150

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Fairbanks Airport

Job ID: 320-65103-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-416469/3-A
Matrix: Water
Analysis Batch: 416862

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 416469

Isotope Dilution	LCSD LCSD		Limits
	%Recovery	Qualifier	
13C3 PFBS	61		25 - 150
18O2 PFHxS	64		25 - 150
13C4 PFOS	66		25 - 150
d3-NMeFOSAA	60		25 - 150
d5-NEtFOSAA	62		25 - 150
M2-6:2 FTS	72		25 - 150
M2-8:2 FTS	89		25 - 150
13C3 HFPO-DA	54		25 - 150

Lab Sample ID: MB 320-416491/1-A
Matrix: Water
Analysis Batch: 416886

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 416491

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		09/28/20 14:52	09/29/20 20:22	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		09/28/20 14:52	09/29/20 20:22	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		09/28/20 14:52	09/29/20 20:22	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		09/28/20 14:52	09/29/20 20:22	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		09/28/20 14:52	09/29/20 20:22	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		09/28/20 14:52	09/29/20 20:22	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		09/28/20 14:52	09/29/20 20:22	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		09/28/20 14:52	09/29/20 20:22	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		09/28/20 14:52	09/29/20 20:22	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		09/28/20 14:52	09/29/20 20:22	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		09/28/20 14:52	09/29/20 20:22	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		09/28/20 14:52	09/29/20 20:22	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		09/28/20 14:52	09/29/20 20:22	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		09/28/20 14:52	09/29/20 20:22	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		09/28/20 14:52	09/29/20 20:22	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		09/28/20 14:52	09/29/20 20:22	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		09/28/20 14:52	09/29/20 20:22	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		09/28/20 14:52	09/29/20 20:22	1

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	97		25 - 150	09/28/20 14:52	09/29/20 20:22	1
13C4 PFHpA	97		25 - 150	09/28/20 14:52	09/29/20 20:22	1
13C4 PFOA	93		25 - 150	09/28/20 14:52	09/29/20 20:22	1
13C5 PFNA	101		25 - 150	09/28/20 14:52	09/29/20 20:22	1
13C2 PFDA	99		25 - 150	09/28/20 14:52	09/29/20 20:22	1
13C2 PFUnA	95		25 - 150	09/28/20 14:52	09/29/20 20:22	1
13C2 PFDoA	98		25 - 150	09/28/20 14:52	09/29/20 20:22	1
13C2 PFTeDA	99		25 - 150	09/28/20 14:52	09/29/20 20:22	1
13C3 PFBS	104		25 - 150	09/28/20 14:52	09/29/20 20:22	1
18O2 PFHxS	96		25 - 150	09/28/20 14:52	09/29/20 20:22	1

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Fairbanks Airport

Job ID: 320-65103-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 320-416491/1-A
Matrix: Water
Analysis Batch: 416886

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 416491

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C4 PFOS	98		25 - 150	09/28/20 14:52	09/29/20 20:22	1
d3-NMeFOSAA	105		25 - 150	09/28/20 14:52	09/29/20 20:22	1
d5-NEtFOSAA	104		25 - 150	09/28/20 14:52	09/29/20 20:22	1
13C3 HFPO-DA	98		25 - 150	09/28/20 14:52	09/29/20 20:22	1

Lab Sample ID: LCS 320-416491/2-A
Matrix: Water
Analysis Batch: 416886

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 416491

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.
							Limits
Perfluorohexanoic acid (PFHxA)	40.0	42.1		ng/L		105	73 - 133
Perfluoroheptanoic acid (PFHpA)	40.0	40.0		ng/L		100	72 - 132
Perfluorooctanoic acid (PFOA)	40.0	39.8		ng/L		99	70 - 130
Perfluorononanoic acid (PFNA)	40.0	40.9		ng/L		102	75 - 135
Perfluorodecanoic acid (PFDA)	40.0	40.9		ng/L		102	76 - 136
Perfluoroundecanoic acid (PFUnA)	40.0	37.9		ng/L		95	68 - 128
Perfluorododecanoic acid (PFDoA)	40.0	43.6		ng/L		109	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	41.1		ng/L		103	71 - 131
Perfluorotetradecanoic acid (PFTeA)	40.0	43.2		ng/L		108	70 - 130
Perfluorobutanesulfonic acid (PFBS)	35.4	36.7		ng/L		104	67 - 127
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.9		ng/L		96	59 - 119
Perfluorooctanesulfonic acid (PFOS)	37.1	40.2		ng/L		108	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	40.9		ng/L		110	75 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	41.2		ng/L		103	51 - 173
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	40.0		ng/L		106	54 - 114
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	38.5		ng/L		102	79 - 139

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	99		25 - 150
13C4 PFHpA	98		25 - 150
13C4 PFOA	96		25 - 150
13C5 PFNA	100		25 - 150
13C2 PFDA	97		25 - 150
13C2 PFUnA	102		25 - 150
13C2 PFDoA	90		25 - 150
13C2 PFTeDA	85		25 - 150
13C3 PFBS	103		25 - 150
18O2 PFHxS	104		25 - 150
13C4 PFOS	98		25 - 150
d3-NMeFOSAA	106		25 - 150
d5-NEtFOSAA	103		25 - 150

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Fairbanks Airport

Job ID: 320-65103-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-416491/2-A
Matrix: Water
Analysis Batch: 416886

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 416491

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
13C3 HFPO-DA	95		25 - 150

Lab Sample ID: LCSD 320-416491/3-A
Matrix: Water
Analysis Batch: 416886

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 416491

<i>Analyte</i>	<i>Spike Added</i>	<i>LCSD Result</i>	<i>LCSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec. Limits</i>	<i>RPD</i>	<i>RPD Limit</i>
Perfluorohexanoic acid (PFHxA)	40.0	43.3		ng/L		108	73 - 133	3	30
Perfluoroheptanoic acid (PFHpA)	40.0	41.8		ng/L		104	72 - 132	4	30
Perfluorooctanoic acid (PFOA)	40.0	40.2		ng/L		100	70 - 130	1	30
Perfluorononanoic acid (PFNA)	40.0	41.7		ng/L		104	75 - 135	2	30
Perfluorodecanoic acid (PFDA)	40.0	40.4		ng/L		101	76 - 136	1	30
Perfluoroundecanoic acid (PFUnA)	40.0	41.5		ng/L		104	68 - 128	9	30
Perfluorododecanoic acid (PFDoA)	40.0	41.5		ng/L		104	71 - 131	5	30
Perfluorotridecanoic acid (PFTriA)	40.0	36.2		ng/L		91	71 - 131	13	30
Perfluorotetradecanoic acid (PFTeA)	40.0	39.7		ng/L		99	70 - 130	8	30
Perfluorobutanesulfonic acid (PFBS)	35.4	38.4		ng/L		109	67 - 127	5	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	35.2		ng/L		97	59 - 119	1	30
Perfluorooctanesulfonic acid (PFOS)	37.1	40.3		ng/L		109	70 - 130	0	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	41.7		ng/L		112	75 - 135	2	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	41.9		ng/L		105	51 - 173	2	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	42.8		ng/L		114	54 - 114	7	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	40.7		ng/L		108	79 - 139	6	30

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
13C2 PFHxA	92		25 - 150
13C4 PFHpA	90		25 - 150
13C4 PFOA	87		25 - 150
13C5 PFNA	89		25 - 150
13C2 PFDA	92		25 - 150
13C2 PFUnA	87		25 - 150
13C2 PFDoA	93		25 - 150
13C2 PFTeDA	87		25 - 150
13C3 PFBS	94		25 - 150
18O2 PFHxS	98		25 - 150
13C4 PFOS	90		25 - 150
d3-NMeFOSAA	96		25 - 150
d5-NEtFOSAA	98		25 - 150
13C3 HFPO-DA	88		25 - 150

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Fairbanks Airport

Job ID: 320-65103-1

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Lab Sample ID: MB 320-416399/1-A
Matrix: Water
Analysis Batch: 416751

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 416399

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.50	ng/L		09/28/20 12:15	09/29/20 11:53	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.50	ng/L		09/28/20 12:15	09/29/20 11:53	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.50	ng/L		09/28/20 12:15	09/29/20 11:53	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.50	ng/L		09/28/20 12:15	09/29/20 11:53	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.50	ng/L		09/28/20 12:15	09/29/20 11:53	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.50	ng/L		09/28/20 12:15	09/29/20 11:53	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.50	ng/L		09/28/20 12:15	09/29/20 11:53	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	0.50	ng/L		09/28/20 12:15	09/29/20 11:53	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.50	ng/L		09/28/20 12:15	09/29/20 11:53	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.50	ng/L		09/28/20 12:15	09/29/20 11:53	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.50	ng/L		09/28/20 12:15	09/29/20 11:53	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.50	ng/L		09/28/20 12:15	09/29/20 11:53	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.0	0.50	ng/L		09/28/20 12:15	09/29/20 11:53	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.0	0.50	ng/L		09/28/20 12:15	09/29/20 11:53	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O)	ND		2.0	0.50	ng/L		09/28/20 12:15	09/29/20 11:53	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF)	ND		2.0	0.50	ng/L		09/28/20 12:15	09/29/20 11:53	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		2.0	0.50	ng/L		09/28/20 12:15	09/29/20 11:53	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.50	ng/L		09/28/20 12:15	09/29/20 11:53	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	92		70 - 130	09/28/20 12:15	09/29/20 11:53	1
13C2 PFDA	91		70 - 130	09/28/20 12:15	09/29/20 11:53	1
d5-NEtFOSAA	90		70 - 130	09/28/20 12:15	09/29/20 11:53	1
13C3 HFPO-DA	76		70 - 130	09/28/20 12:15	09/29/20 11:53	1

Lab Sample ID: LCS 320-416399/2-A
Matrix: Water
Analysis Batch: 416802

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 416399

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoroheptanoic acid (PFHpA)	160	173		ng/L		108	70 - 130
Perfluorooctanoic acid (PFOA)	160	162		ng/L		101	70 - 130
Perfluorononanoic acid (PFNA)	160	172		ng/L		107	70 - 130
Perfluorodecanoic acid (PFDA)	160	167		ng/L		104	70 - 130
Perfluoroundecanoic acid (PFUnA)	160	162		ng/L		101	70 - 130
Perfluorododecanoic acid (PFDoA)	160	159		ng/L		100	70 - 130
Perfluorotridecanoic acid (PFTriA)	160	166		ng/L		104	70 - 130
Perfluorotetradecanoic acid (PFTeA)	160	160		ng/L		100	70 - 130
Perfluorobutanesulfonic acid (PFBS)	141	159		ng/L		112	70 - 130

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Fairbanks Airport

Job ID: 320-65103-1

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: LCS 320-416399/2-A
Matrix: Water
Analysis Batch: 416802

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 416399

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanesulfonic acid (PFHxS)	146	169		ng/L		116	70 - 130
Perfluorooctanesulfonic acid (PFOS)	148	166		ng/L		112	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	160	154		ng/L		97	70 - 130
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	160	157		ng/L		98	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O)	149	170		ng/L		114	70 - 130
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PFHexafluoropropylene Oxide Dimer Acid (HFPO-DA)	151	175		ng/L		116	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	160	136		ng/L		85	70 - 130
	151	145		ng/L		96	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
13C2 PFHxA	102		70 - 130
13C2 PFDA	99		70 - 130
d5-NEtFOSAA	98		70 - 130
13C3 HFPO-DA	86		70 - 130

Lab Sample ID: LCSD 320-416399/3-A
Matrix: Water
Analysis Batch: 416802

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 416399

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	160	161		ng/L		101	70 - 130	3	30
Perfluoroheptanoic acid (PFHpA)	160	185		ng/L		115	70 - 130	7	30
Perfluorooctanoic acid (PFOA)	160	171		ng/L		107	70 - 130	5	30
Perfluorononanoic acid (PFNA)	160	178		ng/L		111	70 - 130	4	30
Perfluorodecanoic acid (PFDA)	160	177		ng/L		111	70 - 130	6	30
Perfluoroundecanoic acid (PFUnA)	160	167		ng/L		104	70 - 130	3	30
Perfluorododecanoic acid (PFDoA)	160	170		ng/L		106	70 - 130	6	30
Perfluorotridecanoic acid (PFTriA)	160	179		ng/L		112	70 - 130	7	30
Perfluorotetradecanoic acid (PFTeA)	160	173		ng/L		108	70 - 130	8	30
Perfluorobutanesulfonic acid (PFBS)	141	170		ng/L		120	70 - 130	6	30
Perfluorohexanesulfonic acid (PFHxS)	146	179		ng/L		123	70 - 130	6	30
Perfluorooctanesulfonic acid (PFOS)	148	175		ng/L		118	70 - 130	5	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	160	166		ng/L		104	70 - 130	7	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	160	168		ng/L		105	70 - 130	7	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O)	149	182		ng/L		122	70 - 130	7	30

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
 Project/Site: Fairbanks Airport

Job ID: 320-65103-1

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: LCSD 320-416399/3-A
Matrix: Water
Analysis Batch: 416802

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 416399

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF)	151	182		ng/L		121	70 - 130	4	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	160	148		ng/L		92	70 - 130	8	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	151	157		ng/L		104	70 - 130	8	30

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C2 PFHxA	101		70 - 130
13C2 PFDA	103		70 - 130
d5-NEtFOSAA	104		70 - 130
13C3 HFPO-DA	91		70 - 130



QC Association Summary

Client: Shannon & Wilson, Inc
Project/Site: Fairbanks Airport

Job ID: 320-65103-1

LCMS

Prep Batch: 416399

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-65103-1	120774	Total/NA	Water	537.1 DW	
MB 320-416399/1-A	Method Blank	Total/NA	Water	537.1 DW	
LCS 320-416399/2-A	Lab Control Sample	Total/NA	Water	537.1 DW	
LCSD 320-416399/3-A	Lab Control Sample Dup	Total/NA	Water	537.1 DW	

Prep Batch: 416469

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-65103-2	FTP-pre-004	Total/NA	Water	3535	
320-65103-3	FTP-pre-005	Total/NA	Water	3535	
320-65103-4	MW-1903-20	Total/NA	Water	3535	
320-65103-5	MW-2903-20	Total/NA	Water	3535	
MB 320-416469/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-416469/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-416469/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Prep Batch: 416491

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-65103-6	FAI Drum	Total/NA	Water	3535	
MB 320-416491/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-416491/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-416491/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 416751

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-416399/1-A	Method Blank	Total/NA	Water	537.1 DW	416399

Analysis Batch: 416802

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-65103-1	120774	Total/NA	Water	537.1 DW	416399
LCS 320-416399/2-A	Lab Control Sample	Total/NA	Water	537.1 DW	416399
LCSD 320-416399/3-A	Lab Control Sample Dup	Total/NA	Water	537.1 DW	416399

Analysis Batch: 416862

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-416469/1-A	Method Blank	Total/NA	Water	537 (modified)	416469
LCS 320-416469/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	416469
LCSD 320-416469/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	416469

Analysis Batch: 416886

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-65103-6	FAI Drum	Total/NA	Water	537 (modified)	416491
MB 320-416491/1-A	Method Blank	Total/NA	Water	537 (modified)	416491
LCS 320-416491/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	416491
LCSD 320-416491/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	416491

Analysis Batch: 418441

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-65103-2	FTP-pre-004	Total/NA	Water	537 (modified)	416469
320-65103-3	FTP-pre-005	Total/NA	Water	537 (modified)	416469
320-65103-4	MW-1903-20	Total/NA	Water	537 (modified)	416469

Eurofins TestAmerica, Sacramento

QC Association Summary

Client: Shannon & Wilson, Inc
Project/Site: Fairbanks Airport

Job ID: 320-65103-1

LCMS

Analysis Batch: 419223

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-65103-5	MW-2903-20	Total/NA	Water	537 (modified)	416469

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: Fairbanks Airport

Job ID: 320-65103-1

Client Sample ID: 120774

Lab Sample ID: 320-65103-1

Date Collected: 09/15/20 09:31

Matrix: Water

Date Received: 09/25/20 10:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537.1 DW			265.4 mL	1.00 mL	416399	09/28/20 12:15	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			416802	09/29/20 14:12	SK	TAL SAC

Client Sample ID: FTP-pre-004

Lab Sample ID: 320-65103-2

Date Collected: 09/17/20 15:15

Matrix: Water

Date Received: 09/25/20 10:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			270.3 mL	10.00 mL	416469	09/28/20 13:40	LA	TAL SAC
Total/NA	Analysis	537 (modified)		100			418441	10/03/20 16:05	S1M	TAL SAC

Client Sample ID: FTP-pre-005

Lab Sample ID: 320-65103-3

Date Collected: 09/17/20 15:05

Matrix: Water

Date Received: 09/25/20 10:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			271.1 mL	10.00 mL	416469	09/28/20 13:40	LA	TAL SAC
Total/NA	Analysis	537 (modified)		100			418441	10/03/20 16:14	S1M	TAL SAC

Client Sample ID: MW-1903-20

Lab Sample ID: 320-65103-4

Date Collected: 09/17/20 13:15

Matrix: Water

Date Received: 09/25/20 10:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			287.3 mL	10.00 mL	416469	09/28/20 13:40	LA	TAL SAC
Total/NA	Analysis	537 (modified)		1			418441	10/03/20 15:55	S1M	TAL SAC

Client Sample ID: MW-2903-20

Lab Sample ID: 320-65103-5

Date Collected: 09/17/20 13:05

Matrix: Water

Date Received: 09/25/20 10:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			282.6 mL	10.00 mL	416469	09/28/20 13:40	LA	TAL SAC
Total/NA	Analysis	537 (modified)		1			419223	10/06/20 14:35	JCN	TAL SAC

Client Sample ID: FAI Drum

Lab Sample ID: 320-65103-6

Date Collected: 09/24/20 11:10

Matrix: Water

Date Received: 09/25/20 10:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			1 mL	10.00 mL	416491	09/28/20 14:52	LA	TAL SAC
Total/NA	Analysis	537 (modified)		1			416886	09/29/20 20:59	S1M	TAL SAC

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: Shannon & Wilson, Inc
 Project/Site: Fairbanks Airport

Job ID: 320-65103-1

Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-21
Arkansas DEQ	State	88-0691	06-17-21
California	State	2897	01-31-22
Colorado	State	CA0004	08-31-21
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-21
Georgia	State	4040	01-30-21
Hawaii	State	<cert No.>	01-29-21
Illinois	NELAP	200060	03-17-21
Kansas	NELAP	E-10375	10-31-20
Louisiana	NELAP	01944	06-30-21
Maine	State	CA00004	04-14-22
Michigan	State	9947	08-03-23
Nevada	State	CA000442021-1	07-31-21
New Hampshire	NELAP	2997	04-18-21
New Jersey	NELAP	CA005	06-30-21
New York	NELAP	11666	04-01-21
Oregon	NELAP	4040	01-29-21
Pennsylvania	NELAP	68-01272	03-31-21
Texas	NELAP	T104704399-19-13	06-01-21
US Fish & Wildlife	US Federal Programs	58448	07-31-21
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-28-21
Vermont	State	VT-4040	04-16-21
Virginia	NELAP	460278	03-14-21
Washington	State	C581	05-05-21
West Virginia (DW)	State	9930C	12-31-20
Wisconsin	State	998204680	08-31-21
Wyoming	State Program	8TMS-L	01-28-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Shannon & Wilson, Inc
Project/Site: Fairbanks Airport

Job ID: 320-65103-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
537.1 DW	Perfluorinated Alkyl Acids (LC/MS)	EPA	TAL SAC
3535	Solid-Phase Extraction (SPE)	SW846	TAL SAC
537.1 DW	Extraction of Perfluorinated Alkyl Acids	EPA	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Shannon & Wilson, Inc
Project/Site: Fairbanks Airport

Job ID: 320-65103-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-65103-1	120774	Water	09/15/20 09:31	09/25/20 10:55	
320-65103-2	FTP-pre-004	Water	09/17/20 15:15	09/25/20 10:55	
320-65103-3	FTP-pre-005	Water	09/17/20 15:05	09/25/20 10:55	
320-65103-4	MW-1903-20	Water	09/17/20 13:15	09/25/20 10:55	
320-65103-5	MW-2903-20	Water	09/17/20 13:05	09/25/20 10:55	
320-65103-6	FAI Drum	Water	09/24/20 11:10	09/25/20 10:55	

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16

CHAIN-OF-CUSTODY RECORD

Quote No: _____

Turn Around Time:
 Normal Rush
 Please Specify _____

J-Flags: Yes No

Analytical Methods (include preservative if used)

Total Number of Containers

Remarks/Matrix Composition/Grab? Sample Containers

Sample Identity	Lab No.	Time	Date Sampled	✓	X	✓	✓	✓	✓	✓	✓
<u>2102-120774</u>		<u>0931</u>	<u>9/15/20</u>								
FTP-pre004		<u>1515</u>	<u>9/14/20</u>								
FTP-pre005		<u>1505</u>	<u>9/14/20</u>								
MW-1903-20		<u>1315</u>	<u>9/14/20</u>								
MW-2903-20		<u>1305</u>	<u>9/14/20</u>								
FAI DRUM		<u>1110</u>	<u>9/24/20</u>								



Project Information	Sample Receipt	Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Number: <u>102519</u> Name: <u>Fairbanks Airport</u> Contact: <u>MDW</u> Ongoing Project? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Sampler: <u>MDW/JTY</u>	Total No. of Containers: COC Seals/Intact? Y/N/NA Received Good Cond./Cold Temp: Delivery Method: <u>Goldsbreak</u>	Signature: <u>[Signature]</u> Printed Name: <u>Ashleyaramillo</u> Company: <u>SWI</u> Time: <u>1250</u> Date: <u>9/24/20</u>	Signature: _____ Printed Name: _____ Company: _____ Time: _____ Date: _____	Signature: _____ Printed Name: _____ Company: _____ Time: _____ Date: _____
Notes: <u>102519-008, 005 & 012</u> <u>FAI DRUM - recovered AFFF/water</u> <u>MIX</u>		Signature: <u>[Signature]</u> Printed Name: <u>Kenneth Backington</u> Company: _____ Time: <u>655</u> Date: <u>25/9/20</u>	Signature: _____ Printed Name: _____ Company: _____ Time: _____ Date: _____	Signature: _____ Printed Name: _____ Company: _____ Time: _____ Date: _____

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
 Yellow - w/shipment - for consignee files
 Pink - Shannon & Wilson - job file

1.7°C

No. 411428

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-65103-1

Login Number: 65103

List Source: Eurofins TestAmerica, Sacramento

List Number: 1

Creator: Nuval, Mark-Anthony M

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Laboratory Data Review Checklist

Completed By:

Amber Masters

Title:

Environmental Scientist

Date:

10/9/2020

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins TestAmerica, Sacramento

Laboratory Report Number:

320-65103-1

Laboratory Report Date:

10/9/2020

CS Site Name:

Fairbanks DOT&PF PFAS

ADEC File Number:

100.38.277

Hazard Identification Number:

26816

320-65103-1

Laboratory Report Date:

10/9/2020

CS Site Name:

Note: Any N/A or No box checked must have an explanation in the comments box.

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes No N/A Comments:

The ADEC certified the TestAmerica/Eurofins Laboratories West Sacramento, CA location for the analysis of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) on February 6, 2018. These compounds were included in the ADEC's Contaminated Sites Laboratory Approval 17 020.

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes No N/A Comments:

Samples were not transferred to another laboratory.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes No N/A Comments:

b. Correct analyses requested?

Yes No N/A Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes No N/A Comments:

Sample cooler temperature recorded at 1.7° C upon receipt at laboratory.

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes No N/A Comments:

320-65103-1

Laboratory Report Date:

10/9/2020

CS Site Name:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes No N/A Comments:

The sample receipt form notes that the samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes No N/A Comments:

See above.

e. Data quality or usability affected?

Comments:

Data quality and/or usability is not affected; see above.

4. Case Narrative

a. Present and understandable?

Yes No N/A Comments:

320-65103-1

Laboratory Report Date:

10/9/2020

CS Site Name:

b. Discrepancies, errors, or QC failures identified by the lab?

Yes No N/A Comments:

Results for samples *FTP-pre-004* and *FTP-pre-005* were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits.

The concentration of Perfluorohexanesulfonic acid (PFHxS) and Perfluorooctanesulfonic acid (PFOS) associated with the following samples exceeded the instrument calibration range at the maximum dilution the lab is able to perform on an extract: *FTP-pre-004* and *FTP-pre-005*. These analytes have been qualified; however, the peaks did not saturate the instrument detector. Historical data indicate that for the isotope dilution method, further dilution and re-analysis will not produce significantly different results from those reported above the calibration range. Consequently, the PFHxS and PFOS results for these samples are considered estimates and have been flagged 'J'.

The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit for $^{13}\text{C}_5$ PFNA: *FTP-pre-004* and *FTP-pre-005*. Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the samples. See section 6.d.ii for details.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-416491.

A deviation from the Standard Operating Procedure (SOP) occurred. Details are as follows: due to the matrix, the following samples were prepared using a 1.0 mL aliquot without extracting via the SPE process: *FAI Drum*. This is the equivalent of a 250x dilution prior to submitting extracts for analysis.

The following samples were yellow prior to extraction: *FTP-pre-004* and *FTP-pre-005*.

The following samples were black prior to extraction: *MW-1903-20* and *MW-2903-20*.

The following samples contain floating particulates in the bottles prior to extraction: *FTP-pre-004*, *FTP-pre-005*, *MW-1903-20* and *MW-2903-20*. Due to the excess amount of particulates, the following samples were centrifuged and decanted into new 250 mL container: *MW-1903-20* and *MW-2903-20*. After centrifuging and decanting, the samples were fortified with IDA and then extracted.

320-65103-1

Laboratory Report Date:

10/9/2020

CS Site Name:

The following sample 120774 in preparation batch 320-416399 were light yellow prior to extraction.

The following sample 120774 in preparation batch 320-416399 were yellow after extraction and final voluming.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-416399.

c. Were all corrective actions documented?

Yes No N/A Comments:

Where necessary.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The case narrative does not discuss an impact to data quality.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes No N/A Comments:

b. All applicable holding times met?

Yes No N/A Comments:

c. All soils reported on a dry weight basis?

Yes No N/A Comments:

Soil samples were not submitted with this work order.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes No N/A Comments:

320-65103-1

Laboratory Report Date:

10/9/2020

CS Site Name:

e. Data quality or usability affected?

Data quality and/or usability were not affected.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes No N/A Comments:

No analytes were detected in the method blank.

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

Not applicable, see above.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

v. Data quality or usability affected?

Comments:

No, see above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes No N/A Comments:

320-65103-1

Laboratory Report Date:

10/9/2020

CS Site Name:

- ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

Metals and inorganics were not analyzed as part of this work order.

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

- iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Not applicable; analytical accuracy and precision were within acceptable limits.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

- vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability were not affected.

- c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Note: Leave blank if not required for project

- i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

An MS/MSD was not reported in this work order, see the LCS/LCSD section for an evaluation of analytical accuracy and precision.

Laboratory Report Date:

10/9/2020

CS Site Name:

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

See above.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes No N/A Comments:

See above.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes No N/A Comments:

See above.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Not applicable, see above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Data quality and/or usability was not affected.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes No N/A Comments:

320-65103-1

Laboratory Report Date:

10/9/2020

CS Site Name:

- ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes No N/A Comments:

PFAS IDA 13C5 PFNA was recovered below the lower control limit in sample *FTP-pre-004 and FTP-pre-005*. The laboratory noted that generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the samples. Consequently, the PFNA results in the samples are not considered affected.

- iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

- iv. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected.

e. Trip Blanks

- i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes No N/A Comments:

No volatile analyses were requested as a part of this work order; therefore, a trip blank is not required.

- ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes No N/A Comments:

See above.

- iii. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

See above.

- iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

No samples were affected.

320-65103-1

Laboratory Report Date:

10/9/2020

CS Site Name:

v. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No N/A

Comments:

ii. Submitted blind to lab?

Yes No N/A

Comments:

Field duplicate pairs *FTP-pre-004/FTP-pre-005* and *MW-1903-20/MW-2903-20* were submitted with this work order.

iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Yes No N/A

Comments:

The field duplicate RPDs were within the recommended DQO of 30% for water, where calculable, with the exception of PFOS in samples *MW-1903-20/MW-2903-20*. The field duplicate RPDs for these analytes did not meet the recommended DQO. The sample results are considered estimated with no direction of bias and have been flagged 'J'.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

See above.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes No N/A

Comments:

Samples were not collected using reusable equipment; therefore, an equipment blank was not required for this project.

320-65103-1

Laboratory Report Date:

10/9/2020

CS Site Name:

i. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

See above.

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

Not applicable, see above.

iii. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes No N/A Comments:

There were no additional flags/qualifiers required for this work order.

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-66253-1
Client Project/Site: FY21 FAI MW Sampling

For:
Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

Attn: Marcy Nadel



Authorized for release by:
11/11/2020 1:41:33 PM

David Alltucker, Project Manager I
(916)374-4383
David.Alltucker@Eurofinset.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:
www.eurofinsus.com/Env

The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



Table of Contents

Cover Page	1
Table of Contents	2
Definitions/Glossary	3
Case Narrative	4
Detection Summary	5
Client Sample Results	7
Isotope Dilution Summary	20
QC Sample Results	22
QC Association Summary	25
Lab Chronicle	26
Certification Summary	29
Method Summary	30
Sample Summary	31
Chain of Custody	32
Receipt Checklists	34

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: FY21 FAI MW Sampling

Job ID: 320-66253-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*5	Isotope dilution analyte is outside acceptance limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Shannon & Wilson, Inc
Project/Site: FY21 FAI MW Sampling

Job ID: 320-66253-1

Job ID: 320-66253-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative 320-66253-1

Receipt

The samples were received on 11/3/2020 12:40 PM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.6° C.

LCMS

Method 537 (modified): Results for samples MW-2901-15 (320-66253-4), MW-1901-40 (320-66253-7) and MW-1901-15 (320-66253-10) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits

Method 537 (modified): Several Isotope Dilution Analyte (IDA) recovery are above the method recommended limit for the following sample: MW-1902-80 (320-66253-6). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-428478.

Method 3535: The following samples were beige prior to extraction: MW-1902-40 (320-66253-3), MW-2901-15 (320-66253-4), MW-1901-40 (320-66253-7) and MW-1901-15 (320-66253-10)

Method 3535: The following samples were orange prior to extraction: MW-2902-15 (320-66253-1) and MW-1902-15 (320-66253-8)

Method 3535: During the solid phase extraction process, the following samples contained non-settable particulates which clogged the solid phase extraction column: MW-2902-15 (320-66253-1) and MW-1902-15 (320-66253-8).

Method 3535: Elevated reporting limits are provided for the following samples due to insufficient sample provided for preparation: MW-2902-15 (320-66253-1) and EB-15-2 (320-66253-11).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: FY21 FAI MW Sampling

Job ID: 320-66253-1

Client Sample ID: MW-2902-15

Lab Sample ID: 320-66253-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	32		2.0	0.59	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	4.7		2.0	0.25	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	9.1		2.0	0.86	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	13		2.0	0.20	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	100		2.0	0.58	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	18		2.0	0.55	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-1902-150

Lab Sample ID: 320-66253-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	1.1	J	2.0	0.56	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.56	J	2.0	0.53	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-1902-40

Lab Sample ID: 320-66253-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.88	J	1.9	0.56	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.26	J	1.9	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.62	J	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.0		1.9	0.55	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.3		1.9	0.52	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-2901-15

Lab Sample ID: 320-66253-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	43		1.9	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	76		1.9	0.83	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	330		1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	76		1.9	0.53	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA) - DL	590		19	5.7	ng/L	10		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	1500		19	5.6	ng/L	10		537 (modified)	Total/NA

Client Sample ID: MW-1901-80

Lab Sample ID: 320-66253-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.2	J	1.9	0.56	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.60	J	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	3.4		1.9	0.55	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.2	J	1.9	0.52	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-1902-80

Lab Sample ID: 320-66253-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.24	J	2.0	0.20	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.1	J	2.0	0.56	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.89	J	2.0	0.53	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-1901-40

Lab Sample ID: 320-66253-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	120		1.9	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	150		1.9	0.80	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.35	J	1.9	0.26	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: FY21 FAI MW Sampling

Job ID: 320-66253-1

Client Sample ID: MW-1901-40 (Continued)

Lab Sample ID: 320-66253-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	280		1.9	0.51	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA) - DL	1500		38	11	ng/L	20		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	890		38	3.8	ng/L	20		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	2600		38	11	ng/L	20		537 (modified)	Total/NA

Client Sample ID: MW-1902-15

Lab Sample ID: 320-66253-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	30		1.9	0.56	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	4.5		1.9	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	8.3		1.9	0.82	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	12		1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	99		1.9	0.55	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	17		1.9	0.52	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-1901-150

Lab Sample ID: 320-66253-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.99	J	1.9	0.54	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-1901-15

Lab Sample ID: 320-66253-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	39		1.9	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	74		1.9	0.79	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	74		1.9	0.50	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA) - DL	630		19	5.4	ng/L	10		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	340		19	1.9	ng/L	10		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	1400		19	5.3	ng/L	10		537 (modified)	Total/NA

Client Sample ID: EB-15-2

Lab Sample ID: 320-66253-11

No Detections.

Client Sample ID: EB-15

Lab Sample ID: 320-66253-12

No Detections.

Client Sample ID: FB-40

Lab Sample ID: 320-66253-13

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
 Project/Site: FY21 FAI MW Sampling

Job ID: 320-66253-1

Client Sample ID: MW-2902-15

Lab Sample ID: 320-66253-1

Date Collected: 10/28/20 13:43

Matrix: Water

Date Received: 11/03/20 12:40

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	32		2.0	0.59	ng/L		11/04/20 20:28	11/07/20 05:15	1
Perfluoroheptanoic acid (PFHpA)	4.7		2.0	0.25	ng/L		11/04/20 20:28	11/07/20 05:15	1
Perfluorooctanoic acid (PFOA)	9.1		2.0	0.86	ng/L		11/04/20 20:28	11/07/20 05:15	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		11/04/20 20:28	11/07/20 05:15	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		11/04/20 20:28	11/07/20 05:15	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		11/04/20 20:28	11/07/20 05:15	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.56	ng/L		11/04/20 20:28	11/07/20 05:15	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		11/04/20 20:28	11/07/20 05:15	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.74	ng/L		11/04/20 20:28	11/07/20 05:15	1
Perfluorobutanesulfonic acid (PFBS)	13		2.0	0.20	ng/L		11/04/20 20:28	11/07/20 05:15	1
Perfluorohexanesulfonic acid (PFHxS)	100		2.0	0.58	ng/L		11/04/20 20:28	11/07/20 05:15	1
Perfluorooctanesulfonic acid (PFOS)	18		2.0	0.55	ng/L		11/04/20 20:28	11/07/20 05:15	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		11/04/20 20:28	11/07/20 05:15	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		11/04/20 20:28	11/07/20 05:15	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		11/04/20 20:28	11/07/20 05:15	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		11/04/20 20:28	11/07/20 05:15	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		11/04/20 20:28	11/07/20 05:15	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		11/04/20 20:28	11/07/20 05:15	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	65		25 - 150	11/04/20 20:28	11/07/20 05:15	1
13C4 PFHpA	70		25 - 150	11/04/20 20:28	11/07/20 05:15	1
13C4 PFOA	75		25 - 150	11/04/20 20:28	11/07/20 05:15	1
13C5 PFNA	72		25 - 150	11/04/20 20:28	11/07/20 05:15	1
13C2 PFDA	62		25 - 150	11/04/20 20:28	11/07/20 05:15	1
13C2 PFUnA	61		25 - 150	11/04/20 20:28	11/07/20 05:15	1
13C2 PFDoA	51		25 - 150	11/04/20 20:28	11/07/20 05:15	1
13C2 PFTeDA	56		25 - 150	11/04/20 20:28	11/07/20 05:15	1
13C3 PFBS	66		25 - 150	11/04/20 20:28	11/07/20 05:15	1
18O2 PFHxS	72		25 - 150	11/04/20 20:28	11/07/20 05:15	1
13C4 PFOS	72		25 - 150	11/04/20 20:28	11/07/20 05:15	1
d3-NMeFOSAA	61		25 - 150	11/04/20 20:28	11/07/20 05:15	1
d5-NEtFOSAA	59		25 - 150	11/04/20 20:28	11/07/20 05:15	1
13C3 HFPO-DA	63		25 - 150	11/04/20 20:28	11/07/20 05:15	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FY21 FAI MW Sampling

Job ID: 320-66253-1

Client Sample ID: MW-1902-150

Lab Sample ID: 320-66253-2

Date Collected: 10/28/20 11:30

Matrix: Water

Date Received: 11/03/20 12:40

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.57	ng/L		11/04/20 20:28	11/07/20 05:24	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		11/04/20 20:28	11/07/20 05:24	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.84	ng/L		11/04/20 20:28	11/07/20 05:24	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		11/04/20 20:28	11/07/20 05:24	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		11/04/20 20:28	11/07/20 05:24	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		11/04/20 20:28	11/07/20 05:24	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.54	ng/L		11/04/20 20:28	11/07/20 05:24	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		11/04/20 20:28	11/07/20 05:24	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.72	ng/L		11/04/20 20:28	11/07/20 05:24	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		11/04/20 20:28	11/07/20 05:24	1
Perfluorohexanesulfonic acid (PFHxS)	1.1	J	2.0	0.56	ng/L		11/04/20 20:28	11/07/20 05:24	1
Perfluorooctanesulfonic acid (PFOS)	0.56	J	2.0	0.53	ng/L		11/04/20 20:28	11/07/20 05:24	1
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	ND		4.9	1.2	ng/L		11/04/20 20:28	11/07/20 05:24	1
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	ND		4.9	1.3	ng/L		11/04/20 20:28	11/07/20 05:24	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		11/04/20 20:28	11/07/20 05:24	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		11/04/20 20:28	11/07/20 05:24	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.31	ng/L		11/04/20 20:28	11/07/20 05:24	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.39	ng/L		11/04/20 20:28	11/07/20 05:24	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	100		25 - 150	11/04/20 20:28	11/07/20 05:24	1
13C4 PFHpA	110		25 - 150	11/04/20 20:28	11/07/20 05:24	1
13C4 PFOA	110		25 - 150	11/04/20 20:28	11/07/20 05:24	1
13C5 PFNA	103		25 - 150	11/04/20 20:28	11/07/20 05:24	1
13C2 PFDA	97		25 - 150	11/04/20 20:28	11/07/20 05:24	1
13C2 PFUnA	94		25 - 150	11/04/20 20:28	11/07/20 05:24	1
13C2 PFDoA	91		25 - 150	11/04/20 20:28	11/07/20 05:24	1
13C2 PFTeDA	89		25 - 150	11/04/20 20:28	11/07/20 05:24	1
13C3 PFBS	104		25 - 150	11/04/20 20:28	11/07/20 05:24	1
18O2 PFHxS	105		25 - 150	11/04/20 20:28	11/07/20 05:24	1
13C4 PFOS	108		25 - 150	11/04/20 20:28	11/07/20 05:24	1
d3-NMeFOSAA	102		25 - 150	11/04/20 20:28	11/07/20 05:24	1
d5-NEtFOSAA	95		25 - 150	11/04/20 20:28	11/07/20 05:24	1
13C3 HFPO-DA	92		25 - 150	11/04/20 20:28	11/07/20 05:24	1

Client Sample Results

Client: Shannon & Wilson, Inc
 Project/Site: FY21 FAI MW Sampling

Job ID: 320-66253-1

Client Sample ID: MW-1902-40

Lab Sample ID: 320-66253-3

Date Collected: 10/28/20 12:54

Matrix: Water

Date Received: 11/03/20 12:40

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	0.88	J	1.9	0.56	ng/L		11/04/20 20:28	11/07/20 05:33	1
Perfluoroheptanoic acid (PFHpA)	0.26	J	1.9	0.24	ng/L		11/04/20 20:28	11/07/20 05:33	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.82	ng/L		11/04/20 20:28	11/07/20 05:33	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		11/04/20 20:28	11/07/20 05:33	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		11/04/20 20:28	11/07/20 05:33	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		11/04/20 20:28	11/07/20 05:33	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		11/04/20 20:28	11/07/20 05:33	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.3	ng/L		11/04/20 20:28	11/07/20 05:33	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.71	ng/L		11/04/20 20:28	11/07/20 05:33	1
Perfluorobutanesulfonic acid (PFBS)	0.62	J	1.9	0.19	ng/L		11/04/20 20:28	11/07/20 05:33	1
Perfluorohexanesulfonic acid (PFHxS)	2.0		1.9	0.55	ng/L		11/04/20 20:28	11/07/20 05:33	1
Perfluorooctanesulfonic acid (PFOS)	3.3		1.9	0.52	ng/L		11/04/20 20:28	11/07/20 05:33	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.2	ng/L		11/04/20 20:28	11/07/20 05:33	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.3	ng/L		11/04/20 20:28	11/07/20 05:33	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		11/04/20 20:28	11/07/20 05:33	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		11/04/20 20:28	11/07/20 05:33	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		11/04/20 20:28	11/07/20 05:33	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.39	ng/L		11/04/20 20:28	11/07/20 05:33	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	89		25 - 150				11/04/20 20:28	11/07/20 05:33	1
13C4 PFHpA	97		25 - 150				11/04/20 20:28	11/07/20 05:33	1
13C4 PFOA	98		25 - 150				11/04/20 20:28	11/07/20 05:33	1
13C5 PFNA	91		25 - 150				11/04/20 20:28	11/07/20 05:33	1
13C2 PFDA	97		25 - 150				11/04/20 20:28	11/07/20 05:33	1
13C2 PFUnA	91		25 - 150				11/04/20 20:28	11/07/20 05:33	1
13C2 PFDoA	87		25 - 150				11/04/20 20:28	11/07/20 05:33	1
13C2 PFTeDA	88		25 - 150				11/04/20 20:28	11/07/20 05:33	1
13C3 PFBS	96		25 - 150				11/04/20 20:28	11/07/20 05:33	1
18O2 PFHxS	101		25 - 150				11/04/20 20:28	11/07/20 05:33	1
13C4 PFOS	99		25 - 150				11/04/20 20:28	11/07/20 05:33	1
d3-NMeFOSAA	102		25 - 150				11/04/20 20:28	11/07/20 05:33	1
d5-NEtFOSAA	95		25 - 150				11/04/20 20:28	11/07/20 05:33	1
13C3 HFPO-DA	83		25 - 150				11/04/20 20:28	11/07/20 05:33	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FY21 FAI MW Sampling

Job ID: 320-66253-1

Client Sample ID: MW-2901-15

Lab Sample ID: 320-66253-4

Date Collected: 10/27/20 13:35

Matrix: Water

Date Received: 11/03/20 12:40

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	43		1.9	0.24	ng/L		11/04/20 20:28	11/07/20 05:42	1
Perfluorooctanoic acid (PFOA)	76		1.9	0.83	ng/L		11/04/20 20:28	11/07/20 05:42	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		11/04/20 20:28	11/07/20 05:42	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		11/04/20 20:28	11/07/20 05:42	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		11/04/20 20:28	11/07/20 05:42	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.54	ng/L		11/04/20 20:28	11/07/20 05:42	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.3	ng/L		11/04/20 20:28	11/07/20 05:42	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.71	ng/L		11/04/20 20:28	11/07/20 05:42	1
Perfluorobutanesulfonic acid (PFBS)	330		1.9	0.19	ng/L		11/04/20 20:28	11/07/20 05:42	1
Perfluorooctanesulfonic acid (PFOS)	76		1.9	0.53	ng/L		11/04/20 20:28	11/07/20 05:42	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.9	1.2	ng/L		11/04/20 20:28	11/07/20 05:42	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.9	1.3	ng/L		11/04/20 20:28	11/07/20 05:42	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		11/04/20 20:28	11/07/20 05:42	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		11/04/20 20:28	11/07/20 05:42	1
11-Chloroeicosadecafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		11/04/20 20:28	11/07/20 05:42	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.39	ng/L		11/04/20 20:28	11/07/20 05:42	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFHpA	91		25 - 150				11/04/20 20:28	11/07/20 05:42	1
13C4 PFOA	112		25 - 150				11/04/20 20:28	11/07/20 05:42	1
13C5 PFNA	107		25 - 150				11/04/20 20:28	11/07/20 05:42	1
13C2 PFDA	105		25 - 150				11/04/20 20:28	11/07/20 05:42	1
13C2 PFUnA	93		25 - 150				11/04/20 20:28	11/07/20 05:42	1
13C2 PFDoA	93		25 - 150				11/04/20 20:28	11/07/20 05:42	1
13C2 PFTeDA	87		25 - 150				11/04/20 20:28	11/07/20 05:42	1
13C3 PFBS	99		25 - 150				11/04/20 20:28	11/07/20 05:42	1
13C4 PFOS	111		25 - 150				11/04/20 20:28	11/07/20 05:42	1
d3-NMeFOSAA	103		25 - 150				11/04/20 20:28	11/07/20 05:42	1
d5-NEtFOSAA	98		25 - 150				11/04/20 20:28	11/07/20 05:42	1
13C3 HFPO-DA	92		25 - 150				11/04/20 20:28	11/07/20 05:42	1

Method: 537 (modified) - Fluorinated Alkyl Substances - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	590		19	5.7	ng/L		11/04/20 20:28	11/07/20 23:33	10
Perfluorohexanesulfonic acid (PFHxS)	1500		19	5.6	ng/L		11/04/20 20:28	11/07/20 23:33	10
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	100		25 - 150				11/04/20 20:28	11/07/20 23:33	10
18O2 PFHxS	104		25 - 150				11/04/20 20:28	11/07/20 23:33	10

Client Sample Results

Client: Shannon & Wilson, Inc
 Project/Site: FY21 FAI MW Sampling

Job ID: 320-66253-1

Client Sample ID: MW-1901-80

Lab Sample ID: 320-66253-5

Date Collected: 10/27/20 12:14

Matrix: Water

Date Received: 11/03/20 12:40

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	1.2	J	1.9	0.56	ng/L		11/04/20 20:28	11/07/20 05:51	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		11/04/20 20:28	11/07/20 05:51	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.81	ng/L		11/04/20 20:28	11/07/20 05:51	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		11/04/20 20:28	11/07/20 05:51	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		11/04/20 20:28	11/07/20 05:51	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		11/04/20 20:28	11/07/20 05:51	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		11/04/20 20:28	11/07/20 05:51	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		11/04/20 20:28	11/07/20 05:51	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		11/04/20 20:28	11/07/20 05:51	1
Perfluorobutanesulfonic acid (PFBS)	0.60	J	1.9	0.19	ng/L		11/04/20 20:28	11/07/20 05:51	1
Perfluorohexanesulfonic acid (PFHxS)	3.4		1.9	0.55	ng/L		11/04/20 20:28	11/07/20 05:51	1
Perfluorooctanesulfonic acid (PFOS)	1.2	J	1.9	0.52	ng/L		11/04/20 20:28	11/07/20 05:51	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.1	ng/L		11/04/20 20:28	11/07/20 05:51	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		11/04/20 20:28	11/07/20 05:51	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		11/04/20 20:28	11/07/20 05:51	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		11/04/20 20:28	11/07/20 05:51	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		11/04/20 20:28	11/07/20 05:51	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		11/04/20 20:28	11/07/20 05:51	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	104		25 - 150				11/04/20 20:28	11/07/20 05:51	1
13C4 PFHpA	104		25 - 150				11/04/20 20:28	11/07/20 05:51	1
13C4 PFOA	110		25 - 150				11/04/20 20:28	11/07/20 05:51	1
13C5 PFNA	101		25 - 150				11/04/20 20:28	11/07/20 05:51	1
13C2 PFDA	86		25 - 150				11/04/20 20:28	11/07/20 05:51	1
13C2 PFUnA	72		25 - 150				11/04/20 20:28	11/07/20 05:51	1
13C2 PFDoA	51		25 - 150				11/04/20 20:28	11/07/20 05:51	1
13C2 PFTeDA	75		25 - 150				11/04/20 20:28	11/07/20 05:51	1
13C3 PFBS	95		25 - 150				11/04/20 20:28	11/07/20 05:51	1
18O2 PFHxS	103		25 - 150				11/04/20 20:28	11/07/20 05:51	1
13C4 PFOS	98		25 - 150				11/04/20 20:28	11/07/20 05:51	1
d3-NMeFOSAA	77		25 - 150				11/04/20 20:28	11/07/20 05:51	1
d5-NEtFOSAA	71		25 - 150				11/04/20 20:28	11/07/20 05:51	1
13C3 HFPO-DA	90		25 - 150				11/04/20 20:28	11/07/20 05:51	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FY21 FAI MW Sampling

Job ID: 320-66253-1

Client Sample ID: MW-1902-80

Lab Sample ID: 320-66253-6

Date Collected: 10/28/20 12:20

Matrix: Water

Date Received: 11/03/20 12:40

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.57	ng/L		11/04/20 20:28	11/07/20 06:00	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.24	ng/L		11/04/20 20:28	11/07/20 06:00	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.83	ng/L		11/04/20 20:28	11/07/20 06:00	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.26	ng/L		11/04/20 20:28	11/07/20 06:00	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.30	ng/L		11/04/20 20:28	11/07/20 06:00	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		11/04/20 20:28	11/07/20 06:00	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.54	ng/L		11/04/20 20:28	11/07/20 06:00	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		11/04/20 20:28	11/07/20 06:00	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.71	ng/L		11/04/20 20:28	11/07/20 06:00	1
Perfluorobutanesulfonic acid (PFBS)	0.24	J	2.0	0.20	ng/L		11/04/20 20:28	11/07/20 06:00	1
Perfluorohexanesulfonic acid (PFHxS)	1.1	J	2.0	0.56	ng/L		11/04/20 20:28	11/07/20 06:00	1
Perfluorooctanesulfonic acid (PFOS)	0.89	J	2.0	0.53	ng/L		11/04/20 20:28	11/07/20 06:00	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.9	1.2	ng/L		11/04/20 20:28	11/07/20 06:00	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.9	1.3	ng/L		11/04/20 20:28	11/07/20 06:00	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.23	ng/L		11/04/20 20:28	11/07/20 06:00	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		11/04/20 20:28	11/07/20 06:00	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.31	ng/L		11/04/20 20:28	11/07/20 06:00	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.39	ng/L		11/04/20 20:28	11/07/20 06:00	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	179	*5	25 - 150	11/04/20 20:28	11/07/20 06:00	1
13C4 PFHpA	187	*5	25 - 150	11/04/20 20:28	11/07/20 06:00	1
13C4 PFOA	195	*5	25 - 150	11/04/20 20:28	11/07/20 06:00	1
13C5 PFNA	178	*5	25 - 150	11/04/20 20:28	11/07/20 06:00	1
13C2 PFDA	153	*5	25 - 150	11/04/20 20:28	11/07/20 06:00	1
13C2 PFUnA	141		25 - 150	11/04/20 20:28	11/07/20 06:00	1
13C2 PFDoA	142		25 - 150	11/04/20 20:28	11/07/20 06:00	1
13C2 PFTeDA	136		25 - 150	11/04/20 20:28	11/07/20 06:00	1
13C3 PFBS	136		25 - 150	11/04/20 20:28	11/07/20 06:00	1
18O2 PFHxS	157	*5	25 - 150	11/04/20 20:28	11/07/20 06:00	1
13C4 PFOS	152	*5	25 - 150	11/04/20 20:28	11/07/20 06:00	1
d3-NMeFOSAA	162	*5	25 - 150	11/04/20 20:28	11/07/20 06:00	1
d5-NEtFOSAA	141		25 - 150	11/04/20 20:28	11/07/20 06:00	1
13C3 HFPO-DA	164	*5	25 - 150	11/04/20 20:28	11/07/20 06:00	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FY21 FAI MW Sampling

Job ID: 320-66253-1

Client Sample ID: MW-1901-40

Lab Sample ID: 320-66253-7

Date Collected: 10/27/20 13:07

Matrix: Water

Date Received: 11/03/20 12:40

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	120		1.9	0.24	ng/L		11/04/20 20:28	11/07/20 06:10	1
Perfluorooctanoic acid (PFOA)	150		1.9	0.80	ng/L		11/04/20 20:28	11/07/20 06:10	1
Perfluorononanoic acid (PFNA)	0.35	J	1.9	0.26	ng/L		11/04/20 20:28	11/07/20 06:10	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		11/04/20 20:28	11/07/20 06:10	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		11/04/20 20:28	11/07/20 06:10	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		11/04/20 20:28	11/07/20 06:10	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		11/04/20 20:28	11/07/20 06:10	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		11/04/20 20:28	11/07/20 06:10	1
Perfluorooctanesulfonic acid (PFOS)	280		1.9	0.51	ng/L		11/04/20 20:28	11/07/20 06:10	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		11/04/20 20:28	11/07/20 06:10	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		11/04/20 20:28	11/07/20 06:10	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		11/04/20 20:28	11/07/20 06:10	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		11/04/20 20:28	11/07/20 06:10	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		11/04/20 20:28	11/07/20 06:10	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		11/04/20 20:28	11/07/20 06:10	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFHpA	77		25 - 150	11/04/20 20:28	11/07/20 06:10	1
13C4 PFOA	96		25 - 150	11/04/20 20:28	11/07/20 06:10	1
13C5 PFNA	99		25 - 150	11/04/20 20:28	11/07/20 06:10	1
13C2 PFDA	92		25 - 150	11/04/20 20:28	11/07/20 06:10	1
13C2 PFUnA	95		25 - 150	11/04/20 20:28	11/07/20 06:10	1
13C2 PFDoA	89		25 - 150	11/04/20 20:28	11/07/20 06:10	1
13C2 PFTeDA	79		25 - 150	11/04/20 20:28	11/07/20 06:10	1
13C4 PFOS	101		25 - 150	11/04/20 20:28	11/07/20 06:10	1
d3-NMeFOSAA	105		25 - 150	11/04/20 20:28	11/07/20 06:10	1
d5-NEtFOSAA	108		25 - 150	11/04/20 20:28	11/07/20 06:10	1
13C3 HFPO-DA	84		25 - 150	11/04/20 20:28	11/07/20 06:10	1

Method: 537 (modified) - Fluorinated Alkyl Substances - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	1500		38	11	ng/L		11/04/20 20:28	11/07/20 23:42	20
Perfluorobutanesulfonic acid (PFBS)	890		38	3.8	ng/L		11/04/20 20:28	11/07/20 23:42	20
Perfluorohexanesulfonic acid (PFHxS)	2600		38	11	ng/L		11/04/20 20:28	11/07/20 23:42	20

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	87		25 - 150	11/04/20 20:28	11/07/20 23:42	20
13C3 PFBS	99		25 - 150	11/04/20 20:28	11/07/20 23:42	20
18O2 PFHxS	105		25 - 150	11/04/20 20:28	11/07/20 23:42	20

Client Sample Results

Client: Shannon & Wilson, Inc
 Project/Site: FY21 FAI MW Sampling

Job ID: 320-66253-1

Client Sample ID: MW-1902-15

Lab Sample ID: 320-66253-8

Date Collected: 10/28/20 13:33

Matrix: Water

Date Received: 11/03/20 12:40

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	30		1.9	0.56	ng/L		11/04/20 20:28	11/07/20 06:37	1
Perfluoroheptanoic acid (PFHpA)	4.5		1.9	0.24	ng/L		11/04/20 20:28	11/07/20 06:37	1
Perfluorooctanoic acid (PFOA)	8.3		1.9	0.82	ng/L		11/04/20 20:28	11/07/20 06:37	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		11/04/20 20:28	11/07/20 06:37	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		11/04/20 20:28	11/07/20 06:37	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		11/04/20 20:28	11/07/20 06:37	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		11/04/20 20:28	11/07/20 06:37	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.3	ng/L		11/04/20 20:28	11/07/20 06:37	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.71	ng/L		11/04/20 20:28	11/07/20 06:37	1
Perfluorobutanesulfonic acid (PFBS)	12		1.9	0.19	ng/L		11/04/20 20:28	11/07/20 06:37	1
Perfluorohexanesulfonic acid (PFHxS)	99		1.9	0.55	ng/L		11/04/20 20:28	11/07/20 06:37	1
Perfluorooctanesulfonic acid (PFOS)	17		1.9	0.52	ng/L		11/04/20 20:28	11/07/20 06:37	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.2	ng/L		11/04/20 20:28	11/07/20 06:37	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.3	ng/L		11/04/20 20:28	11/07/20 06:37	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		11/04/20 20:28	11/07/20 06:37	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		11/04/20 20:28	11/07/20 06:37	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		11/04/20 20:28	11/07/20 06:37	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.39	ng/L		11/04/20 20:28	11/07/20 06:37	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	49		25 - 150	11/04/20 20:28	11/07/20 06:37	1
13C4 PFHpA	49		25 - 150	11/04/20 20:28	11/07/20 06:37	1
13C4 PFOA	52		25 - 150	11/04/20 20:28	11/07/20 06:37	1
13C5 PFNA	51		25 - 150	11/04/20 20:28	11/07/20 06:37	1
13C2 PFDA	45		25 - 150	11/04/20 20:28	11/07/20 06:37	1
13C2 PFUnA	40		25 - 150	11/04/20 20:28	11/07/20 06:37	1
13C2 PFDoA	32		25 - 150	11/04/20 20:28	11/07/20 06:37	1
13C2 PFTeDA	35		25 - 150	11/04/20 20:28	11/07/20 06:37	1
13C3 PFBS	51		25 - 150	11/04/20 20:28	11/07/20 06:37	1
18O2 PFHxS	53		25 - 150	11/04/20 20:28	11/07/20 06:37	1
13C4 PFOS	51		25 - 150	11/04/20 20:28	11/07/20 06:37	1
d3-NMeFOSAA	44		25 - 150	11/04/20 20:28	11/07/20 06:37	1
d5-NEtFOSAA	38		25 - 150	11/04/20 20:28	11/07/20 06:37	1
13C3 HFPO-DA	44		25 - 150	11/04/20 20:28	11/07/20 06:37	1

Client Sample Results

Client: Shannon & Wilson, Inc
 Project/Site: FY21 FAI MW Sampling

Job ID: 320-66253-1

Client Sample ID: MW-1901-150

Lab Sample ID: 320-66253-9

Date Collected: 10/27/20 10:55

Matrix: Water

Date Received: 11/03/20 12:40

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		11/04/20 20:28	11/07/20 06:46	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		11/04/20 20:28	11/07/20 06:46	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.81	ng/L		11/04/20 20:28	11/07/20 06:46	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		11/04/20 20:28	11/07/20 06:46	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		11/04/20 20:28	11/07/20 06:46	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		11/04/20 20:28	11/07/20 06:46	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		11/04/20 20:28	11/07/20 06:46	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		11/04/20 20:28	11/07/20 06:46	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		11/04/20 20:28	11/07/20 06:46	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		11/04/20 20:28	11/07/20 06:46	1
Perfluorohexanesulfonic acid (PFHxS)	0.99	J	1.9	0.54	ng/L		11/04/20 20:28	11/07/20 06:46	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		11/04/20 20:28	11/07/20 06:46	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.1	ng/L		11/04/20 20:28	11/07/20 06:46	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		11/04/20 20:28	11/07/20 06:46	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		11/04/20 20:28	11/07/20 06:46	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		11/04/20 20:28	11/07/20 06:46	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		11/04/20 20:28	11/07/20 06:46	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		11/04/20 20:28	11/07/20 06:46	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	100		25 - 150	11/04/20 20:28	11/07/20 06:46	1
13C4 PFHpA	102		25 - 150	11/04/20 20:28	11/07/20 06:46	1
13C4 PFOA	100		25 - 150	11/04/20 20:28	11/07/20 06:46	1
13C5 PFNA	100		25 - 150	11/04/20 20:28	11/07/20 06:46	1
13C2 PFDA	100		25 - 150	11/04/20 20:28	11/07/20 06:46	1
13C2 PFUnA	100		25 - 150	11/04/20 20:28	11/07/20 06:46	1
13C2 PFDoA	86		25 - 150	11/04/20 20:28	11/07/20 06:46	1
13C2 PFTeDA	93		25 - 150	11/04/20 20:28	11/07/20 06:46	1
13C3 PFBS	106		25 - 150	11/04/20 20:28	11/07/20 06:46	1
18O2 PFHxS	111		25 - 150	11/04/20 20:28	11/07/20 06:46	1
13C4 PFOS	109		25 - 150	11/04/20 20:28	11/07/20 06:46	1
d3-NMeFOSAA	104		25 - 150	11/04/20 20:28	11/07/20 06:46	1
d5-NEtFOSAA	100		25 - 150	11/04/20 20:28	11/07/20 06:46	1
13C3 HFPO-DA	90		25 - 150	11/04/20 20:28	11/07/20 06:46	1

Client Sample Results

Client: Shannon & Wilson, Inc
 Project/Site: FY21 FAI MW Sampling

Job ID: 320-66253-1

Client Sample ID: MW-1901-15

Lab Sample ID: 320-66253-10

Date Collected: 10/27/20 13:40

Matrix: Water

Date Received: 11/03/20 12:40

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	39		1.9	0.23	ng/L		11/04/20 20:28	11/07/20 06:55	1
Perfluorooctanoic acid (PFOA)	74		1.9	0.79	ng/L		11/04/20 20:28	11/07/20 06:55	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		11/04/20 20:28	11/07/20 06:55	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		11/04/20 20:28	11/07/20 06:55	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		11/04/20 20:28	11/07/20 06:55	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		11/04/20 20:28	11/07/20 06:55	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		11/04/20 20:28	11/07/20 06:55	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		11/04/20 20:28	11/07/20 06:55	1
Perfluorooctanesulfonic acid (PFOS)	74		1.9	0.50	ng/L		11/04/20 20:28	11/07/20 06:55	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		11/04/20 20:28	11/07/20 06:55	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		11/04/20 20:28	11/07/20 06:55	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		11/04/20 20:28	11/07/20 06:55	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/04/20 20:28	11/07/20 06:55	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		11/04/20 20:28	11/07/20 06:55	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		11/04/20 20:28	11/07/20 06:55	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFHpA	85		25 - 150	11/04/20 20:28	11/07/20 06:55	1
13C4 PFOA	103		25 - 150	11/04/20 20:28	11/07/20 06:55	1
13C5 PFNA	101		25 - 150	11/04/20 20:28	11/07/20 06:55	1
13C2 PFDA	100		25 - 150	11/04/20 20:28	11/07/20 06:55	1
13C2 PFUnA	89		25 - 150	11/04/20 20:28	11/07/20 06:55	1
13C2 PFDoA	81		25 - 150	11/04/20 20:28	11/07/20 06:55	1
13C2 PFTeDA	86		25 - 150	11/04/20 20:28	11/07/20 06:55	1
13C4 PFOS	95		25 - 150	11/04/20 20:28	11/07/20 06:55	1
d3-NMeFOSAA	97		25 - 150	11/04/20 20:28	11/07/20 06:55	1
d5-NEtFOSAA	99		25 - 150	11/04/20 20:28	11/07/20 06:55	1
13C3 HFPO-DA	86		25 - 150	11/04/20 20:28	11/07/20 06:55	1

Method: 537 (modified) - Fluorinated Alkyl Substances - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	630		19	5.4	ng/L		11/04/20 20:28	11/07/20 23:51	10
Perfluorobutanesulfonic acid (PFBS)	340		19	1.9	ng/L		11/04/20 20:28	11/07/20 23:51	10
Perfluorohexanesulfonic acid (PFHxS)	1400		19	5.3	ng/L		11/04/20 20:28	11/07/20 23:51	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	95		25 - 150	11/04/20 20:28	11/07/20 23:51	10
13C3 PFBS	99		25 - 150	11/04/20 20:28	11/07/20 23:51	10
18O2 PFHxS	98		25 - 150	11/04/20 20:28	11/07/20 23:51	10

Client Sample Results

Client: Shannon & Wilson, Inc
 Project/Site: FY21 FAI MW Sampling

Job ID: 320-66253-1

Client Sample ID: EB-15-2

Lab Sample ID: 320-66253-11

Date Collected: 10/28/20 13:50

Matrix: Water

Date Received: 11/03/20 12:40

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.2	0.64	ng/L		11/04/20 20:28	11/07/20 07:04	1
Perfluoroheptanoic acid (PFHpA)	ND		2.2	0.28	ng/L		11/04/20 20:28	11/07/20 07:04	1
Perfluorooctanoic acid (PFOA)	ND		2.2	0.94	ng/L		11/04/20 20:28	11/07/20 07:04	1
Perfluorononanoic acid (PFNA)	ND		2.2	0.30	ng/L		11/04/20 20:28	11/07/20 07:04	1
Perfluorodecanoic acid (PFDA)	ND		2.2	0.34	ng/L		11/04/20 20:28	11/07/20 07:04	1
Perfluoroundecanoic acid (PFUnA)	ND		2.2	1.2	ng/L		11/04/20 20:28	11/07/20 07:04	1
Perfluorododecanoic acid (PFDoA)	ND		2.2	0.61	ng/L		11/04/20 20:28	11/07/20 07:04	1
Perfluorotridecanoic acid (PFTriA)	ND		2.2	1.4	ng/L		11/04/20 20:28	11/07/20 07:04	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.2	0.80	ng/L		11/04/20 20:28	11/07/20 07:04	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.2	0.22	ng/L		11/04/20 20:28	11/07/20 07:04	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.2	0.63	ng/L		11/04/20 20:28	11/07/20 07:04	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.2	0.59	ng/L		11/04/20 20:28	11/07/20 07:04	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.5	1.3	ng/L		11/04/20 20:28	11/07/20 07:04	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.5	1.4	ng/L		11/04/20 20:28	11/07/20 07:04	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.2	0.26	ng/L		11/04/20 20:28	11/07/20 07:04	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.4	1.7	ng/L		11/04/20 20:28	11/07/20 07:04	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.2	0.35	ng/L		11/04/20 20:28	11/07/20 07:04	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.2	0.44	ng/L		11/04/20 20:28	11/07/20 07:04	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	89		25 - 150	11/04/20 20:28	11/07/20 07:04	1
13C4 PFHpA	93		25 - 150	11/04/20 20:28	11/07/20 07:04	1
13C4 PFOA	100		25 - 150	11/04/20 20:28	11/07/20 07:04	1
13C5 PFNA	92		25 - 150	11/04/20 20:28	11/07/20 07:04	1
13C2 PFDA	87		25 - 150	11/04/20 20:28	11/07/20 07:04	1
13C2 PFUnA	81		25 - 150	11/04/20 20:28	11/07/20 07:04	1
13C2 PFDoA	76		25 - 150	11/04/20 20:28	11/07/20 07:04	1
13C2 PFTeDA	73		25 - 150	11/04/20 20:28	11/07/20 07:04	1
13C3 PFBS	88		25 - 150	11/04/20 20:28	11/07/20 07:04	1
18O2 PFHxS	102		25 - 150	11/04/20 20:28	11/07/20 07:04	1
13C4 PFOS	97		25 - 150	11/04/20 20:28	11/07/20 07:04	1
d3-NMeFOSAA	90		25 - 150	11/04/20 20:28	11/07/20 07:04	1
d5-NEtFOSAA	73		25 - 150	11/04/20 20:28	11/07/20 07:04	1
13C3 HFPO-DA	81		25 - 150	11/04/20 20:28	11/07/20 07:04	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FY21 FAI MW Sampling

Job ID: 320-66253-1

Client Sample ID: EB-15
Date Collected: 10/27/20 13:50
Date Received: 11/03/20 12:40

Lab Sample ID: 320-66253-12
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.51	ng/L		11/04/20 20:28	11/07/20 07:13	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.22	ng/L		11/04/20 20:28	11/07/20 07:13	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.74	ng/L		11/04/20 20:28	11/07/20 07:13	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.24	ng/L		11/04/20 20:28	11/07/20 07:13	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		11/04/20 20:28	11/07/20 07:13	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.96	ng/L		11/04/20 20:28	11/07/20 07:13	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		11/04/20 20:28	11/07/20 07:13	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		11/04/20 20:28	11/07/20 07:13	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.64	ng/L		11/04/20 20:28	11/07/20 07:13	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		11/04/20 20:28	11/07/20 07:13	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.50	ng/L		11/04/20 20:28	11/07/20 07:13	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.47	ng/L		11/04/20 20:28	11/07/20 07:13	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.0	ng/L		11/04/20 20:28	11/07/20 07:13	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		11/04/20 20:28	11/07/20 07:13	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		11/04/20 20:28	11/07/20 07:13	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		11/04/20 20:28	11/07/20 07:13	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		11/04/20 20:28	11/07/20 07:13	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.35	ng/L		11/04/20 20:28	11/07/20 07:13	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	92		25 - 150	11/04/20 20:28	11/07/20 07:13	1
13C4 PFHpA	97		25 - 150	11/04/20 20:28	11/07/20 07:13	1
13C4 PFOA	99		25 - 150	11/04/20 20:28	11/07/20 07:13	1
13C5 PFNA	92		25 - 150	11/04/20 20:28	11/07/20 07:13	1
13C2 PFDA	88		25 - 150	11/04/20 20:28	11/07/20 07:13	1
13C2 PFUnA	94		25 - 150	11/04/20 20:28	11/07/20 07:13	1
13C2 PFDoA	76		25 - 150	11/04/20 20:28	11/07/20 07:13	1
13C2 PFTeDA	83		25 - 150	11/04/20 20:28	11/07/20 07:13	1
13C3 PFBS	91		25 - 150	11/04/20 20:28	11/07/20 07:13	1
18O2 PFHxS	104		25 - 150	11/04/20 20:28	11/07/20 07:13	1
13C4 PFOS	103		25 - 150	11/04/20 20:28	11/07/20 07:13	1
d3-NMeFOSAA	89		25 - 150	11/04/20 20:28	11/07/20 07:13	1
d5-NEtFOSAA	82		25 - 150	11/04/20 20:28	11/07/20 07:13	1
13C3 HFPO-DA	82		25 - 150	11/04/20 20:28	11/07/20 07:13	1

Client Sample Results

Client: Shannon & Wilson, Inc
 Project/Site: FY21 FAI MW Sampling

Job ID: 320-66253-1

Client Sample ID: FB-40

Lab Sample ID: 320-66253-13

Date Collected: 10/27/20 13:04

Matrix: Water

Date Received: 11/03/20 12:40

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		11/04/20 20:28	11/07/20 07:23	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		11/04/20 20:28	11/07/20 07:23	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.76	ng/L		11/04/20 20:28	11/07/20 07:23	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		11/04/20 20:28	11/07/20 07:23	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/04/20 20:28	11/07/20 07:23	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		11/04/20 20:28	11/07/20 07:23	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		11/04/20 20:28	11/07/20 07:23	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/04/20 20:28	11/07/20 07:23	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		11/04/20 20:28	11/07/20 07:23	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/04/20 20:28	11/07/20 07:23	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.51	ng/L		11/04/20 20:28	11/07/20 07:23	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		11/04/20 20:28	11/07/20 07:23	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		11/04/20 20:28	11/07/20 07:23	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		11/04/20 20:28	11/07/20 07:23	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/04/20 20:28	11/07/20 07:23	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		11/04/20 20:28	11/07/20 07:23	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/04/20 20:28	11/07/20 07:23	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/04/20 20:28	11/07/20 07:23	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	96		25 - 150	11/04/20 20:28	11/07/20 07:23	1
13C4 PFHpA	93		25 - 150	11/04/20 20:28	11/07/20 07:23	1
13C4 PFOA	100		25 - 150	11/04/20 20:28	11/07/20 07:23	1
13C5 PFNA	92		25 - 150	11/04/20 20:28	11/07/20 07:23	1
13C2 PFDA	91		25 - 150	11/04/20 20:28	11/07/20 07:23	1
13C2 PFUnA	88		25 - 150	11/04/20 20:28	11/07/20 07:23	1
13C2 PFDoA	85		25 - 150	11/04/20 20:28	11/07/20 07:23	1
13C2 PFTeDA	86		25 - 150	11/04/20 20:28	11/07/20 07:23	1
13C3 PFBS	93		25 - 150	11/04/20 20:28	11/07/20 07:23	1
18O2 PFHxS	99		25 - 150	11/04/20 20:28	11/07/20 07:23	1
13C4 PFOS	103		25 - 150	11/04/20 20:28	11/07/20 07:23	1
d3-NMeFOSAA	103		25 - 150	11/04/20 20:28	11/07/20 07:23	1
d5-NEtFOSAA	95		25 - 150	11/04/20 20:28	11/07/20 07:23	1
13C3 HFPO-DA	82		25 - 150	11/04/20 20:28	11/07/20 07:23	1

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
 Project/Site: FY21 FAI MW Sampling

Job ID: 320-66253-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)	PFDaA (25-150)	PFTDA (25-150)
320-66253-1	MW-2902-15	65	70	75	72	62	61	51	56
320-66253-2	MW-1902-150	100	110	110	103	97	94	91	89
320-66253-3	MW-1902-40	89	97	98	91	97	91	87	88
320-66253-4	MW-2901-15		91	112	107	105	93	93	87
320-66253-4 - DL	MW-2901-15	100							
320-66253-5	MW-1901-80	104	104	110	101	86	72	51	75
320-66253-6	MW-1902-80	179 *5	187 *5	195 *5	178 *5	153 *5	141	142	136
320-66253-7	MW-1901-40		77	96	99	92	95	89	79
320-66253-7 - DL	MW-1901-40	87							
320-66253-8	MW-1902-15	49	49	52	51	45	40	32	35
320-66253-9	MW-1901-150	100	102	100	100	100	100	86	93
320-66253-10	MW-1901-15		85	103	101	100	89	81	86
320-66253-10 - DL	MW-1901-15	95							
320-66253-11	EB-15-2	89	93	100	92	87	81	76	73
320-66253-12	EB-15	92	97	99	92	88	94	76	83
320-66253-13	FB-40	96	93	100	92	91	88	85	86
LCS 320-428478/2-A	Lab Control Sample	91	97	98	98	98	92	92	87
LCSD 320-428478/3-A	Lab Control Sample Dup	89	83	98	91	96	95	88	90
MB 320-428478/1-A	Method Blank	89	102	103	98	98	81	78	74

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	d3NMFOS (25-150)	d5NEFOS (25-150)	HFPODA (25-150)
320-66253-1	MW-2902-15	66	72	72	61	59	63
320-66253-2	MW-1902-150	104	105	108	102	95	92
320-66253-3	MW-1902-40	96	101	99	102	95	83
320-66253-4	MW-2901-15	99		111	103	98	92
320-66253-4 - DL	MW-2901-15		104				
320-66253-5	MW-1901-80	95	103	98	77	71	90
320-66253-6	MW-1902-80	136	157 *5	152 *5	162 *5	141	164 *5
320-66253-7	MW-1901-40			101	105	108	84
320-66253-7 - DL	MW-1901-40	99	105				
320-66253-8	MW-1902-15	51	53	51	44	38	44
320-66253-9	MW-1901-150	106	111	109	104	100	90
320-66253-10	MW-1901-15			95	97	99	86
320-66253-10 - DL	MW-1901-15	99	98				
320-66253-11	EB-15-2	88	102	97	90	73	81
320-66253-12	EB-15	91	104	103	89	82	82
320-66253-13	FB-40	93	99	103	103	95	82
LCS 320-428478/2-A	Lab Control Sample	94	105	106	96	84	84
LCSD 320-428478/3-A	Lab Control Sample Dup	97	102	113	113	117	77
MB 320-428478/1-A	Method Blank	97	101	105	92	55	86

Surrogate Legend

- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA

Isotope Dilution Summary

Client: Shannon & Wilson, Inc

Project/Site: FY21 FAI MW Sampling

Job ID: 320-66253-1

PFTDA = 13C2 PFTeDA
C3PFBS = 13C3 PFBS
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
HFPODA = 13C3 HFPO-DA

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

QC Sample Results

Client: Shannon & Wilson, Inc
 Project/Site: FY21 FAI MW Sampling

Job ID: 320-66253-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-428478/1-A
Matrix: Water
Analysis Batch: 429272

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 428478

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		11/04/20 20:28	11/07/20 04:47	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		11/04/20 20:28	11/07/20 04:47	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		11/04/20 20:28	11/07/20 04:47	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		11/04/20 20:28	11/07/20 04:47	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		11/04/20 20:28	11/07/20 04:47	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		11/04/20 20:28	11/07/20 04:47	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		11/04/20 20:28	11/07/20 04:47	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		11/04/20 20:28	11/07/20 04:47	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		11/04/20 20:28	11/07/20 04:47	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		11/04/20 20:28	11/07/20 04:47	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		11/04/20 20:28	11/07/20 04:47	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		11/04/20 20:28	11/07/20 04:47	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		11/04/20 20:28	11/07/20 04:47	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		11/04/20 20:28	11/07/20 04:47	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		11/04/20 20:28	11/07/20 04:47	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		11/04/20 20:28	11/07/20 04:47	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		11/04/20 20:28	11/07/20 04:47	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		11/04/20 20:28	11/07/20 04:47	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	89		25 - 150	11/04/20 20:28	11/07/20 04:47	1
13C4 PFHpA	102		25 - 150	11/04/20 20:28	11/07/20 04:47	1
13C4 PFOA	103		25 - 150	11/04/20 20:28	11/07/20 04:47	1
13C5 PFNA	98		25 - 150	11/04/20 20:28	11/07/20 04:47	1
13C2 PFDA	98		25 - 150	11/04/20 20:28	11/07/20 04:47	1
13C2 PFUnA	81		25 - 150	11/04/20 20:28	11/07/20 04:47	1
13C2 PFDoA	78		25 - 150	11/04/20 20:28	11/07/20 04:47	1
13C2 PFTeDA	74		25 - 150	11/04/20 20:28	11/07/20 04:47	1
13C3 PFBS	97		25 - 150	11/04/20 20:28	11/07/20 04:47	1
18O2 PFHxS	101		25 - 150	11/04/20 20:28	11/07/20 04:47	1
13C4 PFOS	105		25 - 150	11/04/20 20:28	11/07/20 04:47	1
d3-NMeFOSAA	92		25 - 150	11/04/20 20:28	11/07/20 04:47	1
d5-NEtFOSAA	55		25 - 150	11/04/20 20:28	11/07/20 04:47	1
13C3 HFPO-DA	86		25 - 150	11/04/20 20:28	11/07/20 04:47	1

Lab Sample ID: LCS 320-428478/2-A
Matrix: Water
Analysis Batch: 429272

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 428478

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorohexanoic acid (PFHxA)	40.0	45.2		ng/L		113	73 - 133
Perfluoroheptanoic acid (PFHpA)	40.0	43.2		ng/L		108	72 - 132
Perfluorooctanoic acid (PFOA)	40.0	42.6		ng/L		107	70 - 130
Perfluorononanoic acid (PFNA)	40.0	47.9		ng/L		120	75 - 135

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
 Project/Site: FY21 FAI MW Sampling

Job ID: 320-66253-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-428478/2-A
Matrix: Water
Analysis Batch: 429272

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 428478

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorodecanoic acid (PFDA)	40.0	43.7		ng/L		109	76 - 136
Perfluoroundecanoic acid (PFUnA)	40.0	39.7		ng/L		99	68 - 128
Perfluorododecanoic acid (PFDoA)	40.0	51.9		ng/L		130	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	43.0		ng/L		107	71 - 131
Perfluorotetradecanoic acid (PFTeA)	40.0	44.3		ng/L		111	70 - 130
Perfluorobutanesulfonic acid (PFBS)	35.4	40.1		ng/L		113	67 - 127
Perfluorohexanesulfonic acid (PFHxS)	36.4	39.1		ng/L		107	59 - 119
Perfluorooctanesulfonic acid (PFOS)	37.1	37.6		ng/L		101	70 - 130
9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid	37.3	38.0		ng/L		102	75 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	44.7		ng/L		112	51 - 173
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	33.8		ng/L		90	54 - 114
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	40.0		ng/L		106	79 - 139

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C2 PFHxA	91		25 - 150
13C4 PFHpA	97		25 - 150
13C4 PFOA	98		25 - 150
13C5 PFNA	98		25 - 150
13C2 PFDA	98		25 - 150
13C2 PFUnA	92		25 - 150
13C2 PFDoA	92		25 - 150
13C2 PFTeDA	87		25 - 150
13C3 PFBS	94		25 - 150
18O2 PFHxS	105		25 - 150
13C4 PFOS	106		25 - 150
d3-NMeFOSAA	96		25 - 150
d5-NEtFOSAA	84		25 - 150
13C3 HFPO-DA	84		25 - 150

Lab Sample ID: LCSD 320-428478/3-A
Matrix: Water
Analysis Batch: 429793

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 428478

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	43.6		ng/L		109	73 - 133	4	30
Perfluoroheptanoic acid (PFHpA)	40.0	45.0		ng/L		113	72 - 132	4	30
Perfluorooctanoic acid (PFOA)	40.0	39.1		ng/L		98	70 - 130	9	30
Perfluorononanoic acid (PFNA)	40.0	46.2		ng/L		115	75 - 135	4	30
Perfluorodecanoic acid (PFDA)	40.0	46.3		ng/L		116	76 - 136	6	30
Perfluoroundecanoic acid (PFUnA)	40.0	42.5		ng/L		106	68 - 128	7	30

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
 Project/Site: FY21 FAI MW Sampling

Job ID: 320-66253-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-428478/3-A
Matrix: Water
Analysis Batch: 429793

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 428478

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorododecanoic acid (PFDoA)	40.0	50.2		ng/L		125	71 - 131	3	30
Perfluorotridecanoic acid (PFTriA)	40.0	43.8		ng/L		110	71 - 131	2	30
Perfluorotetradecanoic acid (PFTeA)	40.0	49.3		ng/L		123	70 - 130	11	30
Perfluorobutanesulfonic acid (PFBS)	35.4	38.4		ng/L		108	67 - 127	4	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	40.1		ng/L		110	59 - 119	3	30
Perfluorooctanesulfonic acid (PFOS)	37.1	39.8		ng/L		107	70 - 130	6	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	37.8		ng/L		101	75 - 135	1	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	45.1		ng/L		113	51 - 173	1	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	34.7		ng/L		92	54 - 114	2	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	36.3		ng/L		96	79 - 139	10	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	89		25 - 150
13C4 PFHpA	83		25 - 150
13C4 PFOA	98		25 - 150
13C5 PFNA	91		25 - 150
13C2 PFDA	96		25 - 150
13C2 PFUnA	95		25 - 150
13C2 PFDoA	88		25 - 150
13C2 PFTeDA	90		25 - 150
13C3 PFBS	97		25 - 150
18O2 PFHxS	102		25 - 150
13C4 PFOS	113		25 - 150
d3-NMeFOSAA	113		25 - 150
d5-NEtFOSAA	117		25 - 150
13C3 HFPO-DA	77		25 - 150

QC Association Summary

Client: Shannon & Wilson, Inc
Project/Site: FY21 FAI MW Sampling

Job ID: 320-66253-1

LCMS

Prep Batch: 428478

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-66253-1	MW-2902-15	Total/NA	Water	3535	
320-66253-2	MW-1902-150	Total/NA	Water	3535	
320-66253-3	MW-1902-40	Total/NA	Water	3535	
320-66253-4	MW-2901-15	Total/NA	Water	3535	
320-66253-4 - DL	MW-2901-15	Total/NA	Water	3535	
320-66253-5	MW-1901-80	Total/NA	Water	3535	
320-66253-6	MW-1902-80	Total/NA	Water	3535	
320-66253-7	MW-1901-40	Total/NA	Water	3535	
320-66253-7 - DL	MW-1901-40	Total/NA	Water	3535	
320-66253-8	MW-1902-15	Total/NA	Water	3535	
320-66253-9	MW-1901-150	Total/NA	Water	3535	
320-66253-10	MW-1901-15	Total/NA	Water	3535	
320-66253-10 - DL	MW-1901-15	Total/NA	Water	3535	
320-66253-11	EB-15-2	Total/NA	Water	3535	
320-66253-12	EB-15	Total/NA	Water	3535	
320-66253-13	FB-40	Total/NA	Water	3535	
MB 320-428478/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-428478/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-428478/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 429272

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-66253-1	MW-2902-15	Total/NA	Water	537 (modified)	428478
320-66253-2	MW-1902-150	Total/NA	Water	537 (modified)	428478
320-66253-3	MW-1902-40	Total/NA	Water	537 (modified)	428478
320-66253-4	MW-2901-15	Total/NA	Water	537 (modified)	428478
320-66253-5	MW-1901-80	Total/NA	Water	537 (modified)	428478
320-66253-6	MW-1902-80	Total/NA	Water	537 (modified)	428478
320-66253-7	MW-1901-40	Total/NA	Water	537 (modified)	428478
320-66253-8	MW-1902-15	Total/NA	Water	537 (modified)	428478
320-66253-9	MW-1901-150	Total/NA	Water	537 (modified)	428478
320-66253-10	MW-1901-15	Total/NA	Water	537 (modified)	428478
320-66253-11	EB-15-2	Total/NA	Water	537 (modified)	428478
320-66253-12	EB-15	Total/NA	Water	537 (modified)	428478
320-66253-13	FB-40	Total/NA	Water	537 (modified)	428478
MB 320-428478/1-A	Method Blank	Total/NA	Water	537 (modified)	428478
LCS 320-428478/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	428478

Analysis Batch: 429539

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-66253-4 - DL	MW-2901-15	Total/NA	Water	537 (modified)	428478
320-66253-7 - DL	MW-1901-40	Total/NA	Water	537 (modified)	428478
320-66253-10 - DL	MW-1901-15	Total/NA	Water	537 (modified)	428478

Analysis Batch: 429793

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 320-428478/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	428478

Lab Chronicle

Client: Shannon & Wilson, Inc
 Project/Site: FY21 FAI MW Sampling

Job ID: 320-66253-1

Client Sample ID: MW-2902-15

Lab Sample ID: 320-66253-1

Date Collected: 10/28/20 13:43

Matrix: Water

Date Received: 11/03/20 12:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			247.6 mL	10.00 mL	428478	11/04/20 20:28	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			429272	11/07/20 05:15	K1S	TAL SAC

Client Sample ID: MW-1902-150

Lab Sample ID: 320-66253-2

Date Collected: 10/28/20 11:30

Matrix: Water

Date Received: 11/03/20 12:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			254 mL	10.00 mL	428478	11/04/20 20:28	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			429272	11/07/20 05:24	K1S	TAL SAC

Client Sample ID: MW-1902-40

Lab Sample ID: 320-66253-3

Date Collected: 10/28/20 12:54

Matrix: Water

Date Received: 11/03/20 12:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			258.1 mL	10.00 mL	428478	11/04/20 20:28	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			429272	11/07/20 05:33	K1S	TAL SAC

Client Sample ID: MW-2901-15

Lab Sample ID: 320-66253-4

Date Collected: 10/27/20 13:35

Matrix: Water

Date Received: 11/03/20 12:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			256.5 mL	10.00 mL	428478	11/04/20 20:28	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			429272	11/07/20 05:42	K1S	TAL SAC
Total/NA	Prep	3535	DL		256.5 mL	10.00 mL	428478	11/04/20 20:28	VP	TAL SAC
Total/NA	Analysis	537 (modified)	DL	10			429539	11/07/20 23:33	SK	TAL SAC

Client Sample ID: MW-1901-80

Lab Sample ID: 320-66253-5

Date Collected: 10/27/20 12:14

Matrix: Water

Date Received: 11/03/20 12:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			261.1 mL	10.00 mL	428478	11/04/20 20:28	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			429272	11/07/20 05:51	K1S	TAL SAC

Client Sample ID: MW-1902-80

Lab Sample ID: 320-66253-6

Date Collected: 10/28/20 12:20

Matrix: Water

Date Received: 11/03/20 12:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			255.9 mL	10.00 mL	428478	11/04/20 20:28	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			429272	11/07/20 06:00	K1S	TAL SAC

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: FY21 FAI MW Sampling

Job ID: 320-66253-1

Client Sample ID: MW-1901-40

Date Collected: 10/27/20 13:07

Date Received: 11/03/20 12:40

Lab Sample ID: 320-66253-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			264.2 mL	10.00 mL	428478	11/04/20 20:28	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			429272	11/07/20 06:10	K1S	TAL SAC
Total/NA	Prep	3535	DL		264.2 mL	10.00 mL	428478	11/04/20 20:28	VP	TAL SAC
Total/NA	Analysis	537 (modified)	DL	20			429539	11/07/20 23:42	SK	TAL SAC

Client Sample ID: MW-1902-15

Date Collected: 10/28/20 13:33

Date Received: 11/03/20 12:40

Lab Sample ID: 320-66253-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			258.3 mL	10.00 mL	428478	11/04/20 20:28	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			429272	11/07/20 06:37	K1S	TAL SAC

Client Sample ID: MW-1901-150

Date Collected: 10/27/20 10:55

Date Received: 11/03/20 12:40

Lab Sample ID: 320-66253-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			262.2 mL	10.00 mL	428478	11/04/20 20:28	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			429272	11/07/20 06:46	K1S	TAL SAC

Client Sample ID: MW-1901-15

Date Collected: 10/27/20 13:40

Date Received: 11/03/20 12:40

Lab Sample ID: 320-66253-10

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			267.9 mL	10.00 mL	428478	11/04/20 20:28	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			429272	11/07/20 06:55	K1S	TAL SAC
Total/NA	Prep	3535	DL		267.9 mL	10.00 mL	428478	11/04/20 20:28	VP	TAL SAC
Total/NA	Analysis	537 (modified)	DL	10			429539	11/07/20 23:51	SK	TAL SAC

Client Sample ID: EB-15-2

Date Collected: 10/28/20 13:50

Date Received: 11/03/20 12:40

Lab Sample ID: 320-66253-11

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			227.2 mL	10.00 mL	428478	11/04/20 20:28	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			429272	11/07/20 07:04	K1S	TAL SAC

Client Sample ID: EB-15

Date Collected: 10/27/20 13:50

Date Received: 11/03/20 12:40

Lab Sample ID: 320-66253-12

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			286.8 mL	10.00 mL	428478	11/04/20 20:28	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			429272	11/07/20 07:13	K1S	TAL SAC

Eurofins TestAmerica, Sacramento

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: FY21 FAI MW Sampling

Job ID: 320-66253-1

Client Sample ID: FB-40

Lab Sample ID: 320-66253-13

Date Collected: 10/27/20 13:04

Matrix: Water

Date Received: 11/03/20 12:40

<u>Prep Type</u>	<u>Batch Type</u>	<u>Batch Method</u>	<u>Run</u>	<u>Dil Factor</u>	<u>Initial Amount</u>	<u>Final Amount</u>	<u>Batch Number</u>	<u>Prepared or Analyzed</u>	<u>Analyst</u>	<u>Lab</u>
Total/NA	Prep	3535			278 mL	10.00 mL	428478	11/04/20 20:28	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			429272	11/07/20 07:23	K1S	TAL SAC

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

Accreditation/Certification Summary

Client: Shannon & Wilson, Inc
 Project/Site: FY21 FAI MW Sampling

Job ID: 320-66253-1

Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-21
Arkansas DEQ	State	88-0691	06-17-21
California	State	2897	01-31-22
Colorado	State	CA0004	08-31-21
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-21
Georgia	State	4040	01-30-21
Hawaii	State	<cert No.>	01-29-21
Illinois	NELAP	200060	03-17-21
Kansas	NELAP	E-10375	10-31-20 *
Louisiana	NELAP	01944	06-30-21
Maine	State	CA00004	04-14-22
Michigan	State	9947	08-03-23
Nevada	State	CA000442021-1	07-31-21
New Hampshire	NELAP	2997	04-18-21
New Jersey	NELAP	CA005	06-30-21
New York	NELAP	11666	04-01-21
Oregon	NELAP	4040	01-29-21
Pennsylvania	NELAP	68-01272	03-31-21
Texas	NELAP	T104704399-19-13	06-01-21
US Fish & Wildlife	US Federal Programs	58448	07-31-21
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-28-21
Vermont	State	VT-4040	04-16-21
Virginia	NELAP	460278	03-14-21
Washington	State	C581	05-05-21
West Virginia (DW)	State	9930C	12-31-20
Wisconsin	State	998204680	08-31-21
Wyoming	State Program	8TMS-L	01-28-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Shannon & Wilson, Inc
Project/Site: FY21 FAI MW Sampling

Job ID: 320-66253-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
3535	Solid-Phase Extraction (SPE)	SW846	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600



Sample Summary

Client: Shannon & Wilson, Inc
Project/Site: FY21 FAI MW Sampling

Job ID: 320-66253-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-66253-1	MW-2902-15	Water	10/28/20 13:43	11/03/20 12:40	
320-66253-2	MW-1902-150	Water	10/28/20 11:30	11/03/20 12:40	
320-66253-3	MW-1902-40	Water	10/28/20 12:54	11/03/20 12:40	
320-66253-4	MW-2901-15	Water	10/27/20 13:35	11/03/20 12:40	
320-66253-5	MW-1901-80	Water	10/27/20 12:14	11/03/20 12:40	
320-66253-6	MW-1902-80	Water	10/28/20 12:20	11/03/20 12:40	
320-66253-7	MW-1901-40	Water	10/27/20 13:07	11/03/20 12:40	
320-66253-8	MW-1902-15	Water	10/28/20 13:33	11/03/20 12:40	
320-66253-9	MW-1901-150	Water	10/27/20 10:55	11/03/20 12:40	
320-66253-10	MW-1901-15	Water	10/27/20 13:40	11/03/20 12:40	
320-66253-11	EB-15-2	Water	10/28/20 13:50	11/03/20 12:40	
320-66253-12	EB-15	Water	10/27/20 13:50	11/03/20 12:40	
320-66253-13	FB-40	Water	10/27/20 13:04	11/03/20 12:40	

CHAIN-OF-CUSTODY RECORD

Analytical Methods (include preservative if used)

Quote No: _____
 J-Flags: Yes No

Turn Around Time:
 Normal Rush
 Please Specify _____

Sample Identity	Lab No.	Time	Date Sampled	Remarks/Matrix Composition/Grab? Sample Containers	Total Number of Containers
MW-2902-15		1343	10/28/20		
MW-1902-150	1139	1343	10/28/20		2
MW-1902-40		1254	10/28/20		
MW-2901-15		1335	10/27/20		
MW-1901-80		1214	10/27/20		
MW-1902-80		1220	10/28/20		
MW-1901-40		1307	10/27/20		
MW-1902-15		1333	10/28/20		
MW-1901-150		1055	10/27/20		
MW-1901-15		1340	10/27/20		



Project Information	Sample Receipt	Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Number: 102519-015 Name: FY21 FAI MW Sampling Contact: MDN Ongoing Project? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Sampler: AMJ / ARM	Total No. of Containers: 24 COC Seals/Intact? Y/N/NA Received Good Cond./Cold Temp: Delivery Method: Alaska Airlines	Signature: <u>Michael Jaramila</u> Printed Name: Michael Jaramila Company: Shannon & Wilson Time: 11/2/20 Date: 1/4/20	Signature: _____ Printed Name: _____ Company: _____ Time: _____ Date: _____	Signature: _____ Printed Name: _____ Company: _____ Time: _____ Date: _____
Notes: None		Received By: 1. Signature: <u>Dorelle</u> Printed Name: Dorelle Company: <u>Edpa</u> Time: <u>12:20</u> Date: <u>11/5/20</u>	Received By: 2. Signature: _____ Printed Name: _____ Company: _____ Time: _____ Date: _____	Received By: 3. Signature: _____ Printed Name: _____ Company: _____ Time: _____ Date: _____

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
 Yellow - w/shipment - for consignee files
 Pink - Shannon & Wilson - job file

use



2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600
www.shannonwilson.com

CHAIN-OF-CUSTODY RECORD

Laboratory Test America Page 2 of 2
Attn: D. Alfraker

Analytical Methods (include preservative if used)

Quote No: _____

Turn Around Time:
 Normal Rush
 Please Specify _____

J-Flags: Yes No

Sample Identity	Lab No.	Time	Date Sampled	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
6B-15-a		1350	10/28/20	2	Blank water
6B-15		1350	10/27/20	1	
FB-40		1304	10/27/20		

Project Information

Number: _____
 Name: _____
 Contact: _____
 Ongoing Project? Yes No
 Sampler: _____

Sample Receipt

Total No. of Containers: _____
 COC Seals/Intact? Y/N/NA _____
 Received Good Cond / Good _____
 Temp: _____
 Delivery Method: _____

Notes:
 See for

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: <u>[Signature]</u> Printed Name: <u>Michael Jorrallo</u> Company: <u>Shannon & Wilson</u>	Signature: _____ Printed Name: _____ Company: _____	Signature: _____ Printed Name: _____ Company: _____
Time: <u>1400</u> Date: <u>11/2/20</u>	Time: _____ Date: _____	Time: _____ Date: _____
Received By: 1. Signature: <u>[Signature]</u> Printed Name: <u>Davidth</u> Company: _____	Received By: 2. Signature: _____ Printed Name: _____ Company: _____	Received By: 3. Signature: _____ Printed Name: _____ Company: _____
Time: <u>12 to</u> Date: <u>11/3/20</u>	Time: _____ Date: _____	Time: _____ Date: _____

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
 Yellow - w/shipment - for consignee files
 Pink - Shannon & Wilson - job file

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-66253-1

Login Number: 66253

List Source: Eurofins TestAmerica, Sacramento

List Number: 1

Creator: Her, David A

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	SEALS
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Laboratory Data Review Checklist

Completed By:

Andrew Frick

Title:

Environmental Scientist

Date:

12/7/2020

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins TestAmerica, Sacramento

Laboratory Report Number:

320-66253-1

Laboratory Report Date:

11/11/2020

CS Site Name:

FIA Sitewide PFAS

ADEC File Number:

100.38.277

Hazard Identification Number:

26816

320-66253-1

Laboratory Report Date:

11/11/2020

CS Site Name:

Note: Any N/A or No box checked must have an explanation in the comments box.

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes No N/A Comments:

The ADEC certified the TestAmerica/Eurofins Laboratories West Sacramento, CA location for the analysis of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) on February 6, 2018. These compounds were included in the ADEC's Contaminated Sites Laboratory Approval 17-020.

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes No N/A Comments:

Samples were not transferred to another laboratory.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes No N/A Comments:

b. Correct analyses requested?

Yes No N/A Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes No N/A Comments:

The sample cooler temperature was recorded at 4.6° C upon receipt at laboratory.

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes No N/A Comments:

No preservation methods were necessary other than temperature control.

320-66253-1

Laboratory Report Date:

11/11/2020

CS Site Name:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes No N/A Comments:

The sample receipt form notes that the samples arrived in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes No N/A Comments:

There were no discrepancies noted in the sample receipt documentation.

e. Data quality or usability affected?

Comments:

Data quality and/or usability is not affected; see above.

4. Case Narrative

a. Present and understandable?

Yes No N/A Comments:

320-66253-1

Laboratory Report Date:

11/11/2020

CS Site Name:

b. Discrepancies, errors, or QC failures identified by the lab?

Yes No N/A Comments:

Results for samples *MW-2901-15*, *MW-1901-40*, and *MW-1901-15* were reported from the analysis of a diluted extracts. The samples were diluted due to high concentrations of the target analyte in the undiluted extract. A dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits.

Several Isotope Dilution Analyte (IDA) recoveries are above the method recommended limit for the sample *MW-1902-80*. Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-428478.

The following samples were beige prior to extraction: *MW-1902-40*, *MW-2901-15*, *MW-1901-40*, and *MW-1901-15*.

The following samples were orange prior to extraction: *MW-2902-15* and *MW-1902-15*.

During the solid phase extraction process, the following samples contained non-settable particulates which clogged the solid phase extraction column: *MW-2902-15* and *MW-1902-15*.

Elevated reporting limits are provided for the following samples due to insufficient sample provided for preparation: *MW-2902-15* and *EB-15-2*.

c. Were all corrective actions documented?

Yes No N/A Comments:

The case narrative does not specify any corrective actions.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The case narrative does not specify an effect on data quality.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes No N/A Comments:

320-66253-1

Laboratory Report Date:

11/11/2020

CS Site Name:

b. All applicable holding times met?

Yes No N/A Comments:

c. All soils reported on a dry weight basis?

Yes No N/A Comments:

Soil samples were not submitted with this work order.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes No N/A Comments:

e. Data quality or usability affected?

Data quality and/or usability were not affected.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes No N/A Comments:

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

None; target analytes were not detected in the method blank sample.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

No samples are affected; see above.

Laboratory Report Date:

11/11/2020

CS Site Name:

v. Data quality or usability affected?

Comments:

The data quality/usability is not affected.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes No N/A Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

Metals and inorganics were not analyzed as part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A; method accuracy and precision were demonstrated to be within acceptable limits.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

No samples are affected; see above.

Laboratory Report Date:

11/11/2020

CS Site Name:

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability is not affected.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Note: Leave blank if not required for project

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

An MS/MSD was not reported in this work order, see the LCS/LCSD section for an evaluation of analytical accuracy and precision.

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

See above.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes No N/A Comments:

See above.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes No N/A Comments:

See above.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Not applicable, see above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

Laboratory Report Date:

11/11/2020

CS Site Name:

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Data quality and/or usability was not affected.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes No N/A Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes No N/A Comments:Several IDA recoveries exceeded the laboratory's upper limit for project sample *MW-1902-80*. These IDAs include PFHxA, C4PFHA, PFOA, PFNA, PFDA, PFHxS, PFOS, d3NMFOS, and HFPODA.

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:With the exception of PFHxS and PFOS, the analytes associated with the elevated IDA recoveries were not detected in sample *MW-1902-80* and are thus unaffected. The PFHxS and PFOS results of sample *MW-1902-80* have been flagged 'J' to denote uncertainty.

iv. Data quality or usability affected?

Comments:

The data quality and/or usability is affected; see above.

e. Trip Blanks

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes No N/A Comments:

No volatile analyses were requested as a part of this work order; therefore, a trip blank is not required.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes No N/A Comments:

See above.

320-66253-1

Laboratory Report Date:

11/11/2020

CS Site Name:

iii. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

See above.

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

No samples were affected.

v. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No N/A Comments:

ii. Submitted blind to lab?

Yes No N/A Comments:

The following field-duplicate pairs were submitted with this work order: MW1902-15 / MW2902-15 and MW1901-15 / MW2901-15.

iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water, 50% soil)

$$RPD (\%) = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2) / 2)} \times 100$$

Where R₁ = Sample Concentration
R₂ = Field Duplicate Concentration

Yes No N/A Comments:

RPDs were less than the 30% data quality objective for water sample results, where calculable for detected results.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The data quality/usability were not affected; see above.

320-66253-1

Laboratory Report Date:

11/11/2020

CS Site Name:

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes No N/A Comments:

Two equipment blanks and a field blank were submitted with this work order.

i. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

None; target analytes were not detected in the equipment nor field blank samples.

iii. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes No N/A Comments:

Results associated with monitoring well MW-1901-150 are considered estimated due to sample handling. The monitoring well did not meet purging criteria. The results are flagged "J" for detected concentrations and "UJ" for not detected concentrations.

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-66255-1
Client Project/Site: FAI FTP

For:

Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

Attn: Marcy Nadel



Authorized for release by:
11/13/2020 8:13:44 AM

David Alltucker, Project Manager I
(916)374-4383
David.Alltucker@Eurofinset.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:

www.eurofinsus.com/Env

The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



Table of Contents

Cover Page	1
Table of Contents	2
Definitions/Glossary	3
Case Narrative	4
Detection Summary	5
Client Sample Results	6
Isotope Dilution Summary	7
QC Sample Results	8
QC Association Summary	11
Lab Chronicle	12
Certification Summary	13
Method Summary	14
Sample Summary	15
Chain of Custody	16
Receipt Checklists	17

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: FAI FTP

Job ID: 320-66255-1

Qualifiers

LCMS

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Shannon & Wilson, Inc
Project/Site: FAI FTP

Job ID: 320-66255-1

Job ID: 320-66255-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

**Job Narrative
320-66255-1**

Receipt

The sample was received on 11/3/2020 12:40 PM; the sample arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.6° C.

LCMS

Method 537 (modified): Results for sample FTP-pre-006 (320-66255-1) were reported from the analysis of a diluted extract due to high concentrations of target analytes present in the sample. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method 3535: A deviation from the Standard Operating Procedure (SOP) occurred. Details are as follows: due to the matrix, the following sample was prepared using a [0.5] mL aliquot without extracting via the SPE process: FTP-pre-006 (320-66255-1). This is the equivalent of a [500x] dilution prior to submitting extracts for analysis.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.



Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI FTP

Job ID: 320-66255-1

Client Sample ID: FTP-pre-006

Lab Sample ID: 320-66255-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	110000		100000	29000	ng/L	100		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	56000	J	100000	10000	ng/L	100		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	250000		100000	29000	ng/L	100		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1300000		100000	27000	ng/L	100		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI FTP

Job ID: 320-66255-1

Client Sample ID: FTP-pre-006

Lab Sample ID: 320-66255-1

Date Collected: 10/29/20 08:00

Matrix: Water

Date Received: 11/03/20 12:40

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	110000		100000	29000	ng/L		11/10/20 19:58	11/11/20 21:51	100
Perfluoroheptanoic acid (PFHpA)	ND		100000	13000	ng/L		11/10/20 19:58	11/11/20 21:51	100
Perfluorooctanoic acid (PFOA)	ND		100000	43000	ng/L		11/10/20 19:58	11/11/20 21:51	100
Perfluorononanoic acid (PFNA)	ND		100000	14000	ng/L		11/10/20 19:58	11/11/20 21:51	100
Perfluorodecanoic acid (PFDA)	ND		100000	16000	ng/L		11/10/20 19:58	11/11/20 21:51	100
Perfluoroundecanoic acid (PFUnA)	ND		100000	55000	ng/L		11/10/20 19:58	11/11/20 21:51	100
Perfluorododecanoic acid (PFDoA)	ND		100000	28000	ng/L		11/10/20 19:58	11/11/20 21:51	100
Perfluorotridecanoic acid (PFTriA)	ND		100000	65000	ng/L		11/10/20 19:58	11/11/20 21:51	100
Perfluorotetradecanoic acid (PFTeA)	ND		100000	37000	ng/L		11/10/20 19:58	11/11/20 21:51	100
Perfluorobutanesulfonic acid (PFBS)	56000 J		100000	10000	ng/L		11/10/20 19:58	11/11/20 21:51	100
Perfluorohexanesulfonic acid (PFHxS)	250000		100000	29000	ng/L		11/10/20 19:58	11/11/20 21:51	100
Perfluorooctanesulfonic acid (PFOS)	1300000		100000	27000	ng/L		11/10/20 19:58	11/11/20 21:51	100
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		250000	60000	ng/L		11/10/20 19:58	11/11/20 21:51	100
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		250000	65000	ng/L		11/10/20 19:58	11/11/20 21:51	100
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		100000	12000	ng/L		11/10/20 19:58	11/11/20 21:51	100
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		200000	75000	ng/L		11/10/20 19:58	11/11/20 21:51	100
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		100000	16000	ng/L		11/10/20 19:58	11/11/20 21:51	100
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		100000	20000	ng/L		11/10/20 19:58	11/11/20 21:51	100
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	85		25 - 150				11/10/20 19:58	11/11/20 21:51	100
13C4 PFHpA	90		25 - 150				11/10/20 19:58	11/11/20 21:51	100
13C4 PFOA	93		25 - 150				11/10/20 19:58	11/11/20 21:51	100
13C5 PFNA	92		25 - 150				11/10/20 19:58	11/11/20 21:51	100
13C2 PFDA	88		25 - 150				11/10/20 19:58	11/11/20 21:51	100
13C2 PFUnA	85		25 - 150				11/10/20 19:58	11/11/20 21:51	100
13C2 PFDoA	85		25 - 150				11/10/20 19:58	11/11/20 21:51	100
13C2 PFTeDA	86		25 - 150				11/10/20 19:58	11/11/20 21:51	100
13C3 PFBS	82		25 - 150				11/10/20 19:58	11/11/20 21:51	100
18O2 PFHxS	80		25 - 150				11/10/20 19:58	11/11/20 21:51	100
13C4 PFOS	85		25 - 150				11/10/20 19:58	11/11/20 21:51	100
d3-NMeFOSAA	84		25 - 150				11/10/20 19:58	11/11/20 21:51	100
d5-NEtFOSAA	123		25 - 150				11/10/20 19:58	11/11/20 21:51	100
13C3 HFPO-DA	79		25 - 150				11/10/20 19:58	11/11/20 21:51	100

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
 Project/Site: FAI FTP

Job ID: 320-66255-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)	PFDaA (25-150)	PFTDA (25-150)
320-66255-1	FTP-pre-006	85	90	93	92	88	85	85	86
LCS 320-430458/2-A	Lab Control Sample	97	96	101	97	99	100	103	107
LCSD 320-430458/3-A	Lab Control Sample Dup	98	96	101	99	96	94	96	98
MB 320-430458/1-A	Method Blank	95	96	100	95	94	94	102	108

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	d3NMFOS (25-150)	d5NEFOS (25-150)	HFPODA (25-150)
320-66255-1	FTP-pre-006	82	80	85	84	123	79
LCS 320-430458/2-A	Lab Control Sample	93	98	98	94	101	94
LCSD 320-430458/3-A	Lab Control Sample Dup	93	94	98	94	96	94
MB 320-430458/1-A	Method Blank	92	95	97	96	99	91

Surrogate Legend

- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- HFPODA = 13C3 HFPO-DA

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI FTP

Job ID: 320-66255-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-430458/1-A
Matrix: Water
Analysis Batch: 431175

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 430458

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		11/10/20 19:58	11/11/20 21:24	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		11/10/20 19:58	11/11/20 21:24	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		11/10/20 19:58	11/11/20 21:24	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		11/10/20 19:58	11/11/20 21:24	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		11/10/20 19:58	11/11/20 21:24	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		11/10/20 19:58	11/11/20 21:24	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		11/10/20 19:58	11/11/20 21:24	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		11/10/20 19:58	11/11/20 21:24	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		11/10/20 19:58	11/11/20 21:24	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		11/10/20 19:58	11/11/20 21:24	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		11/10/20 19:58	11/11/20 21:24	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		11/10/20 19:58	11/11/20 21:24	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		11/10/20 19:58	11/11/20 21:24	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		11/10/20 19:58	11/11/20 21:24	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		11/10/20 19:58	11/11/20 21:24	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		11/10/20 19:58	11/11/20 21:24	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		11/10/20 19:58	11/11/20 21:24	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		11/10/20 19:58	11/11/20 21:24	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	95		25 - 150	11/10/20 19:58	11/11/20 21:24	1
13C4 PFHpA	96		25 - 150	11/10/20 19:58	11/11/20 21:24	1
13C4 PFOA	100		25 - 150	11/10/20 19:58	11/11/20 21:24	1
13C5 PFNA	95		25 - 150	11/10/20 19:58	11/11/20 21:24	1
13C2 PFDA	94		25 - 150	11/10/20 19:58	11/11/20 21:24	1
13C2 PFUnA	94		25 - 150	11/10/20 19:58	11/11/20 21:24	1
13C2 PFDoA	102		25 - 150	11/10/20 19:58	11/11/20 21:24	1
13C2 PFTeDA	108		25 - 150	11/10/20 19:58	11/11/20 21:24	1
13C3 PFBS	92		25 - 150	11/10/20 19:58	11/11/20 21:24	1
18O2 PFHxS	95		25 - 150	11/10/20 19:58	11/11/20 21:24	1
13C4 PFOS	97		25 - 150	11/10/20 19:58	11/11/20 21:24	1
d3-NMeFOSAA	96		25 - 150	11/10/20 19:58	11/11/20 21:24	1
d5-NEtFOSAA	99		25 - 150	11/10/20 19:58	11/11/20 21:24	1
13C3 HFPO-DA	91		25 - 150	11/10/20 19:58	11/11/20 21:24	1

Lab Sample ID: LCS 320-430458/2-A
Matrix: Water
Analysis Batch: 431175

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 430458

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluoroheptanoic acid (PFHpA)	40.0	41.0		ng/L		102	72 - 132
Perfluorooctanoic acid (PFOA)	40.0	37.2		ng/L		93	70 - 130
Perfluorononanoic acid (PFNA)	40.0	41.3		ng/L		103	75 - 135

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI FTP

Job ID: 320-66255-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-430458/2-A
Matrix: Water
Analysis Batch: 431175

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 430458

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorodecanoic acid (PFDA)	40.0	40.4		ng/L		101	76 - 136
Perfluoroundecanoic acid (PFUnA)	40.0	39.4		ng/L		98	68 - 128
Perfluorododecanoic acid (PFDoA)	40.0	40.5		ng/L		101	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	39.4		ng/L		99	71 - 131
Perfluorotetradecanoic acid (PFTeA)	40.0	41.8		ng/L		105	70 - 130
Perfluorobutanesulfonic acid (PFBS)	35.4	36.4		ng/L		103	67 - 127
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.1		ng/L		94	59 - 119
Perfluorooctanesulfonic acid (PFOS)	37.1	37.4		ng/L		101	70 - 130
9-Chlorohexadecafluoro-3-oxan onane-1-sulfonic acid	37.3	39.1		ng/L		105	75 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	42.9		ng/L		107	51 - 173
11-Chloroeicosafluoro-3-oxaund ecane-1-sulfonic acid	37.7	39.1		ng/L		104	54 - 114
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	38.8		ng/L		103	79 - 139

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C2 PFHxA	97		25 - 150
13C4 PFHpA	96		25 - 150
13C4 PFOA	101		25 - 150
13C5 PFNA	97		25 - 150
13C2 PFDA	99		25 - 150
13C2 PFUnA	100		25 - 150
13C2 PFDoA	103		25 - 150
13C2 PFTeDA	107		25 - 150
13C3 PFBS	93		25 - 150
18O2 PFHxS	98		25 - 150
13C4 PFOS	98		25 - 150
d3-NMeFOSAA	94		25 - 150
d5-NEtFOSAA	101		25 - 150
13C3 HFPO-DA	94		25 - 150

Lab Sample ID: LCSD 320-430458/3-A
Matrix: Water
Analysis Batch: 431175

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 430458

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	40.7		ng/L		102	73 - 133	3	30
Perfluoroheptanoic acid (PFHpA)	40.0	41.7		ng/L		104	72 - 132	2	30
Perfluorooctanoic acid (PFOA)	40.0	37.6		ng/L		94	70 - 130	1	30
Perfluorononanoic acid (PFNA)	40.0	41.7		ng/L		104	75 - 135	1	30
Perfluorodecanoic acid (PFDA)	40.0	42.0		ng/L		105	76 - 136	4	30
Perfluoroundecanoic acid (PFUnA)	40.0	45.0		ng/L		113	68 - 128	13	30

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI FTP

Job ID: 320-66255-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-430458/3-A
Matrix: Water
Analysis Batch: 431175

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 430458

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorododecanoic acid (PFDoA)	40.0	43.4		ng/L		108	71 - 131	7	30
Perfluorotridecanoic acid (PFTriA)	40.0	41.6		ng/L		104	71 - 131	5	30
Perfluorotetradecanoic acid (PFTeA)	40.0	44.3		ng/L		111	70 - 130	6	30
Perfluorobutanesulfonic acid (PFBS)	35.4	37.7		ng/L		107	67 - 127	4	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	35.6		ng/L		98	59 - 119	4	30
Perfluorooctanesulfonic acid (PFOS)	37.1	37.9		ng/L		102	70 - 130	1	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	40.4		ng/L		108	75 - 135	3	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	42.3		ng/L		106	51 - 173	1	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	40.8		ng/L		108	54 - 114	4	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	39.3		ng/L		104	79 - 139	1	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	98		25 - 150
13C4 PFHpA	96		25 - 150
13C4 PFOA	101		25 - 150
13C5 PFNA	99		25 - 150
13C2 PFDA	96		25 - 150
13C2 PFUnA	94		25 - 150
13C2 PFDoA	96		25 - 150
13C2 PFTeDA	98		25 - 150
13C3 PFBS	93		25 - 150
18O2 PFHxS	94		25 - 150
13C4 PFOS	98		25 - 150
d3-NMeFOSAA	94		25 - 150
d5-NEtFOSAA	96		25 - 150
13C3 HFPO-DA	94		25 - 150

QC Association Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI FTP

Job ID: 320-66255-1

LCMS

Prep Batch: 430458

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-66255-1	FTP-pre-006	Total/NA	Water	3535	
MB 320-430458/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-430458/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-430458/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 431175

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-66255-1	FTP-pre-006	Total/NA	Water	537 (modified)	430458
MB 320-430458/1-A	Method Blank	Total/NA	Water	537 (modified)	430458
LCS 320-430458/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	430458
LCSD 320-430458/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	430458

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: FAI FTP

Job ID: 320-66255-1

Client Sample ID: FTP-pre-006

Lab Sample ID: 320-66255-1

Date Collected: 10/29/20 08:00

Matrix: Water

Date Received: 11/03/20 12:40

<u>Prep Type</u>	<u>Batch Type</u>	<u>Batch Method</u>	<u>Run</u>	<u>Dil Factor</u>	<u>Initial Amount</u>	<u>Final Amount</u>	<u>Batch Number</u>	<u>Prepared or Analyzed</u>	<u>Analyst</u>	<u>Lab</u>
Total/NA	Prep	3535			0.50 mL	10.00 mL	430458	11/10/20 19:58	JER	TAL SAC
Total/NA	Analysis	537 (modified)		100			431175	11/11/20 21:51	D1R	TAL SAC

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

Accreditation/Certification Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI FTP

Job ID: 320-66255-1

Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-21
Arkansas DEQ	State	88-0691	06-17-21
California	State	2897	01-31-22
Colorado	State	CA0004	08-31-21
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-21
Georgia	State	4040	01-30-21
Hawaii	State	<cert No.>	01-29-21
Illinois	NELAP	200060	03-17-21
Kansas	NELAP	E-10375	10-31-20 *
Louisiana	NELAP	01944	06-30-21
Maine	State	CA00004	04-14-22
Michigan	State	9947	08-03-23
Nevada	State	CA000442021-1	07-31-21
New Hampshire	NELAP	2997	04-18-21
New Jersey	NELAP	CA005	06-30-21
New York	NELAP	11666	04-01-21
Oregon	NELAP	4040	01-29-21
Pennsylvania	NELAP	68-01272	03-31-21
Texas	NELAP	T104704399-19-13	06-01-21
US Fish & Wildlife	US Federal Programs	58448	07-31-21
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-28-21
Vermont	State	VT-4040	04-16-21
Virginia	NELAP	460278	03-14-21
Washington	State	C581	05-05-21
West Virginia (DW)	State	9930C	12-31-20
Wisconsin	State	998204680	08-31-21
Wyoming	State Program	8TMS-L	01-28-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins TestAmerica, Sacramento

Method Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI FTP

Job ID: 320-66255-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
3535	Solid-Phase Extraction (SPE)	SW846	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600



Sample Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI FTP

Job ID: 320-66255-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-66255-1	FTP-pre-006	Water	10/29/20 08:00	11/03/20 12:40	

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

CHAIN-OF-CUSTODY RECORD

Laboratory Test America Page 1 of 1
 Attn: Daniel Atkinson

Analytical Methods (include preservative if used)

Quote No: _____
 J-Flags: Yes No

Turn Around Time:
 Normal Rush
 Please Specify _____

Sample Identity	Lab No.	Time	Date Sampled	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
FTP - pre -006		1800	10/29/20	18	Filtered water



Project Information	Sample Receipt	Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Number: <u>102519-012</u> Name: <u>FA1 FTP</u> Contact: <u>MDN</u> Ongoing Project? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Sampler: <u>MKT</u>	Total No. of Containers: <u>2</u> COC Seals/Intact? <u>Y/N/NA</u> Received Good Cond./Cold Temp: _____ Delivery Method: <u>Alaska Aircargo</u>	Signature: <u>[Signature]</u> Printed Name: <u>Michael Jovanillo</u> Date: <u>11/2/20</u> Company: <u>Shannon & Wilson</u>	Signature: _____ Printed Name: _____ Date: _____ Company: _____	Signature: _____ Printed Name: _____ Date: _____ Company: _____
Notes: <u>None</u>		Received By: 1. <u>[Signature]</u> Time: <u>11:30</u> Date: <u>11/2/20</u> Company: <u>FA1</u>	Received By: 2. _____ Time: _____ Date: _____ Company: _____	Received By: 3. _____ Time: _____ Date: _____ Company: _____

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
 Yellow - w/shipment - for consignee files
 Pink - Shannon & Wilson - job file

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-66255-1

Login Number: 66255

List Source: Eurofins TestAmerica, Sacramento

List Number: 1

Creator: Her, David A

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	SEALS
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Laboratory Data Review Checklist

Completed By:

Amber Masters

Title:

Environmental Scientist

Date:

12/4/2020

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins TestAmerica, Sacramento

Laboratory Report Number:

320-66255-1

Laboratory Report Date:

11/13/2020

CS Site Name:

FAI FTP

ADEC File Number:

100.38.277

Hazard Identification Number:

26816

320-66255-1

Laboratory Report Date:

11/13/2020

CS Site Name:

Note: Any N/A or No box checked must have an explanation in the comments box.

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes No N/A Comments:

The ADEC certified the TestAmerica/Eurofins Laboratories West Sacramento, CA location for the analysis of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) on February 6, 2018. These compounds were included in the ADEC’s Contaminated Sites Laboratory Approval 17 020.

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes No N/A Comments:

Samples were not transferred to another laboratory.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes No N/A Comments:

b. Correct analyses requested?

Yes No N/A Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes No N/A Comments:

Sample cooler temperature recorded at 4.6° C upon receipt at laboratory.

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes No N/A Comments:

320-66255-1

Laboratory Report Date:

11/13/2020

CS Site Name:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes No N/A Comments:

The sample receipt form notes that the samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes No N/A Comments:

See above.

e. Data quality or usability affected?

Comments:

Data quality and/or usability is not affected; see above.

4. Case Narrative

a. Present and understandable?

Yes No N/A Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

Yes No N/A Comments:

The case narrative notes the following:
Results for samples *FTP-pre-006* were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. This is a deviation from the Standard Operating Procedure (SOP). Due to the matrix, the following sample was prepared using a [0.5] mL aliquot without extracting via the SPE process: *FTP-pre-006* (320-66255-1). This is the equivalent of a [500x] dilution prior to submitting extracts for analysis.

c. Were all corrective actions documented?

Yes No N/A Comments:

See above.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

N/A; data quality/usability not affected.

320-66255-1

Laboratory Report Date:

11/13/2020

CS Site Name:

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes No N/A Comments:

b. All applicable holding times met?

Yes No N/A Comments:

c. All soils reported on a dry weight basis?

Yes No N/A Comments:

Soil samples were not submitted with this work order.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes No N/A Comments:

The reporting limit for PFOA exceeds the DEC groundwater cleanup level of 400 ng/L. We are unable to determine if PFOA is present above the cleanup level. This result has been bolded on the associated data table.

e. Data quality or usability affected?

Yes; see above.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes No N/A Comments:

No analytes were detected in the method blank.

320-66255-1

Laboratory Report Date:

11/13/2020

CS Site Name:

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

Not applicable, see above.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

v. Data quality or usability affected?

Comments:

No, see above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes No N/A Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

Metals and inorganics were not analyzed as part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

320-66255-1

Laboratory Report Date:

11/13/2020

CS Site Name:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Not applicable; analytical accuracy and precision were within acceptable limits.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

N/A; see above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability were not affected.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Note: Leave blank if not required for project

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

An MS/MSD was not reported in this work order, see the LCS/LCSD section for an evaluation of analytical accuracy and precision.

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

See above.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes No N/A Comments:

See above.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes No N/A Comments:

See above.

320-66255-1

Laboratory Report Date:

11/13/2020

CS Site Name:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Not applicable, see above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Data quality and/or usability was not affected.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes No N/A Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes No N/A Comments:

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

There were no IDA recovery failures associated with this work order.

iv. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected.

320-66255-1

Laboratory Report Date:

11/13/2020

CS Site Name:

e. Trip Blanks

- i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples?
(If not, enter explanation below.)

Yes No N/A Comments:

No volatile analyses were requested as a part of this work order; therefore, a trip blank is not required.

- ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC?
(If not, a comment explaining why must be entered below)

Yes No N/A Comments:

See above.

- iii. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

See above.

- iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

No samples were affected.

- v. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected.

f. Field Duplicate

- i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No N/A Comments:

A field duplicate was not submitted with this work order.

- ii. Submitted blind to lab?

Yes No N/A Comments:

See above.

320-66255-1

Laboratory Report Date:

11/13/2020

CS Site Name:

iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water, 50% soil)

$$RPD (\%) = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2) / 2)} \times 100$$

Where R₁ = Sample Concentration
R₂ = Field Duplicate Concentration

Yes No N/A Comments:

N/A; see above.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Data quality and usability not affected. See above.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes No N/A Comments:

Samples were not collected using reusable equipment; therefore, an equipment blank was not required for this project.

i. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

See above.

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

Not applicable, see above.

iii. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes No N/A Comments:

There were no additional flags/qualifiers required for this work order.

320-66255-1

Laboratory Report Date:

11/13/2020

CS Site Name:

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-69099-1
Client Project/Site: PFAS

For:

Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

Attn: Marcy Nadel



*Authorized for release by:
1/26/2021 10:37:29 AM*

David Alltucker, Project Manager I
(916)374-4383
David.Alltucker@Eurofinset.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:

www.eurofinsus.com/Env

The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



Table of Contents

Cover Page	1
Table of Contents	2
Definitions/Glossary	3
Case Narrative	4
Detection Summary	5
Client Sample Results	7
Isotope Dilution Summary	21
QC Sample Results	23
QC Association Summary	26
Lab Chronicle	27
Certification Summary	30
Method Summary	31
Sample Summary	32
Chain of Custody	33
Receipt Checklists	35

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: PFAS

Job ID: 320-69099-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*5+	Isotope dilution analyte is outside acceptance limits, high biased.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Shannon & Wilson, Inc
Project/Site: PFAS

Job ID: 320-69099-1

Job ID: 320-69099-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative 320-69099-1

Receipt

The samples were received on 1/20/2021 3:45 PM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.4° C.

LCMS

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for several analytes in the following samples: MW-2901-80 (320-69099-14) and (LCSD 320-454229/3-A). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for 13C2 PFHxDA in the following samples: MW-1902-150 (320-69099-7), FB2-FAI (320-69099-9) and (LCS 320-454229/2-A). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method 537 (modified): Results for samples MW-1901-15 (320-69099-4) and MW-1901-40 (320-69099-12) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits.

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for 13C2 PFTeDA and 13C2 PFHxDA in the following method blank (MB): (MB 320-454229/1-A). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-454229 and 320-454229.

Method 3535: The following samples were beige prior to extraction: MW-1902-15 (320-69099-1), MW-2902-15 (320-69099-2), MW-1901-15 (320-69099-4), MW-1902-40 (320-69099-5) and MW-1901-40 (320-69099-12)

Method 3535: The following samples were cloudy prior to extraction: MW-1902-80 (320-69099-6), MW-1902-150 (320-69099-7), MW-1901-80 (320-69099-13) and MW-2901-80 (320-69099-14)

Method 3535: The following samples contained some sediments prior to extraction: MW-1901-150 (320-69099-10)

Method 3535: The following sample contained sediments which clogged the cartridge during extraction: MW-1901-150 (320-69099-10)

Method 3535: The following sample is cloudy at final volume: MW-2902-15 (320-69099-2)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: PFAS

Job ID: 320-69099-1

Client Sample ID: MW-1902-15

Lab Sample ID: 320-69099-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	14		1.9	0.55	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.5		1.9	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	5.0		1.9	0.80	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	6.0		1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	45		1.9	0.54	ng/L	1		537 (modified)	Total/NA
Perfluorooctane sulfonate (PFOS)	13		1.9	0.51	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-2902-15

Lab Sample ID: 320-69099-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	14		1.9	0.55	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.2		1.9	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	4.2		1.9	0.80	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	5.9		1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	47		1.9	0.54	ng/L	1		537 (modified)	Total/NA
Perfluorooctane sulfonate (PFOS)	12		1.9	0.51	ng/L	1		537 (modified)	Total/NA

Client Sample ID: EB-1902-15

Lab Sample ID: 320-69099-3

No Detections.

Client Sample ID: MW-1901-15

Lab Sample ID: 320-69099-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	770		18	5.3	ng/L	10		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	64		1.8	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	80		1.8	0.78	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	380		18	1.8	ng/L	10		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2100		18	5.2	ng/L	10		537 (modified)	Total/NA
Perfluorooctane sulfonate (PFOS)	50		1.8	0.49	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-1902-40

Lab Sample ID: 320-69099-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.30	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.5	J	1.8	0.52	ng/L	1		537 (modified)	Total/NA
Perfluorooctane sulfonate (PFOS)	1.6	J	1.8	0.49	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-1902-80

Lab Sample ID: 320-69099-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.21	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.2	J	1.8	0.52	ng/L	1		537 (modified)	Total/NA
Perfluorooctane sulfonate (PFOS)	0.67	J	1.8	0.49	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-1902-150

Lab Sample ID: 320-69099-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.19	J	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.1	J	1.9	0.53	ng/L	1		537 (modified)	Total/NA
Perfluorooctane sulfonate (PFOS)	0.68	J	1.9	0.50	ng/L	1		537 (modified)	Total/NA

Client Sample ID: FB-FAI

Lab Sample ID: 320-69099-8

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: PFAS

Job ID: 320-69099-1

Client Sample ID: FB2-FAI

Lab Sample ID: 320-69099-9

No Detections.

Client Sample ID: MW-1901-150

Lab Sample ID: 320-69099-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.18	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.0	J	1.8	0.53	ng/L	1		537 (modified)	Total/NA

Client Sample ID: EB-1901-150

Lab Sample ID: 320-69099-11

No Detections.

Client Sample ID: MW-1901-40

Lab Sample ID: 320-69099-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1300		18	5.4	ng/L	10		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	140		1.8	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	140		1.8	0.79	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.25	J	1.8	0.25	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	880		18	1.8	ng/L	10		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2700		18	5.3	ng/L	10		537 (modified)	Total/NA
Perfluorooctane sulfonate (PFOS)	300		1.8	0.50	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-1901-80

Lab Sample ID: 320-69099-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.36	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.4	J	1.8	0.52	ng/L	1		537 (modified)	Total/NA
Perfluorooctane sulfonate (PFOS)	0.86	J	1.8	0.50	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-2901-80

Lab Sample ID: 320-69099-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.28	J	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.4	J	1.9	0.55	ng/L	1		537 (modified)	Total/NA
Perfluorooctane sulfonate (PFOS)	0.90	J	1.9	0.52	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: PFAS

Job ID: 320-69099-1

Client Sample ID: MW-1902-15

Lab Sample ID: 320-69099-1

Date Collected: 01/18/21 12:40

Matrix: Water

Date Received: 01/20/21 15:45

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	14		1.9	0.55	ng/L		01/21/21 18:12	01/23/21 18:04	1
Perfluoroheptanoic acid (PFHpA)	2.5		1.9	0.24	ng/L		01/21/21 18:12	01/23/21 18:04	1
Perfluorooctanoic acid (PFOA)	5.0		1.9	0.80	ng/L		01/21/21 18:12	01/23/21 18:04	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		01/21/21 18:12	01/23/21 18:04	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		01/21/21 18:12	01/23/21 18:04	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		01/21/21 18:12	01/23/21 18:04	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		01/21/21 18:12	01/23/21 18:04	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		01/21/21 18:12	01/23/21 18:04	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		01/21/21 18:12	01/23/21 18:04	1
Perfluorobutanesulfonic acid (PFBS)	6.0		1.9	0.19	ng/L		01/21/21 18:12	01/23/21 18:04	1
Perfluorohexanesulfonic acid (PFHxS)	45		1.9	0.54	ng/L		01/21/21 18:12	01/23/21 18:04	1
Perfluorooctane sulfonate (PFOS)	13		1.9	0.51	ng/L		01/21/21 18:12	01/23/21 18:04	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	ND		1.9	0.23	ng/L		01/21/21 18:12	01/23/21 18:04	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		01/21/21 18:12	01/23/21 18:04	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		01/21/21 18:12	01/23/21 18:04	1
11-Chloroeicosafuoro-3-oxaundecan e-1-sulfonic acid	ND		1.9	0.30	ng/L		01/21/21 18:12	01/23/21 18:04	1
N-ethylperfluorooctanesulfonamidoac etic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		01/21/21 18:12	01/23/21 18:04	1
N-methylperfluorooctanesulfonamidoa cetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		01/21/21 18:12	01/23/21 18:04	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	102		25 - 150	01/21/21 18:12	01/23/21 18:04	1
13C4 PFBA	51		25 - 150	01/21/21 18:12	01/23/21 18:04	1
13C2 PFHxA	91		25 - 150	01/21/21 18:12	01/23/21 18:04	1
13C4 PFOA	96		25 - 150	01/21/21 18:12	01/23/21 18:04	1
13C5 PFNA	112		25 - 150	01/21/21 18:12	01/23/21 18:04	1
13C2 PFDA	107		25 - 150	01/21/21 18:12	01/23/21 18:04	1
13C2 PFUnA	102		25 - 150	01/21/21 18:12	01/23/21 18:04	1
13C2 PFDoA	102		25 - 150	01/21/21 18:12	01/23/21 18:04	1
18O2 PFHxS	97		25 - 150	01/21/21 18:12	01/23/21 18:04	1
13C4 PFOS	101		25 - 150	01/21/21 18:12	01/23/21 18:04	1
13C4 PFHpA	94		25 - 150	01/21/21 18:12	01/23/21 18:04	1
13C5 PFPeA	68		25 - 150	01/21/21 18:12	01/23/21 18:04	1
d5-NEtFOSAA	101		25 - 150	01/21/21 18:12	01/23/21 18:04	1
d3-NMeFOSAA	103		25 - 150	01/21/21 18:12	01/23/21 18:04	1
13C3 HFPO-DA	84		25 - 150	01/21/21 18:12	01/23/21 18:04	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: PFAS

Job ID: 320-69099-1

Client Sample ID: MW-2902-15

Lab Sample ID: 320-69099-2

Date Collected: 01/18/21 12:30

Matrix: Water

Date Received: 01/20/21 15:45

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	14		1.9	0.55	ng/L		01/21/21 18:12	01/22/21 16:57	1
Perfluoroheptanoic acid (PFHpA)	2.2		1.9	0.24	ng/L		01/21/21 18:12	01/22/21 16:57	1
Perfluorooctanoic acid (PFOA)	4.2		1.9	0.80	ng/L		01/21/21 18:12	01/22/21 16:57	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		01/21/21 18:12	01/22/21 16:57	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		01/21/21 18:12	01/22/21 16:57	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		01/21/21 18:12	01/22/21 16:57	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		01/21/21 18:12	01/22/21 16:57	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		01/21/21 18:12	01/22/21 16:57	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		01/21/21 18:12	01/22/21 16:57	1
Perfluorobutanesulfonic acid (PFBS)	5.9		1.9	0.19	ng/L		01/21/21 18:12	01/22/21 16:57	1
Perfluorohexanesulfonic acid (PFHxS)	47		1.9	0.54	ng/L		01/21/21 18:12	01/22/21 16:57	1
Perfluorooctane sulfonate (PFOS)	12		1.9	0.51	ng/L		01/21/21 18:12	01/22/21 16:57	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	ND		1.9	0.23	ng/L		01/21/21 18:12	01/22/21 16:57	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		01/21/21 18:12	01/22/21 16:57	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		01/21/21 18:12	01/22/21 16:57	1
11-Chloroeicosafuoro-3-oxaundecan e-1-sulfonic acid	ND		1.9	0.30	ng/L		01/21/21 18:12	01/22/21 16:57	1
N-ethylperfluorooctanesulfonamidoac etic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		01/21/21 18:12	01/22/21 16:57	1
N-methylperfluorooctanesulfonamidoa cetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		01/21/21 18:12	01/22/21 16:57	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	92		25 - 150	01/21/21 18:12	01/22/21 16:57	1
13C4 PFBA	67		25 - 150	01/21/21 18:12	01/22/21 16:57	1
13C2 PFHxA	89		25 - 150	01/21/21 18:12	01/22/21 16:57	1
13C4 PFOA	114		25 - 150	01/21/21 18:12	01/22/21 16:57	1
13C5 PFNA	112		25 - 150	01/21/21 18:12	01/22/21 16:57	1
13C2 PFDA	119		25 - 150	01/21/21 18:12	01/22/21 16:57	1
13C2 PFUnA	102		25 - 150	01/21/21 18:12	01/22/21 16:57	1
13C2 PFDoA	104		25 - 150	01/21/21 18:12	01/22/21 16:57	1
18O2 PFHxS	84		25 - 150	01/21/21 18:12	01/22/21 16:57	1
13C4 PFOS	89		25 - 150	01/21/21 18:12	01/22/21 16:57	1
13C4 PFHpA	100		25 - 150	01/21/21 18:12	01/22/21 16:57	1
13C5 PFPeA	76		25 - 150	01/21/21 18:12	01/22/21 16:57	1
d5-NEtFOSAA	76		25 - 150	01/21/21 18:12	01/22/21 16:57	1
d3-NMeFOSAA	74		25 - 150	01/21/21 18:12	01/22/21 16:57	1
13C3 HFPO-DA	92		25 - 150	01/21/21 18:12	01/22/21 16:57	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: PFAS

Job ID: 320-69099-1

Client Sample ID: EB-1902-15

Lab Sample ID: 320-69099-3

Date Collected: 01/18/21 13:00

Matrix: Water

Date Received: 01/20/21 15:45

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.51	ng/L		01/21/21 18:12	01/22/21 17:06	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		01/21/21 18:12	01/22/21 17:06	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.75	ng/L		01/21/21 18:12	01/22/21 17:06	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		01/21/21 18:12	01/22/21 17:06	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		01/21/21 18:12	01/22/21 17:06	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.97	ng/L		01/21/21 18:12	01/22/21 17:06	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		01/21/21 18:12	01/22/21 17:06	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.1	ng/L		01/21/21 18:12	01/22/21 17:06	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		01/21/21 18:12	01/22/21 17:06	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		01/21/21 18:12	01/22/21 17:06	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.50	ng/L		01/21/21 18:12	01/22/21 17:06	1
Perfluorooctane sulfonate (PFOS)	ND		1.8	0.48	ng/L		01/21/21 18:12	01/22/21 17:06	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	ND		1.8	0.21	ng/L		01/21/21 18:12	01/22/21 17:06	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		01/21/21 18:12	01/22/21 17:06	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		01/21/21 18:12	01/22/21 17:06	1
11-Chloroeicosafuoro-3-oxaundecan e-1-sulfonic acid	ND		1.8	0.28	ng/L		01/21/21 18:12	01/22/21 17:06	1
N-ethylperfluorooctanesulfonamidoac etic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		01/21/21 18:12	01/22/21 17:06	1
N-methylperfluorooctanesulfonamidoa cetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		01/21/21 18:12	01/22/21 17:06	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	97		25 - 150	01/21/21 18:12	01/22/21 17:06	1
13C4 PFBA	87		25 - 150	01/21/21 18:12	01/22/21 17:06	1
13C2 PFHxA	92		25 - 150	01/21/21 18:12	01/22/21 17:06	1
13C4 PFOA	117		25 - 150	01/21/21 18:12	01/22/21 17:06	1
13C5 PFNA	106		25 - 150	01/21/21 18:12	01/22/21 17:06	1
13C2 PFDA	125		25 - 150	01/21/21 18:12	01/22/21 17:06	1
13C2 PFUnA	107		25 - 150	01/21/21 18:12	01/22/21 17:06	1
13C2 PFDoA	93		25 - 150	01/21/21 18:12	01/22/21 17:06	1
18O2 PFHxS	88		25 - 150	01/21/21 18:12	01/22/21 17:06	1
13C4 PFOS	93		25 - 150	01/21/21 18:12	01/22/21 17:06	1
13C4 PFHpA	102		25 - 150	01/21/21 18:12	01/22/21 17:06	1
13C5 PFPeA	90		25 - 150	01/21/21 18:12	01/22/21 17:06	1
d5-NEtFOSAA	79		25 - 150	01/21/21 18:12	01/22/21 17:06	1
d3-NMeFOSAA	82		25 - 150	01/21/21 18:12	01/22/21 17:06	1
13C3 HFPO-DA	96		25 - 150	01/21/21 18:12	01/22/21 17:06	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: PFAS

Job ID: 320-69099-1

Client Sample ID: MW-1901-15

Lab Sample ID: 320-69099-4

Date Collected: 01/18/21 11:40

Matrix: Water

Date Received: 01/20/21 15:45

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	770		18	5.3	ng/L		01/21/21 18:12	01/23/21 17:18	10
Perfluoroheptanoic acid (PFHpA)	64		1.8	0.23	ng/L		01/21/21 18:12	01/22/21 17:15	1
Perfluorooctanoic acid (PFOA)	80		1.8	0.78	ng/L		01/21/21 18:12	01/22/21 17:15	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		01/21/21 18:12	01/22/21 17:15	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		01/21/21 18:12	01/22/21 17:15	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		01/21/21 18:12	01/22/21 17:15	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		01/21/21 18:12	01/22/21 17:15	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		01/21/21 18:12	01/22/21 17:15	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		01/21/21 18:12	01/22/21 17:15	1
Perfluorobutanesulfonic acid (PFBS)	380		18	1.8	ng/L		01/21/21 18:12	01/23/21 17:18	10
Perfluorohexanesulfonic acid (PFHxS)	2100		18	5.2	ng/L		01/21/21 18:12	01/23/21 17:18	10
Perfluorooctane sulfonate (PFOS)	50		1.8	0.49	ng/L		01/21/21 18:12	01/22/21 17:15	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	ND		1.8	0.22	ng/L		01/21/21 18:12	01/22/21 17:15	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		01/21/21 18:12	01/22/21 17:15	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		01/21/21 18:12	01/22/21 17:15	1
11-Chloroeicosafuoro-3-oxaundecan e-1-sulfonic acid	ND		1.8	0.29	ng/L		01/21/21 18:12	01/22/21 17:15	1
N-ethylperfluorooctanesulfonamidoac etic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		01/21/21 18:12	01/22/21 17:15	1
N-methylperfluorooctanesulfonamidoa cetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		01/21/21 18:12	01/22/21 17:15	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	99		25 - 150	01/21/21 18:12	01/22/21 17:15	1
13C4 PFBA	74		25 - 150	01/21/21 18:12	01/22/21 17:15	1
13C2 PFHxA	121		25 - 150	01/21/21 18:12	01/23/21 17:18	10
13C4 PFOA	132		25 - 150	01/21/21 18:12	01/22/21 17:15	1
13C5 PFNA	119		25 - 150	01/21/21 18:12	01/22/21 17:15	1
13C2 PFDA	109		25 - 150	01/21/21 18:12	01/22/21 17:15	1
13C2 PFUnA	111		25 - 150	01/21/21 18:12	01/22/21 17:15	1
13C2 PFDoA	108		25 - 150	01/21/21 18:12	01/22/21 17:15	1
18O2 PFHxS	97		25 - 150	01/21/21 18:12	01/23/21 17:18	10
13C4 PFOS	86		25 - 150	01/21/21 18:12	01/22/21 17:15	1
13C4 PFHpA	93		25 - 150	01/21/21 18:12	01/22/21 17:15	1
13C5 PFPeA	86		25 - 150	01/21/21 18:12	01/22/21 17:15	1
d5-NEtFOSAA	67		25 - 150	01/21/21 18:12	01/22/21 17:15	1
d3-NMeFOSAA	74		25 - 150	01/21/21 18:12	01/22/21 17:15	1
13C3 HFPO-DA	110		25 - 150	01/21/21 18:12	01/22/21 17:15	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: PFAS

Job ID: 320-69099-1

Client Sample ID: MW-1902-40

Lab Sample ID: 320-69099-5

Date Collected: 01/18/21 14:12

Matrix: Water

Date Received: 01/20/21 15:45

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		01/21/21 18:12	01/22/21 17:43	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		01/21/21 18:12	01/22/21 17:43	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		01/21/21 18:12	01/22/21 17:43	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		01/21/21 18:12	01/22/21 17:43	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		01/21/21 18:12	01/22/21 17:43	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		01/21/21 18:12	01/22/21 17:43	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		01/21/21 18:12	01/22/21 17:43	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		01/21/21 18:12	01/22/21 17:43	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		01/21/21 18:12	01/22/21 17:43	1
Perfluorobutanesulfonic acid (PFBS)	0.30	J	1.8	0.18	ng/L		01/21/21 18:12	01/22/21 17:43	1
Perfluorohexanesulfonic acid (PFHxS)	1.5	J	1.8	0.52	ng/L		01/21/21 18:12	01/22/21 17:43	1
Perfluorooctane sulfonate (PFOS)	1.6	J	1.8	0.49	ng/L		01/21/21 18:12	01/22/21 17:43	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	ND		1.8	0.22	ng/L		01/21/21 18:12	01/22/21 17:43	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		01/21/21 18:12	01/22/21 17:43	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		01/21/21 18:12	01/22/21 17:43	1
11-Chloroeicosafuoro-3-oxaundecan e-1-sulfonic acid	ND		1.8	0.29	ng/L		01/21/21 18:12	01/22/21 17:43	1
N-ethylperfluorooctanesulfonamidoac etic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		01/21/21 18:12	01/22/21 17:43	1
N-methylperfluorooctanesulfonamidoa cetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		01/21/21 18:12	01/22/21 17:43	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	99		25 - 150	01/21/21 18:12	01/22/21 17:43	1
13C4 PFBA	82		25 - 150	01/21/21 18:12	01/22/21 17:43	1
13C2 PFHxA	100		25 - 150	01/21/21 18:12	01/22/21 17:43	1
13C4 PFOA	124		25 - 150	01/21/21 18:12	01/22/21 17:43	1
13C5 PFNA	120		25 - 150	01/21/21 18:12	01/22/21 17:43	1
13C2 PFDA	118		25 - 150	01/21/21 18:12	01/22/21 17:43	1
13C2 PFUnA	107		25 - 150	01/21/21 18:12	01/22/21 17:43	1
13C2 PFDoA	94		25 - 150	01/21/21 18:12	01/22/21 17:43	1
18O2 PFHxS	92		25 - 150	01/21/21 18:12	01/22/21 17:43	1
13C4 PFOS	96		25 - 150	01/21/21 18:12	01/22/21 17:43	1
13C4 PFHpA	109		25 - 150	01/21/21 18:12	01/22/21 17:43	1
13C5 PFPeA	89		25 - 150	01/21/21 18:12	01/22/21 17:43	1
d5-NEtFOSAA	82		25 - 150	01/21/21 18:12	01/22/21 17:43	1
d3-NMeFOSAA	89		25 - 150	01/21/21 18:12	01/22/21 17:43	1
13C3 HFPO-DA	102		25 - 150	01/21/21 18:12	01/22/21 17:43	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: PFAS

Job ID: 320-69099-1

Client Sample ID: MW-1902-80

Lab Sample ID: 320-69099-6

Date Collected: 01/18/21 14:45

Matrix: Water

Date Received: 01/20/21 15:45

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		01/21/21 18:12	01/22/21 17:52	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		01/21/21 18:12	01/22/21 17:52	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		01/21/21 18:12	01/22/21 17:52	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		01/21/21 18:12	01/22/21 17:52	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		01/21/21 18:12	01/22/21 17:52	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		01/21/21 18:12	01/22/21 17:52	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		01/21/21 18:12	01/22/21 17:52	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		01/21/21 18:12	01/22/21 17:52	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		01/21/21 18:12	01/22/21 17:52	1
Perfluorobutanesulfonic acid (PFBS)	0.21	J	1.8	0.18	ng/L		01/21/21 18:12	01/22/21 17:52	1
Perfluorohexanesulfonic acid (PFHxS)	1.2	J	1.8	0.52	ng/L		01/21/21 18:12	01/22/21 17:52	1
Perfluorooctane sulfonate (PFOS)	0.67	J	1.8	0.49	ng/L		01/21/21 18:12	01/22/21 17:52	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	ND		1.8	0.22	ng/L		01/21/21 18:12	01/22/21 17:52	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		01/21/21 18:12	01/22/21 17:52	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		01/21/21 18:12	01/22/21 17:52	1
11-Chloroeicosafuoro-3-oxaundecan e-1-sulfonic acid	ND		1.8	0.29	ng/L		01/21/21 18:12	01/22/21 17:52	1
N-ethylperfluorooctanesulfonamidoac etic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		01/21/21 18:12	01/22/21 17:52	1
N-methylperfluorooctanesulfonamidoa cetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		01/21/21 18:12	01/22/21 17:52	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	117		25 - 150	01/21/21 18:12	01/22/21 17:52	1
13C4 PFBA	94		25 - 150	01/21/21 18:12	01/22/21 17:52	1
13C2 PFHxA	116		25 - 150	01/21/21 18:12	01/22/21 17:52	1
13C4 PFOA	142		25 - 150	01/21/21 18:12	01/22/21 17:52	1
13C5 PFNA	130		25 - 150	01/21/21 18:12	01/22/21 17:52	1
13C2 PFDA	137		25 - 150	01/21/21 18:12	01/22/21 17:52	1
13C2 PFUnA	120		25 - 150	01/21/21 18:12	01/22/21 17:52	1
13C2 PFDoA	116		25 - 150	01/21/21 18:12	01/22/21 17:52	1
18O2 PFHxS	103		25 - 150	01/21/21 18:12	01/22/21 17:52	1
13C4 PFOS	107		25 - 150	01/21/21 18:12	01/22/21 17:52	1
13C4 PFHpA	127		25 - 150	01/21/21 18:12	01/22/21 17:52	1
13C5 PFPeA	103		25 - 150	01/21/21 18:12	01/22/21 17:52	1
d5-NEtFOSAA	89		25 - 150	01/21/21 18:12	01/22/21 17:52	1
d3-NMeFOSAA	94		25 - 150	01/21/21 18:12	01/22/21 17:52	1
13C3 HFPO-DA	115		25 - 150	01/21/21 18:12	01/22/21 17:52	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: PFAS

Job ID: 320-69099-1

Client Sample ID: MW-1902-150

Lab Sample ID: 320-69099-7

Date Collected: 01/18/21 15:22

Matrix: Water

Date Received: 01/20/21 15:45

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		01/21/21 18:12	01/22/21 18:01	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		01/21/21 18:12	01/22/21 18:01	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		01/21/21 18:12	01/22/21 18:01	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		01/21/21 18:12	01/22/21 18:01	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		01/21/21 18:12	01/22/21 18:01	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		01/21/21 18:12	01/22/21 18:01	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		01/21/21 18:12	01/22/21 18:01	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		01/21/21 18:12	01/22/21 18:01	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		01/21/21 18:12	01/22/21 18:01	1
Perfluorobutanesulfonic acid (PFBS)	0.19	J	1.9	0.19	ng/L		01/21/21 18:12	01/22/21 18:01	1
Perfluorohexanesulfonic acid (PFHxS)	1.1	J	1.9	0.53	ng/L		01/21/21 18:12	01/22/21 18:01	1
Perfluorooctane sulfonate (PFOS)	0.68	J	1.9	0.50	ng/L		01/21/21 18:12	01/22/21 18:01	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	ND		1.9	0.22	ng/L		01/21/21 18:12	01/22/21 18:01	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		01/21/21 18:12	01/22/21 18:01	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		01/21/21 18:12	01/22/21 18:01	1
11-Chloroeicosafuoro-3-oxaundecan e-1-sulfonic acid	ND		1.9	0.30	ng/L		01/21/21 18:12	01/22/21 18:01	1
N-ethylperfluorooctanesulfonamidoac etic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		01/21/21 18:12	01/22/21 18:01	1
N-methylperfluorooctanesulfonamidoa cetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		01/21/21 18:12	01/22/21 18:01	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	119		25 - 150	01/21/21 18:12	01/22/21 18:01	1
13C4 PFBA	101		25 - 150	01/21/21 18:12	01/22/21 18:01	1
13C2 PFHxA	120		25 - 150	01/21/21 18:12	01/22/21 18:01	1
13C4 PFOA	137		25 - 150	01/21/21 18:12	01/22/21 18:01	1
13C5 PFNA	140		25 - 150	01/21/21 18:12	01/22/21 18:01	1
13C2 PFDA	137		25 - 150	01/21/21 18:12	01/22/21 18:01	1
13C2 PFUnA	126		25 - 150	01/21/21 18:12	01/22/21 18:01	1
13C2 PFDoA	136		25 - 150	01/21/21 18:12	01/22/21 18:01	1
18O2 PFHxS	107		25 - 150	01/21/21 18:12	01/22/21 18:01	1
13C4 PFOS	113		25 - 150	01/21/21 18:12	01/22/21 18:01	1
13C4 PFHpA	132		25 - 150	01/21/21 18:12	01/22/21 18:01	1
13C5 PFPeA	109		25 - 150	01/21/21 18:12	01/22/21 18:01	1
d5-NEtFOSAA	97		25 - 150	01/21/21 18:12	01/22/21 18:01	1
d3-NMeFOSAA	103		25 - 150	01/21/21 18:12	01/22/21 18:01	1
13C3 HFPO-DA	121		25 - 150	01/21/21 18:12	01/22/21 18:01	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: PFAS

Job ID: 320-69099-1

Client Sample ID: FB-FAI

Lab Sample ID: 320-69099-8

Date Collected: 01/18/21 15:45

Matrix: Water

Date Received: 01/20/21 15:45

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.54	ng/L		01/21/21 18:12	01/22/21 18:10	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		01/21/21 18:12	01/22/21 18:10	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.79	ng/L		01/21/21 18:12	01/22/21 18:10	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		01/21/21 18:12	01/22/21 18:10	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.29	ng/L		01/21/21 18:12	01/22/21 18:10	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		01/21/21 18:12	01/22/21 18:10	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		01/21/21 18:12	01/22/21 18:10	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		01/21/21 18:12	01/22/21 18:10	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		01/21/21 18:12	01/22/21 18:10	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		01/21/21 18:12	01/22/21 18:10	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.53	ng/L		01/21/21 18:12	01/22/21 18:10	1
Perfluorooctane sulfonate (PFOS)	ND		1.8	0.50	ng/L		01/21/21 18:12	01/22/21 18:10	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	ND		1.8	0.22	ng/L		01/21/21 18:12	01/22/21 18:10	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		01/21/21 18:12	01/22/21 18:10	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		01/21/21 18:12	01/22/21 18:10	1
11-Chloroeicosafuoro-3-oxaundecan e-1-sulfonic acid	ND		1.8	0.30	ng/L		01/21/21 18:12	01/22/21 18:10	1
N-ethylperfluorooctanesulfonamidoac etic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		01/21/21 18:12	01/22/21 18:10	1
N-methylperfluorooctanesulfonamidoa cetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		01/21/21 18:12	01/22/21 18:10	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	96		25 - 150	01/21/21 18:12	01/22/21 18:10	1
13C4 PFBA	92		25 - 150	01/21/21 18:12	01/22/21 18:10	1
13C2 PFHxA	95		25 - 150	01/21/21 18:12	01/22/21 18:10	1
13C4 PFOA	113		25 - 150	01/21/21 18:12	01/22/21 18:10	1
13C5 PFNA	117		25 - 150	01/21/21 18:12	01/22/21 18:10	1
13C2 PFDA	118		25 - 150	01/21/21 18:12	01/22/21 18:10	1
13C2 PFUnA	109		25 - 150	01/21/21 18:12	01/22/21 18:10	1
13C2 PFDoA	94		25 - 150	01/21/21 18:12	01/22/21 18:10	1
18O2 PFHxS	90		25 - 150	01/21/21 18:12	01/22/21 18:10	1
13C4 PFOS	92		25 - 150	01/21/21 18:12	01/22/21 18:10	1
13C4 PFHpA	104		25 - 150	01/21/21 18:12	01/22/21 18:10	1
13C5 PFPeA	94		25 - 150	01/21/21 18:12	01/22/21 18:10	1
d5-NEtFOSAA	85		25 - 150	01/21/21 18:12	01/22/21 18:10	1
d3-NMeFOSAA	93		25 - 150	01/21/21 18:12	01/22/21 18:10	1
13C3 HFPO-DA	102		25 - 150	01/21/21 18:12	01/22/21 18:10	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: PFAS

Job ID: 320-69099-1

Client Sample ID: FB2-FAI

Lab Sample ID: 320-69099-9

Date Collected: 01/19/21 12:10

Matrix: Water

Date Received: 01/20/21 15:45

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		01/21/21 18:12	01/22/21 18:19	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		01/21/21 18:12	01/22/21 18:19	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		01/21/21 18:12	01/22/21 18:19	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		01/21/21 18:12	01/22/21 18:19	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		01/21/21 18:12	01/22/21 18:19	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		01/21/21 18:12	01/22/21 18:19	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		01/21/21 18:12	01/22/21 18:19	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		01/21/21 18:12	01/22/21 18:19	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		01/21/21 18:12	01/22/21 18:19	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		01/21/21 18:12	01/22/21 18:19	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		01/21/21 18:12	01/22/21 18:19	1
Perfluorooctane sulfonate (PFOS)	ND		1.9	0.50	ng/L		01/21/21 18:12	01/22/21 18:19	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	ND		1.9	0.22	ng/L		01/21/21 18:12	01/22/21 18:19	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		01/21/21 18:12	01/22/21 18:19	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		01/21/21 18:12	01/22/21 18:19	1
11-Chloroeicosafuoro-3-oxaundecan e-1-sulfonic acid	ND		1.9	0.30	ng/L		01/21/21 18:12	01/22/21 18:19	1
N-ethylperfluorooctanesulfonamidoac etic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		01/21/21 18:12	01/22/21 18:19	1
N-methylperfluorooctanesulfonamidoa cetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		01/21/21 18:12	01/22/21 18:19	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	108		25 - 150	01/21/21 18:12	01/22/21 18:19	1
13C4 PFBA	102		25 - 150	01/21/21 18:12	01/22/21 18:19	1
13C2 PFHxA	109		25 - 150	01/21/21 18:12	01/22/21 18:19	1
13C4 PFOA	132		25 - 150	01/21/21 18:12	01/22/21 18:19	1
13C5 PFNA	129		25 - 150	01/21/21 18:12	01/22/21 18:19	1
13C2 PFDA	138		25 - 150	01/21/21 18:12	01/22/21 18:19	1
13C2 PFUnA	115		25 - 150	01/21/21 18:12	01/22/21 18:19	1
13C2 PFDoA	113		25 - 150	01/21/21 18:12	01/22/21 18:19	1
18O2 PFHxS	99		25 - 150	01/21/21 18:12	01/22/21 18:19	1
13C4 PFOS	106		25 - 150	01/21/21 18:12	01/22/21 18:19	1
13C4 PFHpA	113		25 - 150	01/21/21 18:12	01/22/21 18:19	1
13C5 PFPeA	105		25 - 150	01/21/21 18:12	01/22/21 18:19	1
d5-NEtFOSAA	99		25 - 150	01/21/21 18:12	01/22/21 18:19	1
d3-NMeFOSAA	107		25 - 150	01/21/21 18:12	01/22/21 18:19	1
13C3 HFPO-DA	113		25 - 150	01/21/21 18:12	01/22/21 18:19	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: PFAS

Job ID: 320-69099-1

Client Sample ID: MW-1901-150

Lab Sample ID: 320-69099-10

Date Collected: 01/19/21 11:51

Matrix: Water

Date Received: 01/20/21 15:45

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		01/21/21 18:12	01/22/21 18:29	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		01/21/21 18:12	01/22/21 18:29	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		01/21/21 18:12	01/22/21 18:29	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		01/21/21 18:12	01/22/21 18:29	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.29	ng/L		01/21/21 18:12	01/22/21 18:29	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		01/21/21 18:12	01/22/21 18:29	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		01/21/21 18:12	01/22/21 18:29	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		01/21/21 18:12	01/22/21 18:29	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		01/21/21 18:12	01/22/21 18:29	1
Perfluorobutanesulfonic acid (PFBS)	0.18	J	1.8	0.18	ng/L		01/21/21 18:12	01/22/21 18:29	1
Perfluorohexanesulfonic acid (PFHxS)	1.0	J	1.8	0.53	ng/L		01/21/21 18:12	01/22/21 18:29	1
Perfluorooctane sulfonate (PFOS)	ND		1.8	0.50	ng/L		01/21/21 18:12	01/22/21 18:29	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	ND		1.8	0.22	ng/L		01/21/21 18:12	01/22/21 18:29	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		01/21/21 18:12	01/22/21 18:29	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		01/21/21 18:12	01/22/21 18:29	1
11-Chloroeicosafuoro-3-oxaundecan e-1-sulfonic acid	ND		1.8	0.30	ng/L		01/21/21 18:12	01/22/21 18:29	1
N-ethylperfluorooctanesulfonamidoac etic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		01/21/21 18:12	01/22/21 18:29	1
N-methylperfluorooctanesulfonamidoa cetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		01/21/21 18:12	01/22/21 18:29	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	78		25 - 150	01/21/21 18:12	01/22/21 18:29	1
13C4 PFBA	68		25 - 150	01/21/21 18:12	01/22/21 18:29	1
13C2 PFHxA	77		25 - 150	01/21/21 18:12	01/22/21 18:29	1
13C4 PFOA	93		25 - 150	01/21/21 18:12	01/22/21 18:29	1
13C5 PFNA	92		25 - 150	01/21/21 18:12	01/22/21 18:29	1
13C2 PFDA	91		25 - 150	01/21/21 18:12	01/22/21 18:29	1
13C2 PFUnA	84		25 - 150	01/21/21 18:12	01/22/21 18:29	1
13C2 PFDoA	71		25 - 150	01/21/21 18:12	01/22/21 18:29	1
18O2 PFHxS	74		25 - 150	01/21/21 18:12	01/22/21 18:29	1
13C4 PFOS	75		25 - 150	01/21/21 18:12	01/22/21 18:29	1
13C4 PFHpA	85		25 - 150	01/21/21 18:12	01/22/21 18:29	1
13C5 PFPeA	73		25 - 150	01/21/21 18:12	01/22/21 18:29	1
d5-NEtFOSAA	56		25 - 150	01/21/21 18:12	01/22/21 18:29	1
d3-NMeFOSAA	65		25 - 150	01/21/21 18:12	01/22/21 18:29	1
13C3 HFPO-DA	80		25 - 150	01/21/21 18:12	01/22/21 18:29	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: PFAS

Job ID: 320-69099-1

Client Sample ID: EB-1901-150

Lab Sample ID: 320-69099-11

Date Collected: 01/19/21 12:00

Matrix: Water

Date Received: 01/20/21 15:45

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		01/21/21 18:12	01/22/21 18:38	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		01/21/21 18:12	01/22/21 18:38	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		01/21/21 18:12	01/22/21 18:38	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		01/21/21 18:12	01/22/21 18:38	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		01/21/21 18:12	01/22/21 18:38	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		01/21/21 18:12	01/22/21 18:38	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		01/21/21 18:12	01/22/21 18:38	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		01/21/21 18:12	01/22/21 18:38	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		01/21/21 18:12	01/22/21 18:38	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		01/21/21 18:12	01/22/21 18:38	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		01/21/21 18:12	01/22/21 18:38	1
Perfluorooctane sulfonate (PFOS)	ND		1.9	0.50	ng/L		01/21/21 18:12	01/22/21 18:38	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	ND		1.9	0.22	ng/L		01/21/21 18:12	01/22/21 18:38	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		01/21/21 18:12	01/22/21 18:38	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		01/21/21 18:12	01/22/21 18:38	1
11-Chloroeicosafuoro-3-oxaundecan e-1-sulfonic acid	ND		1.9	0.30	ng/L		01/21/21 18:12	01/22/21 18:38	1
N-ethylperfluorooctanesulfonamidoac etic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		01/21/21 18:12	01/22/21 18:38	1
N-methylperfluorooctanesulfonamidoa cetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		01/21/21 18:12	01/22/21 18:38	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	104		25 - 150	01/21/21 18:12	01/22/21 18:38	1
13C4 PFBA	95		25 - 150	01/21/21 18:12	01/22/21 18:38	1
13C2 PFHxA	101		25 - 150	01/21/21 18:12	01/22/21 18:38	1
13C4 PFOA	123		25 - 150	01/21/21 18:12	01/22/21 18:38	1
13C5 PFNA	127		25 - 150	01/21/21 18:12	01/22/21 18:38	1
13C2 PFDA	122		25 - 150	01/21/21 18:12	01/22/21 18:38	1
13C2 PFUnA	125		25 - 150	01/21/21 18:12	01/22/21 18:38	1
13C2 PFDoA	94		25 - 150	01/21/21 18:12	01/22/21 18:38	1
18O2 PFHxS	94		25 - 150	01/21/21 18:12	01/22/21 18:38	1
13C4 PFOS	99		25 - 150	01/21/21 18:12	01/22/21 18:38	1
13C4 PFHpA	112		25 - 150	01/21/21 18:12	01/22/21 18:38	1
13C5 PFPeA	99		25 - 150	01/21/21 18:12	01/22/21 18:38	1
d5-NEtFOSAA	84		25 - 150	01/21/21 18:12	01/22/21 18:38	1
d3-NMeFOSAA	90		25 - 150	01/21/21 18:12	01/22/21 18:38	1
13C3 HFPO-DA	109		25 - 150	01/21/21 18:12	01/22/21 18:38	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: PFAS

Job ID: 320-69099-1

Client Sample ID: MW-1901-40

Lab Sample ID: 320-69099-12

Date Collected: 01/19/21 10:52

Matrix: Water

Date Received: 01/20/21 15:45

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	1300		18	5.4	ng/L		01/21/21 18:12	01/23/21 17:27	10
Perfluoroheptanoic acid (PFHpA)	140		1.8	0.23	ng/L		01/21/21 18:12	01/22/21 18:47	1
Perfluorooctanoic acid (PFOA)	140		1.8	0.79	ng/L		01/21/21 18:12	01/22/21 18:47	1
Perfluorononanoic acid (PFNA)	0.25	J	1.8	0.25	ng/L		01/21/21 18:12	01/22/21 18:47	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.29	ng/L		01/21/21 18:12	01/22/21 18:47	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		01/21/21 18:12	01/22/21 18:47	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		01/21/21 18:12	01/22/21 18:47	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		01/21/21 18:12	01/22/21 18:47	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		01/21/21 18:12	01/22/21 18:47	1
Perfluorobutanesulfonic acid (PFBS)	880		18	1.8	ng/L		01/21/21 18:12	01/23/21 17:27	10
Perfluorohexanesulfonic acid (PFHxS)	2700		18	5.3	ng/L		01/21/21 18:12	01/23/21 17:27	10
Perfluorooctane sulfonate (PFOS)	300		1.8	0.50	ng/L		01/21/21 18:12	01/22/21 18:47	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	ND		1.8	0.22	ng/L		01/21/21 18:12	01/22/21 18:47	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		01/21/21 18:12	01/22/21 18:47	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		01/21/21 18:12	01/22/21 18:47	1
11-Chloroeicosafuoro-3-oxaundecan e-1-sulfonic acid	ND		1.8	0.30	ng/L		01/21/21 18:12	01/22/21 18:47	1
N-ethylperfluorooctanesulfonamidoac etic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		01/21/21 18:12	01/22/21 18:47	1
N-methylperfluorooctanesulfonamidoa cetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		01/21/21 18:12	01/22/21 18:47	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	109		25 - 150	01/21/21 18:12	01/22/21 18:47	1
13C4 PFBA	79		25 - 150	01/21/21 18:12	01/22/21 18:47	1
13C2 PFHxA	119		25 - 150	01/21/21 18:12	01/23/21 17:27	10
13C4 PFOA	123		25 - 150	01/21/21 18:12	01/22/21 18:47	1
13C5 PFNA	129		25 - 150	01/21/21 18:12	01/22/21 18:47	1
13C2 PFDA	133		25 - 150	01/21/21 18:12	01/22/21 18:47	1
13C2 PFUnA	117		25 - 150	01/21/21 18:12	01/22/21 18:47	1
13C2 PFDoA	124		25 - 150	01/21/21 18:12	01/22/21 18:47	1
18O2 PFHxS	110		25 - 150	01/21/21 18:12	01/23/21 17:27	10
13C4 PFOS	102		25 - 150	01/21/21 18:12	01/22/21 18:47	1
13C4 PFHpA	78		25 - 150	01/21/21 18:12	01/22/21 18:47	1
13C5 PFPeA	112		25 - 150	01/21/21 18:12	01/23/21 17:27	10
d5-NEtFOSAA	87		25 - 150	01/21/21 18:12	01/22/21 18:47	1
d3-NMeFOSAA	93		25 - 150	01/21/21 18:12	01/22/21 18:47	1
13C3 HFPO-DA	106		25 - 150	01/21/21 18:12	01/22/21 18:47	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: PFAS

Job ID: 320-69099-1

Client Sample ID: MW-1901-80

Lab Sample ID: 320-69099-13

Date Collected: 01/19/21 11:23

Matrix: Water

Date Received: 01/20/21 15:45

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		01/21/21 18:12	01/23/21 17:08	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		01/21/21 18:12	01/23/21 17:08	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		01/21/21 18:12	01/23/21 17:08	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		01/21/21 18:12	01/23/21 17:08	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		01/21/21 18:12	01/23/21 17:08	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		01/21/21 18:12	01/23/21 17:08	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		01/21/21 18:12	01/23/21 17:08	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		01/21/21 18:12	01/23/21 17:08	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		01/21/21 18:12	01/23/21 17:08	1
Perfluorobutanesulfonic acid (PFBS)	0.36	J	1.8	0.18	ng/L		01/21/21 18:12	01/23/21 17:08	1
Perfluorohexanesulfonic acid (PFHxS)	1.4	J	1.8	0.52	ng/L		01/21/21 18:12	01/23/21 17:08	1
Perfluorooctane sulfonate (PFOS)	0.86	J	1.8	0.50	ng/L		01/21/21 18:12	01/23/21 17:08	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	ND		1.8	0.22	ng/L		01/21/21 18:12	01/23/21 17:08	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		01/21/21 18:12	01/23/21 17:08	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		01/21/21 18:12	01/23/21 17:08	1
11-Chloroeicosafuoro-3-oxaundecan e-1-sulfonic acid	ND		1.8	0.29	ng/L		01/21/21 18:12	01/23/21 17:08	1
N-ethylperfluorooctanesulfonamidoac etic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		01/21/21 18:12	01/23/21 17:08	1
N-methylperfluorooctanesulfonamidoa cetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		01/21/21 18:12	01/23/21 17:08	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	130		25 - 150	01/21/21 18:12	01/23/21 17:08	1
13C4 PFBA	109		25 - 150	01/21/21 18:12	01/23/21 17:08	1
13C2 PFHxA	129		25 - 150	01/21/21 18:12	01/23/21 17:08	1
13C4 PFOA	146		25 - 150	01/21/21 18:12	01/23/21 17:08	1
13C5 PFNA	141		25 - 150	01/21/21 18:12	01/23/21 17:08	1
13C2 PFDA	135		25 - 150	01/21/21 18:12	01/23/21 17:08	1
13C2 PFUnA	125		25 - 150	01/21/21 18:12	01/23/21 17:08	1
13C2 PFDoA	122		25 - 150	01/21/21 18:12	01/23/21 17:08	1
18O2 PFHxS	134		25 - 150	01/21/21 18:12	01/23/21 17:08	1
13C4 PFOS	138		25 - 150	01/21/21 18:12	01/23/21 17:08	1
13C4 PFHpA	138		25 - 150	01/21/21 18:12	01/23/21 17:08	1
13C5 PFPeA	120		25 - 150	01/21/21 18:12	01/23/21 17:08	1
d5-NEtFOSAA	132		25 - 150	01/21/21 18:12	01/23/21 17:08	1
d3-NMeFOSAA	132		25 - 150	01/21/21 18:12	01/23/21 17:08	1
13C3 HFPO-DA	129		25 - 150	01/21/21 18:12	01/23/21 17:08	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: PFAS

Job ID: 320-69099-1

Client Sample ID: MW-2901-80

Lab Sample ID: 320-69099-14

Date Collected: 01/19/21 11:13

Matrix: Water

Date Received: 01/20/21 15:45

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.56	ng/L		01/21/21 18:12	01/22/21 19:05	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		01/21/21 18:12	01/22/21 19:05	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.82	ng/L		01/21/21 18:12	01/22/21 19:05	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		01/21/21 18:12	01/22/21 19:05	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		01/21/21 18:12	01/22/21 19:05	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		01/21/21 18:12	01/22/21 19:05	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		01/21/21 18:12	01/22/21 19:05	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.3	ng/L		01/21/21 18:12	01/22/21 19:05	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		01/21/21 18:12	01/22/21 19:05	1
Perfluorobutanesulfonic acid (PFBS)	0.28	J	1.9	0.19	ng/L		01/21/21 18:12	01/22/21 19:05	1
Perfluorohexanesulfonic acid (PFHxS)	1.4	J	1.9	0.55	ng/L		01/21/21 18:12	01/22/21 19:05	1
Perfluorooctane sulfonate (PFOS)	0.90	J	1.9	0.52	ng/L		01/21/21 18:12	01/22/21 19:05	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	ND		1.9	0.23	ng/L		01/21/21 18:12	01/22/21 19:05	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		01/21/21 18:12	01/22/21 19:05	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		01/21/21 18:12	01/22/21 19:05	1
11-Chloroeicosafuoro-3-oxaundecan e-1-sulfonic acid	ND		1.9	0.31	ng/L		01/21/21 18:12	01/22/21 19:05	1
N-ethylperfluorooctanesulfonamidoac etic acid (NEtFOSAA)	ND		4.8	1.3	ng/L		01/21/21 18:12	01/22/21 19:05	1
N-methylperfluorooctanesulfonamidoa cetic acid (NMeFOSAA)	ND		4.8	1.2	ng/L		01/21/21 18:12	01/22/21 19:05	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	157	*5+	25 - 150	01/21/21 18:12	01/22/21 19:05	1
13C4 PFBA	127		25 - 150	01/21/21 18:12	01/22/21 19:05	1
13C2 PFHxA	149		25 - 150	01/21/21 18:12	01/22/21 19:05	1
13C4 PFOA	188	*5+	25 - 150	01/21/21 18:12	01/22/21 19:05	1
13C5 PFNA	180	*5+	25 - 150	01/21/21 18:12	01/22/21 19:05	1
13C2 PFDA	180	*5+	25 - 150	01/21/21 18:12	01/22/21 19:05	1
13C2 PFUnA	166	*5+	25 - 150	01/21/21 18:12	01/22/21 19:05	1
13C2 PFDoA	150		25 - 150	01/21/21 18:12	01/22/21 19:05	1
18O2 PFHxS	145		25 - 150	01/21/21 18:12	01/22/21 19:05	1
13C4 PFOS	150		25 - 150	01/21/21 18:12	01/22/21 19:05	1
13C4 PFHpA	161	*5+	25 - 150	01/21/21 18:12	01/22/21 19:05	1
13C5 PFPeA	140		25 - 150	01/21/21 18:12	01/22/21 19:05	1
d5-NEtFOSAA	124		25 - 150	01/21/21 18:12	01/22/21 19:05	1
d3-NMeFOSAA	128		25 - 150	01/21/21 18:12	01/22/21 19:05	1
13C3 HFPO-DA	151	*5+	25 - 150	01/21/21 18:12	01/22/21 19:05	1

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: PFAS

Job ID: 320-69099-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFOSA (25-150)	PFBA (25-150)	PFHxA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)	PFDaA (25-150)
320-69099-1	MW-1902-15	102	51	91	96	112	107	102	102
320-69099-2	MW-2902-15	92	67	89	114	112	119	102	104
320-69099-3	EB-1902-15	97	87	92	117	106	125	107	93
320-69099-4	MW-1901-15	99	74		132	119	109	111	108
320-69099-4	MW-1901-15			121					
320-69099-5	MW-1902-40	99	82	100	124	120	118	107	94
320-69099-6	MW-1902-80	117	94	116	142	130	137	120	116
320-69099-7	MW-1902-150	119	101	120	137	140	137	126	136
320-69099-8	FB-FAI	96	92	95	113	117	118	109	94
320-69099-9	FB2-FAI	108	102	109	132	129	138	115	113
320-69099-10	MW-1901-150	78	68	77	93	92	91	84	71
320-69099-11	EB-1901-150	104	95	101	123	127	122	125	94
320-69099-12	MW-1901-40	109	79		123	129	133	117	124
320-69099-12	MW-1901-40			119					
320-69099-13	MW-1901-80	130	109	129	146	141	135	125	122
320-69099-14	MW-2901-80	157 *5+	127	149	188 *5+	180 *5+	180 *5+	166 *5+	150
LCS 320-454229/2-A	Lab Control Sample	113	110	115	134	135	125	132	141
LCSD 320-454229/3-A	Lab Control Sample Dup	136	132	139	163 *5+	155 *5+	167 *5+	157 *5+	175 *5+
MB 320-454229/1-A	Method Blank	118	110	118	142	135	140	123	145

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)						
		PFHxS (25-150)	PFOS (25-150)	C4PFHA (25-150)	PFPeA (25-150)	d5NEFOS (25-150)	d3NMFOS (25-150)	HFPODA (25-150)
320-69099-1	MW-1902-15	97	101	94	68	101	103	84
320-69099-2	MW-2902-15	84	89	100	76	76	74	92
320-69099-3	EB-1902-15	88	93	102	90	79	82	96
320-69099-4	MW-1901-15		86	93	86	67	74	110
320-69099-4	MW-1901-15	97						
320-69099-5	MW-1902-40	92	96	109	89	82	89	102
320-69099-6	MW-1902-80	103	107	127	103	89	94	115
320-69099-7	MW-1902-150	107	113	132	109	97	103	121
320-69099-8	FB-FAI	90	92	104	94	85	93	102
320-69099-9	FB2-FAI	99	106	113	105	99	107	113
320-69099-10	MW-1901-150	74	75	85	73	56	65	80
320-69099-11	EB-1901-150	94	99	112	99	84	90	109
320-69099-12	MW-1901-40		102	78		87	93	106
320-69099-12	MW-1901-40	110			112			
320-69099-13	MW-1901-80	134	138	138	120	132	132	129
320-69099-14	MW-2901-80	145	150	161 *5+	140	124	128	151 *5+
LCS 320-454229/2-A	Lab Control Sample	101	106	125	111	99	108	119
LCSD 320-454229/3-A	Lab Control Sample Dup	126	131	151 *5+	132	113	131	146
MB 320-454229/1-A	Method Blank	103	112	123	113	101	113	122

Surrogate Legend

- PFOSA = 13C8 FOSA
- PFBA = 13C4 PFBA
- PFHxA = 13C2 PFHxA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA

Isotope Dilution Summary

Client: Shannon & Wilson, Inc

Project/Site: PFAS

Job ID: 320-69099-1

PFD_oA = 13C₂ PFD_oA
PFH_xS = 18O₂ PFH_xS
PFOS = 13C₄ PFOS
C₄PFHA = 13C₄ PFH_pA
PFPeA = 13C₅ PFPeA
d₅NEFOS = d₅-NEtFOSAA
d₃NMFOS = d₃-NMeFOSAA
HFPODA = 13C₃ HFPO-DA

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: PFAS

Job ID: 320-69099-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-454229/1-A
Matrix: Water
Analysis Batch: 454590

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 454229

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		01/21/21 18:12	01/22/21 15:53	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		01/21/21 18:12	01/22/21 15:53	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		01/21/21 18:12	01/22/21 15:53	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		01/21/21 18:12	01/22/21 15:53	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		01/21/21 18:12	01/22/21 15:53	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		01/21/21 18:12	01/22/21 15:53	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		01/21/21 18:12	01/22/21 15:53	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		01/21/21 18:12	01/22/21 15:53	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		01/21/21 18:12	01/22/21 15:53	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		01/21/21 18:12	01/22/21 15:53	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		01/21/21 18:12	01/22/21 15:53	1
Perfluorooctane sulfonate (PFOS)	ND		2.0	0.54	ng/L		01/21/21 18:12	01/22/21 15:53	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	ND		2.0	0.24	ng/L		01/21/21 18:12	01/22/21 15:53	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		01/21/21 18:12	01/22/21 15:53	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		01/21/21 18:12	01/22/21 15:53	1
11-Chloroeicosafuoro-3-oxaundecan e-1-sulfonic acid	ND		2.0	0.32	ng/L		01/21/21 18:12	01/22/21 15:53	1
N-ethylperfluorooctanesulfonamidoac etic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		01/21/21 18:12	01/22/21 15:53	1
N-methylperfluorooctanesulfonamidoa cetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		01/21/21 18:12	01/22/21 15:53	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C8 FOSA	118		25 - 150	01/21/21 18:12	01/22/21 15:53	1
13C4 PFBA	110		25 - 150	01/21/21 18:12	01/22/21 15:53	1
13C2 PFHxA	118		25 - 150	01/21/21 18:12	01/22/21 15:53	1
13C4 PFOA	142		25 - 150	01/21/21 18:12	01/22/21 15:53	1
13C5 PFNA	135		25 - 150	01/21/21 18:12	01/22/21 15:53	1
13C2 PFDA	140		25 - 150	01/21/21 18:12	01/22/21 15:53	1
13C2 PFUnA	123		25 - 150	01/21/21 18:12	01/22/21 15:53	1
13C2 PFDoA	145		25 - 150	01/21/21 18:12	01/22/21 15:53	1
18O2 PFHxS	103		25 - 150	01/21/21 18:12	01/22/21 15:53	1
13C4 PFOS	112		25 - 150	01/21/21 18:12	01/22/21 15:53	1
13C4 PFHpA	123		25 - 150	01/21/21 18:12	01/22/21 15:53	1
13C5 PFPeA	113		25 - 150	01/21/21 18:12	01/22/21 15:53	1
d5-NEtFOSAA	101		25 - 150	01/21/21 18:12	01/22/21 15:53	1
d3-NMeFOSAA	113		25 - 150	01/21/21 18:12	01/22/21 15:53	1
13C3 HFPO-DA	122		25 - 150	01/21/21 18:12	01/22/21 15:53	1

Lab Sample ID: LCS 320-454229/2-A
Matrix: Water
Analysis Batch: 454590

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 454229

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoroheptanoic acid (PFHpA)	40.0	40.4		ng/L		101	72 - 132
Perfluorooctanoic acid (PFOA)	40.0	41.0		ng/L		102	70 - 130

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: PFAS

Job ID: 320-69099-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-454229/2-A
Matrix: Water
Analysis Batch: 454590

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 454229

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorononanoic acid (PFNA)	40.0	41.0		ng/L		102	75 - 135
Perfluorodecanoic acid (PFDA)	40.0	45.6		ng/L		114	76 - 136
Perfluoroundecanoic acid (PFUnA)	40.0	43.4		ng/L		109	68 - 128
Perfluorododecanoic acid (PFDoA)	40.0	41.2		ng/L		103	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	44.4		ng/L		111	71 - 131
Perfluorotetradecanoic acid (PFTeA)	40.0	49.2		ng/L		123	70 - 130
Perfluorobutanesulfonic acid (PFBS)	35.4	37.8		ng/L		107	67 - 127
Perfluorohexanesulfonic acid (PFHxS)	36.4	38.1		ng/L		105	59 - 119
Perfluorooctane sulfonate (PFOS)	37.1	38.7		ng/L		104	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	39.7		ng/L		107	75 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	43.8		ng/L		116	79 - 139
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	41.4		ng/L		104	51 - 173
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.7	38.7		ng/L		103	54 - 114
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	43.8		ng/L		110	76 - 136
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	38.2		ng/L		95	76 - 136

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C8 FOSA	113		25 - 150
13C4 PFBA	110		25 - 150
13C2 PFHxA	115		25 - 150
13C4 PFOA	134		25 - 150
13C5 PFNA	135		25 - 150
13C2 PFDA	125		25 - 150
13C2 PFUnA	132		25 - 150
13C2 PFDoA	141		25 - 150
18O2 PFHxS	101		25 - 150
13C4 PFOS	106		25 - 150
13C4 PFHpA	125		25 - 150
13C5 PFPeA	111		25 - 150
d5-NEtFOSAA	99		25 - 150
d3-NMeFOSAA	108		25 - 150
13C3 HFPO-DA	119		25 - 150

Lab Sample ID: LCSD 320-454229/3-A
Matrix: Water
Analysis Batch: 454590

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 454229

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	41.0		ng/L		102	73 - 133	2	30

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: PFAS

Job ID: 320-69099-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-454229/3-A
Matrix: Water
Analysis Batch: 454590

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 454229

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoroheptanoic acid (PFHpA)	40.0	41.7		ng/L		104	72 - 132	3	30
Perfluorooctanoic acid (PFOA)	40.0	40.0		ng/L		100	70 - 130	2	30
Perfluorononanoic acid (PFNA)	40.0	44.8		ng/L		112	75 - 135	9	30
Perfluorodecanoic acid (PFDA)	40.0	41.3		ng/L		103	76 - 136	10	30
Perfluoroundecanoic acid (PFUnA)	40.0	39.4		ng/L		98	68 - 128	10	30
Perfluorododecanoic acid (PFDoA)	40.0	40.8		ng/L		102	71 - 131	1	30
Perfluorotridecanoic acid (PFTriA)	40.0	43.1		ng/L		108	71 - 131	3	30
Perfluorotetradecanoic acid (PFTeA)	40.0	41.3		ng/L		103	70 - 130	18	30
Perfluorobutanesulfonic acid (PFBS)	35.4	37.2		ng/L		105	67 - 127	2	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	36.3		ng/L		100	59 - 119	5	30
Perfluorooctane sulfonate (PFOS)	37.1	38.6		ng/L		104	70 - 130	0	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	38.2		ng/L		102	75 - 135	4	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	42.7		ng/L		113	79 - 139	3	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	40.8		ng/L		102	51 - 173	2	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	36.4		ng/L		97	54 - 114	6	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	44.6		ng/L		112	76 - 136	2	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	37.4		ng/L		94	76 - 136	2	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C8 FOSA	136		25 - 150
13C4 PFBA	132		25 - 150
13C2 PFHxA	139		25 - 150
13C4 PFOA	163	*5+	25 - 150
13C5 PFNA	155	*5+	25 - 150
13C2 PFDA	167	*5+	25 - 150
13C2 PFUnA	157	*5+	25 - 150
13C2 PFDoA	175	*5+	25 - 150
18O2 PFHxS	126		25 - 150
13C4 PFOS	131		25 - 150
13C4 PFHpA	151	*5+	25 - 150
13C5 PFPeA	132		25 - 150
d5-NEtFOSAA	113		25 - 150
d3-NMeFOSAA	131		25 - 150
13C3 HFPO-DA	146		25 - 150

QC Association Summary

Client: Shannon & Wilson, Inc
Project/Site: PFAS

Job ID: 320-69099-1

LCMS

Prep Batch: 454229

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-69099-1	MW-1902-15	Total/NA	Water	3535	
320-69099-2	MW-2902-15	Total/NA	Water	3535	
320-69099-3	EB-1902-15	Total/NA	Water	3535	
320-69099-4	MW-1901-15	Total/NA	Water	3535	
320-69099-5	MW-1902-40	Total/NA	Water	3535	
320-69099-6	MW-1902-80	Total/NA	Water	3535	
320-69099-7	MW-1902-150	Total/NA	Water	3535	
320-69099-8	FB-FAI	Total/NA	Water	3535	
320-69099-9	FB2-FAI	Total/NA	Water	3535	
320-69099-10	MW-1901-150	Total/NA	Water	3535	
320-69099-11	EB-1901-150	Total/NA	Water	3535	
320-69099-12	MW-1901-40	Total/NA	Water	3535	
320-69099-13	MW-1901-80	Total/NA	Water	3535	
320-69099-14	MW-2901-80	Total/NA	Water	3535	
MB 320-454229/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-454229/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-454229/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 454590

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-69099-2	MW-2902-15	Total/NA	Water	537 (modified)	454229
320-69099-3	EB-1902-15	Total/NA	Water	537 (modified)	454229
320-69099-4	MW-1901-15	Total/NA	Water	537 (modified)	454229
320-69099-5	MW-1902-40	Total/NA	Water	537 (modified)	454229
320-69099-6	MW-1902-80	Total/NA	Water	537 (modified)	454229
320-69099-7	MW-1902-150	Total/NA	Water	537 (modified)	454229
320-69099-8	FB-FAI	Total/NA	Water	537 (modified)	454229
320-69099-9	FB2-FAI	Total/NA	Water	537 (modified)	454229
320-69099-10	MW-1901-150	Total/NA	Water	537 (modified)	454229
320-69099-11	EB-1901-150	Total/NA	Water	537 (modified)	454229
320-69099-12	MW-1901-40	Total/NA	Water	537 (modified)	454229
320-69099-14	MW-2901-80	Total/NA	Water	537 (modified)	454229
MB 320-454229/1-A	Method Blank	Total/NA	Water	537 (modified)	454229
LCS 320-454229/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	454229
LCSD 320-454229/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	454229

Analysis Batch: 454853

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-69099-1	MW-1902-15	Total/NA	Water	537 (modified)	454229
320-69099-4	MW-1901-15	Total/NA	Water	537 (modified)	454229
320-69099-12	MW-1901-40	Total/NA	Water	537 (modified)	454229
320-69099-13	MW-1901-80	Total/NA	Water	537 (modified)	454229

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: PFAS

Job ID: 320-69099-1

Client Sample ID: MW-1902-15

Date Collected: 01/18/21 12:40

Date Received: 01/20/21 15:45

Lab Sample ID: 320-69099-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			264.2 mL	10.00 mL	454229	01/21/21 18:12	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			454853	01/23/21 18:04	RS1	TAL SAC

Client Sample ID: MW-2902-15

Date Collected: 01/18/21 12:30

Date Received: 01/20/21 15:45

Lab Sample ID: 320-69099-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			265 mL	10.00 mL	454229	01/21/21 18:12	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			454590	01/22/21 16:57	K1S	TAL SAC

Client Sample ID: EB-1902-15

Date Collected: 01/18/21 13:00

Date Received: 01/20/21 15:45

Lab Sample ID: 320-69099-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			282.7 mL	10.00 mL	454229	01/21/21 18:12	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			454590	01/22/21 17:06	K1S	TAL SAC

Client Sample ID: MW-1901-15

Date Collected: 01/18/21 11:40

Date Received: 01/20/21 15:45

Lab Sample ID: 320-69099-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			274.1 mL	10.00 mL	454229	01/21/21 18:12	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			454590	01/22/21 17:15	K1S	TAL SAC
Total/NA	Prep	3535			274.1 mL	10.00 mL	454229	01/21/21 18:12	VP	TAL SAC
Total/NA	Analysis	537 (modified)		10			454853	01/23/21 17:18	RS1	TAL SAC

Client Sample ID: MW-1902-40

Date Collected: 01/18/21 14:12

Date Received: 01/20/21 15:45

Lab Sample ID: 320-69099-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			273.7 mL	10.00 mL	454229	01/21/21 18:12	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			454590	01/22/21 17:43	K1S	TAL SAC

Client Sample ID: MW-1902-80

Date Collected: 01/18/21 14:45

Date Received: 01/20/21 15:45

Lab Sample ID: 320-69099-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			274.5 mL	10.00 mL	454229	01/21/21 18:12	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			454590	01/22/21 17:52	K1S	TAL SAC

Eurofins TestAmerica, Sacramento

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: PFAS

Job ID: 320-69099-1

Client Sample ID: MW-1902-150

Date Collected: 01/18/21 15:22

Date Received: 01/20/21 15:45

Lab Sample ID: 320-69099-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			267.9 mL	10.00 mL	454229	01/21/21 18:12	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			454590	01/22/21 18:01	K1S	TAL SAC

Client Sample ID: FB-FAI

Date Collected: 01/18/21 15:45

Date Received: 01/20/21 15:45

Lab Sample ID: 320-69099-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			270.4 mL	10.00 mL	454229	01/21/21 18:12	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			454590	01/22/21 18:10	K1S	TAL SAC

Client Sample ID: FB2-FAI

Date Collected: 01/19/21 12:10

Date Received: 01/20/21 15:45

Lab Sample ID: 320-69099-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			268.6 mL	10.00 mL	454229	01/21/21 18:12	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			454590	01/22/21 18:19	K1S	TAL SAC

Client Sample ID: MW-1901-150

Date Collected: 01/19/21 11:51

Date Received: 01/20/21 15:45

Lab Sample ID: 320-69099-10

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			271.1 mL	10.00 mL	454229	01/21/21 18:12	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			454590	01/22/21 18:29	K1S	TAL SAC

Client Sample ID: EB-1901-150

Date Collected: 01/19/21 12:00

Date Received: 01/20/21 15:45

Lab Sample ID: 320-69099-11

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			268.5 mL	10.00 mL	454229	01/21/21 18:12	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			454590	01/22/21 18:38	K1S	TAL SAC

Client Sample ID: MW-1901-40

Date Collected: 01/19/21 10:52

Date Received: 01/20/21 15:45

Lab Sample ID: 320-69099-12

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			270.6 mL	10.00 mL	454229	01/21/21 18:12	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			454590	01/22/21 18:47	K1S	TAL SAC
Total/NA	Prep	3535			270.6 mL	10.00 mL	454229	01/21/21 18:12	VP	TAL SAC
Total/NA	Analysis	537 (modified)		10			454853	01/23/21 17:27	RS1	TAL SAC

Eurofins TestAmerica, Sacramento

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: PFAS

Job ID: 320-69099-1

Client Sample ID: MW-1901-80

Lab Sample ID: 320-69099-13

Date Collected: 01/19/21 11:23

Matrix: Water

Date Received: 01/20/21 15:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			272.7 mL	10.00 mL	454229	01/21/21 18:12	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			454853	01/23/21 17:08	RS1	TAL SAC

Client Sample ID: MW-2901-80

Lab Sample ID: 320-69099-14

Date Collected: 01/19/21 11:13

Matrix: Water

Date Received: 01/20/21 15:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			259.9 mL	10.00 mL	454229	01/21/21 18:12	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			454590	01/22/21 19:05	K1S	TAL SAC

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: Shannon & Wilson, Inc
Project/Site: PFAS

Job ID: 320-69099-1

Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2468	01-20-24
ANAB	Dept. of Energy	L2468.01	01-20-21 *
ANAB	ISO/IEC 17025	L2468	01-20-21 *
Arizona	State	AZ0708	08-11-21
Arkansas DEQ	State	88-0691	06-17-21
California	State	2897	01-31-22
Colorado	State	CA0004	08-31-21
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-21
Georgia	State	4040	01-30-21
Hawaii	State	<cert No.>	01-29-21
Illinois	NELAP	200060	03-17-21
Kansas	NELAP	E-10375	02-01-21
Louisiana	NELAP	01944	06-30-21
Maine	State	CA00004	04-14-22
Michigan	State	9947	01-29-21
Nevada	State	CA000442021-2	07-31-21
New Hampshire	NELAP	2997	04-18-21
New Jersey	NELAP	CA005	06-30-21
New York	NELAP	11666	04-01-21
Ohio	State	41252	01-29-22
Oregon	NELAP	4040	01-29-21
Pennsylvania	NELAP	68-01272	03-31-21
Texas	NELAP	T104704399-19-13	06-01-21
US Fish & Wildlife	US Federal Programs	58448	07-31-21
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-28-21
Vermont	State	VT-4040	04-16-21
Virginia	NELAP	460278	03-14-21
Washington	State	C581	05-05-21
West Virginia (DW)	State	9930C	12-31-21
Wisconsin	State	998204680	08-31-21
Wyoming	State Program	8TMS-L	01-28-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins TestAmerica, Sacramento

Method Summary

Client: Shannon & Wilson, Inc
Project/Site: PFAS

Job ID: 320-69099-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
3535	Solid-Phase Extraction (SPE)	SW846	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600



Sample Summary

Client: Shannon & Wilson, Inc
Project/Site: PFAS

Job ID: 320-69099-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-69099-1	MW-1902-15	Water	01/18/21 12:40	01/20/21 15:45	
320-69099-2	MW-2902-15	Water	01/18/21 12:30	01/20/21 15:45	
320-69099-3	EB-1902-15	Water	01/18/21 13:00	01/20/21 15:45	
320-69099-4	MW-1901-15	Water	01/18/21 11:40	01/20/21 15:45	
320-69099-5	MW-1902-40	Water	01/18/21 14:12	01/20/21 15:45	
320-69099-6	MW-1902-80	Water	01/18/21 14:45	01/20/21 15:45	
320-69099-7	MW-1902-150	Water	01/18/21 15:22	01/20/21 15:45	
320-69099-8	FB-FAI	Water	01/18/21 15:45	01/20/21 15:45	
320-69099-9	FB2-FAI	Water	01/19/21 12:10	01/20/21 15:45	
320-69099-10	MW-1901-150	Water	01/19/21 11:51	01/20/21 15:45	
320-69099-11	EB-1901-150	Water	01/19/21 12:00	01/20/21 15:45	
320-69099-12	MW-1901-40	Water	01/19/21 10:52	01/20/21 15:45	
320-69099-13	MW-1901-80	Water	01/19/21 11:23	01/20/21 15:45	
320-69099-14	MW-2901-80	Water	01/19/21 11:13	01/20/21 15:45	



2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600
www.shannonwilson.com

CHAIN-OF-CUSTODY RECORD

Laboratory Page 1 of 2
Test America
Attn: *David Allfucker*

Analytical Methods (include preservative if used)

Quote No: _____

Turn Around Time:
 Normal Rush
 Please Specify _____

J-Flags: Yes No

PRAS EPA 537.1

Remarks/Matrix Composition/Grab? Sample Containers

Sample Identity	Lab No.	Time	Date Sampled	Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
MW-1902-15		12:40	1-18	X		2 GW, Grab
MW-2902-15		12:30	1-18	X		2 GW, Grab
MW-1902-15						
EB-1902-15		13:00	1-18	X		2 GW, Grab ^{Equipment} Blank
MW-1901-15		11:40	1-18	X		2 GW, Grab
MW-1902-40		14:12	1-18	X		2 GW, Grab
MW-1902-80		14:45	1-18	X		2 GW, Grab
MW-1902-150		15:22	1-18	X		2 GW, Grab
FB-FAI		15:45	1-18	X		2 GW, Grab Field Blank
FB2-FAI		12:10	1-19	X		Field Blank



Project Information

Number: 102519
 Name: FAI FTP MW
 Contact: MON
 Ongoing Project? Yes No
 Sampler: JKR, APW

Sample Receipt

Total No. of Containers: 26
 COC Seals/intact? Y/N/NA Ye
 Received Good Cond./Cold Yes
 Temp: 1.4c
 Delivery Method: AK Air Cargo

Notes:

Signature: _____
 Printed Name: _____
 Company: _____

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
 Yellow - w/shipment - for consignee files
 Pink - Shannon & Wilson - job file



No. 36367

CHAIN-OF-CUSTODY RECORD

Analytical Methods (include preservative if used)

PFAS EPA 537.1

Turn Around Time:
 Normal Rush
 Please Specify

Quote No: _____

J-Flags: Yes No

Sample Identity	Lab No.	Time	Date Sampled	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
MW-1901-150		11:51	1-19	2	GW, Grab
EB-1901-150		12:00	1-19	2	Equipment Blank
MW-1901-40		10:52	1-19	2	GW, Grab
MW-1901-80		11:23	1-19	2	GW, Grab
MW-2901-80		11:13	1-19	2	GW, Grab

Project Information	Sample Receipt	Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Number: <u>102519</u>	Total No. of Containers: <u>26</u>	Signature: <u>Adam Wyborny</u>	Signature: _____	Signature: _____
Name: <u>FAI FTPMW</u>	COC Seals/Intact? <u>Y/N/A</u> <u>Yes</u>	Printed Name: <u>Adam Wyborny</u>	Printed Name: _____	Printed Name: _____
Contact: <u>MDN</u>	Received Good Cond./Cold <u>Yes</u>	Date: <u>1/19/21</u>	Date: _____	Date: _____
Ongoing Project? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Temp: <u>1-4C</u>	Company: <u>Shannon & Wilson</u>	Company: _____	Company: _____
Sampler: <u>SKR, APW</u>	Delivery Method: <u>AK Air Cargo</u>	Received By: 1.	Received By: 2.	Received By: 3.
Notes:				
Signature: <u>[Signature]</u> Time: <u>1545</u>				
Printed Name: <u>David Hr</u> Date: <u>1/20/21</u>				
Company: <u>ETAS</u>				

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
 Yellow - w/shipment - for consignee files
 Pink - Shannon & Wilson - job file

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-69099-1

Login Number: 69099

List Source: Eurofins TestAmerica, Sacramento

List Number: 1

Creator: Her, David A

Question	Answer	Comment
Radioactivity wasn't checked or is < /= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	SEALS
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is < 6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Laboratory Data Review Checklist

Completed By:

Justin Risley

Title:

Engineering Staff

Date:

February 2, 2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins TestAmerica, Sacramento

Laboratory Report Number:

320-69099-1

Laboratory Report Date:

January 26, 2021

CS Site Name:

Fairbanks DOT&PF PFAS

ADEC File Number:

100.38.277

Hazard Identification Number:

26816

320-69099-1

Laboratory Report Date:

January 26, 2021

CS Site Name:

Fairbanks DOT&PF PFAS

Note: Any N/A or No box checked must have an explanation in the comments box.

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes No N/A Comments:

The ADEC certified the TestAmerica/Eurofins Laboratories West Sacramento, CA location for the analysis of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) by method 537 on February 6, 2018. These compounds were included in the ADEC's Contaminated Sites Laboratory Approval 17-020.

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes No N/A Comments:

Analyses were performed by TestAmerica Laboratories, Inc. in West Sacramento, CA.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes No N/A Comments:

b. Correct analyses requested?

Yes No N/A Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes No N/A Comments:

The temperature blank was measured within the acceptable temperature range of 0 °C to 6 °C upon arrival at the laboratory. The temperature of the sample cooler upon receipt was 1.4°C.

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes No N/A Comments:

Analysis of PFAS compounds in groundwater does not require chemical preservation outside of temperature control.

320-69099-1

Laboratory Report Date:

January 26, 2021

CS Site Name:

Fairbanks DOT&PF PFAS

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes No N/A Comments:

The sample receipt form notes the samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes No N/A Comments:

There were no discrepancies noted by the laboratory in the sample receipt documentation.

e. Data quality or usability affected?

Comments:

Data quality and/or usability are not affected; see above.

4. Case Narrative

a. Present and understandable?

Yes No N/A Comments:

The samples arrived in good condition, properly preserved, and within the required temperature range.

320-69099-1

Laboratory Report Date:

January 26, 2021

CS Site Name:

Fairbanks DOT&PF PFAS

b. Discrepancies, errors, or QC failures identified by the lab?

Yes No N/A Comments:

There was insufficient sample volume available to perform a matrix spike (MS) and MS duplicate (MSD) in conjunction with laboratory preparation batch 320-454229.

The following samples were beige prior to extraction: *MW-1902-15*, *MW-2902-15*, *MW-1901-15*, *MW-1902-40*, and *MW-1901-40*.

The following samples were cloudy prior to extraction: *MW-1902-80*, *MW-1902-150*, *MW-1901-80*, and *MW-2901-80*.

The following samples contained some sediments prior to extraction: *MW-1901-150*.

The following sample contained sediments which clogged the cartridge during extraction: *MW-1901-150*.

The following sample was cloudy at final volume: *MW-2902-15*.

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for several analytes in the following samples: *MW-2901-80* (320-69099-14) and (LCSD 320-454229/3-A). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for ¹³C₂ PFHxDA in the following samples: *MW-1902-150* (320-69099-7), *FB2-FAI* (320-69099-9) and (LCS 320-454229/2-A). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries. This is not a target analyte for the project and therefore the project sample results are not affected.

Method 537 (modified): Results for samples *MW-1901-15* (320-69099-4) and *MW-1901-40* (320-69099-12) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits.

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for ¹³C₂ PFTeDA and ¹³C₂ PFHxDA in the following method blank (MB): (MB 320-454229/1-A). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries. These are not target analytes for the project and therefore project sample results are not affected.

c. Were all corrective actions documented?

Yes No N/A Comments:

See above.

320-69099-1

Laboratory Report Date:

January 26, 2021

CS Site Name:

Fairbanks DOT&PF PFAS

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The case narrative does not note an effect on data quality.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes No N/A Comments:

b. All applicable holding times met?

Yes No N/A Comments:

The samples were analyzed within the 14-day hold time for extraction and 40-day hold time for analysis using solid phase extraction (SPE).

c. All soils reported on a dry weight basis?

Yes No N/A Comments:

This work order does not include soil samples.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes No N/A Comments:

The LOQ, equivalent to the TestAmerica Reporting Limit (RL), for PFOS and PFOA are less than the DEC groundwater-cleanup levels for these analytes, where detected.

e. Data quality or usability affected?

The data quality and/or usability are not affected.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

320-69099-1

Laboratory Report Date:

January 26, 2021

CS Site Name:

Fairbanks DOT&PF PFAS

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes No N/A Comments:

No analytes were detected in the method blank.

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

N/A; see above.

v. Data quality or usability affected?

Comments:

The data quality and/or usability are not affected.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes No N/A Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

Metals and/or inorganics were not analyzed as part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

320-69099-1

Laboratory Report Date:

January 26, 2021

CS Site Name:

Fairbanks DOT&PF PFAS

- iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

None; analytical accuracy and precision were demonstrated to be within acceptable limits.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

- vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability are not affected.

- c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Note: Leave blank if not required for project

- i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

Sufficient volume was not available to complete an MS/MSD for the project sample set. Precision and accuracy were evaluated using the LCS/LCSD samples.

- ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

Metals and/or inorganics were not analyzed as part of this work order.

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes No N/A Comments:

See above.

320-69099-1

Laboratory Report Date:

January 26, 2021

CS Site Name:

Fairbanks DOT&PF PFAS

- iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes No N/A Comments:

See above.

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Not applicable, see above.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

- vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability are not affected.

- d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

- i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes No N/A Comments:

Method 537M uses IDA, which entails adding ¹³C-isotopes of certain target analytes to assess recovery.

- ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes No N/A Comments:

The % recovery for ¹³C₄ PFOA, ¹³C₅ PFNA, ¹³C₂ PFDA, ¹³C₂ PFUnA, ¹³C₂ PFDoA, ¹³C₄ PFHpA were above the limits for project sample MW-2901-80. There were several IDA failures associated with the LCSD samples.

320-69099-1

Laboratory Report Date:

January 26, 2021

CS Site Name:

Fairbanks DOT&PF PFAS

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

The associated data are not affected by above-limit IDA failures for non-detect results. We consider analyte PFBS to be affected due to the IDA failures. The result is considered estimated, flagged 'J' in the analytical database.

LCSD results are not affected by the IDA failures.

iv. Data quality or usability affected?

Comments:

The data quality and/or usability are affected; see above.

e. Trip Blanks

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes No N/A Comments:

PFAS are not volatile; therefore, a trip blank is not required.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes No N/A Comments:

See above.

iii. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

See above.

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

None; a trip blank was not submitted with this work order.

v. Data quality or usability affected?

Comments:

The data quality and/or usability are not affected; see above.

320-69099-1

Laboratory Report Date:

January 26, 2021

CS Site Name:

Fairbanks DOT&PF PFAS

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No N/A Comments:

ii. Submitted blind to lab?

Yes No N/A Comments:

Field-duplicate pairs *MW-1902-15 / MW-2902-15* and *MW-1901-80 / MW-2901-80* were submitted with this work order.

iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2) / 2)} \times 100$$

Where R_1 = Sample Concentration
 R_2 = Field Duplicate Concentration

Yes No N/A Comments:

Where calculable, the RPDs were within laboratory limits for the project analytes.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The data quality and/or usability are not affected; see above.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes No N/A Comments:

Equipment blank samples *EB-1901-150* and *EB-1902-15* were submitted with this work order. Additionally, field blank samples *FB-FAI* and *FB2-FAI* were submitted with this work order.

i. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

None of the project analytes were detected in the blank samples.

320-69099-1

Laboratory Report Date:

January 26, 2021

CS Site Name:

Fairbanks DOT&PF PFAS

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above.

iii. Data quality or usability affected?

Comments:

The data quality and/or usability are not affected; see above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes No N/A

Comments:

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-72496-1
Client Project/Site: FAI FTP

For:

Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

Attn: Marcy Nadel



Authorized for release by:
4/29/2021 12:33:27 PM

David Alltucker, Project Manager I
(916)374-4383
David.Alltucker@Eurofinset.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:

www.eurofinsus.com/Env

The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



Table of Contents

Cover Page	1
Table of Contents	2
Definitions/Glossary	3
Case Narrative	4
Detection Summary	5
Client Sample Results	7
Isotope Dilution Summary	18
QC Sample Results	20
QC Association Summary	23
Lab Chronicle	24
Certification Summary	26
Method Summary	27
Sample Summary	28
Chain of Custody	29
Receipt Checklists	31

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: FAI FTP

Job ID: 320-72496-1

Qualifiers

LCMS

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Shannon & Wilson, Inc
Project/Site: FAI FTP

Job ID: 320-72496-1

Job ID: 320-72496-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative 320-72496-1

Receipt

The samples were received on 4/15/2021 3:35 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.3° C.

LCMS

Method EPA 537(Mod): Results for samples MW-1901-15 (320-72496-1), MW-1901-115 (320-72496-2) and MW-1901-40 (320-72496-5) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits.

Method EPA 537(Mod): The following field blank (FB) contains several analytes above half the reporting limit: FB-1901-15 (320-72496-4). The FB was re-analyzed with concurring results. The sample was re-extracted with improved results; however, due to an error during extraction the method blank (MB) and laboratory control sample (LCS) did not recover any isotope dilution analytes (IDA). Due to insufficient sample volume, there samples cannot be re-extraction again; therefore, the original data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-480507.

Method 3535: The following samples were yellow and contained a thin layer of sediment at the bottom of the bottle prior to extraction: MW-1901-15 (320-72496-1), MW-1901-115 (320-72496-2), MW-1901-40 (320-72496-5), MW-1901-80 (320-72496-6), MW-1901-150 (320-72496-7), MW-1902-15 (320-72496-8), MW-1902-40 (320-72496-9), MW-1902-80 (320-72496-10) and MW-1902-150 (320-72496-11).

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-482642.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI FTP

Job ID: 320-72496-1

Client Sample ID: MW-1901-15

Lab Sample ID: 320-72496-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	65		1.8	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	88		1.8	0.77	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	46		1.8	0.49	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanoic acid (PFHxA) - DL	750		18	5.3	ng/L	10		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	420		18	1.8	ng/L	10		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	1700		18	5.2	ng/L	10		EPA 537(Mod)	Total/NA

Client Sample ID: MW-1901-115

Lab Sample ID: 320-72496-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	64		1.8	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	91		1.8	0.78	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	47		1.8	0.50	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanoic acid (PFHxA) - DL	740		18	5.3	ng/L	10		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	460		18	1.8	ng/L	10		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	1900		18	5.2	ng/L	10		EPA 537(Mod)	Total/NA

Client Sample ID: EB-1901-15

Lab Sample ID: 320-72496-3

No Detections.

Client Sample ID: FB-1901-15

Lab Sample ID: 320-72496-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.4	J	1.8	0.51	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.2	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	4.0		1.8	0.50	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.68	J	1.8	0.48	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: MW-1901-40

Lab Sample ID: 320-72496-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	150		1.8	0.22	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	170		1.8	0.75	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanoic acid (PFHxA) - DL	1200		35	10	ng/L	20		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	940		35	3.5	ng/L	20		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	2600		35	10	ng/L	20		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	450		35	9.5	ng/L	20		EPA 537(Mod)	Total/NA

Client Sample ID: MW-1901-80

Lab Sample ID: 320-72496-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.4	J	1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.76	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.6		1.8	0.51	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.1	J	1.8	0.48	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI FTP

Job ID: 320-72496-1

Client Sample ID: MW-1901-150

Lab Sample ID: 320-72496-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	1.0	J	1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: MW-1902-15

Lab Sample ID: 320-72496-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	11		1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.2		1.9	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	4.6		1.9	0.80	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	5.1		1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	45		1.9	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	13		1.9	0.51	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: MW-1902-40

Lab Sample ID: 320-72496-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.60	J	1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.5	J	1.8	0.51	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.1		1.8	0.48	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: MW-1902-80

Lab Sample ID: 320-72496-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	1.1	J	1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: MW-1902-150

Lab Sample ID: 320-72496-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	1.2	J	2.0	0.56	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.86	J	2.0	0.53	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI FTP

Job ID: 320-72496-1

Client Sample ID: MW-1901-15

Lab Sample ID: 320-72496-1

Date Collected: 04/13/21 16:47

Matrix: Water

Date Received: 04/15/21 15:35

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	65		1.8	0.23	ng/L		04/17/21 05:14	04/20/21 19:25	1
Perfluorooctanoic acid (PFOA)	88		1.8	0.77	ng/L		04/17/21 05:14	04/20/21 19:25	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		04/17/21 05:14	04/20/21 19:25	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		04/17/21 05:14	04/20/21 19:25	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		04/17/21 05:14	04/20/21 19:25	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		04/17/21 05:14	04/20/21 19:25	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		04/17/21 05:14	04/20/21 19:25	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		04/17/21 05:14	04/20/21 19:25	1
Perfluorooctanesulfonic acid (PFOS)	46		1.8	0.49	ng/L		04/17/21 05:14	04/20/21 19:25	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		04/17/21 05:14	04/20/21 19:25	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		04/17/21 05:14	04/20/21 19:25	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		04/17/21 05:14	04/20/21 19:25	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		04/17/21 05:14	04/20/21 19:25	1
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		04/17/21 05:14	04/20/21 19:25	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		04/17/21 05:14	04/20/21 19:25	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFHpA	76		50 - 150	04/17/21 05:14	04/20/21 19:25	1
13C4 PFOA	92		50 - 150	04/17/21 05:14	04/20/21 19:25	1
13C5 PFNA	103		50 - 150	04/17/21 05:14	04/20/21 19:25	1
13C2 PFDA	90		50 - 150	04/17/21 05:14	04/20/21 19:25	1
13C2 PFUnA	88		50 - 150	04/17/21 05:14	04/20/21 19:25	1
13C2 PFDoA	90		50 - 150	04/17/21 05:14	04/20/21 19:25	1
13C2 PFTeDA	103		50 - 150	04/17/21 05:14	04/20/21 19:25	1
13C3 PFBS	61		50 - 150	04/17/21 05:14	04/20/21 19:25	1
13C4 PFOS	89		50 - 150	04/17/21 05:14	04/20/21 19:25	1
d3-NMeFOSAA	96		50 - 150	04/17/21 05:14	04/20/21 19:25	1
d5-NEtFOSAA	92		50 - 150	04/17/21 05:14	04/20/21 19:25	1
13C3 HFPO-DA	73		50 - 150	04/17/21 05:14	04/20/21 19:25	1

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	750		18	5.3	ng/L		04/17/21 05:14	04/22/21 17:54	10
Perfluorobutanesulfonic acid (PFBS)	420		18	1.8	ng/L		04/17/21 05:14	04/22/21 17:54	10
Perfluorohexanesulfonic acid (PFHxS)	1700		18	5.2	ng/L		04/17/21 05:14	04/22/21 17:54	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	98		50 - 150	04/17/21 05:14	04/22/21 17:54	10
13C3 PFBS	78		50 - 150	04/17/21 05:14	04/22/21 17:54	10
18O2 PFHxS	95		50 - 150	04/17/21 05:14	04/22/21 17:54	10

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI FTP

Job ID: 320-72496-1

Client Sample ID: MW-1901-115

Lab Sample ID: 320-72496-2

Date Collected: 04/13/21 16:57

Matrix: Water

Date Received: 04/15/21 15:35

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	64		1.8	0.23	ng/L		04/17/21 05:14	04/20/21 19:34	1
Perfluorooctanoic acid (PFOA)	91		1.8	0.78	ng/L		04/17/21 05:14	04/20/21 19:34	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		04/17/21 05:14	04/20/21 19:34	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.29	ng/L		04/17/21 05:14	04/20/21 19:34	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		04/17/21 05:14	04/20/21 19:34	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		04/17/21 05:14	04/20/21 19:34	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		04/17/21 05:14	04/20/21 19:34	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		04/17/21 05:14	04/20/21 19:34	1
Perfluorooctanesulfonic acid (PFOS)	47		1.8	0.50	ng/L		04/17/21 05:14	04/20/21 19:34	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		04/17/21 05:14	04/20/21 19:34	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		04/17/21 05:14	04/20/21 19:34	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		04/17/21 05:14	04/20/21 19:34	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		04/17/21 05:14	04/20/21 19:34	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		04/17/21 05:14	04/20/21 19:34	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		04/17/21 05:14	04/20/21 19:34	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFHpA	77		50 - 150	04/17/21 05:14	04/20/21 19:34	1
13C4 PFOA	91		50 - 150	04/17/21 05:14	04/20/21 19:34	1
13C5 PFNA	108		50 - 150	04/17/21 05:14	04/20/21 19:34	1
13C2 PFDA	89		50 - 150	04/17/21 05:14	04/20/21 19:34	1
13C2 PFUnA	93		50 - 150	04/17/21 05:14	04/20/21 19:34	1
13C2 PFDoA	91		50 - 150	04/17/21 05:14	04/20/21 19:34	1
13C2 PFTeDA	107		50 - 150	04/17/21 05:14	04/20/21 19:34	1
13C3 PFBS	61		50 - 150	04/17/21 05:14	04/20/21 19:34	1
13C4 PFOS	88		50 - 150	04/17/21 05:14	04/20/21 19:34	1
d3-NMeFOSAA	96		50 - 150	04/17/21 05:14	04/20/21 19:34	1
d5-NEtFOSAA	95		50 - 150	04/17/21 05:14	04/20/21 19:34	1
13C3 HFPO-DA	74		50 - 150	04/17/21 05:14	04/20/21 19:34	1

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	740		18	5.3	ng/L		04/17/21 05:14	04/22/21 18:04	10
Perfluorobutanesulfonic acid (PFBS)	460		18	1.8	ng/L		04/17/21 05:14	04/22/21 18:04	10
Perfluorohexanesulfonic acid (PFHxS)	1900		18	5.2	ng/L		04/17/21 05:14	04/22/21 18:04	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	97		50 - 150	04/17/21 05:14	04/22/21 18:04	10
13C3 PFBS	75		50 - 150	04/17/21 05:14	04/22/21 18:04	10
18O2 PFHxS	88		50 - 150	04/17/21 05:14	04/22/21 18:04	10

Eurolins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI FTP

Job ID: 320-72496-1

Client Sample ID: EB-1901-15

Lab Sample ID: 320-72496-3

Date Collected: 04/13/21 17:10

Matrix: Water

Date Received: 04/15/21 15:35

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		04/17/21 05:14	04/20/21 19:44	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		04/17/21 05:14	04/20/21 19:44	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		04/17/21 05:14	04/20/21 19:44	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		04/17/21 05:14	04/20/21 19:44	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		04/17/21 05:14	04/20/21 19:44	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		04/17/21 05:14	04/20/21 19:44	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		04/17/21 05:14	04/20/21 19:44	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		04/17/21 05:14	04/20/21 19:44	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		04/17/21 05:14	04/20/21 19:44	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		04/17/21 05:14	04/20/21 19:44	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		04/17/21 05:14	04/20/21 19:44	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.50	ng/L		04/17/21 05:14	04/20/21 19:44	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		04/17/21 05:14	04/20/21 19:44	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		04/17/21 05:14	04/20/21 19:44	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		04/17/21 05:14	04/20/21 19:44	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		04/17/21 05:14	04/20/21 19:44	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		04/17/21 05:14	04/20/21 19:44	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		04/17/21 05:14	04/20/21 19:44	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	94		50 - 150				04/17/21 05:14	04/20/21 19:44	1
13C4 PFHpA	92		50 - 150				04/17/21 05:14	04/20/21 19:44	1
13C4 PFOA	95		50 - 150				04/17/21 05:14	04/20/21 19:44	1
13C5 PFNA	99		50 - 150				04/17/21 05:14	04/20/21 19:44	1
13C2 PFDA	95		50 - 150				04/17/21 05:14	04/20/21 19:44	1
13C2 PFUnA	98		50 - 150				04/17/21 05:14	04/20/21 19:44	1
13C2 PFDoA	95		50 - 150				04/17/21 05:14	04/20/21 19:44	1
13C2 PFTeDA	101		50 - 150				04/17/21 05:14	04/20/21 19:44	1
13C3 PFBS	79		50 - 150				04/17/21 05:14	04/20/21 19:44	1
18O2 PFHxS	96		50 - 150				04/17/21 05:14	04/20/21 19:44	1
13C4 PFOS	91		50 - 150				04/17/21 05:14	04/20/21 19:44	1
d3-NMeFOSAA	97		50 - 150				04/17/21 05:14	04/20/21 19:44	1
d5-NEtFOSAA	99		50 - 150				04/17/21 05:14	04/20/21 19:44	1
13C3 HFPO-DA	85		50 - 150				04/17/21 05:14	04/20/21 19:44	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI FTP

Job ID: 320-72496-1

Client Sample ID: FB-1901-15

Lab Sample ID: 320-72496-4

Date Collected: 04/13/21 16:21

Matrix: Water

Date Received: 04/15/21 15:35

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	1.4	J	1.8	0.51	ng/L		04/17/21 05:14	04/22/21 17:45	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		04/17/21 05:14	04/22/21 17:45	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.75	ng/L		04/17/21 05:14	04/22/21 17:45	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		04/17/21 05:14	04/22/21 17:45	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		04/17/21 05:14	04/22/21 17:45	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.97	ng/L		04/17/21 05:14	04/22/21 17:45	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		04/17/21 05:14	04/22/21 17:45	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		04/17/21 05:14	04/22/21 17:45	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		04/17/21 05:14	04/22/21 17:45	1
Perfluorobutanesulfonic acid (PFBS)	1.2	J	1.8	0.18	ng/L		04/17/21 05:14	04/22/21 17:45	1
Perfluorohexanesulfonic acid (PFHxS)	4.0		1.8	0.50	ng/L		04/17/21 05:14	04/22/21 17:45	1
Perfluorooctanesulfonic acid (PFOS)	0.68	J	1.8	0.48	ng/L		04/17/21 05:14	04/22/21 17:45	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		04/17/21 05:14	04/22/21 17:45	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.2	ng/L		04/17/21 05:14	04/22/21 17:45	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		04/17/21 05:14	04/22/21 17:45	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		04/17/21 05:14	04/22/21 17:45	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		04/17/21 05:14	04/22/21 17:45	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		04/17/21 05:14	04/22/21 17:45	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	93		50 - 150				04/17/21 05:14	04/22/21 17:45	1
13C4 PFHpA	85		50 - 150				04/17/21 05:14	04/22/21 17:45	1
13C4 PFOA	90		50 - 150				04/17/21 05:14	04/22/21 17:45	1
13C5 PFNA	89		50 - 150				04/17/21 05:14	04/22/21 17:45	1
13C2 PFDA	86		50 - 150				04/17/21 05:14	04/22/21 17:45	1
13C2 PFUnA	84		50 - 150				04/17/21 05:14	04/22/21 17:45	1
13C2 PFDoA	88		50 - 150				04/17/21 05:14	04/22/21 17:45	1
13C2 PFTeDA	90		50 - 150				04/17/21 05:14	04/22/21 17:45	1
13C3 PFBS	77		50 - 150				04/17/21 05:14	04/22/21 17:45	1
18O2 PFHxS	82		50 - 150				04/17/21 05:14	04/22/21 17:45	1
13C4 PFOS	80		50 - 150				04/17/21 05:14	04/22/21 17:45	1
d3-NMeFOSAA	94		50 - 150				04/17/21 05:14	04/22/21 17:45	1
d5-NEtFOSAA	95		50 - 150				04/17/21 05:14	04/22/21 17:45	1
13C3 HFPO-DA	81		50 - 150				04/17/21 05:14	04/22/21 17:45	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI FTP

Job ID: 320-72496-1

Client Sample ID: MW-1901-40

Lab Sample ID: 320-72496-5

Date Collected: 04/13/21 15:57

Matrix: Water

Date Received: 04/15/21 15:35

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	150		1.8	0.22	ng/L		04/17/21 05:14	04/20/21 20:21	1
Perfluorooctanoic acid (PFOA)	170		1.8	0.75	ng/L		04/17/21 05:14	04/20/21 20:21	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		04/17/21 05:14	04/20/21 20:21	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		04/17/21 05:14	04/20/21 20:21	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.97	ng/L		04/17/21 05:14	04/20/21 20:21	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.48	ng/L		04/17/21 05:14	04/20/21 20:21	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.1	ng/L		04/17/21 05:14	04/20/21 20:21	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.64	ng/L		04/17/21 05:14	04/20/21 20:21	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		04/17/21 05:14	04/20/21 20:21	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		04/17/21 05:14	04/20/21 20:21	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		04/17/21 05:14	04/20/21 20:21	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		04/17/21 05:14	04/20/21 20:21	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		04/17/21 05:14	04/20/21 20:21	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		04/17/21 05:14	04/20/21 20:21	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFHpA	66		50 - 150	04/17/21 05:14	04/20/21 20:21	1
13C4 PFOA	86		50 - 150	04/17/21 05:14	04/20/21 20:21	1
13C5 PFNA	98		50 - 150	04/17/21 05:14	04/20/21 20:21	1
13C2 PFDA	85		50 - 150	04/17/21 05:14	04/20/21 20:21	1
13C2 PFUnA	79		50 - 150	04/17/21 05:14	04/20/21 20:21	1
13C2 PFDoA	86		50 - 150	04/17/21 05:14	04/20/21 20:21	1
13C2 PFTeDA	93		50 - 150	04/17/21 05:14	04/20/21 20:21	1
13C3 PFBS	60		50 - 150	04/17/21 05:14	04/20/21 20:21	1
13C4 PFOS	87		50 - 150	04/17/21 05:14	04/20/21 20:21	1
d3-NMeFOSAA	95		50 - 150	04/17/21 05:14	04/20/21 20:21	1
d5-NEtFOSAA	92		50 - 150	04/17/21 05:14	04/20/21 20:21	1
13C3 HFPO-DA	75		50 - 150	04/17/21 05:14	04/20/21 20:21	1

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	1200		35	10	ng/L		04/17/21 05:14	04/22/21 18:13	20
Perfluorobutanesulfonic acid (PFBS)	940		35	3.5	ng/L		04/17/21 05:14	04/22/21 18:13	20
Perfluorohexanesulfonic acid (PFHxS)	2600		35	10	ng/L		04/17/21 05:14	04/22/21 18:13	20
Perfluorooctanesulfonic acid (PFOS)	450		35	9.5	ng/L		04/17/21 05:14	04/22/21 18:13	20

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	91		50 - 150	04/17/21 05:14	04/22/21 18:13	20
13C3 PFBS	70		50 - 150	04/17/21 05:14	04/22/21 18:13	20
18O2 PFHxS	93		50 - 150	04/17/21 05:14	04/22/21 18:13	20
13C4 PFOS	71		50 - 150	04/17/21 05:14	04/22/21 18:13	20

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI FTP

Job ID: 320-72496-1

Client Sample ID: MW-1901-80

Lab Sample ID: 320-72496-6

Date Collected: 04/13/21 15:20

Matrix: Water

Date Received: 04/15/21 15:35

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	1.4	J	1.8	0.52	ng/L		04/17/21 05:14	04/20/21 20:30	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		04/17/21 05:14	04/20/21 20:30	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.76	ng/L		04/17/21 05:14	04/20/21 20:30	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		04/17/21 05:14	04/20/21 20:30	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		04/17/21 05:14	04/20/21 20:30	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		04/17/21 05:14	04/20/21 20:30	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		04/17/21 05:14	04/20/21 20:30	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		04/17/21 05:14	04/20/21 20:30	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		04/17/21 05:14	04/20/21 20:30	1
Perfluorobutanesulfonic acid (PFBS)	0.76	J	1.8	0.18	ng/L		04/17/21 05:14	04/20/21 20:30	1
Perfluorohexanesulfonic acid (PFHxS)	2.6		1.8	0.51	ng/L		04/17/21 05:14	04/20/21 20:30	1
Perfluorooctanesulfonic acid (PFOS)	1.1	J	1.8	0.48	ng/L		04/17/21 05:14	04/20/21 20:30	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		04/17/21 05:14	04/20/21 20:30	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		04/17/21 05:14	04/20/21 20:30	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		04/17/21 05:14	04/20/21 20:30	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		04/17/21 05:14	04/20/21 20:30	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		04/17/21 05:14	04/20/21 20:30	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		04/17/21 05:14	04/20/21 20:30	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	86		50 - 150				04/17/21 05:14	04/20/21 20:30	1
13C4 PFHpA	92		50 - 150				04/17/21 05:14	04/20/21 20:30	1
13C4 PFOA	95		50 - 150				04/17/21 05:14	04/20/21 20:30	1
13C5 PFNA	99		50 - 150				04/17/21 05:14	04/20/21 20:30	1
13C2 PFDA	89		50 - 150				04/17/21 05:14	04/20/21 20:30	1
13C2 PFUnA	91		50 - 150				04/17/21 05:14	04/20/21 20:30	1
13C2 PFDoA	87		50 - 150				04/17/21 05:14	04/20/21 20:30	1
13C2 PFTeDA	102		50 - 150				04/17/21 05:14	04/20/21 20:30	1
13C3 PFBS	70		50 - 150				04/17/21 05:14	04/20/21 20:30	1
18O2 PFHxS	89		50 - 150				04/17/21 05:14	04/20/21 20:30	1
13C4 PFOS	92		50 - 150				04/17/21 05:14	04/20/21 20:30	1
d3-NMeFOSAA	99		50 - 150				04/17/21 05:14	04/20/21 20:30	1
d5-NEtFOSAA	94		50 - 150				04/17/21 05:14	04/20/21 20:30	1
13C3 HFPO-DA	80		50 - 150				04/17/21 05:14	04/20/21 20:30	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI FTP

Job ID: 320-72496-1

Client Sample ID: MW-1901-150

Lab Sample ID: 320-72496-7

Date Collected: 04/13/21 14:31

Matrix: Water

Date Received: 04/15/21 15:35

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		04/17/21 05:14	04/20/21 20:40	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		04/17/21 05:14	04/20/21 20:40	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		04/17/21 05:14	04/20/21 20:40	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		04/17/21 05:14	04/20/21 20:40	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		04/17/21 05:14	04/20/21 20:40	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		04/17/21 05:14	04/20/21 20:40	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		04/17/21 05:14	04/20/21 20:40	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		04/17/21 05:14	04/20/21 20:40	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		04/17/21 05:14	04/20/21 20:40	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		04/17/21 05:14	04/20/21 20:40	1
Perfluorohexanesulfonic acid (PFHxS)	1.0	J	1.8	0.52	ng/L		04/17/21 05:14	04/20/21 20:40	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		04/17/21 05:14	04/20/21 20:40	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		04/17/21 05:14	04/20/21 20:40	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		04/17/21 05:14	04/20/21 20:40	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		04/17/21 05:14	04/20/21 20:40	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		04/17/21 05:14	04/20/21 20:40	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		04/17/21 05:14	04/20/21 20:40	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		04/17/21 05:14	04/20/21 20:40	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	93		50 - 150	04/17/21 05:14	04/20/21 20:40	1
13C4 PFHpA	92		50 - 150	04/17/21 05:14	04/20/21 20:40	1
13C4 PFOA	91		50 - 150	04/17/21 05:14	04/20/21 20:40	1
13C5 PFNA	98		50 - 150	04/17/21 05:14	04/20/21 20:40	1
13C2 PFDA	96		50 - 150	04/17/21 05:14	04/20/21 20:40	1
13C2 PFUnA	96		50 - 150	04/17/21 05:14	04/20/21 20:40	1
13C2 PFDoA	93		50 - 150	04/17/21 05:14	04/20/21 20:40	1
13C2 PFTeDA	109		50 - 150	04/17/21 05:14	04/20/21 20:40	1
13C3 PFBS	77		50 - 150	04/17/21 05:14	04/20/21 20:40	1
18O2 PFHxS	88		50 - 150	04/17/21 05:14	04/20/21 20:40	1
13C4 PFOS	95		50 - 150	04/17/21 05:14	04/20/21 20:40	1
d3-NMeFOSAA	100		50 - 150	04/17/21 05:14	04/20/21 20:40	1
d5-NEtFOSAA	100		50 - 150	04/17/21 05:14	04/20/21 20:40	1
13C3 HFPO-DA	88		50 - 150	04/17/21 05:14	04/20/21 20:40	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI FTP

Job ID: 320-72496-1

Client Sample ID: MW-1902-15

Lab Sample ID: 320-72496-8

Date Collected: 04/13/21 10:02

Matrix: Water

Date Received: 04/15/21 15:35

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	11		1.9	0.54	ng/L		04/17/21 05:14	04/20/21 20:49	1
Perfluoroheptanoic acid (PFHpA)	2.2		1.9	0.23	ng/L		04/17/21 05:14	04/20/21 20:49	1
Perfluorooctanoic acid (PFOA)	4.6		1.9	0.80	ng/L		04/17/21 05:14	04/20/21 20:49	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		04/17/21 05:14	04/20/21 20:49	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		04/17/21 05:14	04/20/21 20:49	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		04/17/21 05:14	04/20/21 20:49	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		04/17/21 05:14	04/20/21 20:49	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		04/17/21 05:14	04/20/21 20:49	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		04/17/21 05:14	04/20/21 20:49	1
Perfluorobutanesulfonic acid (PFBS)	5.1		1.9	0.19	ng/L		04/17/21 05:14	04/20/21 20:49	1
Perfluorohexanesulfonic acid (PFHxS)	45		1.9	0.53	ng/L		04/17/21 05:14	04/20/21 20:49	1
Perfluorooctanesulfonic acid (PFOS)	13		1.9	0.51	ng/L		04/17/21 05:14	04/20/21 20:49	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		04/17/21 05:14	04/20/21 20:49	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		04/17/21 05:14	04/20/21 20:49	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		04/17/21 05:14	04/20/21 20:49	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		04/17/21 05:14	04/20/21 20:49	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		04/17/21 05:14	04/20/21 20:49	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		04/17/21 05:14	04/20/21 20:49	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	88		50 - 150	04/17/21 05:14	04/20/21 20:49	1
13C4 PFHpA	86		50 - 150	04/17/21 05:14	04/20/21 20:49	1
13C4 PFOA	99		50 - 150	04/17/21 05:14	04/20/21 20:49	1
13C5 PFNA	99		50 - 150	04/17/21 05:14	04/20/21 20:49	1
13C2 PFDA	91		50 - 150	04/17/21 05:14	04/20/21 20:49	1
13C2 PFUnA	83		50 - 150	04/17/21 05:14	04/20/21 20:49	1
13C2 PFDoA	86		50 - 150	04/17/21 05:14	04/20/21 20:49	1
13C2 PFTeDA	99		50 - 150	04/17/21 05:14	04/20/21 20:49	1
13C3 PFBS	68		50 - 150	04/17/21 05:14	04/20/21 20:49	1
18O2 PFHxS	84		50 - 150	04/17/21 05:14	04/20/21 20:49	1
13C4 PFOS	89		50 - 150	04/17/21 05:14	04/20/21 20:49	1
d3-NMeFOSAA	98		50 - 150	04/17/21 05:14	04/20/21 20:49	1
d5-NEtFOSAA	85		50 - 150	04/17/21 05:14	04/20/21 20:49	1
13C3 HFPO-DA	82		50 - 150	04/17/21 05:14	04/20/21 20:49	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI FTP

Job ID: 320-72496-1

Client Sample ID: MW-1902-40

Lab Sample ID: 320-72496-9

Date Collected: 04/13/21 10:55

Matrix: Water

Date Received: 04/15/21 15:35

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	0.60	J	1.8	0.52	ng/L		04/17/21 05:14	04/20/21 20:59	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		04/17/21 05:14	04/20/21 20:59	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.76	ng/L		04/17/21 05:14	04/20/21 20:59	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		04/17/21 05:14	04/20/21 20:59	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		04/17/21 05:14	04/20/21 20:59	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.98	ng/L		04/17/21 05:14	04/20/21 20:59	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		04/17/21 05:14	04/20/21 20:59	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		04/17/21 05:14	04/20/21 20:59	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		04/17/21 05:14	04/20/21 20:59	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		04/17/21 05:14	04/20/21 20:59	1
Perfluorohexanesulfonic acid (PFHxS)	1.5	J	1.8	0.51	ng/L		04/17/21 05:14	04/20/21 20:59	1
Perfluorooctanesulfonic acid (PFOS)	2.1		1.8	0.48	ng/L		04/17/21 05:14	04/20/21 20:59	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		04/17/21 05:14	04/20/21 20:59	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.2	ng/L		04/17/21 05:14	04/20/21 20:59	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		04/17/21 05:14	04/20/21 20:59	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		04/17/21 05:14	04/20/21 20:59	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		04/17/21 05:14	04/20/21 20:59	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		04/17/21 05:14	04/20/21 20:59	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	83		50 - 150	04/17/21 05:14	04/20/21 20:59	1
13C4 PFHpA	88		50 - 150	04/17/21 05:14	04/20/21 20:59	1
13C4 PFOA	91		50 - 150	04/17/21 05:14	04/20/21 20:59	1
13C5 PFNA	98		50 - 150	04/17/21 05:14	04/20/21 20:59	1
13C2 PFDA	90		50 - 150	04/17/21 05:14	04/20/21 20:59	1
13C2 PFUnA	97		50 - 150	04/17/21 05:14	04/20/21 20:59	1
13C2 PFDoA	104		50 - 150	04/17/21 05:14	04/20/21 20:59	1
13C2 PFTeDA	103		50 - 150	04/17/21 05:14	04/20/21 20:59	1
13C3 PFBS	65		50 - 150	04/17/21 05:14	04/20/21 20:59	1
18O2 PFHxS	86		50 - 150	04/17/21 05:14	04/20/21 20:59	1
13C4 PFOS	82		50 - 150	04/17/21 05:14	04/20/21 20:59	1
d3-NMeFOSAA	105		50 - 150	04/17/21 05:14	04/20/21 20:59	1
d5-NEtFOSAA	99		50 - 150	04/17/21 05:14	04/20/21 20:59	1
13C3 HFPO-DA	81		50 - 150	04/17/21 05:14	04/20/21 20:59	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI FTP

Job ID: 320-72496-1

Client Sample ID: MW-1902-80

Lab Sample ID: 320-72496-10

Date Collected: 04/13/21 11:34

Matrix: Water

Date Received: 04/15/21 15:35

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		04/17/21 05:14	04/20/21 21:08	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		04/17/21 05:14	04/20/21 21:08	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		04/17/21 05:14	04/20/21 21:08	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		04/17/21 05:14	04/20/21 21:08	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.29	ng/L		04/17/21 05:14	04/20/21 21:08	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		04/17/21 05:14	04/20/21 21:08	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		04/17/21 05:14	04/20/21 21:08	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		04/17/21 05:14	04/20/21 21:08	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		04/17/21 05:14	04/20/21 21:08	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		04/17/21 05:14	04/20/21 21:08	1
Perfluorohexanesulfonic acid (PFHxS)	1.1	J	1.8	0.52	ng/L		04/17/21 05:14	04/20/21 21:08	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.50	ng/L		04/17/21 05:14	04/20/21 21:08	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		04/17/21 05:14	04/20/21 21:08	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		04/17/21 05:14	04/20/21 21:08	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		04/17/21 05:14	04/20/21 21:08	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		04/17/21 05:14	04/20/21 21:08	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		04/17/21 05:14	04/20/21 21:08	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		04/17/21 05:14	04/20/21 21:08	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	94		50 - 150	04/17/21 05:14	04/20/21 21:08	1
13C4 PFHpA	96		50 - 150	04/17/21 05:14	04/20/21 21:08	1
13C4 PFOA	93		50 - 150	04/17/21 05:14	04/20/21 21:08	1
13C5 PFNA	101		50 - 150	04/17/21 05:14	04/20/21 21:08	1
13C2 PFDA	95		50 - 150	04/17/21 05:14	04/20/21 21:08	1
13C2 PFUnA	94		50 - 150	04/17/21 05:14	04/20/21 21:08	1
13C2 PFDoA	91		50 - 150	04/17/21 05:14	04/20/21 21:08	1
13C2 PFTeDA	106		50 - 150	04/17/21 05:14	04/20/21 21:08	1
13C3 PFBS	72		50 - 150	04/17/21 05:14	04/20/21 21:08	1
18O2 PFHxS	84		50 - 150	04/17/21 05:14	04/20/21 21:08	1
13C4 PFOS	92		50 - 150	04/17/21 05:14	04/20/21 21:08	1
d3-NMeFOSAA	102		50 - 150	04/17/21 05:14	04/20/21 21:08	1
d5-NEtFOSAA	101		50 - 150	04/17/21 05:14	04/20/21 21:08	1
13C3 HFPO-DA	84		50 - 150	04/17/21 05:14	04/20/21 21:08	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI FTP

Job ID: 320-72496-1

Client Sample ID: MW-1902-150

Lab Sample ID: 320-72496-11

Date Collected: 04/13/21 13:19

Matrix: Water

Date Received: 04/15/21 15:35

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.57	ng/L		04/17/21 05:14	04/20/21 21:17	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		04/17/21 05:14	04/20/21 21:17	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.84	ng/L		04/17/21 05:14	04/20/21 21:17	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		04/17/21 05:14	04/20/21 21:17	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		04/17/21 05:14	04/20/21 21:17	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		04/17/21 05:14	04/20/21 21:17	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.54	ng/L		04/17/21 05:14	04/20/21 21:17	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		04/17/21 05:14	04/20/21 21:17	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.72	ng/L		04/17/21 05:14	04/20/21 21:17	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		04/17/21 05:14	04/20/21 21:17	1
Perfluorohexanesulfonic acid (PFHxS)	1.2	J	2.0	0.56	ng/L		04/17/21 05:14	04/20/21 21:17	1
Perfluorooctanesulfonic acid (PFOS)	0.86	J	2.0	0.53	ng/L		04/17/21 05:14	04/20/21 21:17	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.9	1.2	ng/L		04/17/21 05:14	04/20/21 21:17	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.9	1.3	ng/L		04/17/21 05:14	04/20/21 21:17	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		04/17/21 05:14	04/20/21 21:17	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		04/17/21 05:14	04/20/21 21:17	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		04/17/21 05:14	04/20/21 21:17	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.39	ng/L		04/17/21 05:14	04/20/21 21:17	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	92		50 - 150	04/17/21 05:14	04/20/21 21:17	1
13C4 PFHpA	91		50 - 150	04/17/21 05:14	04/20/21 21:17	1
13C4 PFOA	93		50 - 150	04/17/21 05:14	04/20/21 21:17	1
13C5 PFNA	120		50 - 150	04/17/21 05:14	04/20/21 21:17	1
13C2 PFDA	95		50 - 150	04/17/21 05:14	04/20/21 21:17	1
13C2 PFUnA	92		50 - 150	04/17/21 05:14	04/20/21 21:17	1
13C2 PFDoA	100		50 - 150	04/17/21 05:14	04/20/21 21:17	1
13C2 PFTeDA	104		50 - 150	04/17/21 05:14	04/20/21 21:17	1
13C3 PFBS	70		50 - 150	04/17/21 05:14	04/20/21 21:17	1
18O2 PFHxS	88		50 - 150	04/17/21 05:14	04/20/21 21:17	1
13C4 PFOS	91		50 - 150	04/17/21 05:14	04/20/21 21:17	1
d3-NMeFOSAA	104		50 - 150	04/17/21 05:14	04/20/21 21:17	1
d5-NEtFOSAA	105		50 - 150	04/17/21 05:14	04/20/21 21:17	1
13C3 HFPO-DA	83		50 - 150	04/17/21 05:14	04/20/21 21:17	1

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI FTP

Job ID: 320-72496-1

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDoA (50-150)	PFTDA (50-150)
320-72496-1	MW-1901-15		76	92	103	90	88	90	103
320-72496-1 - DL	MW-1901-15	98							
320-72496-2	MW-1901-115		77	91	108	89	93	91	107
320-72496-2 - DL	MW-1901-115	97							
320-72496-3	EB-1901-15	94	92	95	99	95	98	95	101
320-72496-4	FB-1901-15	93	85	90	89	86	84	88	90
320-72496-5	MW-1901-40		66	86	98	85	79	86	93
320-72496-5 - DL	MW-1901-40	91							
320-72496-6	MW-1901-80	86	92	95	99	89	91	87	102
320-72496-7	MW-1901-150	93	92	91	98	96	96	93	109
320-72496-8	MW-1902-15	88	86	99	99	91	83	86	99
320-72496-9	MW-1902-40	83	88	91	98	90	97	104	103
320-72496-10	MW-1902-80	94	96	93	101	95	94	91	106
320-72496-11	MW-1902-150	92	91	93	120	95	92	100	104
LCS 320-480507/2-A	Lab Control Sample	92	96	94	102	94	92	95	95
LCSD 320-480507/3-A	Lab Control Sample Dup	92	93	99	103	95	102	94	104
MB 320-480507/1-A	Method Blank	95	93	96	102	96	95	90	101

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)					
		C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
320-72496-1	MW-1901-15	61		89	96	92	73
320-72496-1 - DL	MW-1901-15	78	95				
320-72496-2	MW-1901-115	61		88	96	95	74
320-72496-2 - DL	MW-1901-115	75	88				
320-72496-3	EB-1901-15	79	96	91	97	99	85
320-72496-4	FB-1901-15	77	82	80	94	95	81
320-72496-5	MW-1901-40	60		87	95	92	75
320-72496-5 - DL	MW-1901-40	70	93	71			
320-72496-6	MW-1901-80	70	89	92	99	94	80
320-72496-7	MW-1901-150	77	88	95	100	100	88
320-72496-8	MW-1902-15	68	84	89	98	85	82
320-72496-9	MW-1902-40	65	86	82	105	99	81
320-72496-10	MW-1902-80	72	84	92	102	101	84
320-72496-11	MW-1902-150	70	88	91	104	105	83
LCS 320-480507/2-A	Lab Control Sample	79	99	93	100	94	89
LCSD 320-480507/3-A	Lab Control Sample Dup	81	93	95	101	93	91
MB 320-480507/1-A	Method Blank	80	88	90	99	100	88

Surrogate Legend

- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDoA = 13C2 PFDoA
- PFTDA = 13C2 PFTeDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS

Isotope Dilution Summary

Client: Shannon & Wilson, Inc

Project/Site: FAI FTP

d3NMFOS = d3-NMeFOSAA

d5NEFOS = d5-NEtFOSAA

HFPODA = ¹³C₃ HFPO-DA

Job ID: 320-72496-1

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI FTP

Job ID: 320-72496-1

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Lab Sample ID: MB 320-480507/1-A
Matrix: Water
Analysis Batch: 481668

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 480507

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		04/17/21 05:14	04/20/21 18:29	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		04/17/21 05:14	04/20/21 18:29	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		04/17/21 05:14	04/20/21 18:29	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		04/17/21 05:14	04/20/21 18:29	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		04/17/21 05:14	04/20/21 18:29	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		04/17/21 05:14	04/20/21 18:29	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		04/17/21 05:14	04/20/21 18:29	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		04/17/21 05:14	04/20/21 18:29	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		04/17/21 05:14	04/20/21 18:29	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		04/17/21 05:14	04/20/21 18:29	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		04/17/21 05:14	04/20/21 18:29	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		04/17/21 05:14	04/20/21 18:29	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		04/17/21 05:14	04/20/21 18:29	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		04/17/21 05:14	04/20/21 18:29	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		04/17/21 05:14	04/20/21 18:29	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		04/17/21 05:14	04/20/21 18:29	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		04/17/21 05:14	04/20/21 18:29	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		04/17/21 05:14	04/20/21 18:29	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	95		50 - 150	04/17/21 05:14	04/20/21 18:29	1
13C4 PFHpA	93		50 - 150	04/17/21 05:14	04/20/21 18:29	1
13C4 PFOA	96		50 - 150	04/17/21 05:14	04/20/21 18:29	1
13C5 PFNA	102		50 - 150	04/17/21 05:14	04/20/21 18:29	1
13C2 PFDA	96		50 - 150	04/17/21 05:14	04/20/21 18:29	1
13C2 PFUnA	95		50 - 150	04/17/21 05:14	04/20/21 18:29	1
13C2 PFDoA	90		50 - 150	04/17/21 05:14	04/20/21 18:29	1
13C2 PFTeDA	101		50 - 150	04/17/21 05:14	04/20/21 18:29	1
13C3 PFBS	80		50 - 150	04/17/21 05:14	04/20/21 18:29	1
18O2 PFHxS	88		50 - 150	04/17/21 05:14	04/20/21 18:29	1
13C4 PFOS	90		50 - 150	04/17/21 05:14	04/20/21 18:29	1
d3-NMeFOSAA	99		50 - 150	04/17/21 05:14	04/20/21 18:29	1
d5-NEtFOSAA	100		50 - 150	04/17/21 05:14	04/20/21 18:29	1
13C3 HFPO-DA	88		50 - 150	04/17/21 05:14	04/20/21 18:29	1

Lab Sample ID: LCS 320-480507/2-A
Matrix: Water
Analysis Batch: 481668

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 480507

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluoroheptanoic acid (PFHpA)	40.0	45.1		ng/L		113	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	47.2		ng/L		118	71 - 133
Perfluorononanoic acid (PFNA)	40.0	44.1		ng/L		110	69 - 130

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI FTP

Job ID: 320-72496-1

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCS 320-480507/2-A
Matrix: Water
Analysis Batch: 481668

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 480507

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorodecanoic acid (PFDA)	40.0	46.1		ng/L		115	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	45.3		ng/L		113	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	43.2		ng/L		108	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	43.1		ng/L		108	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	44.7		ng/L		112	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.4	42.2		ng/L		119	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	39.9		ng/L		110	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.1	39.9		ng/L		108	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.8		ng/L		102	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	44.5		ng/L		111	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	42.8		ng/L		115	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	43.4		ng/L		108	72 - 132
11-Chloroeicosadecafluoro-3-oxaundecane-1-sulfonic acid	37.7	39.4		ng/L		105	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	45.2		ng/L		120	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	92		50 - 150
13C4 PFHpA	96		50 - 150
13C4 PFOA	94		50 - 150
13C5 PFNA	102		50 - 150
13C2 PFDA	94		50 - 150
13C2 PFUnA	92		50 - 150
13C2 PFDoA	95		50 - 150
13C2 PFTeDA	95		50 - 150
13C3 PFBS	79		50 - 150
18O2 PFHxS	99		50 - 150
13C4 PFOS	93		50 - 150
d3-NMeFOSAA	100		50 - 150
d5-NEtFOSAA	94		50 - 150
13C3 HFPO-DA	89		50 - 150

Lab Sample ID: LCSD 320-480507/3-A
Matrix: Water
Analysis Batch: 481668

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 480507

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec.		RPD Limit
							Limits	RPD	
Perfluorohexanoic acid (PFHxA)	40.0	46.1		ng/L		115	72 - 129	6	30
Perfluoroheptanoic acid (PFHpA)	40.0	45.1		ng/L		113	72 - 130	0	30
Perfluorooctanoic acid (PFOA)	40.0	44.0		ng/L		110	71 - 133	7	30

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: FAI FTP

Job ID: 320-72496-1

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCSD 320-480507/3-A
Matrix: Water
Analysis Batch: 481668

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 480507

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	41.9		ng/L		105	69 - 130	5	30
Perfluorodecanoic acid (PFDA)	40.0	42.7		ng/L		107	71 - 129	8	30
Perfluoroundecanoic acid (PFUnA)	40.0	41.1		ng/L		103	69 - 133	10	30
Perfluorododecanoic acid (PFDoA)	40.0	45.7		ng/L		114	72 - 134	6	30
Perfluorotridecanoic acid (PFTriA)	40.0	46.9		ng/L		117	65 - 144	8	30
Perfluorotetradecanoic acid (PFTeA)	40.0	44.0		ng/L		110	71 - 132	2	30
Perfluorobutanesulfonic acid (PFBS)	35.4	45.0		ng/L		127	72 - 130	6	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	43.7		ng/L		120	68 - 131	9	30
Perfluorooctanesulfonic acid (PFOS)	37.1	39.5		ng/L		106	65 - 140	1	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	44.2		ng/L		111	65 - 136	8	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	44.4		ng/L		111	61 - 135	0	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	42.9		ng/L		115	77 - 137	0	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	45.6		ng/L		114	72 - 132	5	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.7	38.9		ng/L		103	76 - 136	1	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	41.0		ng/L		109	81 - 141	10	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	92		50 - 150
13C4 PFHpA	93		50 - 150
13C4 PFOA	99		50 - 150
13C5 PFNA	103		50 - 150
13C2 PFDA	95		50 - 150
13C2 PFUnA	102		50 - 150
13C2 PFDoA	94		50 - 150
13C2 PFTeDA	104		50 - 150
13C3 PFBS	81		50 - 150
18O2 PFHxS	93		50 - 150
13C4 PFOS	95		50 - 150
d3-NMeFOSAA	101		50 - 150
d5-NEtFOSAA	93		50 - 150
13C3 HFPO-DA	91		50 - 150

QC Association Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI FTP

Job ID: 320-72496-1

LCMS

Prep Batch: 480507

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-72496-1 - DL	MW-1901-15	Total/NA	Water	3535	
320-72496-1	MW-1901-15	Total/NA	Water	3535	
320-72496-2 - DL	MW-1901-115	Total/NA	Water	3535	
320-72496-2	MW-1901-115	Total/NA	Water	3535	
320-72496-3	EB-1901-15	Total/NA	Water	3535	
320-72496-4	FB-1901-15	Total/NA	Water	3535	
320-72496-5	MW-1901-40	Total/NA	Water	3535	
320-72496-5 - DL	MW-1901-40	Total/NA	Water	3535	
320-72496-6	MW-1901-80	Total/NA	Water	3535	
320-72496-7	MW-1901-150	Total/NA	Water	3535	
320-72496-8	MW-1902-15	Total/NA	Water	3535	
320-72496-9	MW-1902-40	Total/NA	Water	3535	
320-72496-10	MW-1902-80	Total/NA	Water	3535	
320-72496-11	MW-1902-150	Total/NA	Water	3535	
MB 320-480507/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-480507/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-480507/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 481668

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-72496-1	MW-1901-15	Total/NA	Water	EPA 537(Mod)	480507
320-72496-2	MW-1901-115	Total/NA	Water	EPA 537(Mod)	480507
320-72496-3	EB-1901-15	Total/NA	Water	EPA 537(Mod)	480507
320-72496-5	MW-1901-40	Total/NA	Water	EPA 537(Mod)	480507
320-72496-6	MW-1901-80	Total/NA	Water	EPA 537(Mod)	480507
320-72496-7	MW-1901-150	Total/NA	Water	EPA 537(Mod)	480507
320-72496-8	MW-1902-15	Total/NA	Water	EPA 537(Mod)	480507
320-72496-9	MW-1902-40	Total/NA	Water	EPA 537(Mod)	480507
320-72496-10	MW-1902-80	Total/NA	Water	EPA 537(Mod)	480507
320-72496-11	MW-1902-150	Total/NA	Water	EPA 537(Mod)	480507
MB 320-480507/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	480507
LCS 320-480507/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	480507
LCSD 320-480507/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	480507

Analysis Batch: 482245

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-72496-1 - DL	MW-1901-15	Total/NA	Water	EPA 537(Mod)	480507
320-72496-2 - DL	MW-1901-115	Total/NA	Water	EPA 537(Mod)	480507
320-72496-4	FB-1901-15	Total/NA	Water	EPA 537(Mod)	480507
320-72496-5 - DL	MW-1901-40	Total/NA	Water	EPA 537(Mod)	480507

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: FAI FTP

Job ID: 320-72496-1

Client Sample ID: MW-1901-15

Lab Sample ID: 320-72496-1

Date Collected: 04/13/21 16:47

Matrix: Water

Date Received: 04/15/21 15:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			274.7 mL	10.0 mL	480507	04/17/21 05:14	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			481668	04/20/21 19:25	K1S	TAL SAC
Total/NA	Prep	3535	DL		274.7 mL	10.0 mL	480507	04/17/21 05:14	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)	DL	10			482245	04/22/21 17:54	D1R	TAL SAC

Client Sample ID: MW-1901-115

Lab Sample ID: 320-72496-2

Date Collected: 04/13/21 16:57

Matrix: Water

Date Received: 04/15/21 15:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			271.7 mL	10.0 mL	480507	04/17/21 05:14	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			481668	04/20/21 19:34	K1S	TAL SAC
Total/NA	Prep	3535	DL		271.7 mL	10.0 mL	480507	04/17/21 05:14	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)	DL	10			482245	04/22/21 18:04	D1R	TAL SAC

Client Sample ID: EB-1901-15

Lab Sample ID: 320-72496-3

Date Collected: 04/13/21 17:10

Matrix: Water

Date Received: 04/15/21 15:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			272.7 mL	10.0 mL	480507	04/17/21 05:14	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			481668	04/20/21 19:44	K1S	TAL SAC

Client Sample ID: FB-1901-15

Lab Sample ID: 320-72496-4

Date Collected: 04/13/21 16:21

Matrix: Water

Date Received: 04/15/21 15:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			282.2 mL	10.0 mL	480507	04/17/21 05:14	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			482245	04/22/21 17:45	D1R	TAL SAC

Client Sample ID: MW-1901-40

Lab Sample ID: 320-72496-5

Date Collected: 04/13/21 15:57

Matrix: Water

Date Received: 04/15/21 15:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			283.8 mL	10.0 mL	480507	04/17/21 05:14	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			481668	04/20/21 20:21	K1S	TAL SAC
Total/NA	Prep	3535	DL		283.8 mL	10.0 mL	480507	04/17/21 05:14	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)	DL	20			482245	04/22/21 18:13	D1R	TAL SAC

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: FAI FTP

Job ID: 320-72496-1

Client Sample ID: MW-1901-80

Lab Sample ID: 320-72496-6

Date Collected: 04/13/21 15:20

Matrix: Water

Date Received: 04/15/21 15:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			278.7 mL	10.0 mL	480507	04/17/21 05:14	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			481668	04/20/21 20:30	K1S	TAL SAC

Client Sample ID: MW-1901-150

Lab Sample ID: 320-72496-7

Date Collected: 04/13/21 14:31

Matrix: Water

Date Received: 04/15/21 15:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			276.2 mL	10.0 mL	480507	04/17/21 05:14	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			481668	04/20/21 20:40	K1S	TAL SAC

Client Sample ID: MW-1902-15

Lab Sample ID: 320-72496-8

Date Collected: 04/13/21 10:02

Matrix: Water

Date Received: 04/15/21 15:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			267 mL	10.0 mL	480507	04/17/21 05:14	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			481668	04/20/21 20:49	K1S	TAL SAC

Client Sample ID: MW-1902-40

Lab Sample ID: 320-72496-9

Date Collected: 04/13/21 10:55

Matrix: Water

Date Received: 04/15/21 15:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			280.9 mL	10.0 mL	480507	04/17/21 05:14	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			481668	04/20/21 20:59	K1S	TAL SAC

Client Sample ID: MW-1902-80

Lab Sample ID: 320-72496-10

Date Collected: 04/13/21 11:34

Matrix: Water

Date Received: 04/15/21 15:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			271.9 mL	10.0 mL	480507	04/17/21 05:14	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			481668	04/20/21 21:08	K1S	TAL SAC

Client Sample ID: MW-1902-150

Lab Sample ID: 320-72496-11

Date Collected: 04/13/21 13:19

Matrix: Water

Date Received: 04/15/21 15:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			253.9 mL	10.0 mL	480507	04/17/21 05:14	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			481668	04/20/21 21:17	K1S	TAL SAC

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Eurofins TestAmerica, Sacramento

Accreditation/Certification Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI FTP

Job ID: 320-72496-1

Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24
ANAB	Dept. of Defense ELAP	L2468	01-20-24
ANAB	Dept. of Energy	L2468.01	01-20-24
ANAB	ISO/IEC 17025	L2468	01-20-24
Arizona	State	AZ0708	08-11-21
Arkansas DEQ	State	88-0691	06-17-21
California	State	2897	01-31-22
Colorado	State	CA0004	08-31-21
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-21
Georgia	State	4040	01-29-22
Hawaii	State	<cert No.>	01-29-22
Illinois	NELAP	200060	03-18-22
Kansas	NELAP	E-10375	10-31-21
Louisiana	NELAP	01944	06-30-21
Maine	State	CA00004	04-14-22
Michigan	State	9947	01-29-22
Nevada	State	CA000442021-2	07-31-21
New Jersey	NELAP	CA005	06-30-21
New York	NELAP	11666	04-01-22
Ohio	State	41252	01-29-22
Oregon	NELAP	4040	01-30-23
Texas	NELAP	T104704399-19-13	06-01-21
US Fish & Wildlife	US Federal Programs	58448	07-31-21
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442021-12	03-01-22
Virginia	NELAP	460278	03-14-22
Washington	State	C581	05-05-21
West Virginia (DW)	State	9930C	12-31-21
Wisconsin	State	998204680	08-31-21
Wyoming	State Program	8TMS-L	01-28-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI FTP

Job ID: 320-72496-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod) 3535	PFAS for QSM 5.3, Table B-15 Solid-Phase Extraction (SPE)	EPA SW846	TAL SAC TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600



Sample Summary

Client: Shannon & Wilson, Inc
Project/Site: FAI FTP

Job ID: 320-72496-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-72496-1	MW-1901-15	Water	04/13/21 16:47	04/15/21 15:35	
320-72496-2	MW-1901-115	Water	04/13/21 16:57	04/15/21 15:35	
320-72496-3	EB-1901-15	Water	04/13/21 17:10	04/15/21 15:35	
320-72496-4	FB-1901-15	Water	04/13/21 16:21	04/15/21 15:35	
320-72496-5	MW-1901-40	Water	04/13/21 15:57	04/15/21 15:35	
320-72496-6	MW-1901-80	Water	04/13/21 15:20	04/15/21 15:35	
320-72496-7	MW-1901-150	Water	04/13/21 14:31	04/15/21 15:35	
320-72496-8	MW-1902-15	Water	04/13/21 10:02	04/15/21 15:35	
320-72496-9	MW-1902-40	Water	04/13/21 10:55	04/15/21 15:35	
320-72496-10	MW-1902-80	Water	04/13/21 11:34	04/15/21 15:35	
320-72496-11	MW-1902-150	Water	04/13/21 13:19	04/15/21 15:35	

CHAIN-OF-CUSTODY RECORD

Analytical Methods (include preservative if used)

PFAS EPA 521M (preserved)



320-72496 Chain of Custody

Quote No: _____
 J-Flags: Yes No

Turn Around Time:
 Normal Rush
 Please Specify _____

Sample Identity	Lab No.	Time	Date Sampled	Remarks/Matrix Composition/Grab? Sample Containers	Total
MW-1901-15		1647	4/13-21		2
MW-1901-115		1657			2
EB-1901-15		1710			2
FB-1901-15		1621			2
MW-1901-40		1557			2
MW-1901-80		1520			2
MW-1901-150		1431			2
MW-1902-15		1602			2
MW-1902-40		1055			2
MW-1902-80		1134			2

Project Information	Sample Receipt	Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Number: <u>102512-015</u>	Total No. of Containers: <u>22</u>	Signature: <u>Justin Risley</u>	Signature: _____	Signature: _____
Name: <u>FAI FTP</u>	COC Seals/Intact? <u>Y/N/A</u>	Printed Name: <u>Justin Risley</u>	Printed Name: _____	Printed Name: _____
Contact: <u>MDM</u>	Received Good Cond./Cold	Company: <u>Shannon & Wilson, Inc.</u>	Company: _____	Company: _____
Ongoing Project? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Temp: _____	Time: <u>16:00</u>	Time: _____	Time: _____
Sampler: <u>DKR/MXJ</u>	Delivery Method: _____	Date: <u>4-14-21</u>	Date: _____	Date: _____
Notes:		Received By: 1.	Received By: 2.	Received By: 3.
		Signature: _____	Signature: _____	Signature: _____
		Printed Name: <u>Juan Gulman</u>	Printed Name: _____	Printed Name: _____
		Company: <u>ETASAC</u>	Company: _____	Company: _____

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
 Yellow - w/shipment - for consignee files
 Pink - Shannon & Wilson - job file

2.3



Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-72496-1

Login Number: 72496

List Source: Eurofins TestAmerica, Sacramento

List Number: 1

Creator: Her, David A

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	seals
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Laboratory Data Review Checklist

Completed By:

Justin Risley

Title:

Engineering Staff

Date:

April 30, 2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins TestAmerica, Sacramento

Laboratory Report Number:

320-72496-1

Laboratory Report Date:

April 29, 2021

CS Site Name:

Fairbanks DOT&PF PFAS

ADEC File Number:

100.38.277

Hazard Identification Number:

26816

320-72496-1

Laboratory Report Date:

April 29, 2021

CS Site Name:

Fairbanks DOT&PF PFAS

Note: Any N/A or No box checked must have an explanation in the comments box.

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes No N/A Comments:

The ADEC certified the TestAmerica/Eurofins Laboratories West Sacramento, CA location for the analysis of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) by method 537 on February 6, 2018. These compounds were included in the ADEC's Contaminated Sites Laboratory Approval 17-020.

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes No N/A Comments:

Analyses were performed by TestAmerica Laboratories, Inc. in West Sacramento, CA.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes No N/A Comments:

b. Correct analyses requested?

Yes No N/A Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes No N/A Comments:

The temperature blank was measured within the acceptable temperature range of 0 °C to 6 °C upon arrival at the laboratory. The temperature of the sample cooler upon receipt was 2.3°C.

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes No N/A Comments:

Analysis of PFAS compounds in groundwater does not require chemical preservation outside of temperature control.

320-72496-1

Laboratory Report Date:

April 29, 2021

CS Site Name:

Fairbanks DOT&PF PFAS

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes No N/A Comments:

The sample receipt form notes the samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes No N/A Comments:

There were no discrepancies noted by the laboratory in the sample receipt documentation.

e. Data quality or usability affected?

Comments:

Data quality and/or usability are not affected; see above.

4. Case Narrative

a. Present and understandable?

Yes No N/A Comments:

The samples arrived in good condition, properly preserved, and within the required temperature range.

320-72496-1

Laboratory Report Date:

April 29, 2021

CS Site Name:

Fairbanks DOT&PF PFAS

b. Discrepancies, errors, or QC failures identified by the lab?

Yes No N/A Comments:

Method EPA 537(Mod): Results for samples *MW-1901-15* (320-72496-1), *MW-1901-115* (320-72496-2) and *MW-1901-40* (320-72496-5) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits. Data quality and/or usability not affected.

Method EPA 537(Mod): The following field blank (FB) contains several analytes above half the reporting limit: *FB-1901-15* (320-72496-4). The FB was re-analyzed with concurring results. The sample was re-extracted with improved results; however, due to an error during extraction the method blank (MB) and laboratory control sample (LCS) did not recover any isotope dilution analytes (IDA). Due to insufficient sample volume, there samples cannot be re-extraction again; therefore, the original data have been reported. See Section 6.g for further discussion.

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-480507. Data quality and/or usability not affected.

Method 3535: The following samples were yellow and contained a thin layer of sediment at the bottom of the bottle prior to extraction: *MW-1901-15* (320-72496-1), *MW-1901-115* (320-72496-2), *MW-1901-40* (320-72496-5), *MW-1901-80* (320-72496-6), *MW-1901-150* (320-72496-7), *MW-1902-15* (320-72496-8), *MW-1902-40* (320-72496-9), *MW-1902-80* (320-72496-10) and *MW-1902-150* (320-72496-11). Data quality and/or usability not affected.

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-482642. Data quality and/or usability not affected.

c. Were all corrective actions documented?

Yes No N/A Comments:

See above.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The case narrative does not note an effect on data quality.

320-72496-1

Laboratory Report Date:

April 29, 2021

CS Site Name:

Fairbanks DOT&PF PFAS

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes No N/A Comments:

b. All applicable holding times met?

Yes No N/A Comments:

The samples were analyzed within the 14-day hold time for extraction and 40-day hold time for analysis using solid phase extraction (SPE).

c. All soils reported on a dry weight basis?

Yes No N/A Comments:

This work order does not include soil samples.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes No N/A Comments:

The LOQ, equivalent to the TestAmerica Reporting Limit (RL), for PFOS and PFOA are less than the DEC groundwater-cleanup levels for these analytes, where detected.

e. Data quality or usability affected?

The data quality and/or usability are not affected.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes No N/A Comments:

No analytes were detected in the method blank.

320-72496-1

Laboratory Report Date:

April 29, 2021

CS Site Name:

Fairbanks DOT&PF PFAS

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

N/A; see above.

v. Data quality or usability affected?

Comments:

The data quality and/or usability are not affected.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes No N/A Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

Metals and/or inorganics were not analyzed as part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

320-72496-1

Laboratory Report Date:

April 29, 2021

CS Site Name:

Fairbanks DOT&PF PFAS

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

None; analytical accuracy and precision were demonstrated to be within acceptable limits.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability are not affected; see above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Note: Leave blank if not required for project

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

Sufficient volume was not available to complete an MS/MSD for the project sample set. Precision and accuracy were evaluated using the LCS/LCSD samples.

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

Metals and/or inorganics were not analyzed as part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes No N/A Comments:

See above.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes No N/A Comments:

See above.

320-72496-1

Laboratory Report Date:

April 29, 2021

CS Site Name:

Fairbanks DOT&PF PFAS

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Not applicable, see above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

See above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability are not affected.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes No N/A Comments:

Method 537M uses IDAs to assess recovery.

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes No N/A Comments:

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

iv. Data quality or usability affected?

Comments:

The data quality and/or usability are not affected; see above.

320-72496-1

Laboratory Report Date:

April 29, 2021

CS Site Name:

Fairbanks DOT&PF PFAS

e. Trip Blanks

- i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples?
(If not, enter explanation below.)

Yes No N/A Comments:

PFAS are not volatile; therefore, a trip blank is not required.

- ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC?
(If not, a comment explaining why must be entered below)

Yes No N/A Comments:

See above.

- iii. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

See above.

- iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

None; a trip blank was not submitted with this work order.

- v. Data quality or usability affected?

Comments:

The data quality and/or usability are not affected; see above.

f. Field Duplicate

- i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No N/A Comments:

- ii. Submitted blind to lab?

Yes No N/A Comments:

Field-duplicate pair *MW-1901-15 / MW-1901-115* were submitted with this work order.

320-72496-1

Laboratory Report Date:

April 29, 2021

CS Site Name:

Fairbanks DOT&PF PFAS

iii. Precision – All relative percent differences (RPD) less than specified project objectives?
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
 R_2 = Field Duplicate Concentration

Yes No N/A Comments:

Where calculable, the RPDs were within laboratory limits for the project analytes.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The data quality and/or usability are not affected; see above.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes No N/A Comments:

Equipment blank sample *EB-1901-15* was submitted with this work order. Additionally, field blank sample *FB-1901-15* was submitted with this work order.

i. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

None of the project analytes were detected in the equipment blank sample.

PFHxA, PFBS, PFHxS, and PFOS were detected in the field blank sample.

320-72496-1

Laboratory Report Date:

April 29, 2021

CS Site Name:

Fairbanks DOT&PF PFAS

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

The result for PFHxA in project samples MW-1901-80 and MW-1902-40 are below the LOQ and are considered not detected and have been flagged 'UB' at the LOQ in the analytical database.

The result for PFBS in project sample MW-1901-80 is below the LOQ and is considered not detected and has been flagged 'UB' at the LOQ in the analytical database.

The results for PFHxS in project samples MW-1901-150, MW-1902-40, MW-1902-80, and MW-1902-150 are below the LOQ; these results are considered not detected and have been flagged 'UB' at the LOQ in the analytical database.

The results for PFOS in project samples MW-1901-80 and MW-1902-150 are below the LOQ and are considered not detected and have been flagged 'UB' at the LOQ in the analytical database.

The results for PFBS in project sample MW-1902-15 are above the LOQ and less than five-times the field blank detection, therefore they are considered not detected and have been flagged 'UB' at the detected concentration.

The results for PFHxS in project sample MW-1901-80 are above the LOQ and less than five-times the field blank detection, therefore they are considered not detected and have been flagged 'UB' at the detected concentration.

The results for PFOS in project sample MW-1902-40 are above the LOQ and less than five-times the field blank detection, therefore they are considered not detected and have been flagged 'UB' at the detected concentration.

The result for PFHxA in project sample MW-1902-15 is detected above the LOQ and within ten-times the field blank detection, therefore it is considered estimated, biased high, has been flagged 'JH' at the detected concentration.

iii. Data quality or usability affected?

Comments:

The data quality and/or usability are affected; see above.

320-72496-1

Laboratory Report Date:

April 29, 2021

CS Site Name:

Fairbanks DOT&PF PFAS

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes No N/A

Comments:

Appendix G

Conceptual Site Model

CONTENTS

- Human Health Conceptual Site Model (CSM) Scoping Form
- Human Health CSM Graphic Form

Appendix A - Human Health Conceptual Site Model Scoping Form and Standardized Graphic

Site Name: Fairbanks International Airport Fire Training Pit and PFAS Plume

File Number: 100.38.070 and 100.38.277

Completed by: Shannon & Wilson, Inc.

Introduction

The form should be used to reach agreement with the Alaska Department of Environmental Conservation (DEC) about which exposure pathways should be further investigated during site characterization. From this information, summary text about the CSM and a graphic depicting exposure pathways should be submitted with the site characterization work plan and updated as needed in later reports.

General Instructions: *Follow the italicized instructions in each section below.*

1. General Information:

Sources (*check potential sources at the site*)

- | | |
|--|--|
| <input type="checkbox"/> USTs | <input type="checkbox"/> Vehicles |
| <input type="checkbox"/> ASTs | <input type="checkbox"/> Landfills |
| <input type="checkbox"/> Dispensers/fuel loading racks | <input type="checkbox"/> Transformers |
| <input type="checkbox"/> Drums | <input checked="" type="checkbox"/> Other: Aqueous Film Forming Foam (AFFF) releases for training, systems testing, and emergency response |

Release Mechanisms (*check potential release mechanisms at the site*)

- | | |
|--|---|
| <input checked="" type="checkbox"/> Spills | <input checked="" type="checkbox"/> Direct discharge |
| <input checked="" type="checkbox"/> Leaks | <input checked="" type="checkbox"/> Burning |
| | <input checked="" type="checkbox"/> Other: AFFF overspray |

Impacted Media (*check potentially-impacted media at the site*)

- | | |
|---|---|
| <input checked="" type="checkbox"/> Surface soil (0-2 feet bgs*) | <input checked="" type="checkbox"/> Groundwater |
| <input checked="" type="checkbox"/> Subsurface soil (>2 feet bgs) | <input checked="" type="checkbox"/> Surface water |
| <input type="checkbox"/> Air | <input checked="" type="checkbox"/> Biota |
| <input checked="" type="checkbox"/> Sediment | <input type="checkbox"/> Other: |

Receptors (*check receptors that could be affected by contamination at the site*)

- | | |
|---|---|
| <input checked="" type="checkbox"/> Residents (adult or child) | <input checked="" type="checkbox"/> Site visitor |
| <input checked="" type="checkbox"/> Commercial or industrial worker | <input checked="" type="checkbox"/> Trespasser |
| <input checked="" type="checkbox"/> Construction worker | <input checked="" type="checkbox"/> Recreational user |
| <input checked="" type="checkbox"/> Subsistence harvester (i.e. gathers wild foods) | <input type="checkbox"/> Farmer |
| <input checked="" type="checkbox"/> Subsistence consumer (i.e. eats wild foods) | <input type="checkbox"/> Other: |

* bgs - below ground surface

2. Exposure Pathways: *(The answers to the following questions will identify complete exposure pathways at the site. Check each box where the answer to the question is "yes".)*

a) Direct Contact -

1. Incidental Soil Ingestion

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site-specific basis.)

If the box is checked, label this pathway complete:

Complete

Comments:

Surface and subsurface soil samples from the former fire training pit (FTP) and Aircraft Rescue and Firefighting (ARFF) building vicinities have PFOS and PFOA above cleanup levels. PFOS and PFOA soil contamination may be present in other locations.

2. Dermal Absorption of Contaminants from Soil

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.)

Can the soil contaminants permeate the skin (see Appendix B in the guidance document)?

If both boxes are checked, label this pathway complete:

Complete

Comments:

See above.

b) Ingestion -

1. Ingestion of Groundwater

Have contaminants been detected or are they expected to be detected in the groundwater, or are contaminants expected to migrate to groundwater in the future?

Could the potentially affected groundwater be used as a current or future drinking water source? Please note, only leave the box unchecked if DEC has determined the groundwater is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350.

If both boxes are checked, label this pathway complete:

Complete

Comments:

PFOS and PFOA are present at concentrations exceeding DEC cleanup levels and the U.S. EPA's lifetime health advisory level for drinking water, in onsite and offsite groundwater. To control drinking water exposure the FAI offered College Utilities water connections to properties in the PFAS-impacted area. With two exceptions, locations with known drinking water supply wells were connected to utility water.

2. Ingestion of Surface Water

Have contaminants been detected or are they expected to be detected in surface water, or are contaminants expected to migrate to surface water in the future?

Could potentially affected surface water bodies be used, currently or in the future, as a drinking water source? Consider both public water systems and private use (i.e., during residential, recreational or subsistence activities).

If both boxes are checked, label this pathway complete:

Incomplete

Comments:

PFOS and PFOA have been found above cleanup levels in some surface water bodies within the PFAS groundwater plume. However, to our knowledge the locations used for recreational and subsistence activities (Chena River, Jet Ski Pond) have detections below cleanup levels.

3. Ingestion of Wild and Farmed Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild or farmed foods?

Do the site contaminants have the potential to bioaccumulate (see Appendix C in the guidance document)?

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. soil within the root zone for plants or burrowing depth for animals, in groundwater that could be connected to surface water, etc.)

If all of the boxes are checked, label this pathway complete:

Complete

Comments:

PFOS and PFOA have the potential to bioaccumulate in plants, fish, and birds. Fairbanks residents may fish and harvest wild foods in gravel pit lakes south and east of the FAI, and along the Chena and Tanana Rivers. Contaminated well water can be used for vegetable gardening.

c) Inhalation-

1. Inhalation of Outdoor Air

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.)

Are the contaminants in soil volatile (see Appendix D in the guidance document)?

If both boxes are checked, label this pathway complete:

Incomplete

Comments:

PFAS are not included in Appendix D.

2. Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be occupied or placed on the site in an area that could be affected by contaminant vapors? (within 30 horizontal or vertical feet of petroleum contaminated soil or groundwater; within 100 feet of non-petroleum contaminated soil or groundwater; or subject to "preferential pathways," which promote easy airflow like utility conduits or rock fractures)

Are volatile compounds present in soil or groundwater (see Appendix D in the guidance document)?

If both boxes are checked, label this pathway complete:

Incomplete

Comments:

N/A

3. Additional Exposure Pathways: *(Although there are no definitive questions provided in this section, these exposure pathways should also be considered at each site. Use the guidelines provided below to determine if further evaluation of each pathway is warranted.)*

Dermal Exposure to Contaminants in Groundwater and Surface Water

Dermal exposure to contaminants in groundwater and surface water may be a complete pathway if:

- Climate permits recreational use of waters for swimming.
- Climate permits exposure to groundwater during activities, such as construction.
- Groundwater or surface water is used for household purposes, such as bathing or cleaning.

Generally, DEC groundwater cleanup levels in 18 AAC 75, Table C, are deemed protective of this pathway because dermal absorption is incorporated into the groundwater exposure equation for residential uses.

Check the box if further evaluation of this pathway is needed:



Comments:

Property owners with PFOS- and PFOA-impacted water supply wells may use their water for outdoor uses such as car washing, irrigation, gardening, and summertime bathing, resulting in dermal contact. To our knowledge the PFOS- and PFOA-impacted surface water bodies are not used for swimming or other recreational activities.

DOT&PF staff could be exposed to impacted surface water during FAI operations. Construction workers, residents, site visitors, and trespassers could be exposed to surface water or shallow contaminated groundwater during future excavation and construction projects.

Inhalation of Volatile Compounds in Tap Water

Inhalation of volatile compounds in tap water may be a complete pathway if:

- The contaminated water is used for indoor household purposes such as showering, laundering, and dish washing.
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix D in the guidance document.)

DEC groundwater cleanup levels in 18 AAC 75, Table C are protective of this pathway because the inhalation of vapors during normal household activities is incorporated into the groundwater exposure equation.

Check the box if further evaluation of this pathway is needed:



Comments:

N/A

Inhalation of Fugitive Dust

Inhalation of fugitive dust may be a complete pathway if:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers (Particulate Matter - PM₁₀). Particles of this size are called respirable particles and can reach the pulmonary parts of the lungs when inhaled.

DEC human health soil cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway because the inhalation of particulates is incorporated into the soil exposure equation.

Check the box if further evaluation of this pathway is needed:



Comments:

Surface soil near the FTP with PFOS and PFOA concentrations above cleanup levels has a moderate silt content, allowing for respirable dust particles. Surface soil and gravel fill in other areas of the FAI may also be impacted.

Direct Contact with Sediment

This pathway involves people's hands being exposed to sediment, such as during some recreational, subsistence, or industrial activity. People then incidentally ingest sediment from normal hand-to-mouth activities. In addition, dermal absorption of contaminants may be of concern if the the contaminants are able to permeate the skin (see Appendix B in the guidance document). This type of exposure should be investigated if:

- Climate permits recreational activities around sediment.
- The community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

Generally, DEC direct contact soil cleanup levels in 18 AAC 75, Table B1, are assumed to be protective of direct contact with sediment.

Check the box if further evaluation of this pathway is needed:



Comments:

PFOS was found above the cleanup level in several sediment samples from the bottom of a manmade pond at 5880 Industrial Road. Sediment in other onsite or offsite locations could also be impacted.

Direct contact is possible during future construction projects. Recreational activities are not expected to result in contact with potentially contaminated sediment.

4. Other Comments *(Provide other comments as necessary to support the information provided in this form.)*

Ingestion of groundwater is considered a future exposure pathway because the known properties with concentrations above the U.S. EPA lifetime health advisory level in water supply wells leading to indoor plumbing are not actively using their wells for drinking or cooking.

PFAS characterization efforts to date have focused primarily on groundwater and surface water ingestion exposure pathways. Additional information is needed to evaluate exposure to PFOS- and PFOA-contaminated soil, sediment, and biota.

HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: Fairbanks International Airport Fire Training Pit and PFAS Plume
100.38.070 and 100.38.277

Completed By: Shannon & Wilson, Inc.
 Date Completed: May 2021

Instructions: Follow the numbered directions below. Do not consider contaminant concentrations or engineering/land use controls when describing pathways.

(1) Check the media that could be directly affected by the release.	(2) For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Check additional media under (1) if the media acts as a secondary source.
Media	Transport Mechanisms
<input checked="" type="checkbox"/> Surface Soil (0-2 ft bgs)	<input checked="" type="checkbox"/> Direct release to surface soil <i>check soil</i> <input checked="" type="checkbox"/> Migration to subsurface <i>check soil</i> <input checked="" type="checkbox"/> Migration to groundwater <i>check groundwater</i> <input type="checkbox"/> Volatilization <i>check air</i> <input type="checkbox"/> Runoff or erosion <i>check surface water</i> <input checked="" type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____
<input type="checkbox"/> Subsurface Soil (2-15 ft bgs)	<input type="checkbox"/> Direct release to subsurface soil <i>check soil</i> <input type="checkbox"/> Migration to groundwater <i>check groundwater</i> <input type="checkbox"/> Volatilization <i>check air</i> <input type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____
<input type="checkbox"/> Ground-water	<input type="checkbox"/> Direct release to groundwater <i>check groundwater</i> <input type="checkbox"/> Volatilization <i>check air</i> <input type="checkbox"/> Flow to surface water body <i>check surface water</i> <input type="checkbox"/> Flow to sediment <i>check sediment</i> <input type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____
<input checked="" type="checkbox"/> Surface Water	<input checked="" type="checkbox"/> Direct release to surface water <i>check surface water</i> <input type="checkbox"/> Volatilization <i>check air</i> <input checked="" type="checkbox"/> Sedimentation <i>check sediment</i> <input checked="" type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____
<input type="checkbox"/> Sediment	<input type="checkbox"/> Direct release to sediment <i>check sediment</i> <input type="checkbox"/> Resuspension, runoff, or erosion <i>check surface water</i> <input type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____

(3) Check all exposure media identified in (2).	(4) Check all pathways that could be complete. The pathways identified in this column must agree with Sections 2 and 3 of the Human Health CSM Scoping Form.	(5) Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, "C/F" for both current and future receptors, or "I" for insignificant exposure.																								
Exposure Media	Exposure Pathway/Route	Current & Future Receptors																								
		Residents (adults or children) Commercial or Industrial workers Site visitors, trespassers, or recreational users Construction workers Farmers or subsistence harvesters Subsistence consumers Other																								
<input checked="" type="checkbox"/> soil	<input checked="" type="checkbox"/> Incidental Soil Ingestion <input checked="" type="checkbox"/> Dermal Absorption of Contaminants from Soil <input checked="" type="checkbox"/> Inhalation of Fugitive Dust	<table border="1"> <tr> <td>C/F</td> <td>C/F</td> <td>C/F</td> <td>F</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>C/F</td> <td>C/F</td> <td>C/F</td> <td>F</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>C/F</td> <td>C/F</td> <td>C/F</td> <td>C/F</td> <td>C/F</td> <td>C/F</td> <td></td> <td></td> </tr> </table>	C/F	C/F	C/F	F					C/F	C/F	C/F	F					C/F	C/F	C/F	C/F	C/F	C/F		
C/F	C/F	C/F	F																							
C/F	C/F	C/F	F																							
C/F	C/F	C/F	C/F	C/F	C/F																					
<input checked="" type="checkbox"/> groundwater	<input checked="" type="checkbox"/> Ingestion of Groundwater <input checked="" type="checkbox"/> Dermal Absorption of Contaminants in Groundwater <input type="checkbox"/> Inhalation of Volatile Compounds in Tap Water	<table border="1"> <tr> <td>F</td> <td>F</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>C/F</td> <td>C/F</td> <td>F</td> <td>F</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	F	F							C/F	C/F	F	F												
F	F																									
C/F	C/F	F	F																							
<input type="checkbox"/> air	<input type="checkbox"/> Inhalation of Outdoor Air <input type="checkbox"/> Inhalation of Indoor Air <input checked="" type="checkbox"/> Inhalation of Fugitive Dust	<table border="1"> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>F</td> <td>F</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>											F	F												
		F	F																							
<input checked="" type="checkbox"/> surface water	<input type="checkbox"/> Ingestion of Surface Water <input checked="" type="checkbox"/> Dermal Absorption of Contaminants in Surface Water <input type="checkbox"/> Inhalation of Volatile Compounds in Tap Water	<table border="1"> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>F</td> <td>C/F</td> <td>F</td> <td>F</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>									F	C/F	F	F												
F	C/F	F	F																							
<input checked="" type="checkbox"/> sediment	<input checked="" type="checkbox"/> Direct Contact with Sediment	<table border="1"> <tr> <td>F</td> <td>F</td> <td>F</td> <td>F</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	F	F	F	F																				
F	F	F	F																							
<input checked="" type="checkbox"/> biota	<input checked="" type="checkbox"/> Ingestion of Wild or Farmed Foods	<table border="1"> <tr> <td>C/F</td> <td></td> <td>C/F</td> <td></td> <td>C/F</td> <td>C/F</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	C/F		C/F		C/F	C/F																		
C/F		C/F		C/F	C/F																					

Important Information

About Your Environmental Report

IMPORTANT INFORMATION

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors that were considered in the development of the report have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent

such situations, you and your consultant can work together to help reduce their impacts. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary, because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports, and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

The preceding paragraphs are based on information provided by the ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland