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REVISION 1

SUMMARY REPORT

July 2020 to June 2021 Quarterly PFAS Water Sampling

GUSTAVUS, ALASKA

SHANNON & WILSON

December 2022

Shannon & Wilson No: 102599

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Submitted To: Alaska Department of Transportation & Public Facilities
2301 Peger Road
Fairbanks, AK 99709
Attn: Marcus Zimmerman and Sammy Cummings

Subject: REVISION 1 SUMMARY REPORT, JULY 2020 TO JUNE 2021
QUARTERLY PFAS WATER SAMPLING, GUSTAVUS, ALASKA

Shannon & Wilson prepared this report and participated in this project as a consultant to the Alaska Department of Administration's Division of Risk Management (DRM) and Alaska Department of Transportation and Public Facilities (DOT&PF).

Shannon & Wilson's services were authorized by DRM under our letter titled *Confirmation of Authorization to Proceed with Environmental Support Services, Gustavus Airport PFAS Assessment, Gustavus, Alaska* dated August 23, 2018. Shannon & Wilson's services were authorized by DOT&PF under Professional Services Agreement Number 25-19-1-013, issued by the DOT&PF on December 19, 2018, and the following contract amendments:

- Amendment 35, NTP P5-1-2021a for quarterly residential monitoring in fiscal year (FY) 2021, and NTP P5-11a for quarterly monitoring well sampling in FY 2021.
- Amendment 40, NTP P5-13 for the FY 2021 annual groundwater monitoring report.

This report presents a summary of Shannon & Wilson's water-supply and monitoring well sampling and related services from July 2020 through June 2021.

Shannon & Wilson appreciates the opportunity to be of service to you on this project.

Amber Masters
Environmental Scientist, Report Author

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Associate, Chemist, Project Manager

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ACRONYMS

°C	degrees Celsius
9CL-PF3ONS	9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid
11CL-PF3OUdS	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid
AAC	Alaska Administrative Code
AFFF	aqueous film-forming foam
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
DEC	Alaska Department of Environmental Conservation
DO	dissolved oxygen
DONA or ADONA	4,8-dioxa-3H-perfluorononanoic acid
DRO	diesel range organics
DOT&PF	Alaska Department of Transportation and Public Facilities
DRM	Alaska Department of Administration's Division of Risk Management
EPA	U.S. Environmental Protection Agency
Eurofins	Eurofins TestAmerica in West Sacramento, California
FY	fiscal year
GAC	granular activated carbon
GRO	gasoline range organics
GST	Gustavus Airport
HFPO-DA	hexafluoropropylene oxide dimer acid
LDRC	Laboratory Data Review Checklist
LHA	Lifetime Health Advisory
mg/L	milligrams per liter
mV	millivolts
N-EtFOSAA	N-ethyl perfluorooctane sulfonamidoacetic acid
ng/L	nanograms per liter
N-MeFOSAA	N-methyl perfluorooctane sulfonamidoacetic acid
NPS	National Park Service
PAH	polycyclic aromatic hydrocarbons
PFAS	per- and polyfluoroalkyl substances
PFBS	perfluorobutanesulfonic acid
PFDA	perluorodecanoic acid
PFDoA	perluorododecanoic acid
PFHpA	perfluoroheptanoic acid
PFHxA	perfluorohexanoic acid
PFHxS	perfluorohexanesulfonic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid

ACRONYMS

PFNA	perfluorononanoic acid
PFTeA	perfluorotetradecanoic acid
PFTrDA or PFTriA	perfluorotridecanoic acid
PFUnA	perfluoroundecanoic acid
POET	point-of-entry treatment system
PW-ID	private well identification
QA	quality assurance
QC	quality control
RRO	residual range organics
SGS	SGS North America, Inc.
Shannon & Wilson	Shannon & Wilson, Inc.
Trizma ®	tris(hydroxymethyl)aminomethane buffer
VOC	volatile organic compound
WO	work order
µg/L	micrograms per liter
YSI	multiprobe water quality meter

1 INTRODUCTION

Shannon & Wilson, Inc. (Shannon & Wilson) has prepared this report to document water-supply and monitoring well sampling and point-of-entry treatment (POET) system testing efforts near the Gustavus Airport (GST) in Gustavus, Alaska. This report covers project tasks completed in July 2020 through June 2021 for this ongoing project.

The GST is an active, Alaska Department of Environmental Conservation (DEC) listed contaminated site due to the presence of per- and polyfluoroalkyl substances (PFAS) in soil, groundwater, and surface water (File Number 1507.38.017, Hazard ID 26904).

This report was prepared for the Alaska Department of Transportation & Public Facilities (DOT&PF) and the Alaska Department of Risk Management (DRM) in accordance with the terms and conditions of Shannon & Wilson's contracts, relevant DEC guidance documents, and 18 Alaska Administrative Code (AAC) 75.335.

1.1 Purpose and Objectives

The purpose of the services described in this report was to evaluate the potential for human exposure to PFAS in groundwater near the GST. Shannon & Wilson's primary objective was to collect quarterly groundwater samples from monitoring wells, and quarterly and annual groundwater samples from water-supply wells meeting the monitoring criteria detailed in Section 1.5. Well search and sampling areas are shown in Figure 1. The fiscal year (FY) 2021 monitoring status of water-supply wells identified during our well search and sampling effort is shown in Figure 2.

Our secondary objective was to collect groundwater samples from water-supply wells within the well search areas that were newly installed or were not yet sampled during previous sampling efforts.

1.2 Background

The GST terminal is located at 1 Airport Way in Gustavus, Alaska (Figure 1). The property is owned by the DOT&PF, who also owns multiple adjacent parcels. The geographic coordinates of the GST terminal are latitude 58.4252, longitude -135.7074.

The DOT&PF Crash and Fire Rescue program used aqueous film-forming foam (AFFF) for training, annual fire apparatus testing, and emergency response at the GST for many years. AFFF release areas are shown in Figure 1. The precise timeline of AFFF use at the GST is unknown, and it is possible additional areas of AFFF use have not been identified. AFFF

contains PFAS, a category of persistent organic compounds. There is evidence that exposure to PFAS can lead to adverse health effects.

On May 4, 2018, DEC informed DOT&PF the airport terminal well and National Park Service (NPS) Water System well serving the school were at risk for PFAS contamination. On June 27, 2018, DOT&PF sampled both drinking-water-supply wells for the presence of PFAS. The analytical results were received on July 30, 2018. The airport terminal well contained levels of PFAS exceeding the U.S. Environmental Protection Agency's (EPA's) Lifetime Health Advisory (LHA) level. The NPS well had detections of several PFAS less than the EPA's LHA level. DOT&PF and DRM contacted Shannon & Wilson regarding the Gustavus community well results. Shannon & Wilson began water-supply well search and sampling efforts in August 2018. Results from the initial sampling event is summarized in our April 2019 report, August *2018 to November 2018 Private Well Sampling-Revision 1.*

Shannon & Wilson has sampled 121 water-supply wells for PFAS on and around the GST since 2018. Figure 1 shows the extent of the overall well search and sampling effort. PFAS were identified in several water-supply wells at concentrations exceeding the EPA LHA. Well search and sampling areas were expanded until PFAS concentrations in wells along the edges of the sampling area were found to be below the applicable DEC regulatory levels. Shannon & Wilson personnel conducted additional well search efforts in October, November, and December 2018.

Water-supply well sample concentrations for the sum of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) ranged from not detected to 6,110 nanograms per liter (ng/L) for wells associated with the GST PFAS project. Water-supply well depths are generally between 15 to 25 feet below ground surface (bgs) based on information provided by the residents and the former, local driller who installed most of the wells. Shannon & Wilson was not able to obtain well-drilling or construction logs to confirm these depths.

Through coordination with the DOT&PF and DEC, Shannon & Wilson established the well monitoring network criteria defined in Section 1.5. Quarterly water-supply well monitoring began in March 2019. Annual monitoring began in June 2019. Water-supply sampling events conducted between December 2018 and November 2019 are presented in our report *Summary Report, December 2018 to November 2019 Water Supply Sampling*, dated August 2020. The sampling events for the first and second quarter of 2020 were canceled due to COVID-19 travel restrictions. Quarterly and annual sampling conducted between July 2020 and June 2021 is covered in this report.

1.3 Geology and Hydrology

The GST sampling area lies in a glacial outwash plain. The plain is bounded by the Chilkat Mountain Range to the northeast, Glacier Bay to the northwest and Icy Strait to the south.

Our knowledge of subsurface geology and hydrology in the investigation area is based on observations Shannon & Wilson made during the 2019 and 2021 site characterization drilling activities and information provided to us by a local well driller. Our investigation noted the sampling area is mostly comprised of fluvial and marine sediments. The soil profile generally consists of water-bearing, interbedded sand and silt underlain by a silty clay or clay layer. The clay layer was observed at varying depths ranging from approximately 13 to 45 feet bgs during the 2019 site characterization activities.

1.4 Contaminants of Concern and Action Levels

The primary contaminants of concern are PFOS and PFOA. The DEC groundwater-cleanup level for PFOS and PFOA is 400 ng/L for the individual compounds. These levels were promulgated in on November 6, 2016. However, the current DEC action level for drinking water aligns with the EPA's LHA level of 70 ng/L for the sum of PFOS and PFOA. The LHA was published in May 2016. This threshold is the current action level for drinking water in accordance with DEC's April 9, 2019 Technical Memorandum, titled *Action Levels for PFAS in Water and Guidance on Sampling Groundwater and Drinking Water*. From August 2018 to April 2019 the State of Alaska enforced a different action level for drinking water. Please refer to our *Summary Report, December 2018 to November 2019 Water-supply Well Sampling* for more details. Additional contaminants of concern include petroleum compounds for the monitoring wells onsite at the GST and arsenic for the POET system installed at the [redacted] The current action levels, in accordance with *DEC 18 AAC 75.345, Table C*, are shown in Exhibit 1-1 below.

Exhibit 1-1: Applicable Regulatory Action Levels

Media	Compound	Level
Drinking water	PFOS + PFOA	70 ng/L
Groundwater	PFOS	400 ng/L
Groundwater	PFOA	400 ng/L
Drinking Water	Arsenic	10 µg/L [a]
Groundwater	Petroleum	Varies by analyte

Notes:

a EPA's drinking-water maximum contaminant level.

µg/L= micrograms per liter; ng/L = nanograms per liter; PFOA= perfluorooctanoic acid; PFOS = perfluorooctanesulfonic acid

On October 2, 2019, DEC published an updated Technical Memorandum requesting samples be submitted for additional PFAS analytes. Water samples collected during the sampling events summarized in this report were submitted for the following 18 PFAS analytes via EPA Method 537.1 or 537.1M.

Exhibit 1-2: Reported PFAS Analytes

EPA 537.1 PFAS Analytes	
PFOS	perfluorotetradecanoic acid (PFTeA)
PFOA	perfluorotridecanoic acid (PFTrDA or PFTriA)
Perfluoroheptanoic acid (PFHpA)	perfluoroundecanoic acid (PFUnA)
Perfluorononanoic acid (PFNA)	hexafluoropropylene oxide dimer acid (HFPO-DA)
Perfluorohexanesulfonic acid (PFHxS)	N-ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)
perfluorobutanesulfonic acid (PFBS)	N-methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)
perluorodecanoic acid (PFDA)	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11CL-PF3OUdS)
perluorododecanoic acid (PFDoA)	9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9CL-PF3ONS)
perfluorohexanoic acid (PFHxA)	4,8-dioxa-3H-perfluorononanoic acid (DONA or ADONA)

1.5 Scope of Services

Our scope summarized in this report includes four water-supply and monitoring well sampling events, additional water-supply well samples collected in response to flooding in December 2020, and quarterly sampling and maintenance of the [redacted] system. This scope is outlined in our D*OT&PF Statewide PFAS Addendum 002-GST-00 Gustavus Well Monitoring* (work plan).

Water-supply well monitoring events included category 1 or 2 water-supply wells. Well categories are designated based on well use reported by the property owner or resident.

Category 1: wells used for drinking or cooking, as reported by owners or occupants.

Category 2: wells used for dish washing and other domestic purposes.

Category 3: wells used for vegetable-garden irrigation and are not plumbed to indoor faucets or spigots. The well water is accessed by outdoor plumbing, but the well may be located underneath or inside the structure. These wells are considered non drinking-water wells.

Category 4: wells used for outdoor purposes only, such as irrigation of lawns or non-vegetable gardens or vehicle washing. These wells are considered non drinking-water wells.

Category 5: wells currently not in use. Wells that have been abandoned in place, are inoperable, disconnected, or intended for future use, are considered category 5 wells. These wells are considered non drinking-water-wells.

The annual water-supply well sampling event occurred in August/September 2020. The quarterly sampling events were conducted in December 2020, March 2021, and June 2021. In addition, six first-time water-supply well samples were collected from July 2020 to June 2021. Please note this project is ongoing. Shannon & Wilson collected analytical groundwater samples for determination of 18 PFAS (Exhibit 1-2) from category 1 or 2 water-supply wells that either had not been sampled during a previous sampling event, or met the following sampling criteria:

- samples were collected quarterly for active wells whose maximum combined PFOS and PFOA concentration is between 35 ng/L and 69 ng/L (50 and 100 percent of the LHA), per DEC guidance;
- samples were collected annually for active wells whose maximum combined PFOS and PFOA concentration is between 17.5 ng/L and 35 ng/L (25 and 50 percent of the LHA), per DEC guidance; and
- active wells within 500 lateral feet of a water-supply or monitoring well meeting the quarterly or annual sampling criteria, based on the event (quarterly or annual).

Lateral distance is measured from the parcel location global positioning system point; these points were collected during the initial well search. These points are generally located at the structure served by the well and may not reflect the water-supply well's actual location.

Per DEC guidance, locations that are considered "affected" (historical concentration exceeds the LHA or former DEC action limit) are not included in the quarterly or annual water-supply well monitoring events.

This report was prepared for the exclusive use of the DOT&PF 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:

- 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, or cleanup 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 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 from July 2020 through June 2021. Travel was conducted in accordance with state guidelines, City of Gustavus policies, and Shannon & Wilson's Site-Specific Health and Safety Plan, including the addition of COVID-19 protocols for sampling at private residences.

Shannon & Wilson personnel who collected analytical water samples for this project are State of Alaska Qualified Environmental Processionals as defined in 18 AAC 75.333[b]. Copies of our *Private Well Sampling Logs, Monitoring Well Sampling Logs,* and *Private Well Inventory Survey Forms* for samples and information collected during the reporting period are included in Appendix A.

2.1 Monitoring Well Sampling

Shannon & Wilson collected 15 primary groundwater and two or three field duplicates each quarter from the monitoring well network (monitoring wells MW-1 through MW-12). These wells were installed in October 2019 during site characterization activities. Monitoring well locations are shown on Figure 3.

Exhibit 2-1. Location of nest, MW-2; adjacent to City Hall.

Prior to sample collection, field staff purged monitoring wells using a peri-pump or

submersible pump and new, disposable PFAS-free tubing. The following parameters were measured using a YSI multiprobe water quality meter (YSI). Readings were recorded for the following parameters: temperature in degrees Celsius (°C), pH, conductivity in microSiemens, dissolved oxygen (DO) in milligrams per liter (mg/L), and redox potential in millivolts (mV). Parameters were recorded approximately once every three minutes until sample collection. The following values were used to indicate stability for a minimum of three consecutive readings: ±0.1 pH, ±3 percent °C, ±10 percent DO, ±3 percent conductivity, and ±10 mV redox. Samples were collected into laboratory-supplied bottles following parameter stabilization, or after three well volumes were purged.

Shannon & Wilson submitted groundwater samples collected from each monitoring well for analysis of 18 PFAS via EPA Method 537.1. Per DEC guidance, samples were also collected for petroleum compounds for monitoring wells MW-11-15 and MW-12-10. Sampling logs are included in Appendix A.

Shannon & Wilson discharged purge water to five-gallon buckets and treated purge water with granular activated carbon (GAC) before discharging to the ground surface.

Monitoring well descriptions are presented in Exhibit 2-2, below.

Exhibit 2-2: Quarterly Monitoring Well Network Summary

Monitoring Well	Location Description
MW-1-15	
MW-1-40	
MW-2-20	
MW-2-30	
MW-3-15	
MW-3-40	
MW-4-20	
MW-5-20	
MW-6-20	
MW-7-20	
MW-8-20	
MW-9-30	
MW-10-20	
MW-11-15	
MW-12-10	

2.2 Water-supply Well Sampling

Shannon & Wilson collected 70 primary and 14 field duplicates water-supply well samples from 35 water-supply wells during FY 2021. Water-supply well and POET system samples collected from [redacted] POET are not included in these totals. [redacted] POET sampling is described in Section 2.3.

Shannon & Wilson purged water-supply well systems prior to sampling by allowing the water to run until water-quality parameters stabilized and the water appeared clear. We measured these parameters using a YSI and recorded pH, temperature, and conductivity approximately once every three minutes until sample collection. The following values were used to indicate stability for a minimum of three consecutive readings: ±0.1 pH, ±0.5 °C, and ±3 percent conductivity. Purge water was discharged to an indoor sink or the ground surface. We note that indoor plumbing in the GST well search area generally leads to private septic systems.

Following parameter stabilization, field staff collected PFAS groundwater samples into laboratory-supplied sample bottles. Water-supply well samples were preserved with tris(hydroxymethyl)aminomethane buffer (Trizma®), per the laboratories standard operating procedure for drinking-water samples. Field staff collected water-supply well samples from sampling locations within the location's plumbing system, upstream of water-treatment systems or water softeners. For the purposes of this project, we do not consider small (i.e., less than 18 inches in height) particulate filters to be treatment systems. Copies of the *Residential Well Sampling Logs* are included in Appendix A.

Field staff are aware of the potential for cross-contamination from numerous everyday household items. Precautions to prevent cross-contamination included discontinuing the use of personal protective equipment and field supplies known to contain PFAS, using liner bags to contain samples before and after sample collection, hand washing, and donning a fresh pair of disposable nitrile gloves before sample collection.

2.2.1 Quarterly and Annual Monitoring

Quarterly and annual water-supply well sampling criteria is described in Section 1.5. The sampling status of each water-supply well is shown in Figure 2. In August and September 2020, Shannon & Wilson field staff collected samples from 14 of the 16 quarterly monitoring locations and nine of the 15 annual monitoring locations. In December 2020 staff collected samples from 11 of 15 quarterly monitoring locations and one annual location. In March

2021 staff collected samples from 12 of 15 quarterly monitoring locations and one annual location. During the June 2021 event, Shannon & Wilson sampled 15 of 15 quarterly monitoring locations.

These sampling events are summarized in Exhibit 2-3 below. Homes and businesses marked "No" indicate the owner or occupant declined sampling, or Shannon & Wilson was unable to reach the property contact. Property owners more commonly declined sampling in the winter and spring sampling events when many properties are winterized. Annual sampling was conducted in fall 2020 or during the next available sampling event. Shannon & Wilson intends to collect annual samples in the summer for future sampling events, in an attempt to collect samples from seasonal locations.

Exhibit 2-3: Quarterly and Annual Location Summary

Sample Name	Description	Fall 2020	Winter 2020	Spring 2021	Summer 2021
*NPS Well / PW-1001**	[redacted]	Yes	--	Yes ¥	--
PW-010	[redacted]	Yes	Yes	Yes	Yes
PW-012	[redacted]	Yes	Yes	Yes	Yes
*PW-032**	[redacted]	Yes	--	--	--
PW-037	[redacted]	Yes	Yes	Yes	Yes
PW-038	[redacted]	Yes	Yes	Yes	Yes
PW-039	[redacted]	Yes	Yes	Yes	Yes
PW-040	[redacted]	Yes	Yes	Yes	Yes
*PW-047**	[redacted]	No	--	--	--
PW-059	[redacted]	Yes	Yes	Yes	Yes
*PW-061**	[redacted]	Yes	--	--	--
*PW-074**	[redacted]	No	--	--	--
PW-203	[redacted]	Yes	Yes	Yes	Yes
PW-204 (removed) *PW-204.1* (new)	[redacted]	Yes --	No --	-- No	-- Yes ‡
PW-205.1 (new)	[redacted]	--	--	--	Yes ‡
*PW-207**	[redacted]	No	--	--	--
PW-208 (removed) *PW-208.1*† (new)	[redacted]	No --	No --	Yes --	-- Yes ‡
PW-211	[redacted]	Yes	Yes	Yes	Yes
*PW-212**	[redacted]	Yes	--	--	--
*PW-213**	[redacted]	Yes †	--	--	--
*PW-218**	[redacted]	No	Yes	--	--
*PW-219**	[redacted]	Yes	--	--	--
PW-221	[redacted]	Yes	Yes	Yes	Yes
*PW-230**	[redacted]	Yes	--	--	--
*PW-240**	[redacted]	Yes	--	--	--
*PW-241**	[redacted]	No	--	--	--
PW-401	[redacted]	Yes	Yes	Yes	Yes
*PW-414**	[redacted]	Yes	--	--	--
PW-419	[redacted]	Yes	No	No	Yes
*PW-438**	[redacted]	Yes	--	--	--
*PW-462***	[redacted]	Yes	--	--	--

Notes:

*=annual sample; **=removed from network due to well category; †=exceeded regulatory levels, removed from monitoring network; ‡=first-time sample; ¥=sampled at request of DEC.

2.2.2 First-Time Samples

Shannon & Wilson field staff revisited locations we were unable to sample or reach during previous mobilizations during each water-supply well sampling event. Locations where more than five attempts have been made to contact owners are no longer being visited. We consider these locations to be passive refusals.

In March 2021, Shannon & Wilson collected a sample from the well at the [redacted] (PW-465). This property contains two wells, [redacted] (PW-415) [redacted] (PW-465). [redacted].

In June 2021, Shannon & Wilson collected a sample from the water-supply well [redacted] (PW-062). Previous contact had been made with the owner of this property; however, the owner [redacted] was not available during prior sampling events.

In June 2021, Shannon & Wilson collected first-time samples from three properties where the previous well had been replaced with a new water-supply well. We denote the new wells using the original private well identification (PW-ID) followed by a "." and counting consecutively. The following new wells were sampled during the reporting period: PW-204.1, PW-205.1, and PW-208.1.

2.2.3 December 2020 Flood Response Samples

In December 2020, Gustavus experienced a period of rainfall that caused flooding in the neighborhoods near the GST. In response to numerous requests from residents concerned that the flooding may have facilitated migration of PFAS into new areas, DEC and DOT&PF requested Shannon & Wilson collect additional water-supply well samples from properties in areas that may have been impacted by PFAS transport in flood waters. The following flood-response samples were collected during the December 2020/January 2021 sampling event:

- *NPS Well* – also sampled annually as part of the water-supply well monitoring;
- *PW-016* - previously sampled in August 2018;
- *PW-045* - previously sampled in August 2018 and October 2019. Note: this property was unable to be sampled as part of the flood response until June 2021, [redacted]
- *PW-235* - previously sampled in November 2018; and

- *PW-466* - first-time water sample from a water-supply well [redacted]

2.2.4 Notification of Results

Shannon & Wilson notified property owners and occupants following the receipt of analytical data. Owners and/or occupants were first contacted by telephone, where possible. We also prepared letters interpreting the results of the relevant water-supply well sample(s). When requested, results letters were e-mailed to owners and occupants.

Letters were tailored to each property and analytical sample and included the following information:

- sample name(s);
- comparison of PFOS and PFOA analytical results to the EPA LHA level;
- description of the project;
- pages of the laboratory report that apply to the water-well sample; and
- updated GST PFAS fact sheet.

A copy of the result letter template is included in Appendix B.

2.2.5 Public Information

The DOT&PF hosts a webpage describing the PFAS water-testing project. The webpage includes a project summary, list of contacts, a results map, and links to additional resources. The map is updated as analytical results are received and uploaded to the webpage by DOT&PF.

2.3 Point-of-Entry Treatment System Monitoring

Shannon & Wilson collected samples from the POET system installed at the [redacted] The POET system is designed to remove PFAS and arsenic from the drinking-water associated with water-supply well PW-200. Water samples were collected following parameter stabilization as described in section 2.2. Quarterly samples were collected during the reporting period from the following locations in the treatment system:

- *PW-200-Sink*: collected from a post-treatment sink or spigot, generally collected from the sink in the garage. This sample is submitted for PFAS and arsenic analysis.
- *PW-200-C Port Composite*: collected from the mid-system C-port of each of the four parallel treatment units. This composite sample is submitted for PFAS analysis.

- *PW-200-Unit C-port*: collected from the mid-system C-port of each of the four parallel treatment units. These individual samples are submitted for PFAS analysis; however, the sample is not analyzed unless PFAS is detected in the composite sample listed above. These samples were not analyzed during the reporting period.
- *PW-200-F-port*: collected from the F-port located immediately after the treatment system, prior to entering indoor plumbing. This sample is submitted for PFAS and arsenic analysis; however, the sample is not analyzed unless results from the other ports indicate PFAS and/or arsenic in the treated water. This sample was not analyzed during the reporting period.
- *PW-200*: collected from the raw-water spigot, usually the A-port or the pressure tank spigot. This sample is submitted for PFAS and arsenic analysis.

2.4 Sample Custody, Storage, and Transport

Immediately after collection, the PFAS sample bottles for each location were placed in Ziploc bags and stored in a designated sample cooler or refrigerator maintained between 0 °C and 6 °C with ice substitute separated from the sample bottles by a liner bag. Samples submitted for additional analyses were also stored in the temperature-controlled cooler; however, the requirement to bag the samples and ice separately is not needed.

Shannon & Wilson maintained custody of the samples until submitting them to the laboratories for analysis. Analytical samples and chain-of-custody forms were packaged in a hard-plastic cooler with an adequate quantity of frozen-ice substitute and packing materials to prevent bottle breakage during shipments. Staff applied custody seals to the cooler, which were observed to be intact upon receipt by the laboratory.

Shannon & Wilson shipped the sample coolers to Eurofins TestAmerica in West Sacramento, California (Eurofins) for analysis of PFAS using Alaska Air Cargo's priority overnight service known as Goldstreak. Shannon & Wilson shipped or hand-delivered sample coolers to SGS North America, Inc. (SGS) in Alaska for analysis of petroleum and arsenic analytes.

Shannon & Wilson submitted water samples promptly to the analytical laboratories after each sampling event. This allowed sufficient time for the laboratories to analyze the samples within the holding-time requirements.

2.5 Deviations

In general, Shannon & Wilson conducted services in accordance with the approved proposals and approved work plan addendum. The following are deviations from the proposed scope of services described in Section 1.5.

- Sample *PW-012* was collected from a location downstream of the property's water softener or other in-home treatment system during one or more sampling events.
- Due to an YSI malfunction, pH readings were not accurate during sampling of several monitoring wells in June 2021. The remaining parameters were stabilized prior to samples collection, and pH was approximated using pH paper; however, stabilization of pH for these samples is not assured. Inaccurate pH readings occurred for the following June 2021 monitoring well samples: *MW-5-20, MW-6-20, MW-7-20, MW-8-20, MW-9-30. MW-10-20, MW-11-15,* and *MW-12-10.*
- Sample *PW-462* was collected via a hand pump in September 2020, and parameters were not measured or recorded.
- Sample *PW-208* was collected in March 2021 using a peri-pump. The water-supply well was not connected to the home at the time.
- Sample *PW-205.1* was collected in June 2021 using a residential well pump intended to be used with indoor plumbing. The pump was connected to a PVC pipe for purging, the pipe could not be removed prior to sample collection.
- Sample *PW-208.1* was collected in June 2021 using a residential well pump intended to be used with indoor plumbing.
- Samples *MW-11-15* and *MW-12-10* submitted for the analysis of volatile organic compounds (VOCs) were collected using a peri-pump in Fall 2020, Winter 2020, and Spring 2021.

3 ANALYTICAL RESULTS

Shannon & Wilson submitted groundwater samples to Eurofins for analysis of 18 PFAS compounds using EPA Method 537.1. PFAS analytes are listed in Exhibit 1-2. Results of water-supply well and monitoring well samples were compared to the EPA LHA.

We submitted onsite monitoring well water samples (*MW-11-15* and *MW-12-10*) collected in August/September 2020 to SGS in Anchorage, Alaska for analysis of VOCs by method 8260C, gasoline range organics (GRO) by AK Method 101, diesel range organics (DRO) by AK Method 102, residual range organics (RRO) by AK Method 103, and polycyclic aromatic hydrocarbons (PAH) by EPA Method 8270D-SIM.

We submitted onsite monitoring samples collected in December 2020, March 2021, and June 2021 for benzene, toluene, ethylbenzene, and xylenes (BTEX) analysis by EPA Method 8260 instead of the full VOC analysis.

Water samples were also submitted to SGS for the analysis of arsenic by EPA 200.8 for the POET quarterly monitoring.

The Eurofins and SGS laboratory reports, associated DEC Laboratory Data Review Checklists (LDRCs), and a summary of our Quality Assurance/Quality Control (QA/QC) assessment are included in Appendix C. PFAS results for water-supply well and monitoring well samples collected July 2020 through June 2021 are shown in Tables 1 through 4 and Tables 5 through 8, respectively. Results of petroleum analyses from onsite monitoring wells are shown on Table 9. PFAS and arsenic results from samples collected from the [redacted] POET system are shown on Table 10. The maximum PFOS+PFOA result for each sampling location as of August 2021 is depicted on Figure 4.

3.1 Water-supply Wells

The following sections summarize the water-supply well results associated with each FY 2021 sampling event.

3.1.1 Fall 2020

Table 1 summarizes concentrations of target PFAS analytes for August and September 2020 quarterly and annual water-supply well samples (Eurofins work order [WO] 320-64367-1). None of the samples collected had reported PFOS and PFOA concentrations above the EPA LHA. Analytical results for three wells exhibited combined PFOS and PFOA concentrations greater than 35 ng/L.

The sum of PFOS and PFOA was 69 ng/L in sample *PW-462*. This well exhibited the highest PFOS concentration for the fall 2020 sampling event. Note, the owners previously reported that they planned to develop this property, with the intention of using PW-462 as a drinking water source. The property has not been developed since it was reported as a future water-supply well. This well is not currently used for indoor plumbing or drinking water and has been removed from the monitoring events.

3.1.2 Winter 2020

Table 2 summarizes concentrations of target PFAS analytes for December 2020 and January 2021 quarterly and first-time water-supply well samples (Eurofins WO 320-68521-1). None of the samples collected had reported PFOS and PFOA concentrations above the EPA LHA.

Analytical results for sample *PW-401* exhibited combined PFOS and PFOA concentrations of 31 ng/L. This well had the highest reported PFAS concentration for this sampling event. PFAS analytes were not detected in the first-time sample *PW-466*.

3.1.3 Spring 2021

Table 3 summarizes concentrations of target PFAS analytes for March 2021 quarterly and first-time water-supply well samples (Eurofins WO 320-71796-1).

Analytical results for first-time sample *PW-465* exhibited combined PFOS and PFOA concentrations above the LHA, reported at 119 ng/L. Analytical results for quarterly sample *PW-401* exhibited combined PFOS and PFOA concentrations of 31 ng/L.

3.1.4 Summer 2021

Table 4 summarizes concentrations of target PFAS analytes in June 2021 quarterly and first-time water-supply well samples (Eurofins WO 320-75575-1).

Analytical results for first-time sample *PW-208.1* exhibited combined PFOS and PFOA of 70 ng/L, equivalent to the LHA. This well is considered "affected" and is no longer part of the monitoring sampling events. Analytical results for first time samples *PW-062*, *PW-204.1*, and *PW-205.1* exhibited detections of PFAS less than the LHA.

3.1.5 Historical Results

Historical PFOS results for quarterly water-supply well samples collected between August 2018 and June 2021 are plotted in Figure D.1 (Appendix D). Locations with less than four detectable results of PFOS are excluded.

Select water-supply well locations with detections of multiple PFAS analytes in historical samples collected August 2018 through June 2021 are plotted in Figure D.2 through D.5.

3.2 Monitoring Wells

The following sections summarize the monitoring well results associated with each monitoring well sampling event.

3.2.1 Fall 2020

Table 5 summarizes concentrations of target PFAS analytes in August and September 2020 quarterly monitoring well samples (Eurofins WO 320-64368-1). Analytical results for the following monitoring well samples exhibited PFAS results above the LHA: *MW-2-20, MW-9-30, MW-10-20, MW-11-15,* and *MW-12-10.*

The sum of PFOS and PFOA was 296 ng/L in sample *MW-2-20.* This well exhibited the highest PFAS concentrations for this sampling event.

3.2.2 Winter 2020

Table 6 summarizes concentrations of target PFAS analytes in December 2020 and January 2021 quarterly monitoring well samples (Eurofins WO 320-68519-1). Analytical results for the following monitoring well samples exhibited PFAS results above the LHA: *MW-2-20, MW-9-30, MW-11-15,* and *MW-12-10.*

The sum of PFOS and PFOA was 6,192 ng/L in sample *MW-11-15.* This well exhibited the highest PFAS concentrations for this sampling event.

3.2.3 Spring 2021

Table 7 summarizes concentrations of target PFAS analytes in March 2021 quarterly monitoring well samples (Eurofins WO 320-71798-1). Analytical results for the following monitoring well samples exhibited PFAS results above the LHA: *MW-2-20, MW-9-30,* and *MW-11-15.*

The sum of PFOS and PFOA was 328 ng/L in sample *MW-2-20.* This well exhibited the highest PFAS concentrations for this sampling event.

3.2.4 Summer 2021

Table 8 summarizes concentrations of target PFAS analytes in June 2021 quarterly monitoring well samples (Eurofins WO 320-75574-1). Analytical results for the following monitoring well samples exhibited PFAS results above the LHA: *MW-2-20, MW-9-30, MW-10-20,* and *MW-11-15.*

The sum of PFOS and PFOA was 482 ng/L in sample *MW-2-20.* This well exhibited the highest PFAS concentrations for this sampling event.

3.2.5 Petroleum Analysis

Table 9 summarizes concentrations of target petroleum compounds from August 2020 through June 2021 monitoring well samples. None of the reported analytes were detected above the laboratory reporting limits for the analytical samples collected during the reporting period.

3.2.6 Historical Results

PFAS results for monitoring well samples collected August 2018 through June 2021 are plotted in Figures D.6 through D.14. Locations with less than 4 detectable results are excluded.

3.3 POET System Monitoring

Table 10 summarize concentrations of PFAS and arsenic analytes in samples associated with the POET system installed at the [redacted] (PW-200).

Analytical results for samples collected from untreated groundwater had reported concentrations of PFOS and PFOA above the LHA in the sample collected in August 2020. Combined PFOA and PFOA concentrations were less than the LHA in samples collected in December 2020, March 2021, and June 2021.

Analytical arsenic results exceeded regulatory limits in the untreated groundwater samples collected during each sampling events covered in this report.

Except for a low-level detection of PFOA in the August 2020 C-port composite sample, PFAS analytes were not detected in the treated water (sink) or C-port composite samples during each sampling event covered in this report.

4 DISCUSSION AND RECOMMENDATIONS

The following sections provide a detailed discussion of the results of quarterly water-supply and monitoring well sampling, and POET system testing performed July 2020 through June 2021. Observations and recommendations are based on available data and may be revised following future sampling events. We note that conclusions derived from small data sets may be prone to errors and inconsistencies.

4.1 Comparison to Regulatory Levels

Historical results for the water-supply well samples are provided as Table 11.

4.1.1 Water-supply Wells

Between July 2020 and June 2021, two first-time samples from water-supply wells had reported combined PFOS and PFOA concentrations above the drinking-water action level. The combined PFOS and PFOA concentration in sample *PW-208.1* was 70 ng/L during the summer 2021 sampling event (Table 4). This well was installed in March 2021, as a part of a renovation to an existing property. Previous samples collected from the original well on the property (PW-208) did not exceed the LHA. The combined PFOS and PFOA concentration in sample *PW-465* was 119 ng/L during the spring 2021 sampling event (Table 3). This well was historically used for guest houses located on the property. The well servicing the main home on this property exceeded the LHA in a previous sampling event. Locations where the

well concentration exceeds the LHA are receiving bottled water until a long-term alternative water solution is in place.

PFOS was frequently the highest detected PFAS analyte in the quarterly water-supply well samples collected during the events covered in this report.

4.1.2 Monitoring Wells

Between July 2020 and June 2021, 16 samples from groundwater monitoring wells had combined PFOS and PFOA concentrations above the LHA drinking-water action level. Of these, two samples had PFOS results above the DEC groundwater cleanup level of 400 ng/L. Sample *MW-11-15* collected in December 2020, exhibited a PFOS concentration of 6,100 ng/L (Table 6). Sample MW-*2-20* collected in June 2021 exhibited a PFOS concentration of 450 ng/L during the summer 2021 sampling event.

PFOS was frequently the highest detected PFAS analyte in the quarterly monitoring well samples collected during the events covered in this report.

4.2 Trend Analysis

Shannon & Wilson performed a statistical analysis on the PFAS data set to provide information regarding the potential future risk to receptors via drinking water exposure. We assessed temporal data for quarterly and/or annual water-supply and monitoring wells using a Mann-Kendall nonparametric trend analysis. Mann-Kendall analyzes for increasing or decreasing trends with a confidence above 95 percent.

We are unable to report a trend for locations where fewer than four sample results are available. Trends were analyzed for C4 PFBS, C5 PFHpA, C6 PFHxS, C6 PFHxA, C8 PFOS, C8 PFOA, and PFOS and PFOA combined values. We note these trends were calculated using between five and eight sampling events and are subject to change as more data are accumulated.

Professional judgement was used to interpret trends derived from data that included a mixture of non-detected results and estimated detections below the laboratory reporting limit. Our statistical analysis referenced the laboratory reporting limit for non-detected results. Trends were not derived from data sets with a mixture of detected and non-detected results where 50 percent or more of the data set was not detected. Trends are reported as stable for analytes with consistent non-detected PFAS results for the reported location.

4.2.1 Water-Supply Wells

Table 12 summarizes the statistical analysis data for the quarterly and/or annual water-supply well locations. There were no locations in the quarterly water-supply well monitoring network that exhibited statistically significant "increasing" trends for PFOS or PFOA (Table 12). However, we note that many of the water-supply wells with higher levels of PFAS have been omitted from statistical analysis for lack of monitoring data. Two water-supply well locations exhibit "possibly increasing" trends for other PFAS.

4.2.1.1 PFOS Trend Analysis

Water-supply wells where trend analysis was conducted did not exhibit a statistically significant increasing trend in PFOS concentrations. Sample results for locations NPS Well and PW-401 exhibited a "decreasing" trend in PFOS concentration. Concentrations of PFOS in locations PW-012 and PW-200 exhibited a "possibly decreasing" trend. PFOS results for locations PW-010, PW-037, PW-038, PW-039, PW-040 and PW-221 exhibited a "stable" trend with no significant change. We note that PFOS was not detected in samples collected from July 2020 through June 2021 for locations PW-037, PW-038, PW-039, and PW-040.

4.2.1.2 PFOA Trend Analysis

Water-supply wells where trend analysis was conducted did not exhibit a statistically significant increasing trend in PFOA concentrations. Sample results for locations NPS Well and PW-200 exhibited a "decreasing" trend in PFOA concentration. PFOA results for locations PW-010, PW-037, PW-038, PW-040, PW-221 and PW-401 exhibited a "stable" trend with no significant change. We note that PFOA was not detected in samples collected from July 2020 through Jun 2021 for locations PW-037, PW-038, PW-040 and PW-221.

4.2.1.3 PFOS and PFOA Combined Trend Analysis

Trends for combined PFOS and PFOA concentrations were analyzed for water-supply well locations with calculable LHA combined values. Locations with no detections of PFOS or PFOA were not analyzed.

Water-supply well location NPS Well exhibited statistically significant evidence of a "decreasing" trend. Locations PW-012, PW-200, and PW-401 exhibited a "possibly decreasing" trend. The trend for locations PW-010, PW-040, PW-221 was calculated as "stable" with no significant change.

4.2.2 Monitoring Wells

Table 13 summarizes the statistical analysis for the monitoring well network.

4.2.2.1 PFOS Trend Analysis

Monitoring wells MW-3-40 and MW-7-20 exhibited statistically significant "increasing" trends for PFOS for samples collected through June 2021. The PFOS trend associated with monitoring wells MW-2-20, MW-2-30, MW-4-20, MW-10-20, and MW-12-10 is reported as "stable" with no significant changes. PFOS concentrations in monitoring well MW-3-15 exhibited a statistically significant "decreasing" trend. A trend was unable to be calculated or "no trend" was reported for the remaining monitoring wells.

4.2.2.2 PFOA Trend Analysis

Statistical analysis of PFOA concentrations for the monitoring wells did not report "increasing" or "decreasing" trends for the monitoring wells. PFOA concentrations are reported as "no trend" or as "stable" with no significant changes.

4.2.2.3 PFOS and PFOA Combined Trend Analysis

Trends for combined PFOS and PFOA concentrations were analyzed for monitoring well locations with calculable combined values. Locations with no detections of PFOS or PFOA were not analyzed.

Monitoring wells MW-2-20, MW-3-40, MW-5-20, and MW-7-20 exhibited statistically significant evidence of an "increasing" trend for PFOS and PFOA combined and monitoring well MW-3-15 exhibited statistically significant evidence of a "decreasing" trend.

Notably the PFOS and PFOA results in monitoring well MW-11-15 near the former fire training area had a reported spike in concentration in the December 2020 sampling event. This is likely attributable to the significant rainfall received prior to the sampling event.

4.3 Recommendations

Based on the water-supply well search and sampling efforts completed between July 2020 and June 2021, Shannon & Wilson recommends the DOT&PF:

- discontinue collecting analytical samples for petroleum analytes at locations associated with monitoring wells MW-11 and MW-12;
- continue to conduct the annual water-supply well sampling event in the summer months due to scheduling considerations;
- following this report maps produced for the water-supply and monitoring well data should avoid depicting current data with historical data, as results may have changed and may not represent the current conditions;

- work with the DEC and Alaska Department of Health and Social Services to educate the public regarding the potential health effects of exposure to PFAS-containing water;
- provide the information for monitoring well MW-2-20 to DEC for the purpose of their investigation, given this well has an increasing trend and is likely associated with a secondary source;
- refrain from discharging PFAS-containing AFFF to the ground, surface water bodies, or groundwater during ARFF training and equipment testing;
- discuss with the DEC the sampling criteria described in Section 1.5 and potential upcoming changes to the regulations following EPA's recent publications; and
- consider the following changes (Exhibit 4-1) to the water-supply well network's monitoring frequency.

Exhibit 4-1: Proposed Water-Supply Well Monitoring Network

Quarterly Location	Previous Sampling Frequency	Proposed Sampling Frequency	Reason
PW-010	Quarterly	Quarterly	Frequency not proposed to change
PW-012	Quarterly	Semi-annual	"Possibly decreasing" trend
PW-037	Quarterly	Annual	PFOS & PFOA consistently not detected
PW-038	Quarterly	Annual	PFOS & PFOA consistently not detected
PW-039	Quarterly	Annual	PFOS & PFOA consistently not detected
PW-040	Quarterly	Annual	PFOS & PFOA consistently not detected
PW-059	Quarterly	Quarterly	Frequency not proposed to change
PW-203	Quarterly	Quarterly	Frequency not proposed to change
PW-204	Quarterly	Removed	Well was replaced by owner
PW-204.1	Quarterly	Quarterly	Limited data set for new location
PW-205.1	Quarterly	Quarterly	Limited data set for new location
PW-208	Quarterly	Removed	Well was replaced by owner. New well considered "affected" and also not part of monitoring network.
PW-211	Quarterly	Semi-annual	Consistent PFAS results below reporting limit
PW-221	Quarterly	Quarterly	Frequency not proposed to change
PW-401	Quarterly	Quarterly	Frequency not proposed to change
PW-419	Quarterly	Semi-annual	Seasonal well, access varies with seasonal weather variation

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. "Important

Information about your Geotechnical/Environmental Report" has been prepared and is included, to assist you and others in understanding the use and limitations of this report.

5 REFERENCES

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Table 1 - Summary of August/September 2020 Water-Supply Well Analytical PFAS Results

			Sample Name	NPS Well		PW-010	PW-012		PW-032	PW-037	PW-038	PW-039	PW-040
Analyte	EPA LHA	Units		9/2/2020	9/2/2020 (DUP)	9/2/2020	9/3/2020	9/3/2020 (DUP)	9/1/2020	9/1/2020	9/1/2020	9/1/2020	9/1/2020
Perfluorohexanesulfonic acid (PFHxS)	-	ng/L		7.3	7.4	0.60 J	4.7	4.2	<1.9	<1.9	<1.9	<1.9	<1.9
Perfluorohexanoic acid (PFHxA)	-	ng/L		4.2	4.3	<1.9	1.2 J	1.1 J	<1.9	<1.9	<1.9	<1.9	<1.9
Perfluoroheptanoic acid (PFHpA)	-	ng/L		1.5 J	1.5 J	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
Perfluorononanoic acid (PFNA)	-	ng/L		<1.9	<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
Perfluorobutanesulfonic acid (PFBS)	-	ng/L		0.85 J	0.84 J	<1.9	0.50 J	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
Perfluorodecanoic acid (PFDA)	-	ng/L		<1.9	<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
Perfluoroundecanoic acid (PFUnA)	-	ng/L		<1.9	<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
Perfluorododecanoic acid (PFDoA)	-	ng/L		<1.9	<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
Perfluorotridecanoic acid (PFTrDA)	-	ng/L		<1.9	<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
Perfluorotetradecanoic acid (PFTeA)	-	ng/L		<1.9	<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	-	ng/L		<1.9	<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	-	ng/L		<1.9	<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	-	ng/L		<1.9	<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	-	ng/L		<1.9	<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	-	ng/L		<1.9	<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
Hexafluoropropylene oxide dimer acid (HFPO-DA)	-	ng/L		<1.9	<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
Perfluorooctanesulfonic acid (PFOS)	70†	ng/L		9.7	10	0.88 J	15	14	<1.9	<1.9	<1.9	<1.9	<1.9
Perfluorooctanoic acid (PFOA)		ng/L		1.9	2.0	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
LHA Combined (PFOS + PFOA)	70†	ng/L		12	12	0.88 J‡	15 ‡	14 ‡	N/A	N/A	N/A	N/A	N/A

Notes:

Sample results reported in TestAmerica Work Order J64367-1

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

EPA Environmental Protection Agency

LHA Lifetime Health Advisory

† EPA LHA level is 70 ppt for PFOS and PFOA combined.

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

DUP Field-duplicate sample

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.

‡ Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.

N/A Not applicable. The combined concentration could not be calculated because PFOS and PFOA were not detected in the project sample.

Table 1 - Summary of August/September 2020 Water-Supply Well Analytical PFAS Results

			Sample Name	PW-059	PW-061	PW-203		PW-204	PW-211	PW-212	PW-213	PW-219	PW-221
Analyte	EPA LHA	Units		9/1/2020	9/1/2020	9/1/2020	9/1/2020 (DUP)	9/2/2020	8/31/2020	8/31/2020	9/2/2020	8/31/2020	9/2/2020
Perfluorohexanesulfonic acid (PFHxS)	-	ng/L		0.78 J	0.85 J	0.81 J	0.95 J	3.2	<1.9	<1.9	17	<1.9	0.86 J
Perfluorohexanoic acid (PFHxA)	-	ng/L		<1.9	1.5 J	0.48 J	0.67 J	0.97 J	<1.9	<1.9	6.7	<1.9	<2.0
Perfluoroheptanoic acid (PFHpA)	-	ng/L		<1.9	0.82 J	<1.9	<1.9	0.47 J	<1.9	<1.9	2.5	<1.9	<2.0
Perfluorononanoic acid (PFNA)	-	ng/L		<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<2.0
Perfluorobutanesulfonic acid (PFBS)	-	ng/L		0.75 J	0.49 J	<1.9	<1.9	<1.9	<1.9	<1.9	1.6 J	<1.9	<2.0
Perfluorodecanoic acid (PFDA)	-	ng/L		<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<2.0
Perfluoroundecanoic acid (PFUnA)	-	ng/L		<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<2.0
Perfluorododecanoic acid (PFDoA)	-	ng/L		<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<2.0
Perfluorotridecanoic acid (PFTrDA)	-	ng/L		<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<2.0
Perfluorotetradecanoic acid (PFTeA)	-	ng/L		<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<2.0
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	-	ng/L		<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<2.0
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	-	ng/L		<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<2.0
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	-	ng/L		<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<2.0
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	-	ng/L		<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<2.0
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	-	ng/L		<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<2.0
Hexafluoropropylene oxide dimer acid (HFPO-DA)	-	ng/L		<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<2.0
Perfluorooctanesulfonic acid (PFOS)	70†	ng/L		<1.9	0.49 J	<1.9	0.70 J	6.1	0.65 J	<1.9	61	<1.9	1.5 J
Perfluorooctanoic acid (PFOA)		ng/L		<1.9	1.9	<1.9	0.50 J	0.75 J	<1.9	<1.9	1.4 J	<1.9	<2.0
LHA Combined (PFOS + PFOA)	70†	ng/L		N/A	2.4 J	N/A	1.2 J	6.9 J	0.65 J‡	N/A	62 J	N/A	1.5 J‡

Notes:

Sample results reported in TestAmerica Work Order J64367-1

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

EPA Environmental Protection Agency

LHA Lifetime Health Advisory

† EPA LHA level is 70 ppt for PFOS and PFOA combined.

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

DUP Field-duplicate sample

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.

‡ Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.

N/A Not applicable. The combined concentration could not be calculated because PFOS and PFOA were not detected in the project sample.

Table 1 - Summary of August/September 2020 Water-Supply Well Analytical PFAS Results

Analyte	EPA LHA	Units	Sample Name	PW-230	PW-240	PW-401		PW-414	PW-419	PW-438	PW-462
				9/1/2020	9/1/2020	9/1/2020	9/1/2020 (DUP)	9/1/2020	9/2/2020	8/31/2020	9/2/2020
Perfluorohexanesulfonic acid (PFHxS)	-	ng/L		0.71 J	2.0	9.9	9.6	0.74 J	1.9	1.9	13 J*
Perfluorohexanoic acid (PFHxA)	-	ng/L		<1.8	<1.9	4.1	4.4	<1.9	0.54 J	0.52 J	4.9 J*
Perfluoroheptanoic acid (PFHpA)	-	ng/L		<1.8	<1.9	1.2 J	1.3 J	<1.9	<1.9	<1.9	2.0 J*
Perfluorononanoic acid (PFNA)	-	ng/L		<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.8 J*
Perfluorobutanesulfonic acid (PFBS)	-	ng/L		<1.8	<1.9	0.90 J	0.89 J	<1.9	<1.9	<1.9	0.74 J*
Perfluorodecanoic acid (PFDA)	-	ng/L		<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.8 J*
Perfluoroundecanoic acid (PFUnA)	-	ng/L		<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.8 J*
Perfluorododecanoic acid (PFDoA)	-	ng/L		<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.8 J*
Perfluorotridecanoic acid (PFTrDA)	-	ng/L		<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.8 J*
Perfluorotetradecanoic acid (PFTeA)	-	ng/L		<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.8 J*
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	-	ng/L		<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.8 J*
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	-	ng/L		<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.8 J*
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	-	ng/L		<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.8 J*
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	-	ng/L		<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.8 J*
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	-	ng/L		<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.8 J*
Hexafluoropropylene oxide dimer acid (HFPO-DA)	-	ng/L		<1.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.8 J*
Perfluorooctanesulfonic acid (PFOS)	70†	ng/L		0.68 J	1.8 J	38	38	1.2 J	3.4	3.7	68 J*
Perfluorooctanoic acid (PFOA)		ng/L		1.0 J	<1.9	0.68 J	0.71 J	<1.9	<1.9	<1.9	0.99 J*
LHA Combined (PFOS + PFOA)	70†	ng/L		1.7 J	1.8 J‡	39 J	39 J	1.2 J‡	3.4 ‡	3.7 ‡	69 J*

Notes:

Sample results reported in TestAmerica Work Order J64367-1

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

EPA Environmental Protection Agency

LHA Lifetime Health Advisory

† EPA LHA level is 70 ppt for PFOS and PFOA combined.

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

DUP Field-duplicate sample

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.

‡ Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.

N/A Not applicable. The combined concentration could not be calculated because PFOS and PFOA were not detected in the project sample.

Table 2 - Summary of December 2020/January 2021 Water-Supply Well Analytical PFAS Results

			Sample Name	PW-010	PW-012	PW-016	PW-037	PW-038		PW-039	PW-040	PW-059	PW-203
Analyte	EPA LHA	Units		12/30/2020	1/2/2021	12/29/2020	12/31/2020	12/31/2020	12/31/2020 (DUP)	12/31/2020	12/31/2020	12/30/2020	12/31/2020
Perfluorohexanesulfonic acid (PFHxS)	-	ng/L		<1.8	8.5	1.3 J	<1.8	<1.8	<1.9	<1.8	<1.8	1.6 J	<1.9
Perfluorohexanoic acid (PFHxA)	-	ng/L		<1.8	3.3	7.3	<1.8	<1.8	<1.9	0.54 J	<1.8	0.55 J	<1.9
Perfluoroheptanoic acid (PFHpA)	-	ng/L		<1.8	1.1 J	3.4	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.9
Perfluorononanoic acid (PFNA)	-	ng/L		<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.9
Perfluorobutanesulfonic acid (PFBS)	-	ng/L		<1.8	0.59 J	1.2 J	<1.8	<1.8	<1.9	<1.8	<1.8	0.72 J	<1.9
Perfluorodecanoic acid (PFDA)	-	ng/L		<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.9
Perfluoroundecanoic acid (PFUnA)	-	ng/L		<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.9
Perfluorododecanoic acid (PFDoA)	-	ng/L		<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.9
Perfluorotridecanoic acid (PFTrDA)	-	ng/L		<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.9
Perfluorotetradecanoic acid (PFTeA)	-	ng/L		<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.9
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	-	ng/L		<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.9
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	-	ng/L		<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.9
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	-	ng/L		<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<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	<1.8	<1.8	<1.9	<1.9
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	-	ng/L		<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.9
Hexafluoropropylene oxide dimer acid (HFPO-DA)	-	ng/L		<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9	<1.9
Perfluorooctanesulfonic acid (PFOS)	70†	ng/L		0.46 J	12	0.69 J	<1.8	<1.8	<1.9	<1.8	<1.8	1.0 J	<1.9
Perfluorooctanoic acid (PFOA)		ng/L		<1.8	0.47 J	8.6	<1.8	<1.8	<1.9	<1.8	<1.8	0.70 J	<1.9
LHA Combined (PFOS + PFOA)	70†	ng/L		0.46 J‡	12 J	9.3 J	N/A	N/A	N/A	N/A	N/A	1.7 J	N/A

Notes:
Sample results reported in TestAmerica Work Order J68521-1

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

EPA Environmental Protection Agency

LHA Lifetime Health Advisory

† EPA LHA level is 70 ppt for PFOS and PFOA combined.

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

DUP Field-duplicate sample

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.

‡ Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.

N/A Not applicable. The combined concentration could not be calculated because PFOS and PFOA were not detected in the project sample.

Table 2 - Summary of December 2020/January 2021 Water-Supply Well Analytical PFAS Results

			Sample Name	PW-211	PW-218	PW-221		PW-235	PW-401		PW-466
Analyte	EPA LHA	Units		12/30/2020	12/30/2020	12/30/2020	12/30/2020 (DUP)	12/29/2020	12/29/2020	12/29/2020 (DUP)	1/1/2021
Perfluorohexanesulfonic acid (PFHxS)	-	ng/L		<1.9	<1.9	1.3 J	1.2 J	<1.9	6.9	6.6	<1.8
Perfluorohexanoic acid (PFHxA)	-	ng/L		<1.9	<1.9	<1.9	<2.0	<1.9	2.8	2.6	<1.8
Perfluoroheptanoic acid (PFHpA)	-	ng/L		<1.9	<1.9	<1.9	<2.0	<1.9	1.1 J	1.0 J	<1.8
Perfluorononanoic acid (PFNA)	-	ng/L		<1.9	<1.9	<1.9	<2.0	<1.9	<2.0	<2.0	<1.8
Perfluorobutanesulfonic acid (PFBS)	-	ng/L		<1.9	<1.9	<1.9	<2.0	<1.9	<2.0	<2.0	<1.8
Perfluorodecanoic acid (PFDA)	-	ng/L		<1.9	<1.9	<1.9	<2.0	<1.9	<2.0	<2.0	<1.8
Perfluoroundecanoic acid (PFUnA)	-	ng/L		<1.9	<1.9	<1.9	<2.0	<1.9	<2.0	<2.0	<1.8
Perfluorododecanoic acid (PFDoA)	-	ng/L		<1.9	<1.9	<1.9	<2.0	<1.9	<2.0	<2.0	<1.8
Perfluorotridecanoic acid (PFTrDA)	-	ng/L		<1.9	<1.9	<1.9	<2.0	<1.9	<2.0	<2.0	<1.8
Perfluorotetradecanoic acid (PFTeA)	-	ng/L		<1.9	<1.9	<1.9	<2.0	<1.9	<2.0	<2.0	<1.8
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	-	ng/L		1.9	<1.9	<1.9	<2.0	<1.9	<2.0	<2.0	<1.8
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	-	ng/L		<1.9	<1.9	<1.9	<2.0	<1.9	<2.0	<2.0	<1.8
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	-	ng/L		<1.9	<1.9	<1.9	<2.0	<1.9	<2.0	<2.0	<1.8
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	-	ng/L		<1.9	<1.9	<1.9	<2.0	<1.9	<2.0	<2.0	<1.8
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	-	ng/L		<1.9	<1.9	<1.9	<2.0	<1.9	<2.0	<2.0	<1.8
Hexafluoropropylene oxide dimer acid (HFPO-DA)	-	ng/L		<1.9	<1.9	<1.9	<2.0	<1.9	<2.0	<2.0	<1.8
Perfluorooctanesulfonic acid (PFOS)	70†	ng/L		0.60 J	<1.9	1.7 J	1.6 J	<1.9	30	28	<1.8
Perfluorooctanoic acid (PFOA)		ng/L		<1.9	<1.9	<1.9	<2.0	<1.9	0.51 J	<2.0	<1.8
LHA Combined (PFOS + PFOA)	70†	ng/L		0.60 J‡	N/A	1.7 J‡	1.6 J‡	N/A	31 J	28 ‡	N/A

Notes:
Sample results reported in TestAmerica Work Order J68521-1

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

EPA Environmental Protection Agency

LHA Lifetime Health Advisory

† EPA LHA level is 70 ppt for PFOS and PFOA combined.

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

DUP Field-duplicate sample

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.

‡ Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.

N/A Not applicable. The combined concentration could not be calculated because PFOS and PFOA were not detected in the project sample.

Table 3 - Summary of March 2021 Water-Supply Well Analytical PFAS Results

		Sample Name	*NPS Well*	PW-010	*PW-012*		*PW-037*	*PW-038*	*PW-039*	*PW-040*	
Analyte	**EPA LHA**	**Units**	3/25/2021	3/24/2021	3/24/2021 (DUP)	3/24/2021	3/25/2021	3/25/2021	3/25/2021	3/25/2021 (DUP)	3/25/2021
Perfluorohexanesulfonic acid (PFHxS)	-	ng/L	10	<1.8	1.3 J	1.5 J	<1.7	<1.6	<1.8	<1.7	<1.8
Perfluorohexanoic acid (PFHxA)	-	ng/L	5.1	<1.8	0.62 J	<1.8	<1.7	<1.6	<1.8	<1.7	<1.8
Perfluoroheptanoic acid (PFHpA)	-	ng/L	2.2	<1.8	<1.8	<1.8	<1.7	<1.6	<1.8	<1.7	<1.8
Perfluorononanoic acid (PFNA)	-	ng/L	<1.9	<1.8	<1.8	<1.8	<1.7	<1.6	<1.8	<1.7	<1.8
Perfluorobutanesulfonic acid (PFBS)	-	ng/L	1.0 J	<1.8	<1.8	<1.8	<1.7	<1.6	<1.8	<1.7	<1.8
Perfluorodecanoic acid (PFDA)	-	ng/L	<1.9	<1.8	<1.8	<1.8	<1.7	<1.6	<1.8	<1.7	<1.8
Perfluoroundecanoic acid (PFUnA)	-	ng/L	<1.9	<1.8	<1.8	<1.8	<1.7	<1.6	<1.8	<1.7	<1.8
Perfluorododecanoic acid (PFDoA)	-	ng/L	<1.9	<1.8	<1.8	<1.8	<1.7	<1.6	<1.8	<1.7	<1.8
Perfluorotridecanoic acid (PFTrDA)	-	ng/L	<1.9	<1.8	<1.8	<1.8	<1.7	<1.6	<1.8	<1.7	<1.8
Perfluorotetradecanoic acid (PFTeA)	-	ng/L	<1.9	<1.8	<1.8	<1.8	<1.7	<1.6	<1.8	<1.7	<1.8
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	-	ng/L	<4.6	<4.4	<4.4	<4.4	<4.4	<4.1	<4.5	<4.3	<4.5
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	-	ng/L	<4.6	<4.4	<4.4	<4.4	<4.4	<4.1	<4.5	<4.3	<4.5
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	-	ng/L	<1.9	<1.8	<1.8	<1.8	<1.7	<1.6	<1.8	<1.7	<1.8
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	-	ng/L	<1.9	<1.8	<1.8	<1.8	<1.7	<1.6	<1.8	<1.7	<1.8
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	-	ng/L	<1.9	<1.8	<1.8	<1.8	<1.7	<1.6	<1.8	<1.7	<1.8
Hexafluoropropylene oxide dimer acid (HFPO-DA)	-	ng/L	<3.7	<3.5	<3.5	<3.5	<3.5	<3.3	<3.6	<3.5	<3.6
Perfluorooctanesulfonic acid (PFOS)	70†	ng/L	7.1	0.79 J	6.1	7.7	<1.7	<1.6	<1.8	<1.7	<1.8
Perfluorooctanoic acid (PFOA)		ng/L	2.7	<1.8	<1.8	<1.8	<1.7	<1.6	<1.8	<1.7	<1.8
LHA Combined (PFOS + PFOA)	70†	ng/L	9.8	0.79 J‡	6.1 ‡	7.7 ‡	N/A	N/A	N/A	N/A	N/A

Notes:
Sample results reported in TestAmerica Work Order J71796-1

ng/L	nanograms per liter, equivalent to parts per trillion
EPA	Environmental Protection Agency
LHA	Lifetime Health Advisory
†	EPA LHA level is 70 ppt for PFOS and PFOA combined.
<	Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.
Bold	Concentration exceeds EPA LHA level.
DUP	Field-duplicate sample
J	Flag applied by the laboratory.
JH*	Result considered estimated, biased high, due to a QC failure. Flag applied by Shannon & Wilson, Inc.
‡	Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.
N/A	Not applicable. The combined concentration could not be calculated because PFOS and PFOA were not detected in the project sample.

Table 3 - Summary of March 2021 Water-Supply Well Analytical PFAS Results

Analyte	EPA LHA	Units	Sample Name	PW-059	PW-203	PW-208	PW-211	PW-221	PW-401		PW-465	
				3/24/2021	3/23/2021	3/23/2021	3/24/2021	3/24/2021	3/23/2021	3/23/2021 (DUP)	3/25/2021	3/25/2021 (DUP)
Perfluorohexanesulfonic acid (PFHxS)	-	ng/L		1.7	0.90 J	0.52 J	<1.8	0.90 J	7.7	6.5	19 J*	18 J*
Perfluorohexanoic acid (PFHxA)	-	ng/L		1.1 J	<1.7	2.3	<1.8	0.52 J	4.4	3.5	11 J*	9.7 J*
Perfluoroheptanoic acid (PFHpA)	-	ng/L		0.26 J	<1.7	<1.8	<1.8	<1.8	1.5 J	1.4 J	5.6 J*	5.1 J*
Perfluorononanoic acid (PFNA)	-	ng/L		<1.7	0.50 J	<1.8	<1.8	<1.8	<1.8	<1.9	0.30 J*	<1.8
Perfluorobutanesulfonic acid (PFBS)	-	ng/L		1.3 J	<1.7	0.33 JH*	<1.8	<1.8	0.74 J	0.45 J	1.4 J*	0.93 J*
Perfluorodecanoic acid (PFDA)	-	ng/L		<1.7	<1.7	<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.8
Perfluoroundecanoic acid (PFUnA)	-	ng/L		<1.7	<1.7	<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.8
Perfluorododecanoic acid (PFDoA)	-	ng/L		<1.7	<1.7	<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.8
Perfluorotridecanoic acid (PFTrDA)	-	ng/L		<1.7	<1.7	<1.8	<1.8	<1.8	<1.8	<1.9	1.8 J*	<1.8
Perfluorotetradecanoic acid (PFTeA)	-	ng/L		<1.7	<1.7	<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.8
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	-	ng/L		<4.3	<4.3	<4.6	<4.5	<4.5	<4.5	<4.7	<4.6	4.6 J*
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	-	ng/L		<4.3	<4.3	<4.6	<4.5	<4.5	<4.5	<4.7	<4.6	<4.6
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	-	ng/L		<1.7	<1.7	<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.8
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	-	ng/L		<1.7	<1.7	<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.8
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	-	ng/L		<1.7	<1.7	<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.8
Hexafluoropropylene oxide dimer acid (HFPO-DA)	-	ng/L		<3.4	<3.4	<3.7	<3.6	<3.6	<3.6	<3.7	<3.7	<3.7
Perfluorooctanesulfonic acid (PFOS)	70†	ng/L		1.6 J	1.8	1.6 J	<1.8	2.1	30	29	**110 J***	**100 J***
Perfluorooctanoic acid (PFOA)		ng/L		0.96 J	<1.7	<1.8	<1.8	<1.8	1.0 J	<1.9	9.1 J*	3.4 J*
LHA Combined (PFOS + PFOA)	70†	ng/L		2.6 J	1.8 ‡	1.6 J‡	N/A	2.1 ‡	31 J	29 ‡	**119 J***	**103 J***

Notes:
Sample results reported in TestAmerica Work Order J71796-1

ng/L	nanograms per liter, equivalent to parts per trillion
EPA	Environmental Protection Agency
LHA	Lifetime Health Advisory
†	EPA LHA level is 70 ppt for PFOS and PFOA combined.
<	Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.
Bold	Concentration exceeds EPA LHA level.
DUP	Field-duplicate sample
J	Flag applied by the laboratory.
JH*	Result considered estimated, biased high, due to a QC failure. Flag applied by Shannon & Wilson, Inc.
‡	Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.
N/A	Not applicable. The combined concentration could not be calculated because PFOS and PFOA were not detected in the project sample.

Table 4 - Summary of June 2021 Water-Supply Well Analytical PFAS Results

		Sample Name	*PW-010*	PW-012		*PW-037*	*PW-038*	*PW-039*	*PW-040*	*PW-045*	*PW-059*	*PW-062*	*PW-203*
Analyte	**EPA LHA**	**Units**	6/22/2021	6/21/2021 (DUP)	6/21/2021	6/23/2021	6/23/2021	6/23/2021	6/23/2021	6/22/2021	6/21/2021	6/22/2021	6/21/2021
Perfluorohexanesulfonic acid (PFHxS)	-	ng/L	<1.9	5.2	4.8	<2.0	<1.9	<1.9	<2.1	0.94 J	2.1	<2.0	<2.0
Perfluorohexanoic acid (PFHxA)	-	ng/L	<1.9	<2.1	<2.0	<2.0	<1.9	0.92 J	<2.1	<1.9	1.3 J	0.63 J	<2.0
Perfluoroheptanoic acid (PFHpA)	-	ng/L	<1.9	<2.1	<2.0	<2.0	<1.9	<1.9	<2.1	<1.9	0.33 J	0.39 J	<2.0
Perfluorononanoic acid (PFNA)	-	ng/L	<1.9	<2.1	<2.0	<2.0	<1.9	<1.9	<2.1	<1.9	<2.0	<2.0	<2.0
Perfluorobutanesulfonic acid (PFBS)	-	ng/L	<1.9	0.27 J	0.21 J	<2.0	<1.9	<1.9	<2.1	<1.9	0.81 J	0.23 J	<2.0
Perfluorodecanoic acid (PFDA)	-	ng/L	<1.9	<2.1	<2.0	<2.0	<1.9	<1.9	<2.1	<1.9	<2.0	<2.0	<2.0
Perfluoroundecanoic acid (PFUnA)	-	ng/L	<1.9	<2.1	<2.0	<2.0	<1.9	<1.9	<2.1	<1.9	<2.0	<2.0	<2.0
Perfluorododecanoic acid (PFDoA)	-	ng/L	<1.9	<2.1	<2.0	<2.0	<1.9	<1.9	<2.1	<1.9	<2.0	<2.0	<2.0
Perfluorotridecanoic acid (PFTrDA)	-	ng/L	<1.9	<2.1	<2.0	<2.0	<1.9	<1.9	<2.1	<1.9	<2.0	<2.0	<2.0
Perfluorotetradecanoic acid (PFTeA)	-	ng/L	<1.9	<2.1	<2.0	<2.0	<1.9	<1.9	<2.1	<1.9	<2.0	<2.0	<2.0
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	-	ng/L	<4.8	<5.2	<5.0	<4.9	<4.8	<4.8	<5.3	<4.8	<5.0	<4.9	<5.1
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	-	ng/L	<4.8	<5.2	<5.0	<4.9	<4.8	<4.8	<5.3	<4.8	<5.0	<4.9	<5.1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	-	ng/L	<1.9	<2.1	<2.0	<2.0	<1.9	<1.9	<2.1	<1.9	<2.0	<2.0	<2.0
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	-	ng/L	<1.9	<2.1	<2.0	<2.0	<1.9	<1.9	<2.1	<1.9	<2.0	<2.0	<2.0
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	-	ng/L	<1.9	<2.1	<2.0	<2.0	<1.9	<1.9	<2.1	<1.9	<2.0	<2.0	<2.0
Hexafluoropropylene oxide dimer acid (HFPO-DA)	-	ng/L	<3.8	<4.2	<4.0	<3.9	<3.9	<3.8	<4.2	<3.9	<4.0	<3.9	<4.1
Perfluorooctanesulfonic acid (PFOS)	70†	ng/L	<1.9	5.5	5.6	<2.0	<1.9	<1.9	<2.1	0.99 J	1.4 J	1.2 J	<2.0
Perfluorooctanoic acid (PFOA)		ng/L	<1.9	<2.1	<2.0	<2.0	<1.9	<1.9	<2.1	<1.9	<2.0	<2.0	<2.0
LHA Combined (PFOS + PFOA)	70†	ng/L	N/A	5.5 ‡	5.6 ‡	N/A	N/A	N/A	N/A	0.99 J‡	1.4 J‡	1.2 J‡	N/A

Notes:
Sample results reported in TestAmerica Work Order J75575-1

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

EPA Environmental Protection Agency

LHA Lifetime Health Advisory

† EPA LHA level is 70 ppt for PFOS and PFOA combined.

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

Bold Concentration exceeds EPA LHA level.

DUP Field-duplicate sample

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

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

‡ Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.

N/A Not applicable. The LHA combined concentration could not be calculated because PFOS and PFOA were not detected in the project sample.

Table 4 - Summary of June 2021 Water-Supply Well Analytical PFAS Results

		Sample Name	PW-204.1	PW-205.1	PW-208.1	PW-211	PW-221		PW-401		PW-419
Analyte	EPA LHA	Units	6/21/2021	6/21/2021	6/21/2021	6/21/2021	6/22/2021 (DUP)	6/22/2021	6/23/2021 (DUP)	6/23/2021	6/22/2021
Perfluorohexanesulfonic acid (PFHxS)	-	ng/L	30	1.5 J	11	0.76 J	0.60 J	0.59 J	1.8 J	2.2	0.93 J
Perfluorohexanoic acid (PFHxA)	-	ng/L	11	0.78 J	4.0	<2.0	<2.0	<1.9	1.1 J	1.2 J	<2.0
Perfluoroheptanoic acid (PFHpA)	-	ng/L	3.8	<2.1	1.7 J	<2.0	<2.0	<1.9	0.32 J	0.32 JH*	<2.0
Perfluorononanoic acid (PFNA)	-	ng/L	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<1.9	<2.0
Perfluorobutanesulfonic acid (PFBS)	-	ng/L	2.4	0.27 J	0.74 J	<2.0	<2.0	<1.9	<2.0	0.28 J	<2.0
Perfluorodecanoic acid (PFDA)	-	ng/L	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<1.9	<2.0
Perfluoroundecanoic acid (PFUnA)	-	ng/L	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<1.9	<2.0
Perfluorododecanoic acid (PFDoA)	-	ng/L	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<1.9	<2.0
Perfluorotridecanoic acid (PFTrDA)	-	ng/L	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<1.9	<2.0
Perfluorotetradecanoic acid (PFTeA)	-	ng/L	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<1.9	<2.0
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	-	ng/L	<5.0	<5.2	<5.0	<5.0	<5.0	<4.8	<4.9	<4.9	<5.0
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	-	ng/L	<5.0	<5.2	<5.0	<5.0	<5.0	<4.8	<4.9	<4.9	<5.0
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	-	ng/L	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<1.9	<2.0
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	-	ng/L	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<1.9	<2.0
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	-	ng/L	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<1.9	<2.0
Hexafluoropropylene oxide dimer acid (HFPO-DA)	-	ng/L	<4.0	<4.2	<4.0	<4.0	<4.0	<3.9	<3.9	<3.9	<4.0
Perfluorooctanesulfonic acid (PFOS)	70†	ng/L	49	2.2	67	<2.0	0.97 J	0.98 J	13	14	1.5 J
Perfluorooctanoic acid (PFOA)		ng/L	2.8	<2.1	2.6	<2.0	<2.0	<1.9	<2.0	<1.9	<2.0
LHA Combined (PFOS + PFOA)	70†	ng/L	52	2.2 ‡	**70**	n/a	0.97 J‡	0.98 J‡	13 ‡	14 ‡	1.5 J‡

Notes:
Sample results reported in TestAmerica Work Order J75575-1

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

EPA — Environmental Protection Agency

LHA — Lifetime Health Advisory

† — EPA LHA level is 70 ppt for PFOS and PFOA combined.

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

Bold — Concentration exceeds EPA LHA level.

DUP — Field-duplicate sample

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

JH* — Result considered estimated, biased high, due to a QC failure. Flag applied by Shannon & Wilson, Inc.

‡ — Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.

N/A — Not applicable. The LHA combined concentration could not be calculated because PFOS and PFOA were not detected in the project sample.

Table 5 - Summary of August/September 2020 Monitoring Well Analytical PFAS Results

Analyte	EPA LHA	Units	Sample Name: MW-1-15	MW-1-40	MW-1-40	MW-2-20	MW-2-30	MW-3-15	MW-3-40	MW-4-20	MW-5-20
			8/31/2020	8/31/2020 (DUP)	8/31/2020	9/1/2020	9/1/2020	9/1/2020	9/1/2020	9/2/2020	9/2/2020
Perfluorohexanesulfonic acid (PFHxS)	-	ng/L	<1.7 B*	<1.7 B*	<1.7 B*	32	<1.7 B*	4.5	19	<1.7 B*	<1.7 B*
Perfluorohexanoic acid (PFHxA)	-	ng/L	<1.7	<1.7	<1.7	84	<1.7	1.0 J	2.9	<1.7	0.76 J
Perfluoroheptanoic acid (PFHpA)	-	ng/L	<1.7	<1.7	<1.7	37	<1.7	0.44 J	0.63 J	0.28 J	0.22 J
Perfluorononanoic acid (PFNA)	-	ng/L	<1.7	<1.7	<1.7	4.0	<1.7	<1.7	<1.7	<1.7	<1.7
Perfluorobutanesulfonic acid (PFBS)	-	ng/L	0.33 J	<1.7	<1.7	3.0	1.3 J	0.57 J	1.9	0.32 J	0.29 J
Perfluorodecanoic acid (PFDA)	-	ng/L	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7
Perfluoroundecanoic acid (PFUnA)	-	ng/L	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7
Perfluorododecanoic acid (PFDoA)	-	ng/L	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7
Perfluorotridecanoic acid (PFTrDA)	-	ng/L	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7
Perfluorotetradecanoic acid (PFTeA)	-	ng/L	<1.7	0.43 J	<1.7	<1.7	0.39 J	<1.7	<1.7	0.40 J	0.41 J
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	-	ng/L	<17	<17	<17	<17	<17	<17	<17	<17	<17
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	-	ng/L	<17	<17	<17	<17	<17	<17	<17	<17	<17
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	-	ng/L	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	-	ng/L	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	-	ng/L	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7
Hexafluoropropylene oxide dimer acid (HFPO-DA)	-	ng/L	<3.4	<3.4	<3.4	<3.4	<3.4	<3.5	<3.4	<3.5	<3.4
Perfluorooctanesulfonic acid (PFOS)	70†	ng/L	<1.7	<1.7	<1.7	**260**	<1.7	6.7	12	<1.7	<2.0 B*
Perfluorooctanoic acid (PFOA)		ng/L	<1.7	<1.7	<1.7	36	<1.7	<1.7	2.2	<1.7	<1.7
LHA Combined (PFOS + PFOA)	70†	ng/L	N/A	N/A	N/A	**296**	N/A	6.7 ‡	14	N/A	N/A

Notes:
Sample results reported in TestAmerica Work Order J64368

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

EPA Environmental Protection Agency

LHA Lifetime Health Advisory

† EPA LHA level is 70 ppt for PFOS and PFOA combined.

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

Bold Concentration exceeds EPA LHA level.

DUP Field-duplicate sample

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

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

‡ Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.

N/A Not applicable. The combined concentration could not be calculated because PFOS and PFOA were not detected in the project sample.

Table 5 - Summary of August/September 2020 Monitoring Well Analytical PFAS Results

Analyte	EPA LHA	Units	Sample Name	MW-6-20	MW-7-20	MW-8-20		MW-9-30	MW-10-20	MW-11-15	MW-12-10
				9/2/2020 (DUP)	9/2/2020	9/2/2020	9/1/2020(DUP)	9/1/2020	9/1/2020	9/1/2020	9/2/2020	9/2/2020
Perfluorohexanesulfonic acid (PFHxS)	-	ng/L		<1.8 B*	<1.8 B*	<1.7 B*	<1.7 B*	<1.7 B*	23	13	15	52
Perfluorohexanoic acid (PFHxA)	-	ng/L		<1.7	<1.7	1.2 J	<1.7	<1.7	16	11	27	17
Perfluoroheptanoic acid (PFHpA)	-	ng/L		<1.7	<1.7	0.84 J	<1.7	<1.7	6.0	4.5	7.0	15
Perfluorononanoic acid (PFNA)	-	ng/L		<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	0.42 J	1.4 J	0.97 J
Perfluorobutanesulfonic acid (PFBS)	-	ng/L		0.28 J	0.30 J	0.45 J	<1.7	<1.7	1.6 J	0.64 J	2.2	1.8
Perfluorodecanoic acid (PFDA)	-	ng/L		<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	1.1 J	<1.7
Perfluoroundecanoic acid (PFUnA)	-	ng/L		<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7
Perfluorododecanoic acid (PFDoA)	-	ng/L		<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7
Perfluorotridecanoic acid (PFTrDA)	-	ng/L		<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7
Perfluorotetradecanoic acid (PFTeA)	-	ng/L		<1.7	0.34 J	<1.7	0.50 J	<1.7	<1.7	<1.7	<1.7	<1.7
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	-	ng/L		<17	<17	<17	<17	<17	<17	<17	<17	<17
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	-	ng/L		<17	<17	<17	<17	<17	<17	<17	<17	<17
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	-	ng/L		<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	-	ng/L		<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	-	ng/L		<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7
Hexafluoropropylene oxide dimer acid (HFPO-DA)	-	ng/L		<3.4	<3.4	<3.5	<3.4	<3.4	<3.4	<3.4	<3.4	<3.5
Perfluorooctanesulfonic acid (PFOS)	70†	ng/L		<1.7 B*	<1.7	<3.9 B*	<1.7	<1.7	**88**	**140**	**76**	**210**
Perfluorooctanoic acid (PFOA)		ng/L		<1.7	<1.7	2.7	<1.7	<1.7	2.3	2.6	2.4	9.8
LHA Combined (PFOS + PFOA)	70†	ng/L		N/A	N/A	2.7 B*‡	N/A	N/A	**90**	**143**	**78**	**220**

Notes:
Sample results reported in TestAmerica Work Order J64368

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

EPA Environmental Protection Agency

LHA Lifetime Health Advisory

† EPA LHA level is 70 ppt for PFOS and PFOA combined.

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

Bold Concentration exceeds EPA LHA level.

DUP Field-duplicate sample

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

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

‡ Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.

N/A Not applicable. The combined concentration could not be calculated because PFOS and PFOA were not detected in the project sample.

Table 6 - Summary of December 2020/January 2021 Monitoring Well Analytical PFAS Results

			Sample Name	MW-1-15	MW-1-40	MW-2-20	MW-2-30	MW-3-15	MW-3-40	MW-4-20	MW-5-20	MW-6-20	
Analyte	EPA LHA	Units		12/30/2020	12/30/2020	12/31/2020	12/31/2020	12/30/2020	12/30/2020	12/31/2020	1/1/2021	1/1/2021	1/1/2021 (DUP)
Perfluorohexanesulfonic acid (PFHxS)	-	ng/L		<1.8	1.1 J	64	<1.8	3.6	14	0.65 J	1.3 J	2.8	2.6
Perfluorohexanoic acid (PFHxA)	-	ng/L		<1.8	<1.8	63	<1.8	5.1	1.6 J	<1.8	<1.8	<1.8	<1.7
Perfluoroheptanoic acid (PFHpA)	-	ng/L		<1.8	<1.8	54	0.70 J	2.7	0.43 J	<1.8	<1.8	<1.8	0.29 J*
Perfluorononanoic acid (PFNA)	-	ng/L		<1.8	<1.8	4.0	0.48 J	<1.8	<1.8	<1.8	<1.8	<1.8	<1.7
Perfluorobutanesulfonic acid (PFBS)	-	ng/L		0.20 J	<1.8	9.5	1.4 J	1.2 J	1.2 J	0.46 J*	0.44 J	0.32 J	0.37 J
Perfluorodecanoic acid (PFDA)	-	ng/L		<1.8	<1.8	0.34 J	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.7
Perfluoroundecanoic acid (PFUnA)	-	ng/L		<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.7
Perfluorododecanoic acid (PFDoA)	-	ng/L		<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.7
Perfluorotridecanoic acid (PFTrDA)	-	ng/L		<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.7
Perfluorotetradecanoic acid (PFTeA)	-	ng/L		<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.7
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	-	ng/L		<4.5	<4.6	<4.4	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.3
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	-	ng/L		<4.5	<4.6	<4.4	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.3
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	-	ng/L		<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.7
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	-	ng/L		<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.7
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	-	ng/L		<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.7
Hexafluoropropylene oxide dimer acid (HFPO-DA)	-	ng/L		<3.6	<3.7	<3.5	<3.6	<3.6	<3.6	<3.6	<3.6	<3.6	<3.5
Perfluorooctanesulfonic acid (PFOS)	70†	ng/L		<1.8	0.56 J*	**250**	<1.8	5.1	13 J*	<1.8	1.7 J	1.2 J*	1.3 J*
Perfluorooctanoic acid (PFOA)		ng/L		<1.8	<1.8	**67**	1.4 J	0.94 J	1.3 J	<1.8	1.0 J	<1.8	<1.7
LHA Combined (PFOS + PFOA)	70†	ng/L		N/A	0.56 J I‡	**317**	1.4 J‡	6.0 J	14 J	N/A	2.7 J	1.2 J ‡	1.3 J ‡

Notes:
Sample results reported in TestAmerica Work Order J68519-1

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

EPA — Environmental Protection Agency

LHA — Lifetime Health Advisory

† — EPA LHA level is 70 ppt for PFOS and PFOA combined.

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

Bold — Concentration exceeds EPA LHA level.

DUP — Field-duplicate sample

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

J* — Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc.

‡ — Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.

N/A — Not applicable. The combined concentration could not be calculated; PFOS and PFOA were not detected in the project sample.

Table 6 - Summary of December 2020/January 2021 Monitoring Well Analytical PFAS Results

			Sample Name	MW-7-20		MW-8-20	MW-9-30	MW-10-20	MW-11-15	MW-12-10	
Analyte	EPA LHA	Units		12/30/2020	12/30/2020 (DUP)	1/1/2021	12/30/2020	1/1/2021	12/31/2020	12/31/2020	12/31/2020 (DUP)
Perfluorohexanesulfonic acid (PFHxS)	-	ng/L		1.0 J	1.1 J	0.62 J	11	5.4	830	31	29
Perfluorohexanoic acid (PFHxA)	-	ng/L		1.2 J	1.2 J	<1.7	4.6	5.3	180	13	13
Perfluoroheptanoic acid (PFHpA)	-	ng/L		0.91 J	0.89 J	<1.7	2.0	1.8	19	15	15
Perfluorononanoic acid (PFNA)	-	ng/L		<1.8	<1.9	<1.7	<1.8	<1.8	2.2	2.6	2.5
Perfluorobutanesulfonic acid (PFBS)	-	ng/L		0.43 J	<1.9	<1.7	0.66 J	0.42 J	35	0.68 J	0.71 J
Perfluorodecanoic acid (PFDA)	-	ng/L		<1.8	<1.9	<1.7	<1.8	<1.8	1.3 J	0.51 J	0.65 J
Perfluoroundecanoic acid (PFUnA)	-	ng/L		<1.8	<1.9	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8
Perfluorododecanoic acid (PFDoA)	-	ng/L		<1.8	<1.9	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8
Perfluorotridecanoic acid (PFTrDA)	-	ng/L		<1.8	<1.9	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8
Perfluorotetradecanoic acid (PFTeA)	-	ng/L		<1.8	<1.9	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	-	ng/L		<4.5	<4.8	<4.4	<4.5	<4.6	<4.3	<4.4	<4.6
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	-	ng/L		<4.5	<4.8	<4.4	<4.5	<4.6	<4.3	<4.4	<4.6
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	-	ng/L		<1.8	<1.9	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	-	ng/L		<1.8	<1.9	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	-	ng/L		<1.8	<1.9	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8
Hexafluoropropylene oxide dimer acid (HFPO-DA)	-	ng/L		<3.6	<3.8	<3.5	<3.6	<3.7	<3.5	<3.5	<3.7
Perfluorooctanesulfonic acid (PFOS)	70†	ng/L		4.8	4.5	<1.7	**92**	39	**6,100**	**100**	**100**
Perfluorooctanoic acid (PFOA)		ng/L		1.1 J	1.3 J	<1.7	1.0 J	<1.8	**92**	**9.5**	**8.8**
LHA Combined (PFOS + PFOA)	70†	ng/L		5.9 J	5.8 J	N/A	**93 J**	39 ‡	**6,192**	**110**	**109**

Notes:
Sample results reported in TestAmerica Work Order J68519-1

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

EPA Environmental Protection Agency

LHA Lifetime Health Advisory

† EPA LHA level is 70 ppt for PFOS and PFOA combined.

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

Bold Concentration exceeds EPA LHA level.

DUP Field-duplicate sample

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

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

‡ Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.

N/A Not applicable. The combined concentration could not be calculated; PFOS and PFOA were not detected in the project sample.

Table 7 - Summary of March 2021 Monitoring Well Analytical PFAS Results

		Sample Name	MW-1-15	MW-1-40	MW-2-20		MW-2-30	MW-3-15	MW-3-40	MW-4-20	MW-5-20	MW-6-20
Analyte	EPA LHA	Units	3/24/2021	3/24/2021	3/24/2021	3/24/2021 (DUP)	3/24/2021	3/24/2021	3/24/2021	3/25/2021	3/25/2021	3/25/2021
Perfluorohexanesulfonic acid (PFHxS)	-	ng/L	<1.8	0.68 J	100	98	0.54 J	1.9 J*	17	0.50 J	1.4 J	1.0 J
Perfluorohexanoic acid (PFHxA)	-	ng/L	<1.8	<1.7	31	30	<1.8	0.87 J*	2.4	<1.7	0.89 J	<1.8 J*
Perfluoroheptanoic acid (PFHpA)	-	ng/L	<1.8	<1.7	26	24	<1.8	<1.7 J*	<1.7	<1.7	<1.7	<1.8 J*
Perfluorononanoic acid (PFNA)	-	ng/L	<1.8	<1.7	3.8	4.0	<1.8	<1.7 J*	<1.7	<1.7	0.65 J	<1.8
Perfluorobutanesulfonic acid (PFBS)	-	ng/L	<1.8	<1.7	2.4	2.3	0.91 J	0.24 J*	0.93 J	<1.7	0.45 J	0.30 J*
Perfluorodecanoic acid (PFDA)	-	ng/L	<1.8	<1.7	<1.7	<1.7	<1.8	<1.7 J*	<1.7	<1.7	<1.7	<1.8 J*
Perfluoroundecanoic acid (PFUnA)	-	ng/L	<1.8	<1.7	<1.7	<1.7	<1.8	<1.7 J*	<1.7	<1.7	<1.7	<1.8 J*
Perfluorododecanoic acid (PFDoA)	-	ng/L	<1.8	<1.7	<1.7	<1.7	<1.8	<1.7 J*	<1.7	<1.7	<1.7	<1.8 J*
Perfluorotridecanoic acid (PFTrDA)	-	ng/L	<1.8	<1.7	<1.7	<1.7	<1.8	<1.7 J*	<1.7	<1.7	<1.7	<1.8
Perfluorotetradecanoic acid (PFTeA)	-	ng/L	<1.8	<1.7	<1.7	<1.7	<1.8	<1.7 J*	<1.7	<1.7	<1.7	<1.8 J*
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	-	ng/L	<4.4	<4.3	<4.2	<4.3	<4.4	<4.3 J*	<4.4	<4.3	<4.3	<4.5 J*
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	-	ng/L	<4.4	<4.3	<4.2	<4.3	<4.4	<4.3 J*	<4.4	<4.3	<4.3	<4.5 J*
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	-	ng/L	<1.8	<1.7	<1.7	<1.7	<1.8	<1.7 J*	<1.7	<1.7	<1.7	<1.8
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	-	ng/L	<1.8	<1.7	<1.7	<1.7	<1.8	<1.7 J*	<1.7	<1.7	<1.7	<1.8
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	-	ng/L	<1.8	<1.7	<1.7	<1.7	<1.8	<1.7 J*	<1.7	<1.7	<1.7	<1.8
Hexafluoropropylene oxide dimer acid (HFPO-DA)	-	ng/L	<3.5	<3.4	<3.4	<3.5	<3.5	<3.5 J*	<3.5	<3.5	<3.4	<3.6 J*
Perfluorooctanesulfonic acid (PFOS)	70†	ng/L	<1.8	<1.7	**250**	**240**	<1.8	3.1 J*	13	<1.7	2.7	1.5 J
Perfluorooctanoic acid (PFOA)		ng/L	<1.8	<1.7	**78**	**72**	<1.8	<1.7 J*	1.7	<1.7	0.87 J	<1.8
LHA Combined (PFOS + PFOA)	70†	ng/L	N/A	N/A	**328**	**312**	N/A	3.1 J*‡	15	N/A	3.6 J	1.5 J‡

Notes:
Sample results reported in TestAmerica Work Order J71798-1

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

EPA Environmental Protection Agency

LHA Lifetime Health Advisory

† EPA LHA level is 70 ppt for PFOS and PFOA combined.

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

Bold Concentration exceeds EPA LHA level.

DUP Field-duplicate sample

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

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

‡ Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.

N/A Not applicable. The combined concentration could not be calculated; PFOS and PFOA were not detected in the project sample.

Table 7 - Summary of March 2021 Monitoring Well Analytical PFAS Results

		Sample Name	MW-7-20	MW-8-20	MW-9-30	MW-10-20	MW-11-15		MW-12-10
Analyte	EPA LHA	Units	3/25/2021	3/24/2021	3/24/2021	3/24/2021	3/25/2021	3/25/2021 (DUP)	3/25/2021
Perfluorohexanesulfonic acid (PFHxS)	-	ng/L	0.98 J	0.57 J*	15	17 J*	17	20	9.4
Perfluorohexanoic acid (PFHxA)	-	ng/L	1.3 J	<1.8 J*	8.9	16 J*	15	13	4.8
Perfluoroheptanoic acid (PFHpA)	-	ng/L	1.0 J	<1.8 J*	3.0	4.8	3.0	2.7	3.8
Perfluorononanoic acid (PFNA)	-	ng/L	<1.7	<1.8 J*	<1.8	<1.7	0.62 J	0.60 J	0.64 J
Perfluorobutanesulfonic acid (PFBS)	-	ng/L	<1.7	<1.8 J*	1.2 J	1.3 J*	1.2 J	1.4 J	0.52 J
Perfluorodecanoic acid (PFDA)	-	ng/L	<1.7	<1.8 J*	<1.8	<1.7 J*	<1.7	<1.7	<1.8
Perfluoroundecanoic acid (PFUnA)	-	ng/L	<1.7	<1.8 J*	<1.8	<1.7 J*	<1.7	<1.7	<1.8
Perfluorododecanoic acid (PFDoA)	-	ng/L	<1.7	<1.8 J*	<1.8	<1.7 J*	<1.7	<1.7	<1.8
Perfluorotridecanoic acid (PFTrDA)	-	ng/L	<1.7	<1.8 J*	<1.8	<1.7	<1.7	<1.7	<1.8
Perfluorotetradecanoic acid (PFTeA)	-	ng/L	<1.7	<1.8 J*	<1.8	<1.7 J*	<1.7	<1.7	<1.8
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	-	ng/L	<4.4	<4.6 J*	<4.5	<4.3 J*	<4.2	<4.3	<4.5
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	-	ng/L	<4.4	<4.6 J*	<4.5	<4.3 J*	<4.2	<4.3	<4.5
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	-	ng/L	<1.7	<1.8 J*	<1.8	<1.7	<1.7	<1.7	<1.8
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	-	ng/L	<1.7	<1.8 J*	<1.8	<1.7	<1.7	<1.7	<1.8
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	-	ng/L	<1.7	<1.8 J*	<1.8	<1.7	<1.7	<1.7	<1.8
Hexafluoropropylene oxide dimer acid (HFPO-DA)	-	ng/L	<3.5	<3.7 J*	<3.6	<3.5 J*	<3.4	<3.4	<3.6
Perfluorooctanesulfonic acid (PFOS)	70†	ng/L	5.0	<1.8 J*	**97**	37 J*	**210**	**200**	36
Perfluorooctanoic acid (PFOA)		ng/L	2.3	<1.8 J*	1.0 J	1.9	2.2	2.2	2.9
LHA Combined (PFOS + PFOA)	70†	ng/L	7.3	N/A	**98 J**	39	**212**	**202**	39

Notes:
Sample results reported in TestAmerica Work Order J71798-1

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

EPA Environmental Protection Agency

LHA Lifetime Health Advisory

† EPA LHA level is 70 ppt for PFOS and PFOA combined.

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

Bold Concentration exceeds EPA LHA level.

DUP Field-duplicate sample

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

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

‡ Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.

N/A Not applicable. The combined concentration could not be calculated; PFOS and PFOA were not detected in the project sample.

Table 8 - Summary of June 2021 Monitoring Well Analytical PFAS Results

		Sample Name	MW-1-15	MW-1-40	MW-2-20		MW-2-30	MW-3-15	MW-3-40	MW-4-20	MW-5-20	MW-6-20
Analyte	**EPA LHA**	**Units**	6/21/2021	6/21/2021	6/21/2021	6/21/2021	6/21/2021	6/21/2021	6/21/2021	6/21/2021	6/22/2021	6/22/2021
Perfluorohexanesulfonic acid (PFHxS)	-	ng/L	0.61 J	0.68 J	120	110	<1.8	1.2 J	15	0.63 J	2.8	1.1 J
Perfluorohexanoic acid (PFHxA)	-	ng/L	<1.7	<1.8	45	48	0.60 J	0.62 J	2.1	<1.7	2.1	<1.7
Perfluoroheptanoic acid (PFHpA)	-	ng/L	<1.7	<1.8	26	27	<1.8	<1.7	0.43 J	<1.7	0.96 J	<1.7
Perfluorononanoic acid (PFNA)	-	ng/L	<1.7	<1.8	15	15	<1.8	<1.7	<1.7	<1.7	0.51 J	<1.7
Perfluorobutanesulfonic acid (PFBS)	-	ng/L	<1.7	<1.8	2.0	2.0	1.2 J	<1.7	1.1 J	0.19 J	0.45 J	<1.7
Perfluorodecanoic acid (PFDA)	-	ng/L	<1.7	<1.8	<1.8	0.46 J	<1.8	<1.7	<1.7	<1.7	<1.8	<1.7
Perfluoroundecanoic acid (PFUnA)	-	ng/L	<1.7	<1.8	<1.8	<1.8	<1.8	<1.7	<1.7	<1.7	<1.8	<1.7
Perfluorododecanoic acid (PFDoA)	-	ng/L	<1.7	<1.8	<1.8	<1.8	<1.8	<1.7	<1.7	<1.7	<1.8	<1.7
Perfluorotridecanoic acid (PFTrDA)	-	ng/L	<1.7	<1.8	<1.8	<1.8	<1.8	<1.7	<1.7	<1.7	<1.8	<1.7
Perfluorotetradecanoic acid (PFTeA)	-	ng/L	<1.7	<1.8	<1.8	<1.8	<1.8	<1.7	<1.7	<1.7	<1.8	<1.7
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	-	ng/L	<4.3	<4.5	<4.4	<4.5	<4.4	<4.3	<4.4	<4.4	<4.6	<4.3
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	-	ng/L	<4.3	<4.5	<4.4	<4.5	<4.4	<4.3	<4.4	<4.4	<4.6	<4.3
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	-	ng/L	<1.7	<1.8	<1.8	<1.8	<1.8	<1.7	<1.7	<1.7	<1.8	<1.7
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	-	ng/L	<1.7	<1.8	<1.8	<1.8	<1.8	<1.7	<1.7	<1.7	<1.8	<1.7
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	-	ng/L	<1.7	<1.8	<1.8	<1.8	<1.8	<1.7	<1.7	<1.7	<1.8	<1.7
Hexafluoropropylene oxide dimer acid (HFPO-DA)	-	ng/L	<3.4	<3.6	<3.6	<3.6	<3.5	<3.5	<3.5	<3.5	<3.7	<3.4
Perfluorooctanesulfonic acid (PFOS)	70†	ng/L	1.4 J	<1.8	**450**	**430**	<1.8	2.0	15	<1.7	3.5	<1.7
Perfluorooctanoic acid (PFOA)		ng/L	<1.7	<1.8	32	32	<1.8	<1.7	1.5 J	<1.7	2.1	<1.7
LHA Combined (PFOS + PFOA)	70†	ng/L	1.4 J‡	N/A	**482**	**462**	N/A	2.0 ‡	17 J	N/A	5.6	N/A

Notes:
Sample results reported in TestAmerica Work Order J75574-1

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

EPA Environmental Protection Agency

LHA Lifetime Health Advisory

† EPA LHA level is 70 ppt for PFOS and PFOA combined.

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

Bold Concentration exceeds EPA LHA level.

DUP Field-duplicate sample

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

‡ Minimum concentration, the combined oconcentration includes one or more result that is not detected greater than the MDL.

N/A Not applicable. The LHA Combined concentration could not be calculated; PFOS and PFOA were not detected in the project sample.

Table 8 - Summary of June 2021 Monitoring Well Analytical PFAS Results

		Sample Name	MW-7-20	MW-8-20	MW-9-30		MW-10-20	MW-11-15		MW-12-10
Analyte	**EPA LHA**	**Units**	6/22/2021	6/22/2021	6/22/2021	6/22/2021	6/22/2021	6/23/2021	6/23/2021	6/23/2021
Perfluorohexanesulfonic acid (PFHxS)	-	ng/L	1.0 J	0.49 J	15	15	21	13	13	14
Perfluorohexanoic acid (PFHxA)	-	ng/L	1.2 J	<1.7	7.0	6.7	15	18	15	5.6
Perfluoroheptanoic acid (PFHpA)	-	ng/L	0.96 J	0.23 J	3.2	3.2	5.6	2.7	3.0	5.5
Perfluorononanoic acid (PFNA)	-	ng/L	<1.8	<1.7	<1.7	<1.8	<1.8	0.88 J	0.85 J	0.66 J
Perfluorobutanesulfonic acid (PFBS)	-	ng/L	0.46 J	<1.7	0.78 J	0.79 J	0.87 J	1.0 J	0.97 J	0.61 J
Perfluorodecanoic acid (PFDA)	-	ng/L	<1.8	<1.7	<1.7	<1.8	<1.8	0.86 J	0.85 J	<1.8
Perfluoroundecanoic acid (PFUnA)	-	ng/L	<1.8	<1.7	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8
Perfluorododecanoic acid (PFDoA)	-	ng/L	<1.8	<1.7	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8
Perfluorotridecanoic acid (PFTrDA)	-	ng/L	<1.8	<1.7	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8
Perfluorotetradecanoic acid (PFTeA)	-	ng/L	<1.8	<1.7	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	-	ng/L	<4.5	<4.2	<4.4	<4.4	<4.4	<4.3	<4.4	<4.5
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	-	ng/L	<4.5	<4.2	<4.4	<4.4	<4.4	<4.3	<4.4	<4.5
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	-	ng/L	<1.8	<1.7	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	-	ng/L	<1.8	<1.7	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	-	ng/L	<1.8	<1.7	<1.7	<1.8	<1.8	<1.7	<1.8	<1.8
Hexafluoropropylene oxide dimer acid (HFPO-DA)	-	ng/L	<3.6	<3.4	<3.5	<3.5	<3.5	<3.5	<3.5	<3.6
Perfluorooctanesulfonic acid (PFOS)	70†	ng/L	6.2	<1.7	**84**	**95**	**95**	**140**	**130**	50
Perfluorooctanoic acid (PFOA)		ng/L	6.7	<1.7	0.97 J	1.1 J	2.0	2.0	2.1	2.6
LHA Combined (PFOS + PFOA)	70†	ng/L	13	N/A	**85 J**	**96 J**	**97**	**142**	**132**	53

Notes:
Sample results reported in TestAmerica Work Order J75574-1

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

EPA Environmental Protection Agency

LHA Lifetime Health Advisory

† EPA LHA level is 70 ppt for PFOS and PFOA combined.

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

Bold Concentration exceeds EPA LHA level.

DUP Field-duplicate sample

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

‡ Minimum concentration, the combined oconcentration includes one or more result that is not detected greater than the MDL.

N/A Not applicable. The LHA Combined concentration could not be calculated; PFOS and PFOA were not detected in the project sample.

Table 9 - Summary of August 2020 through June 2021 Monitoring Well Analytical Petroleum Results

Analytical Method	Analyte	Cleanup Level	Units	MW-11-15							MW-12-10				
				9/2/2020	9/2/2020 (DUP)	12/31/2020	3/25/2021	3/25/2021 (DUP)	6/23/2021	6/23/2021 (DUP)	9/2/2020	12/31/2020	12/31/2020 (DUP)	3/25/2021	6/23/2021
AK101	Gasoline Range Organics	2.2	mg/L	<0.050	<0.050	<0.0500 J*	<0.0500	<0.0500	<0.0500	<0.0500	<0.050	<0.0500 J*	<0.0500 J*	<0.100 B*	<0.0500
AK102	Diesel Range Organics	1.5	mg/L	<0.29	<0.29	<0.612 B*	<0.288	<0.283	0.225 J	0.233 J	<0.29	<0.625 B*	<0.600 B*	<0.283	0.235 J
AK103	Residual Range Organics	1.1	mg/L	<0.481 B*	<0.481 B*	<0.510 B*	<0.240	<0.236	<0.245	<0.240	<0.481 B*	<0.521 B*	<0.500 B*	<0.236	<0.232
SW8260C (VOC)	1,1,1,2-Tetrachloroethane	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	--	--	--	--
	2-Butanone (MEK)	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	--	--	--	--

Table 9 - Summary of August 2020 through June 2021 Monitoring Well Analytical Petroleum Results

Analytical Method	Analyte	Cleanup Level	Units	MW-11-15							MW-12-10				
				9/2/2020	9/2/2020 (DUP)	12/31/2020	3/25/2021	3/25/2021 (DUP)	6/23/2021	6/23/2021 (DUP)	9/2/2020	12/31/2020	12/31/2020 (DUP)	3/25/2021	6/23/2021
SW8260C (VOC)	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	(total)	µg/L	<1.00	<1.00	--	--	--	--	--	<1.00	--	--	--	--
	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	<1.5	<1.5	--	--	--	--	--	<1.5	--	--	--	--
	trans-1,2-Dichloroethene	360	µg/L	<0.500	<0.500	--	--	--	--	--	<0.500	--	--	--	--
	trans-1,3-Dichloropropene	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	--	--	--	--
	Vinyl acetate	410	µg/L	<5.00	<5.00	--	--	--	--	--	<5.00	--	--	--	--
	Vinyl chloride	0.19	µg/L	<0.0750	<0.0750	--	--	--	--	--	<0.0750	--	--	--	--
8270D SIM LV (PAH)	1-Methylnaphthalene	11	µg/L	<0.0232	<0.0232	<0.0240 J*	<0.0240	<0.0240	<0.0240	<0.0232	<0.0232	<0.0250 J*	<0.0240 J*	--	<0.0250
	2-Methylnaphthalene	36	µg/L	<0.0232	<0.0232	<0.0240 J*	<0.0240	<0.0240	<0.0240	<0.0232	<0.0232	<0.0250 J*	<0.0240 J*	--	<0.0250
	Acenaphthene	530	µg/L	<0.0232	<0.0232	<0.0240 J*	<0.0240	<0.0240	<0.0240	<0.0232	<0.0232	<0.0250 J*	<0.0240 J*	--	<0.0250
	Acenaphthylene	260	µg/L	<0.0232	<0.0232	<0.0240 J*	<0.0240	<0.0240	<0.0240	<0.0232	<0.0232	<0.0250 J*	<0.0240 J*	--	<0.0250
	Anthracene	43	µg/L	<0.0232	<0.0232	<0.0240 J*	<0.0240	<0.0240	<0.0240	<0.0232	<0.0232	<0.0250 J*	<0.0240 J*	--	<0.0250
	Benzo(a)anthracene	0.3	µg/L	<0.0232	<0.0232	<0.0240 J*	<0.0240	<0.0240	<0.0240	<0.0232	<0.0232	<0.0250 J*	<0.0240 J*	--	<0.0250
	Benzo(a)pyrene	0.25	µg/L	<0.0093	<0.0093	<0.00960 J*	<0.00960	<0.00960	<0.00960	<0.00925	<0.0093	<0.0100 J*	<0.00960 J*	--	<0.0100
	Benzo(b)fluoranthene	2.5	µg/L	<0.0232	<0.0232	<0.0240 J*	<0.0240	<0.0240	<0.0240	<0.0232	<0.0232	<0.0250 J*	<0.0240 J*	--	<0.0250
	Benzo(g,h,i)perylene	0.26	µg/L	<0.0232	<0.0232	<0.0240 J*	<0.0240	<0.0240	<0.0240	<0.0232	<0.0232	<0.0250 J*	<0.0240 J*	--	<0.0250
	Benzo(k)fluoranthene	0.8	µg/L	<0.0232	<0.0232	<0.0240 J*	<0.0240	<0.0240	<0.0240	<0.0232	<0.0232	<0.0250 J*	<0.0240 J*	--	<0.0250
	Chrysene	2	µg/L	<0.0232	<0.0232	<0.0240 J*	<0.0240	<0.0240	<0.0240	<0.0232	<0.0232	<0.0250 J*	<0.0240 J*	--	<0.0250
	Dibenzo(a,h)anthracene	0.25	µg/L	<0.0093	<0.0093	<0.00960 J*	<0.00960	<0.00960	<0.00960	<0.00925	<0.0093	<0.0100 J*	<0.00960 J*	--	<0.0100
	Fluoranthene	260	µg/L	<0.0232	<0.0232	<0.0240 J*	<0.0240	<0.0240	<0.0240	<0.0232	<0.0232	<0.0250 J*	<0.0240 J*	--	<0.0250
	Fluorene	290	µg/L	<0.0232	<0.0232	<0.0240 J*	<0.0240	<0.0240	<0.0240	<0.0232	<0.0232	<0.0250 J*	<0.0240 J*	--	<0.0250
	Indeno(1,2,3-cd)pyrene	0.19	µg/L	<0.0232	<0.0232	<0.0240 J*	<0.0240	<0.0240	<0.0240	<0.0232	<0.0232	<0.0250 J*	<0.0240 J*	--	<0.0250
	Naphthalene	1.7	µg/L	<0.0463	<0.0463	<0.0481 J*	<0.0481	<0.0481	<0.0481	<0.0463	<0.0463	<0.0500 J*	<0.0481 J*	--	<0.0500
	Phenanthrene	170	µg/L	<0.0232	<0.0232	<0.0240 J*	<0.0240	0.0151 J	0.0227 J	0.0250 J	<0.0232	<0.0250 J*	<0.0240 J*	--	0.0233 J
	Pyrene	120	µg/L	<0.0232	<0.0232	<0.0240 J*	<0.0240	<0.0240	<0.0240	<0.0232	<0.0232	<0.0250 J*	<0.0240 J*	--	<0.0250

Table 9 - Summary of August 2020 through June 2021 Monitoring Well Analytical Petroleum Results

Analytical Method	Analyte	Cleanup Level	Units	MW-11-15							MW-12-10				
				9/2/2020	9/2/2020 (DUP)	12/31/2020	3/25/2021	3/25/2021 (DUP)	6/23/2021	6/23/2021 (DUP)	9/2/2020	12/31/2020	12/31/2020 (DUP)	3/25/2021	6/23/2021
8021 BTEX	Benzene	4.6	µg/L	--	--	<0.250 J*	<0.250	<0.250	<0.250	<0.250	--	<0.250 J*	<0.250 J*	<0.250	<0.250
	Ethylbenzene	15	µg/L	--	--	<0.500 J*	<1.00 B*	<1.00 B*	<0.500	<0.500	--	<0.500 J*	<0.500 J*	<1.00 B*	<0.500
	o-Xylene	190 (total)	µg/L	--	--	<0.500 J*	<1.00 B*	<1.00 B*	<1.00	<1.00	--	<0.500 J*	<0.500 J*	<1.00 B*	<1.00
	P & M -Xylene		µg/L	--	--	<1.00 J*	<2.00 B*	<2.00 B*	<0.500	<0.500	--	<1.00 J*	<1.00 J*	<2.00 B*	<0.500
	Toluene	1,100	µg/L	--	--	<0.500 J*	<1.00 B*	<1.00 B*	<0.500	<0.500	--	<0.500 J*	<0.500 J*	<1.00 B*	<0.500
	Total Xylenes	190	µg/L	--	--	<1.50 J*	<3.00 B*	<3.00 B*	<1.50	<1.50	--	<1.50 J*	<1.50 J*	<3.00 B*	<1.50

NOTES:

Analytical results reported from SGS North America laboratory reports 1204821, 1210031, 1211331, and 1213682.

ADEC Groundwater Cleanup Levels from 18 AAC 75.341 Table C - Groundwater Human Health Cleanup Level.

DEC Alaska Department of Environmental Conservation

PAH polynuclear aromatic hydrocarbons

VOC volatile organic compounds

mg/L milligrams per liter

µg/L micrograms per liter

< Analyte was not detected; reported as less than the limit of detection (LOD).

<Bold The laboratory's LOD is greater than the regulatory limit.

- Groundwater cleanup level not established for this analyte

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

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

B* Result is considered not detected at the LOQ or reported concentration (higher value reported) due to contamination identified in a blank.

Table 10 - Summary of August 2020 through June 2021 POET System Analytical PFAS and Arsenic Results

		Sample Date	8/31/2020			12/30/2020			3/23/2021			6/21/2021		
Analyte	Applicable limit	Units	Sink	C-Port Composite	Pre-treatment	Sink	C-Port Composite	Pre-treatment	Sink	C-Port Composite	Pre-treatment	Sink	C-Port Composite	Pre-treatment
Perfluorohexanesulfonic acid (PFHxS)	—	ng/L	<1.9	<1.8	25	<1.9	<1.9	7.6	<1.7	<1.7	12	<1.9	<1.9	12
Perfluorohexanoic acid (PFHxA)	—	ng/L	<1.9	<1.8	12	<1.9	<1.9	3.3	<1.7	<1.7	7.4	<1.9	<1.9	8.1
Perfluoroheptanoic acid (PFHpA)	—	ng/L	<1.9	<1.8	5.2	<1.9	<1.9	1.7 J	<1.7	<1.7	3.8	<1.9	<1.9	2.8
Perfluorononanoic acid (PFNA)	—	ng/L	<1.9	<1.8	<1.9	<1.9	<1.9	0.78 J	<1.7	<1.7	<1.7	<1.9	<1.9	<1.8
Perfluorobutanesulfonic acid (PFBS)	—	ng/L	<1.9	<1.8	1.6 J	<1.9	<1.9	0.84 J	<1.7	<1.7	1.2 J*	<1.9	<1.9	0.68 J
Perfluorodecanoic acid (PFDA)	—	ng/L	<1.9	<1.8	<1.9	<1.9	<1.9	0.88 J	<1.7	<1.7	<1.7	<1.9	<1.9	<1.8
Perfluoroundecanoic acid (PFUnA)	—	ng/L	<1.9	<1.8	<1.9	<1.9	<1.9	0.84 J	<1.7	<1.7	<1.7	<1.9	<1.9	<1.8
Perfluorododecanoic acid (PFDoA)	—	ng/L	<1.9	<1.8	<1.9	<1.9	<1.9	0.83 J	<1.7	<1.7	<1.7	<1.9	<1.9	<1.8
Perfluorotridecanoic acid (PFTrDA)	—	ng/L	<1.9	<1.8	<1.9	<1.9	<1.9	0.87 J	<1.7	<1.7	<1.7	<1.9	<1.9	<1.8
Perfluorotetradecanoic acid (PFTeA)	—	ng/L	<1.9	<1.8	<1.9	<1.9	<1.9	0.79 J	<1.7	<1.7	<1.7	<1.9	<1.9	<1.8
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	ng/L	<1.9	<1.8	<1.9	<1.9	<1.9	0.89 J	<4.2	<4.2	<4.2	<4.8	<4.8	<4.5
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	ng/L	<1.9	<1.8	<1.9	<1.9	<1.9	0.96 J	<4.2	<4.2	<4.2	<4.8	<4.8	<4.5
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	—	ng/L	<1.9	<1.8	<1.9	<1.9	<1.9	0.79 J	<1.7	<1.7	<1.7	<1.9	<1.9	<1.8
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	—	ng/L	<1.9	<1.8	<1.9	<1.9	<1.9	0.84 J	<1.7	<1.7	<1.7	<1.9	<1.9	<1.8
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	—	ng/L	<1.9	<1.8	<1.9	<1.9	<1.9	<1.9	<1.7	<1.7	<1.7	<1.9	<1.9	<1.8
Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	ng/L	<1.9	<1.8	<1.9	<1.9	<1.9	<1.9	<3.4	<3.4	<3.4	<3.8	<3.9	<3.6
Perfluorooctanesulfonic acid (PFOS)	70†	ng/L	<1.9	<1.8	**98**	<1.9	<1.9	50	<1.7	<1.7	60	<1.9	<1.9	45
Perfluorooctanoic acid (PFOA)		ng/L	<1.9	0.60 J	**2.0**	<1.9	<1.9	1.1 J	<1.7	<1.7	1.3 J	<1.9	<1.9	1.4 J
EPA LHA Combined (PFOS + PFOA)	70†	ng/L	N/A	0.60 J‡	**100**	N/A	N/A	51 J	N/A	N/A	61 J	N/A	N/A	46 J
Arsenic	10	µg/L	<2.5	—	**11.8**	<2.5	—	**19.5**	<2.5	—	**20.7**	<2.50	—	**14.9 J***

Notes: PFAS results from Eurofin TestAmerica work orders J64370-1, J68522-1, J71800-1, and J75577-1.
Arsenic results from SGS work orders 1204822, 1210032, 1211330, and 1213677.

ng/L nanograms per liter, equivalent to parts per trillion
µg/L micrograms per liter, equivalent to parts per billion
EPA Environmental Protection Agency
LHA Lifetime Health Advisory
† EPA LHA level is 70 ppt for PFOS and PFOA combined.
< Analyte not detected; PFAS results listed as less than the reporting limit (RL) and arsenic results listed as less than the limit of detection (LOD) unless otherwise flagged due to quality-control (QC) failures.
Bold Concentration exceeds regulatory limit
— Analysis not requested or regulatory limit not available
J Estimated concentration, detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.
J* Estimated concentration due to quality control failure. Flag applied by Shannon & Wilson, Inc.
‡ Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.
N/A Not applicable. The combined concentration could not be calculated; PFOS and PFOA were not detected in the project sample.

Table 11: Summary of Historical Water-Supply Well PFAS Results

Sample Name		City Hall	Firehouse	NPS Well								
Analyte	Units	9/27/18	9/27/18	8/27/18	9/25/18	3/7/19	6/8/19	10/11/2019 DUP	10/11/19	9/2/2020 DUP	9/2/20	3/25/21
Perfluorohexanesulfonic acid (PFHxS)	ng/L	<2.0	2.3	12	11	13	14	10	9.3	7.3	7.4	10
Perfluorohexanoic acid (PFHxA)	ng/L	--	--	--	--	--	--	2.2	1.8 J	4.2	4.3	5.1
Perfluoroheptanoic acid (PFHpA)	ng/L	<2.0	<2.0	1.8 J	1.7 J	1.9 J	1.8 J	1.4 J	1.3 J	1.5 J	1.5 J	2.2
Perfluorononanoic acid (PFNA)	ng/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.8	<1.9	<1.9	<1.8	<1.9
Perfluorobutanesulfonic acid (PFBS)	ng/L	<2.0	<2.0	1.3 J	1.2 J	1.4 J	1.5 J	1.0 J*	0.73 J*	0.85 J	0.84 J	1.0 J
Perfluorodecanoic acid (PFDA)	ng/L	--	--	--	--	--	--	<1.8	<1.9	<1.9	<1.8	<1.9
Perfluoroundecanoic acid (PFUnA)	ng/L	--	--	--	--	--	--	<1.8	<1.9	<1.9	<1.8	<1.9
Perfluorododecanoic acid (PFDoA)	ng/L	--	--	--	--	--	--	<1.8	<1.9	<1.9	<1.8	<1.9
Perfluorotridecanoic acid (PFTrDA)	ng/L	--	--	--	--	--	--	<1.8	<1.9	<1.9	<1.8	<1.9
Perfluorotetradecanoic acid (PFTeA)	ng/L	--	--	--	--	--	--	<1.8	<1.9	<1.9	<1.8	<1.9
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	ng/L	--	--	--	--	--	--	<1.8	<1.9	<1.9	<1.8	<4.6
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	ng/L	--	--	--	--	--	--	<1.8	<1.9	<1.9	<1.8	<4.6
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ng/L	--	--	--	--	--	--	<1.8	<1.9	<1.9	<1.8	<1.9
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ng/L	--	--	--	--	--	--	<1.8	<1.9	<1.9	<1.8	<1.9
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	ng/L	--	--	--	--	--	--	<1.8	<1.9	<1.9	<1.8	<1.9
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	--	--	--	--	--	--	4.0 J*	<1.9 J*	<1.9	<1.8	<3.7
Perfluorooctanesulfonic acid (PFOS)	ng/L	<2.0	<2.0	23	22	13	16	19	18	9.7	10	7.1
Perfluorooctanoic acid (PFOA)	ng/L	<2.0	<2.0	4.6	4.3	3.5	<3.4 B*	2.9	2.8	1.9	2.0	2.7
LHA Combined (PFOS + PFOA)	ng/L	N/A	N/A	28	26	17	16 B*‡	22	21	12	12	9.8

Notes:

DEC	Alaska Department of Environmental Conservation
DUP	Field-duplicate sample
EPA	United States Environmental Protection Agency
PFAS	per- and poly-fluoroalkyl substances
ng/L	nanograms per liter, equivalent to parts per trillion (ppt)
—	No applicable regulatory limit exists for the associated analyte.
<	Analyte was not detected; reported as less than the Reporting Limit (RL).
Bold	Detected concentration exceeds the DEC groundwater cleanup level reported in 18 AAC 75, Table C.
J	Estimated concentration, detected greater than the method detection limit (MDL) and less than the reporting limit (RL). 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. (*)
J*	Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (*)
‡	Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.

Table 11: Summary of Historical Water-Supply Well PFAS Results

Sample Name		PW-001			PW-002			PW-003	PW-004	PW-005	PW-007	PW-008	PW-009
Analyte	**Units**	8/28/18	3/7/19	6/7/19	8/28/18	3/9/19	6/8/19	8/28/18	8/28/18	8/28/18	8/28/18	8/28/18	8/28/18
Perfluorohexanesulfonic acid (PFHxS)	ng/L	350	320	489	32	21	20	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorohexanoic acid (PFHxA)	ng/L	--	--	216	--	--	--	--	--	--	--	--	--
Perfluoroheptanoic acid (PFHpA)	ng/L	13	17	26	4.4	3.4	1.8 J	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorononanoic acid (PFNA)	ng/L	3.0	2.3	4.2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorobutanesulfonic acid (PFBS)	ng/L	20	21	25	2.2	1.8 J	1.9 J	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorodecanoic acid (PFDA)	ng/L	--	--	<2.0	--	--	--	--	--	--	--	--	--
Perfluoroundecanoic acid (PFUnA)	ng/L	--	--	<2.0 J*	--	--	--	--	--	--	--	--	--
Perfluorododecanoic acid (PFDoA)	ng/L	--	--	<2.0 J*	--	--	--	--	--	--	--	--	--
Perfluorotridecanoic acid (PFTrDA)	ng/L	--	--	<2.0	--	--	--	--	--	--	--	--	--
Perfluorotetradecanoic acid (PFTeA)	ng/L	--	--	<2.0 J*	--	--	--	--	--	--	--	--	--
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	ng/L	--	--	<8.0 J*	--	--	--	--	--	--	--	--	--
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	ng/L	--	--	<8.0	--	--	--	--	--	--	--	--	--
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ng/L	--	--	--	--	--	--	--	--	--	--	--	--
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ng/L	--	--	--	--	--	--	--	--	--	--	--	--
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	ng/L	--	--	--	--	--	--	--	--	--	--	--	--
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	--	--	--	--	--	--	--	--	--	--	--	--
Perfluorooctanesulfonic acid (PFOS)	ng/L	**2,300**	**1,200**	**2,880**	**160**	**72**	33	<2.0	<2.0	<2.0	5.6	<2.0	<2.0
Perfluorooctanoic acid (PFOA)	ng/L	19	13	24	3.0	<2.0 B*	1.8 J	1.4 J	<2.0	0.90 J	1.2 J	1.3 J	<2.0
LHA Combined (PFOS + PFOA)	ng/L	**2,319**	**1,213**	**2,904**	**163**	**72 B*‡**	35 J	1.4 J‡	N/A	0.90 J‡	6.8 J	1.3 J‡	N/A

Notes:

DEC	Alaska Department of Environmental Conservation
DUP	Field-duplicate sample
EPA	United States Environmental Protection Agency
PFAS	per- and poly-fluoroalkyl substances
ng/L	nanograms per liter, equivalent to parts per trillion (ppt)
—	No applicable regulatory limit exists for the associated analyte.
<	Analyte was not detected; reported as less than the Reporting Limit (RL).
Bold	Detected concentration exceeds the DEC groundwater cleanup level reported in 18 AAC 75, Table C.
J	Estimated concentration, detected greater than the method detection limit (MDL) and less than the reporting limit (RL). 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. (*)
J*	Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (*)
‡	Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.

Table 11: Summary of Historical Water-Supply Well PFAS Results

Sample Name		PW-010								PW-011				
Analyte	**Units**	8/29/18	6/9/19	10/12/2019 DUP	10/12/19	9/2/20	12/30/20	3/24/21	6/22/21	8/29/18	9/25/18	3/8/19	6/8/2019 DUP	6/8/19
Perfluorohexanesulfonic acid (PFHxS)	ng/L	<2.0	<2.0	2.5	2.9	0.60 J	<1.8	<1.8	<1.9	30	34	32	23	23
Perfluorohexanoic acid (PFHxA)	ng/L	--	--	0.97 J	1.0 J	<1.9	<1.8	<1.8	<1.9	--	--	--	--	--
Perfluoroheptanoic acid (PFHpA)	ng/L	<2.0	<2.0	<1.9	<2.0	<1.9	<1.8	<1.8	<1.9	3.4	3.1	4.5	3.5	3.4
Perfluorononanoic acid (PFNA)	ng/L	<2.0	<2.0	<1.9	<2.0	<1.9	<1.8	<1.8	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorobutanesulfonic acid (PFBS)	ng/L	<2.0	<2.0	<1.9	<2.0	<1.9	<1.8	<1.8	<1.9	2.9	3.2	2.4	1.9 J	1.8 J
Perfluorodecanoic acid (PFDA)	ng/L	--	--	<1.9	<2.0	<1.9	<1.8	<1.8	<1.9	--	--	--	--	--
Perfluoroundecanoic acid (PFUnA)	ng/L	--	--	<1.9	<2.0	<1.9	<1.8	<1.8	<1.9	--	--	--	--	--
Perfluorododecanoic acid (PFDoA)	ng/L	--	--	<1.9	<2.0	<1.9	<1.8	<1.8	<1.9	--	--	--	--	--
Perfluorotridecanoic acid (PFTrDA)	ng/L	--	--	<1.9	<2.0	<1.9	<1.8	<1.8	<1.9	--	--	--	--	--
Perfluorotetradecanoic acid (PFTeA)	ng/L	--	--	<1.9	<2.0	<1.9	<1.8	<1.8	<1.9	--	--	--	--	--
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	ng/L	--	--	<1.9	<2.0	<1.9	<1.8	<4.4	<4.8	--	--	--	--	--
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	ng/L	--	--	<1.9	<2.0	<1.9	<1.8	<4.4	<4.8	--	--	--	--	--
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ng/L	--	--	<1.9	<2.0	<1.9	<1.8	<1.8	<1.9	--	--	--	--	--
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ng/L	--	--	<1.9	<2.0	<1.9	<1.8	<1.8	<1.9	--	--	--	--	--
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	ng/L	--	--	<1.9	<2.0	<1.9	<1.8	<1.8	<1.9	--	--	--	--	--
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	--	--	<1.9	<2.0	<1.9	<1.8	<3.5	<3.8	--	--	--	--	--
Perfluorooctanesulfonic acid (PFOS)	ng/L	<2.0	<2.0	2.0	2.2	0.88 J	0.46 J	0.79 J	<1.9	**93**	**80**	**96**	**82**	**80**
Perfluorooctanoic acid (PFOA)	ng/L	<2.0	<2.0	<1.9	<2.0	<1.9	<1.8	<1.8	<1.9	3.3	3.1	<2.6 B*	2.0	<2.2 B*
LHA Combined (PFOS + PFOA)	ng/L	N/A	N/A	2.0 ‡	2.2 ‡	0.88 J‡	0.46 J‡	0.79 J‡	N/A	**96**	**83**	**96 B*‡**	**84**	**80 B*‡**

Notes:

DEC	Alaska Department of Environmental Conservation
DUP	Field-duplicate sample
EPA	United States Environmental Protection Agency
PFAS	per- and poly-fluoroalkyl substances
ng/L	nanograms per liter, equivalent to parts per trillion (ppt)
—	No applicable regulatory limit exists for the associated analyte.
<	Analyte was not detected; reported as less than the Reporting Limit (RL).
Bold	Detected concentration exceeds the DEC groundwater cleanup level reported in 18 AAC 75, Table C.
J	Estimated concentration, detected greater than the method detection limit (MDL) and less than the reporting limit (RL). 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. (*)
J*	Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (*)
‡	Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.

Table 11: Summary of Historical Water-Supply Well PFAS Results

Sample Name		PW-012											PW-013		
Analyte	**Units**	8/29/18	3/8/19	6/8/19	10/12/19	9/3/2020 DUP	9/3/20	1/2/21	3/24/2021 DUP	3/24/21	6/21/2021 DUP	6/21/21	8/29/18	3/7/19	6/8/19
Perfluorohexanesulfonic acid (PFHxS)	ng/L	8.9	11	7.0	9.3	4.7	4.2	8.5	1.3 J	1.5 J	5.2	4.8	860	650	692
Perfluorohexanoic acid (PFHxA)	ng/L	--	--	--	2.8	1.2 J	1.1 J	3.3	0.62 J	<1.8	<2.1	<2.0	--	--	1,320
Perfluoroheptanoic acid (PFHpA)	ng/L	0.81 J	0.87 J	<2.0	0.86 J	<1.9	<1.9	1.1 J	<1.8	<1.8	<2.1	<2.0	230	150	272
Perfluorononanoic acid (PFNA)	ng/L	<2.0	<2.0	<2.0	<1.9	<1.9	<1.9	<1.8	<1.8	<1.8	<2.1	<2.0	8.9	18	14
Perfluorobutanesulfonic acid (PFBS)	ng/L	1.8 J	1.5 J	1.1 J	0.99 J	0.50 J	<1.9	0.59 J	<1.8	<1.8	0.27 J	0.21 J	57	34	32
Perfluorodecanoic acid (PFDA)	ng/L	--	--	--	<1.9	<1.9	<1.9	<1.8	<1.8	<1.8	<2.1	<2.0	--	--	2.9 J
Perfluoroundecanoic acid (PFUnA)	ng/L	--	--	--	<1.9	<1.9	<1.9	<1.8	<1.8	<1.8	<2.1	<2.0	--	--	<2.0
Perfluorododecanoic acid (PFDoA)	ng/L	--	--	--	<1.9	<1.9	<1.9	<1.8	<1.8	<1.8	<2.1	<2.0	--	--	<2.0
Perfluorotridecanoic acid (PFTrDA)	ng/L	--	--	--	<1.9	<1.9	<1.9	<1.8	<1.8	<1.8	<2.1	<2.0	--	--	<2.0
Perfluorotetradecanoic acid (PFTeA)	ng/L	--	--	--	<1.9	<1.9	<1.9	<1.8	<1.8	<1.8	<2.1	<2.0	--	--	<2.0
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	ng/L	--	--	--	<1.9	<1.9	<1.9	<1.8	<4.4	<4.4	<5.2	<5.0	--	--	<8.0
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	ng/L	--	--	--	<1.9	<1.9	<1.9	<1.8	<4.4	<4.4	<5.2	<5.0	--	--	<8.0
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ng/L	--	--	--	<1.9	<1.9	<1.9	<1.8	<1.8	<1.8	<2.1	<2.0	--	--	--
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ng/L	--	--	--	<1.9	<1.9	<1.9	<1.8	<1.8	<1.8	<2.1	<2.0	--	--	--
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	ng/L	--	--	--	<1.9	<1.9	<1.9	<1.8	<1.8	<1.8	<2.1	<2.0	--	--	--
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	--	--	--	<1.9	<1.9	<1.9	<1.8	<3.5	<3.5	<4.2	<4.0	--	--	--
Perfluorooctanesulfonic acid (PFOS)	ng/L	7.7	25	14	13	15	14	12	6.1	7.7	5.5	5.6	**5,500**	**6,000**	**5,490**
Perfluorooctanoic acid (PFOA)	ng/L	0.77 J	<2.0 B*	0.81 J	0.74 J	<1.9	<1.9	0.47 J	<1.8	<1.8	<2.1	<2.0	**130**	**110**	**129**
LHA Combined (PFOS + PFOA)	ng/L	8.5 J	25 B*‡	15 J	14 J	15 ‡	14 ‡	12 J	6.1 ‡	7.7 ‡	5.5 ‡	5.6 ‡	**5,630**	**6,110**	**5,619**

Notes:

DEC	Alaska Department of Environmental Conservation
DUP	Field-duplicate sample
EPA	United States Environmental Protection Agency
PFAS	per- and poly-fluoroalkyl substances
ng/L	nanograms per liter, equivalent to parts per trillion (ppt)
—	No applicable regulatory limit exists for the associated analyte.
<	Analyte was not detected; reported as less than the Reporting Limit (RL).
Bold	Detected concentration exceeds the DEC groundwater cleanup level reported in 18 AAC 75, Table C.
J	Estimated concentration, detected greater than the method detection limit (MDL) and less than the reporting limit (RL). 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. (*)
J*	Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (*)
‡	Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.

Table 11: Summary of Historical Water-Supply Well PFAS Results

Sample Name		PW-014	PW-015	PW-016		PW-017	PW-018	PW-019	PW-020	PW-021	PW-022			
Analyte	Units	8/29/18	8/29/18	8/30/18	12/29/20	8/30/18	8/30/18	8/30/18	8/30/18	8/30/18	8/30/18	3/7/19	6/7/2019 DUP	6/7/19
Perfluorohexanesulfonic acid (PFHxS)	ng/L	<2.0	<2.0	1.7 J	1.3 J	<2.0	1.2 J	<2.0	<2.0	<2.0	58	230	19	19
Perfluorohexanoic acid (PFHxA)	ng/L	--	--	--	7.3	--	--	--	--	--	--	--	--	--
Perfluoroheptanoic acid (PFHpA)	ng/L	<2.0	<2.0	<2.0	3.4	<2.0	<2.0	<2.0	<2.0	<2.0	4.8	20	1.8 J	1.9 J
Perfluorononanoic acid (PFNA)	ng/L	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	1.7 J I	<2.0	<2.0
Perfluorobutanesulfonic acid (PFBS)	ng/L	<2.0	<2.0	<2.0	1.2 J	<2.0	<2.0	<2.0	<2.0	<2.0	6.4	28	1.4 J	1.4 J
Perfluorodecanoic acid (PFDA)	ng/L	--	--	--	<1.9	--	--	--	--	--	--	--	--	--
Perfluoroundecanoic acid (PFUnA)	ng/L	--	--	--	<1.9	--	--	--	--	--	--	--	--	--
Perfluorododecanoic acid (PFDoA)	ng/L	--	--	--	<1.9	--	--	--	--	--	--	--	--	--
Perfluorotridecanoic acid (PFTrDA)	ng/L	--	--	--	<1.9	--	--	--	--	--	--	--	--	--
Perfluorotetradecanoic acid (PFTeA)	ng/L	--	--	--	<1.9	--	--	--	--	--	--	--	--	--
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	ng/L	--	--	--	<1.9	--	--	--	--	--	--	--	--	--
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	ng/L	--	--	--	<1.9	--	--	--	--	--	--	--	--	--
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ng/L	--	--	--	<1.9	--	--	--	--	--	--	--	--	--
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ng/L	--	--	--	<1.9	--	--	--	--	--	--	--	--	--
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	ng/L	--	--	--	<1.9	--	--	--	--	--	--	--	--	--
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	--	--	--	<1.9	--	--	--	--	--	--	--	--	--
Perfluorooctanesulfonic acid (PFOS)	ng/L	<2.0	<2.0	<2.0	0.69 J	<2.0	2.5	<2.0	<2.0	<2.0	**520**	**1,500**	**120**	**120**
Perfluorooctanoic acid (PFOA)	ng/L	<2.0	<2.0	1.3 J	8.6	<2.0	<2.0	<2.0	<2.0	<2.0	6.9	25	1.3 J	1.7 J
LHA Combined (PFOS + PFOA)	ng/L	N/A	N/A	1.3 J‡	9.3 J	N/A	2.5 ‡	N/A	N/A	N/A	**527**	**1,525**	**121 J**	**122 J**

Notes:

DEC	Alaska Department of Environmental Conservation
DUP	Field-duplicate sample
EPA	United States Environmental Protection Agency
PFAS	per- and poly-fluoroalkyl substances
ng/L	nanograms per liter, equivalent to parts per trillion (ppt)
—	No applicable regulatory limit exists for the associated analyte.
<	Analyte was not detected; reported as less than the Reporting Limit (RL).
Bold	Detected concentration exceeds the DEC groundwater cleanup level reported in 18 AAC 75, Table C.
J	Estimated concentration, detected greater than the method detection limit (MDL) and less than the reporting limit (RL). 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. (*)
J*	Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (*)
‡	Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.

Table 11: Summary of Historical Water-Supply Well PFAS Results

Sample Name		PW-031	PW-032		PW-033	PW-034	PW-036	PW-037							
Analyte	Units	8/27/18	8/28/18	9/1/20	8/28/18	8/28/18	8/28/18	8/31/18	3/8/19	6/7/19	10/11/19	9/1/20	12/31/20	3/25/21	6/23/21
Perfluorohexanesulfonic acid (PFHxS)	ng/L	<2.0	<2.0	<1.9	<2.0	1.1 J	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.8	<1.7	<2.0
Perfluorohexanoic acid (PFHxA)	ng/L	--	--	<1.9	--	--	--	--	--	--	<1.9	<1.9	<1.8	<1.7	<2.0
Perfluoroheptanoic acid (PFHpA)	ng/L	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.8	<1.7	<2.0
Perfluorononanoic acid (PFNA)	ng/L	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.8	<1.7	<2.0
Perfluorobutanesulfonic acid (PFBS)	ng/L	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.8	<1.7	<2.0
Perfluorodecanoic acid (PFDA)	ng/L	--	--	<1.9	--	--	--	--	--	--	<1.9	<1.9	<1.8	<1.7	<2.0
Perfluoroundecanoic acid (PFUnA)	ng/L	--	--	<1.9	--	--	--	--	--	--	<1.9	<1.9	<1.8	<1.7	<2.0
Perfluorododecanoic acid (PFDoA)	ng/L	--	--	<1.9	--	--	--	--	--	--	<1.9	<1.9	<1.8	<1.7	<2.0
Perfluorotridecanoic acid (PFTrDA)	ng/L	--	--	<1.9	--	--	--	--	--	--	<1.9	<1.9	<1.8	<1.7	<2.0
Perfluorotetradecanoic acid (PFTeA)	ng/L	--	--	<1.9	--	--	--	--	--	--	<1.9	<1.9	<1.8	<1.7	<2.0
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	ng/L	--	--	<1.9	--	--	--	--	--	--	<1.9	<1.9	<1.8	<4.4	<4.9
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	ng/L	--	--	<1.9	--	--	--	--	--	--	<1.9	<1.9	<1.8	<4.4	<4.9
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ng/L	--	--	<1.9	--	--	--	--	--	--	<1.9	<1.9	<1.8	<1.7	<2.0
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ng/L	--	--	<1.9	--	--	--	--	--	--	<1.9	<1.9	<1.8	<1.7	<2.0
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	ng/L	--	--	<1.9	--	--	--	--	--	--	<1.9	<1.9	<1.8	<1.7	<2.0
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	--	--	<1.9	--	--	--	--	--	--	0.89 J	<1.9	<1.8	<3.5	<3.9
Perfluorooctanesulfonic acid (PFOS)	ng/L	<2.0	<2.0	<1.9	<2.0	1.5 J	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.8	<1.7	<2.0
Perfluorooctanoic acid (PFOA)	ng/L	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.8	<1.7	<2.0
LHA Combined (PFOS + PFOA)	ng/L	N/A	N/A	N/A	N/A	1.5 J‡	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

DEC	Alaska Department of Environmental Conservation
DUP	Field-duplicate sample
EPA	United States Environmental Protection Agency
PFAS	per- and poly-fluoroalkyl substances
ng/L	nanograms per liter, equivalent to parts per trillion (ppt)
—	No applicable regulatory limit exists for the associated analyte.
<	Analyte was not detected; reported as less than the Reporting Limit (RL).
Bold	Detected concentration exceeds the DEC groundwater cleanup level reported in 18 AAC 75, Table C.
J	Estimated concentration, detected greater than the method detection limit (MDL) and less than the reporting limit (RL). 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. (*)
J*	Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (*)
‡	Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.

Table 11: Summary of Historical Water-Supply Well PFAS Results

Sample Name		PW-038										PW-039									
Analyte	**Units**	8/28/2018 DUP	8/28/18	3/8/19	6/7/19	10/11/19	9/1/20	12/31/2020 DUP	12/31/20	3/25/21	6/23/21	8/29/2018 DUP	8/29/18	3/8/2019 DUP	3/8/19	6/8/19	10/11/19	9/1/20	12/31/20	3/25/21	6/23/21
Perfluorohexanesulfonic acid (PFHxS)	ng/L	<2.0	<2.0	<2.0	<2.0	<1.8	<1.9	<1.8	<1.9	<1.6	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0	<1.8	<1.9	<1.8	<1.8	<1.9
Perfluorohexanoic acid (PFHxA)	ng/L	--	--	--	--	<1.8	<1.9	<1.8	<1.9	<1.6	<1.9	--	--	--	--	--	<1.8	<1.9	0.54 J	<1.8	0.92 J
Perfluoroheptanoic acid (PFHpA)	ng/L	<2.0	<2.0	<2.0	<2.0	<1.8	<1.9	<1.8	<1.9	<1.6	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0	<1.8	<1.9	<1.8	<1.8	<1.9
Perfluorononanoic acid (PFNA)	ng/L	<2.0	<2.0	<2.0	<2.0	<1.8	<1.9	<1.8	<1.9	<1.6	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0	<1.8	<1.9	<1.8	<1.8	<1.9
Perfluorobutanesulfonic acid (PFBS)	ng/L	<2.0	<2.0	<2.0	<2.0	<1.8	<1.9	<1.8	<1.9	<1.6	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0	<1.8	<1.9	<1.8	<1.8	<1.9
Perfluorodecanoic acid (PFDA)	ng/L	--	--	--	--	<1.8	<1.9	<1.8	<1.9	<1.6	<1.9	--	--	--	--	--	<1.8	<1.9	<1.8	<1.8	<1.9
Perfluoroundecanoic acid (PFUnA)	ng/L	--	--	--	--	<1.8	<1.9	<1.8	<1.9	<1.6	<1.9	--	--	--	--	--	<1.8	<1.9	<1.8	<1.8	<1.9
Perfluorododecanoic acid (PFDoA)	ng/L	--	--	--	--	<1.8	<1.9	<1.8	<1.9	<1.6	<1.9	--	--	--	--	--	<1.8	<1.9	<1.8	<1.8	<1.9
Perfluorotridecanoic acid (PFTrDA)	ng/L	--	--	--	--	<1.8	<1.9	<1.8	<1.9	<1.6	<1.9	--	--	--	--	--	<1.8	<1.9	<1.8	<1.8	<1.9
Perfluorotetradecanoic acid (PFTeA)	ng/L	--	--	--	--	<1.8	<1.9	<1.8	<1.9	<1.6	<1.9	--	--	--	--	--	<1.8	<1.9	<1.8	<1.8	<1.9
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	ng/L	--	--	--	--	<1.8	<1.9	<1.8	<1.9	<4.1	<4.8	--	--	--	--	--	<1.8	<1.9	<1.8	<4.5	<4.8
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	ng/L	--	--	--	--	<1.8	<1.9	<1.8	<1.9	<4.1	<4.8	--	--	--	--	--	<1.8	<1.9	<1.8	<4.5	<4.8
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ng/L	--	--	--	--	<1.8	<1.9	<1.8	<1.9	<1.6	<1.9	--	--	--	--	--	<1.8	<1.9	<1.8	<1.8	<1.9
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ng/L	--	--	--	--	<1.8	<1.9	<1.8	<1.9	<1.6	<1.9	--	--	--	--	--	<1.8	<1.9	<1.8	<1.8	<1.9
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	ng/L	--	--	--	--	<1.8	<1.9	<1.8	<1.9	<1.6	<1.9	--	--	--	--	--	<1.8	<1.9	<1.8	<1.8	<1.9
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	--	--	--	--	<1.8	<1.9	<1.8	<1.9	<3.3	<3.9	--	--	--	--	--	<1.8	<1.9	<1.8	<3.6	<3.8
Perfluorooctanesulfonic acid (PFOS)	ng/L	<2.0	<2.0	<2.0	<2.0	<1.8	<1.9	<1.8	<1.9	<1.6	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0	<1.8	<1.9	<1.8	<1.8	<1.9
Perfluorooctanoic acid (PFOA)	ng/L	<2.0	<2.0	<2.0	<2.0	<1.8	<1.9	<1.8	<1.9	<1.6	<1.9	<2.0	0.79 J	<2.0	<2.0	<2.0	<1.8	<1.9	<1.8	<1.8	<1.9
LHA Combined (PFOS + PFOA)	ng/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.79J‡	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

DEC	Alaska Department of Environmental Conservation
DUP	Field-duplicate sample
EPA	United States Environmental Protection Agency
PFAS	per- and poly-fluoroalkyl substances
ng/L	nanograms per liter, equivalent to parts per trillion (ppt)
—	No applicable regulatory limit exists for the associated analyte.
<	Analyte was not detected; reported as less than the Reporting Limit (RL).
Bold	Detected concentration exceeds the DEC groundwater cleanup level reported in 18 AAC 75, Table C.
J	Estimated concentration, detected greater than the method detection limit (MDL) and less than the reporting limit (RL). 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. (*)
J*	Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (*)
‡	Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.

Table 11: Summary of Historical Water-Supply Well PFAS Results

Sample Name		PW-040									PW-041	PW-042	PW-043	PW-044
Analyte	**Units**	8/28/18	3/8/19	6/8/19	10/11/19	9/1/20	12/31/20	3/25/2021 DUP	3/25/21	6/23/21	8/28/18	8/29/18	8/29/18	8/29/18
Perfluorohexanesulfonic acid (PFHxS)	ng/L	<2.0	<2.0	<2.0	<1.9	<1.9	<1.8	<1.7	<1.8	<2.1	<2.0	<2.0	<2.0	<2.0
Perfluorohexanoic acid (PFHxA)	ng/L	--	--	--	<1.9	<1.9	<1.8	<1.7	<1.8	<2.1	--	--	--	--
Perfluoroheptanoic acid (PFHpA)	ng/L	<2.0	<2.0	<2.0	<1.9	<1.9	<1.8	<1.7	<1.8	<2.1	<2.0	<2.0	0.94 J	<2.0
Perfluorononanoic acid (PFNA)	ng/L	<2.0	<2.0	<2.0	<1.9	<1.9	<1.8	<1.7	<1.8	<2.1	<2.0	<2.0	<2.0	<2.0
Perfluorobutanesulfonic acid (PFBS)	ng/L	<2.0	<2.0	<2.0	<1.9	<1.9	<1.8	<1.7	<1.8	<2.1	<2.0	<2.0	<2.0	<2.0
Perfluorodecanoic acid (PFDA)	ng/L	--	--	--	<1.9	<1.9	<1.8	<1.7	<1.8	<2.1	--	--	--	--
Perfluoroundecanoic acid (PFUnA)	ng/L	--	--	--	<1.9	<1.9	<1.8	<1.7	<1.8	<2.1	--	--	--	--
Perfluorododecanoic acid (PFDoA)	ng/L	--	--	--	<1.9	<1.9	<1.8	<1.7	<1.8	<2.1	--	--	--	--
Perfluorotridecanoic acid (PFTrDA)	ng/L	--	--	--	<1.9	<1.9	<1.8	<1.7	<1.8	<2.1	--	--	--	--
Perfluorotetradecanoic acid (PFTeA)	ng/L	--	--	--	<1.9	<1.9	<1.8	<1.7	<1.8	<2.1	--	--	--	--
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	ng/L	--	--	--	<1.9	<1.9	<1.8	<4.3	<4.5	<5.3	--	--	--	--
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	ng/L	--	--	--	<1.9	<1.9	<1.8	<4.3	<4.5	<5.3	--	--	--	--
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ng/L	--	--	--	<1.9	<1.9	<1.8	<1.7	<1.8	<2.1	--	--	--	--
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ng/L	--	--	--	<1.9	<1.9	<1.8	<1.7	<1.8	<2.1	--	--	--	--
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	ng/L	--	--	--	<1.9	<1.9	<1.8	<1.7	<1.8	<2.1	--	--	--	--
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	--	--	--	0.66 J	<1.9	<1.8	<3.5	<3.6	<4.2	--	--	--	--
Perfluorooctanesulfonic acid (PFOS)	ng/L	<2.0	<2.0	<2.0	<1.9	<1.9	<1.8	<1.7	<1.8	<2.1	<2.0	<2.0	6.6	2.0
Perfluorooctanoic acid (PFOA)	ng/L	<2.0	<2.0	<2.0	<1.9	<1.9	<1.8	<1.7	<1.8	<2.1	<2.0	<2.0	7.6	1.3 J
LHA Combined (PFOS + PFOA)	ng/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	14	3.3 J

Notes:

DEC	Alaska Department of Environmental Conservation
DUP	Field-duplicate sample
EPA	United States Environmental Protection Agency
PFAS	per- and poly-fluoroalkyl substances
ng/L	nanograms per liter, equivalent to parts per trillion (ppt)
—	No applicable regulatory limit exists for the associated analyte.
<	Analyte was not detected; reported as less than the Reporting Limit (RL).
Bold	Detected concentration exceeds the DEC groundwater cleanup level reported in 18 AAC 75, Table C.
J	Estimated concentration, detected greater than the method detection limit (MDL) and less than the reporting limit (RL). 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. (*)
J*	Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (*)
‡	Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.

Table 11: Summary of Historical Water-Supply Well PFAS Results

Sample Name		PW-045			PW-046				PW-047	PW-048	
Analyte	Units	8/29/18	10/11/19	6/22/21	8/30/2018 DUP	8/30/18	3/8/19	6/9/19	8/31/18	8/31/18	6/9/19
Perfluorohexanesulfonic acid (PFHxS)	ng/L	<2.0	0.48 J	0.94 J	1,900	1,700	320	865	<2.0	<2.0	<2.0
Perfluorohexanoic acid (PFHxA)	ng/L	--	<1.9	<1.9	--	--	--	37	--	--	<2.0
Perfluoroheptanoic acid (PFHpA)	ng/L	<2.0	<1.9	<1.9	29	27	6.2	8.3	<2.0	<2.0	<2.0
Perfluorononanoic acid (PFNA)	ng/L	<2.0	<1.9	<1.9	<2.0	<2.0	<2.0	1.8 J	<2.0	<2.0	<2.0
Perfluorobutanesulfonic acid (PFBS)	ng/L	<2.0	<1.9	<1.9	120	110	20	29	<2.0	<2.0	<2.0
Perfluorodecanoic acid (PFDA)	ng/L	--	<1.9	<1.9	--	--	--	<2.0	--	--	<2.0
Perfluoroundecanoic acid (PFUnA)	ng/L	--	<1.9	<1.9	--	--	--	<2.0	--	--	<2.0 J*
Perfluorododecanoic acid (PFDoA)	ng/L	--	<1.9	<1.9	--	--	--	<2.0	--	--	<2.0 J*
Perfluorotridecanoic acid (PFTrDA)	ng/L	--	<1.9	<1.9	--	--	--	<2.0	--	--	<2.0
Perfluorotetradecanoic acid (PFTeA)	ng/L	--	<1.9	<1.9	--	--	--	<2.0	--	--	<2.0
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	ng/L	--	<1.9	<4.8	--	--	--	<8.0	--	--	<8.0
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	ng/L	--	<1.9	<4.8	--	--	--	<8.0	--	--	<8.0
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ng/L	--	<1.9	<1.9	--	--	--	--	--	--	--
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ng/L	--	<1.9	<1.9	--	--	--	--	--	--	--
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	ng/L	--	<1.9	<1.9	--	--	--	--	--	--	--
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	--	<1.9	<3.9	--	--	--	--	--	--	--
Perfluorooctanesulfonic acid (PFOS)	ng/L	<2.0	0.79 J	0.99 J	**83**	**79**	63	68	<2.0	<2.0	<2.0 J*
Perfluorooctanoic acid (PFOA)	ng/L	<2.0	<1.9	<1.9	**82**	**77**	20 B	31	<2.0	<2.0	<2.0
LHA Combined (PFOS + PFOA)	ng/L	N/A	0.79 J‡	0.99 J‡	**165**	**156**	**83 B**	**99**	N/A	N/A	N/A

Notes:

DEC	Alaska Department of Environmental Conservation
DUP	Field-duplicate sample
EPA	United States Environmental Protection Agency
PFAS	per- and poly-fluoroalkyl substances
ng/L	nanograms per liter, equivalent to parts per trillion (ppt)
—	No applicable regulatory limit exists for the associated analyte.
<	Analyte was not detected; reported as less than the Reporting Limit (RL).
Bold	Detected concentration exceeds the DEC groundwater cleanup level reported in 18 AAC 75, Table C.
J	Estimated concentration, detected greater than the method detection limit (MDL) and less than the reporting limit (RL). 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. (*)
J*	Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (*)
‡	Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.

Table 11: Summary of Historical Water-Supply Well PFAS Results

Sample Name		PW-059								PW-061		PW-062	PW-066	PW-070
Analyte	**Units**	8/29/18	3/7/19	6/9/19	10/12/19	9/1/20	12/30/20	3/24/21	6/21/21	8/27/18	9/1/20	6/22/21	12/8/18	8/31/18
Perfluorohexanesulfonic acid (PFHxS)	ng/L	1.2 J	0.98 J	<2.0	1.1 J	0.78 J	1.6 J	1.7	2.1	1.3 J	0.85 J	<2.0	<2.0	1.4 J
Perfluorohexanoic acid (PFHxA)	ng/L	--	--	--	<1.9	<1.9	0.55 J	1.1 J	1.3 J		1.5 J	0.63 J	--	--
Perfluoroheptanoic acid (PFHpA)	ng/L	<2.0	<2.0	<2.0	<1.9	<1.9	<1.9	0.26 J	0.33 J	1.3 J	0.82 J	0.39 J	<2.0	<2.0
Perfluorononanoic acid (PFNA)	ng/L	<2.0	<2.0	<2.0	<1.9	<1.9	<1.9	<1.7	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0
Perfluorobutanesulfonic acid (PFBS)	ng/L	<2.0	<2.0	<2.0	<1.9	0.75 J	0.72 J	1.3 J	0.81 J	<2.0	0.49 J	0.23 J	<2.0	1.8 J
Perfluorodecanoic acid (PFDA)	ng/L	--	--	--	<1.9	<1.9	<1.9	<1.7	<2.0	--	<1.9	<2.0	--	--
Perfluoroundecanoic acid (PFUnA)	ng/L	--	--	--	<1.9	<1.9	<1.9	<1.7	<2.0	--	<1.9	<2.0	--	--
Perfluorododecanoic acid (PFDoA)	ng/L	--	--	--	<1.9	<1.9	<1.9	<1.7	<2.0	--	<1.9	<2.0	--	--
Perfluorotridecanoic acid (PFTrDA)	ng/L	--	--	--	<1.9	<1.9	<1.9	<1.7	<2.0	--	<1.9	<2.0	--	--
Perfluorotetradecanoic acid (PFTeA)	ng/L	--	--	--	<1.9	<1.9	<1.9	<1.7	<2.0	--	<1.9	<2.0	--	--
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	ng/L	--	--	--	<1.9	<1.9	<1.9	<4.3	<5.0	--	<1.9	<4.9	--	--
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	ng/L	--	--	--	<1.9	<1.9	<1.9	<4.3	<5.0	--	<1.9	<4.9	--	--
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ng/L	--	--	--	<1.9	<1.9	<1.9	<1.7	<2.0	--	<1.9	<2.0	--	--
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ng/L	--	--	--	<1.9	<1.9	<1.9	<1.7	<2.0	--	<1.9	<2.0	--	--
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	ng/L	--	--	--	<1.9	<1.9	<1.9	<1.7	<2.0	--	<1.9	<2.0	--	--
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	--	--	--	<1.9	<1.9	<1.9	<3.4	<4.0	--	<1.9	<3.9	--	--
Perfluorooctanesulfonic acid (PFOS)	ng/L	<2.0	<2.0	<2.0	<1.9	<1.9	1.0 J	1.6 J	1.4 J	1.4 J	0.49 J	1.2 J	<2.0	<2.0
Perfluorooctanoic acid (PFOA)	ng/L	<2.0	<2.0	<2.0	<1.9	<1.9	0.70 J	0.96 J	<2.0	3.8	1.9	<2.0	<2.0	1.0 J
LHA Combined (PFOS + PFOA)	ng/L	N/A	N/A	N/A	N/A	N/A	1.7 J	2.6 J	1.4 J‡	5.2 J	2.4 J	1.2 J‡	N/A	1.0 J‡

Notes:

DEC	Alaska Department of Environmental Conservation
DUP	Field-duplicate sample
EPA	United States Environmental Protection Agency
PFAS	per- and poly-fluoroalkyl substances
ng/L	nanograms per liter, equivalent to parts per trillion (ppt)
—	No applicable regulatory limit exists for the associated analyte.
<	Analyte was not detected; reported as less than the Reporting Limit (RL).
Bold	Detected concentration exceeds the DEC groundwater cleanup level reported in 18 AAC 75, Table C.
J	Estimated concentration, detected greater than the method detection limit (MDL) and less than the reporting limit (RL). 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. (*)
J*	Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (*)
‡	Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.

Table 11: Summary of Historical Water-Supply Well PFAS Results

Sample Name		PW-071	PW-074		PW-075	PW-201		PW-202			
Analyte	**Units**	6/8/19	9/25/2018 DUP	9/25/18	8/31/18	9/25/18	12/30/20	9/25/18	12/8/18	3/7/19	6/7/19
Perfluorohexanesulfonic acid (PFHxS)	ng/L	<2.0	1.1 J	1.1 J	<2.0	1.7 J	1.3 J	20	8.8	17	17
Perfluorohexanoic acid (PFHxA)	ng/L	--	--	--	--	--	2.1		<8.0 B*		
Perfluoroheptanoic acid (PFHpA)	ng/L	<2.0	<2.0	<2.0	<2.0	<2.0	1.3 J	2.7	2.3 J	2.0	3.2
Perfluorononanoic acid (PFNA)	ng/L	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9	<2.0	<4.0	<2.0	<2.0
Perfluorobutanesulfonic acid (PFBS)	ng/L	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9	2.1	2.5 J	2.4	2.9
Perfluorodecanoic acid (PFDA)	ng/L	--	--	--	--	--	<1.9	--	<4.0	--	--
Perfluoroundecanoic acid (PFUnA)	ng/L	--	--	--	--	--	<1.9	--	<4.0	--	--
Perfluorododecanoic acid (PFDoA)	ng/L	--	--	--	--	--	<1.9	--	<4.0	--	--
Perfluorotridecanoic acid (PFTrDA)	ng/L	--	--	--	--	--	<1.9	--	<4.0	--	--
Perfluorotetradecanoic acid (PFTeA)	ng/L	--	--	--	--	--	<1.9	--	<4.0	--	--
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	ng/L	--	--	--	--	--	<1.9	--	<16	--	--
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	ng/L	--	--	--	--	--	<1.9	--	<16	--	--
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ng/L	--	--	--	--	--	<1.9	--	--	--	--
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ng/L	--	--	--	--	--	<1.9	--	--	--	--
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	ng/L	--	--	--	--	--	<1.9	--	--	--	--
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	--	--	--	--	--	<1.9	--	--	--	--
Perfluorooctanesulfonic acid (PFOS)	ng/L	<2.0	<2.0	<2.0	<2.0	1.4 J	2.1	68	20	32	38
Perfluorooctanoic acid (PFOA)	ng/L	0.82 J	<2.0	<2.0	1.4 J	<2.0	0.97 J	3.1	<8.2 B*	3.0	4.2
LHA Combined (PFOS + PFOA)	ng/L	0.82 J‡	N/A	N/A	1.4 J‡	1.4 J‡	3.1 J	71	20 B*‡	35	42

Notes:

DEC	Alaska Department of Environmental Conservation
DUP	Field-duplicate sample
EPA	United States Environmental Protection Agency
PFAS	per- and poly-fluoroalkyl substances
ng/L	nanograms per liter, equivalent to parts per trillion (ppt)
—	No applicable regulatory limit exists for the associated analyte.
<	Analyte was not detected; reported as less than the Reporting Limit (RL).
Bold	Detected concentration exceeds the DEC groundwater cleanup level reported in 18 AAC 75, Table C.
J	Estimated concentration, detected greater than the method detection limit (MDL) and less than the reporting limit (RL). 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. (*)
J*	Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (*)
‡	Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.

Table 11: Summary of Historical Water-Supply Well PFAS Results

Sample Name		PW-203									PW-204			PW-204.1
Analyte	**Units**	9/25/18	3/8/19	6/8/19	10/14/19	9/1/2020 DUP	9/1/20	12/31/20	3/23/21	6/21/21	9/25/18	6/7/19	9/2/20	6/21/21
Perfluorohexanesulfonic acid (PFHxS)	ng/L	<2.0	<2.0	<2.0	<2.0	0.81 J	0.95 J	<1.9	0.90 J	<2.0	3.3	2.4	3.2	30
Perfluorohexanoic acid (PFHxA)	ng/L	--	--	--	<2.0	0.48 J	0.67 J	<1.9	<1.7	<2.0	--	--	0.97 J	11
Perfluoroheptanoic acid (PFHpA)	ng/L	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.9	<1.7	<2.0	0.93 J	<2.0	0.47 J	3.8
Perfluorononanoic acid (PFNA)	ng/L	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.9	0.50 J	<2.0	<2.0	<2.0	<1.9	<2.0
Perfluorobutanesulfonic acid (PFBS)	ng/L	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.9	<1.7	<2.0	<2.0	<2.0	<1.9	2.4
Perfluorodecanoic acid (PFDA)	ng/L	--	--	--	<2.0	<1.9	<1.9	<1.9	<1.7	<2.0	--	--	<1.9	<2.0
Perfluoroundecanoic acid (PFUnA)	ng/L	--	--	--	<2.0	<1.9	<1.9	<1.9	<1.7	<2.0	--	--	<1.9	<2.0
Perfluorododecanoic acid (PFDoA)	ng/L	--	--	--	<2.0	<1.9	<1.9	<1.9	<1.7	<2.0	--	--	<1.9	<2.0
Perfluorotridecanoic acid (PFTrDA)	ng/L	--	--	--	<2.0	<1.9	<1.9	<1.9	<1.7	<2.0	--	--	<1.9	<2.0
Perfluorotetradecanoic acid (PFTeA)	ng/L	--	--	--	<2.0	<1.9	<1.9	<1.9	<1.7	<2.0	--	--	<1.9	<2.0
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	ng/L	--	--	--	<2.0	<1.9	<1.9	<1.9	<4.3	<5.1	--	--	<1.9	<5.0
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	ng/L	--	--	--	<2.0	<1.9	<1.9	<1.9	<4.3	<5.1	--	--	<1.9	<5.0
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ng/L	--	--	--	<2.0	<1.9	<1.9	<1.9	<1.7	<2.0	--	--	<1.9	<2.0
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ng/L	--	--	--	<2.0	<1.9	<1.9	<1.9	<1.7	<2.0	--	--	<1.9	<2.0
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	ng/L	--	--	--	<2.0	<1.9	<1.9	<1.9	<1.7	<2.0	--	--	<1.9	<2.0
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	--	--	--	<2.0	<1.9	<1.9	<1.9	<3.4	<4.1	--	--	<1.9	<4.0
Perfluorooctanesulfonic acid (PFOS)	ng/L	<2.0	<2.0	<2.0	<2.0	<1.9	0.70 J	<1.9	1.8	<2.0	5.4	4.7	6.1	49
Perfluorooctanoic acid (PFOA)	ng/L	<2.0	<2.0	<2.0	<2.0	<1.9	0.50 J	<1.9	<1.7	<2.0	<2.0	<2.0	0.75 J	2.8
LHA Combined (PFOS + PFOA)	ng/L	N/A	N/A	N/A	N/A	N/A	1.2 J	N/A	1.8 ‡	N/A	5.4 ‡	4.7 ‡	6.9 J	52

Notes:

DEC	Alaska Department of Environmental Conservation
DUP	Field-duplicate sample
EPA	United States Environmental Protection Agency
PFAS	per- and poly-fluoroalkyl substances
ng/L	nanograms per liter, equivalent to parts per trillion (ppt)
—	No applicable regulatory limit exists for the associated analyte.
<	Analyte was not detected; reported as less than the Reporting Limit (RL).
Bold	Detected concentration exceeds the DEC groundwater cleanup level reported in 18 AAC 75, Table C.
J	Estimated concentration, detected greater than the method detection limit (MDL) and less than the reporting limit (RL). 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. (*)
J*	Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (*)
‡	Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.

Table 11: Summary of Historical Water-Supply Well PFAS Results

Sample Name		PW-205		PW-205.1	PW-206	PW-207	PW-208		PW-208.1	PW-209		
Analyte	**Units**	6/9/19	10/12/19	6/21/21	9/28/18	6/7/19	6/7/19	3/23/21	6/21/21	9/26/18	3/7/19	6/7/19
Perfluorohexanesulfonic acid (PFHxS)	ng/L	11	10	1.5 J	<2.0	<2.0	2.5	0.52 J	11	26	35	24
Perfluorohexanoic acid (PFHxA)	ng/L	--	3.0	0.78 J	--	--	--	2.3	4.0	--	--	--
Perfluoroheptanoic acid (PFHpA)	ng/L	<2.0	0.63 J	<2.1	<2.0	<2.0	<2.0	<1.8	1.7 J	3.0	5.0	3.8
Perfluorononanoic acid (PFNA)	ng/L	<2.0	<1.9	<2.1	<2.0	<2.0	<2.0	<1.8	<2.0	<2.0	<2.0	<2.0
Perfluorobutanesulfonic acid (PFBS)	ng/L	2.0	1.4 J	0.27 J	<2.0	<2.0	<2.0	0.33 JH*	0.74 J	2.2	2.7	1.6 J
Perfluorodecanoic acid (PFDA)	ng/L	--	<1.9	<2.1	--	--	--	<1.8	<2.0	--	--	--
Perfluoroundecanoic acid (PFUnA)	ng/L	--	<1.9	<2.1	--	--	--	<1.8	<2.0	--	--	--
Perfluorododecanoic acid (PFDoA)	ng/L	--	<1.9	<2.1	--	--	--	<1.8	<2.0	--	--	--
Perfluorotridecanoic acid (PFTrDA)	ng/L	--	<1.9	<2.1	--	--	--	<1.8	<2.0	--	--	--
Perfluorotetradecanoic acid (PFTeA)	ng/L	--	<1.9	<2.1	--	--	--	<1.8	<2.0	--	--	--
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	ng/L	--	<1.9	<5.2	--	--	--	<4.6	<5.0	--	--	--
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	ng/L	--	<1.9	<5.2	--	--	--	<4.6	<5.0	--	--	--
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ng/L	--	<1.9	<2.1	--	--	--	<1.8	<2.0	--	--	--
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ng/L	--	<1.9	<2.1	--	--	--	<1.8	<2.0	--	--	--
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	ng/L	--	<1.9	<2.1	--	--	--	<1.8	<2.0	--	--	--
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	--	<1.9	<4.2	--	--	--	<3.7	<4.0	--	--	--
Perfluorooctanesulfonic acid (PFOS)	ng/L	9.0	10	2.2	<2.0	<2.0	8.4	1.6 J	67	**100**	**120**	**120**
Perfluorooctanoic acid (PFOA)	ng/L	0.93 J	0.76 J	<2.1	<2.0	1.0 J	0.80 J I	<1.8	2.6	3.3	2.7	2.5
LHA Combined (PFOS + PFOA)	ng/L	9.9 J	11 J	2.2 ‡	N/A	1.0 J‡	9.2 J I	1.6 J‡	**70**	**103**	**123**	**123**

Notes:

DEC	Alaska Department of Environmental Conservation
DUP	Field-duplicate sample
EPA	United States Environmental Protection Agency
PFAS	per- and poly-fluoroalkyl substances
ng/L	nanograms per liter, equivalent to parts per trillion (ppt)
—	No applicable regulatory limit exists for the associated analyte.
<	Analyte was not detected; reported as less than the Reporting Limit (RL).
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B*	Result is included in the same preparatory batch as a blank detection for the associated analyte. Flag applied by Shannon & Wilson, Inc. (*)
J*	Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (*)
‡	Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.

Table 11: Summary of Historical Water-Supply Well PFAS Results

Sample Name		PW-210				PW-211						PW-212		
Analyte	**Units**	9/26/18	9/26/18	3/7/19	6/8/19	9/26/18	10/13/19	8/31/20	12/30/20	3/24/21	6/21/21	9/26/18	10/14/19	8/31/20
Perfluorohexanesulfonic acid (PFHxS)	ng/L	30	32	26	24	1.1 J	<1.9	<1.9	<1.9	<1.8	0.76 J	<2.0	<1.9	<1.9
Perfluorohexanoic acid (PFHxA)	ng/L	--	--	--	--	--	0.83 J	<1.9	<1.9	<1.8	<2.0	--	<1.9	<1.9
Perfluoroheptanoic acid (PFHpA)	ng/L	3.1	3.0	2.6	3.2	3.3	0.51 J	<1.9	<1.9	<1.8	<2.0	<2.0	<1.9	<1.9
Perfluorononanoic acid (PFNA)	ng/L	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.9	<1.8	<2.0	<2.0	<1.9	<1.9
Perfluorobutanesulfonic acid (PFBS)	ng/L	2.5	2.7	2.7	1.9 J	<2.0	1.4 J	<1.9	<1.9	<1.8	<2.0	<2.0	<1.9	<1.9
Perfluorodecanoic acid (PFDA)	ng/L	--	--	--	--	--	<1.9	<1.9	<1.9	<1.8	<2.0	--	<1.9	<1.9
Perfluoroundecanoic acid (PFUnA)	ng/L	--	--	--	--	--	<1.9	<1.9	<1.9	<1.8	<2.0	--	<1.9	<1.9
Perfluorododecanoic acid (PFDoA)	ng/L	--	--	--	--	--	<1.9	<1.9	<1.9	<1.8	<2.0	--	<1.9	<1.9
Perfluorotridecanoic acid (PFTrDA)	ng/L	--	--	--	--	--	<1.9	<1.9	<1.9	<1.8	<2.0	--	<1.9	<1.9
Perfluorotetradecanoic acid (PFTeA)	ng/L	--	--	--	--	--	<1.9	<1.9	<1.9	<1.8	<2.0	--	<1.9	<1.9
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	ng/L	--	--	--	--	--	3.7	<1.9	1.9	<4.5	<5.0	--	<1.9	<1.9
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	ng/L	--	--	--	--	--	<1.9	<1.9	<1.9	<4.5	<5.0	--	<1.9	<1.9
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ng/L	--	--	--	--	--	<1.9	<1.9	<1.9	<1.8	<2.0	--	<1.9	<1.9
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ng/L	--	--	--	--	--	<1.9	<1.9	<1.9	<1.8	<2.0	--	<1.9	<1.9
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	ng/L	--	--	--	--	--	<1.9	<1.9	<1.9	<1.8	<2.0	--	<1.9	<1.9
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	--	--	--	--	--	<1.9	<1.9	<1.9	<3.6	<4.0	--	<1.9	<1.9
Perfluorooctanesulfonic acid (PFOS)	ng/L	**92**	**95**	**70**	**77**	9.1	1.0 J	0.65 J	0.60 J	<1.8	<2.0	<2.0	<1.9	<1.9
Perfluorooctanoic acid (PFOA)	ng/L	2.6	2.8	2.5	2.4	15	1.0 J	<1.9	<1.9	<1.8	<2.0	<2.0	<1.9	<1.9
LHA Combined (PFOS + PFOA)	ng/L	**95**	**98**	**73**	**79**	24	2.0 J	0.65 J‡	0.60 J‡	N/A	N/A	N/A	N/A	N/A

Notes:

DEC	Alaska Department of Environmental Conservation
DUP	Field-duplicate sample
EPA	United States Environmental Protection Agency
PFAS	per- and poly-fluoroalkyl substances
ng/L	nanograms per liter, equivalent to parts per trillion (ppt)
—	No applicable regulatory limit exists for the associated analyte.
<	Analyte was not detected; reported as less than the Reporting Limit (RL).
Bold	Detected concentration exceeds the DEC groundwater cleanup level reported in 18 AAC 75, Table C.
J	Estimated concentration, detected greater than the method detection limit (MDL) and less than the reporting limit (RL). 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. (*)
J*	Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (*)
‡	Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.

Table 11: Summary of Historical Water-Supply Well PFAS Results

Sample Name		PW-213				PW-214	PW-216	PW-218		PW-219			
Analyte	**Units**	11/1/18	3/7/19	6/9/19	9/2/20	9/27/18	9/27/18	11/1/18	12/30/20	9/27/18	9/27/18	10/14/19	8/31/20
Perfluorohexanesulfonic acid (PFHxS)	ng/L	24	24	20	17	0.88 J	<2.0	<2.0	<1.9	<2.0	<2.0	<1.9	<1.9
Perfluorohexanoic acid (PFHxA)	ng/L	--	--	--	6.7	--	--	--	<1.9	--	--	0.74 J	<1.9
Perfluoroheptanoic acid (PFHpA)	ng/L	2.2	2.5	2.1	2.5	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	0.49 J	<1.9
Perfluorononanoic acid (PFNA)	ng/L	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<1.9	<1.9
Perfluorobutanesulfonic acid (PFBS)	ng/L	3.2	3.1	2.2	1.6 J	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	1.2 J	<1.9
Perfluorodecanoic acid (PFDA)	ng/L	--	--	--	<1.9	--	--	--	<1.9	--	--	<1.9	<1.9
Perfluoroundecanoic acid (PFUnA)	ng/L	--	--	--	<1.9	--	--	--	<1.9	--	--	<1.9	<1.9
Perfluorododecanoic acid (PFDoA)	ng/L	--	--	--	<1.9	--	--	--	<1.9	--	--	<1.9	<1.9
Perfluorotridecanoic acid (PFTrDA)	ng/L	--	--	--	<1.9	--	--	--	<1.9	--	--	<1.9	<1.9
Perfluorotetradecanoic acid (PFTeA)	ng/L	--	--	--	<1.9	--	--	--	<1.9	--	--	<1.9	<1.9
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	ng/L	--	--	--	<1.9	--	--	--	<1.9	--	--	<1.9	<1.9
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	ng/L	--	--	--	<1.9	--	--	--	<1.9	--	--	<1.9	<1.9
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ng/L	--	--	--	<1.9	--	--	--	<1.9	--	--	<1.9	<1.9
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ng/L	--	--	--	<1.9	--	--	--	<1.9	--	--	<1.9	<1.9
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	ng/L	--	--	--	<1.9	--	--	--	<1.9	--	--	<1.9	<1.9
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	--	--	--	<1.9	--	--	--	<1.9	--	--	<1.9	<1.9
Perfluorooctanesulfonic acid (PFOS)	ng/L	51	53	44	61	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<1.9	<1.9
Perfluorooctanoic acid (PFOA)	ng/L	2.3	2.2	<2.2 B*	1.4 J	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	0.84 J	<1.9
LHA Combined (PFOS + PFOA)	ng/L	53	55	44 B*‡	62 J	N/A	N/A	N/A	N/A	N/A	N/A	0.84 J‡	N/A

Notes:

DEC	Alaska Department of Environmental Conservation
DUP	Field-duplicate sample
EPA	United States Environmental Protection Agency
PFAS	per- and poly-fluoroalkyl substances
ng/L	nanograms per liter, equivalent to parts per trillion (ppt)
—	No applicable regulatory limit exists for the associated analyte.
<	Analyte was not detected; reported as less than the Reporting Limit (RL).
Bold	Detected concentration exceeds the DEC groundwater cleanup level reported in 18 AAC 75, Table C.
J	Estimated concentration, detected greater than the method detection limit (MDL) and less than the reporting limit (RL). 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. (*)
J*	Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (*)
‡	Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.

Table 11: Summary of Historical Water-Supply Well PFAS Results

Sample Name		PW-221									PW-230		PW-231	PW-232
Analyte	**Units**	11/1/18	6/9/19	10/12/19	9/2/20	12/30/2020 DUP	12/30/20	3/24/21	6/22/2021 DUP	6/22/21	10/31/18	9/1/20	10/31/18	10/31/18
Perfluorohexanesulfonic acid (PFHxS)	ng/L	<2.0	<2.0	2.1	0.86 J	1.3 J	1.2 J	0.90 J	0.60 J	0.59 J	1.2 J	0.71 J	2.6	<2.0
Perfluorohexanoic acid (PFHxA)	ng/L	--	--	0.87 J	<2.0	<1.9	<2.0	0.52 J	<2.0	<1.9	--	<1.8	--	--
Perfluoroheptanoic acid (PFHpA)	ng/L	<2.0	<2.0	<1.9	<2.0	<1.9	<2.0	<1.8	<2.0	<1.9	<2.0	<1.8	0.96 J	<2.0
Perfluorononanoic acid (PFNA)	ng/L	<2.0	<2.0	<1.9	<2.0	<1.9	<2.0	<1.8	<2.0	<1.9	<2.0	<1.8	<2.0	<2.0
Perfluorobutanesulfonic acid (PFBS)	ng/L	<2.0	<2.0	<1.9	<2.0	<1.9	<2.0	<1.8	<2.0	<1.9	<2.0	<1.8	<2.0	<2.0
Perfluorodecanoic acid (PFDA)	ng/L	--	--	<1.9	<2.0	<1.9	<2.0	<1.8	<2.0	<1.9	--	<1.8	--	--
Perfluoroundecanoic acid (PFUnA)	ng/L	--	--	<1.9	<2.0	<1.9	<2.0	<1.8	<2.0	<1.9	--	<1.8	--	--
Perfluorododecanoic acid (PFDoA)	ng/L	--	--	<1.9	<2.0	<1.9	<2.0	<1.8	<2.0	<1.9	--	<1.8	--	--
Perfluorotridecanoic acid (PFTrDA)	ng/L	--	--	<1.9	<2.0	<1.9	<2.0	<1.8	<2.0	<1.9	--	<1.8	--	--
Perfluorotetradecanoic acid (PFTeA)	ng/L	--	--	<1.9	<2.0	<1.9	<2.0	<1.8	<2.0	<1.9	--	<1.8	--	--
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	ng/L	--	--	<1.9	<2.0	<1.9	<2.0	<4.5	<5.0	<4.8	--	<1.8	--	--
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	ng/L	--	--	<1.9	<2.0	<1.9	<2.0	<4.5	<5.0	<4.8	--	<1.8	--	--
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ng/L	--	--	<1.9	<2.0	<1.9	<2.0	<1.8	<2.0	<1.9	--	<1.8	--	--
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ng/L	--	--	<1.9	<2.0	<1.9	<2.0	<1.8	<2.0	<1.9	--	<1.8	--	--
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	ng/L	--	--	<1.9	<2.0	<1.9	<2.0	<1.8	<2.0	<1.9	--	<1.8	--	--
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	--	--	<1.9	<2.0	<1.9	<2.0	<3.6	<4.0	<3.9	--	<1.8	--	--
Perfluorooctanesulfonic acid (PFOS)	ng/L	<2.0	<2.0	2.4	1.5 J	1.7 J	1.6 J	2.1	0.97 J	0.98 J	<2.0	0.68 J	<2.0	<2.0
Perfluorooctanoic acid (PFOA)	ng/L	<2.0	<2.0	<1.9	<2.0	<1.9	<2.0	<1.8	<2.0	<1.9	1.1 J	1.0 J	1.1 J	<2.0
LHA Combined (PFOS + PFOA)	ng/L	N/A	N/A	2.4 ‡	1.5 J‡	1.7 J‡	1.6 J‡	2.1 ‡	0.97 J‡	0.98 J‡	1.1 J‡	1.7 J	1.1 J‡	N/A

Notes:

DEC	Alaska Department of Environmental Conservation
DUP	Field-duplicate sample
EPA	United States Environmental Protection Agency
PFAS	per- and poly-fluoroalkyl substances
ng/L	nanograms per liter, equivalent to parts per trillion (ppt)
—	No applicable regulatory limit exists for the associated analyte.
<	Analyte was not detected; reported as less than the Reporting Limit (RL).
Bold	Detected concentration exceeds the DEC groundwater cleanup level reported in 18 AAC 75, Table C.
J	Estimated concentration, detected greater than the method detection limit (MDL) and less than the reporting limit (RL). 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. (*)
J*	Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (*)
‡	Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.

Table 11: Summary of Historical Water-Supply Well PFAS Results

Sample Name		PW-233	PW-234	PW-235		PW-236		PW-237	PW-238	PW-239	PW-240		PW-241	
Analyte	**Units**	10/31/18	10/31/18	11/1/18	12/29/20	10/31/2018 DUP	10/31/18	11/1/18	11/1/18	11/1/18	11/1/18	9/1/20	11/1/2018 DUP	11/1/18
Perfluorohexanesulfonic acid (PFHxS)	ng/L	<2.0	<2.0	<2.0	<1.9	0.96 J	1.0 J	<2.0	3.5	<2.0	3.3	2.0	5.8	6.1
Perfluorohexanoic acid (PFHxA)	ng/L	--	--	--	<1.9	--	--	--	--	--	--	<1.9	--	--
Perfluoroheptanoic acid (PFHpA)	ng/L	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0
Perfluorononanoic acid (PFNA)	ng/L	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0
Perfluorobutanesulfonic acid (PFBS)	ng/L	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0
Perfluorodecanoic acid (PFDA)	ng/L	--	--	--	<1.9	--	--	--	--	--	--	<1.9	--	--
Perfluoroundecanoic acid (PFUnA)	ng/L	--	--	--	<1.9	--	--	--	--	--	--	<1.9	--	--
Perfluorododecanoic acid (PFDoA)	ng/L	--	--	--	<1.9	--	--	--	--	--	--	<1.9	--	--
Perfluorotridecanoic acid (PFTrDA)	ng/L	--	--	--	<1.9	--	--	--	--	--	--	<1.9	--	--
Perfluorotetradecanoic acid (PFTeA)	ng/L	--	--	--	<1.9	--	--	--	--	--	--	<1.9	--	--
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	ng/L	--	--	--	<1.9	--	--	--	--	--	--	<1.9	--	--
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	ng/L	--	--	--	<1.9	--	--	--	--	--	--	<1.9	--	--
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ng/L	--	--	--	<1.9	--	--	--	--	--	--	<1.9	--	--
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ng/L	--	--	--	<1.9	--	--	--	--	--	--	<1.9	--	--
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	ng/L	--	--	--	<1.9	--	--	--	--	--	--	<1.9	--	--
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	--	--	--	<1.9	--	--	--	--	--	--	<1.9	--	--
Perfluorooctanesulfonic acid (PFOS)	ng/L	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	2.0	<2.0	<2.0	1.8 J	2.9	2.7
Perfluorooctanoic acid (PFOA)	ng/L	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	0.77 J	<2.0	<2.0	<1.9	0.98 J	0.89 J
LHA Combined (PFOS + PFOA)	ng/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.8 J	N/A	N/A	1.8 J‡	3.9 J	3.6 J

Notes:

DEC	Alaska Department of Environmental Conservation
DUP	Field-duplicate sample
EPA	United States Environmental Protection Agency
PFAS	per- and poly-fluoroalkyl substances
ng/L	nanograms per liter, equivalent to parts per trillion (ppt)
—	No applicable regulatory limit exists for the associated analyte.
<	Analyte was not detected; reported as less than the Reporting Limit (RL).
Bold	Detected concentration exceeds the DEC groundwater cleanup level reported in 18 AAC 75, Table C.
J	Estimated concentration, detected greater than the method detection limit (MDL) and less than the reporting limit (RL). 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. (*)
J*	Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (*)
‡	Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.

Table 11: Summary of Historical Water-Supply Well PFAS Results

Sample Name		PW-247	PW-248	PW-249		PW-255	PW-275		PW-400
Analyte	Units	11/2/18	11/2/18	11/2/2018 DUP	11/2/18	10/31/18	12/9/2018 DUP	12/9/18	9/25/18
Perfluorohexanesulfonic acid (PFHxS)	ng/L	2.7	6.3	1.5 J	1.4 J	<2.0	<2.0	<2.0	<2.0
Perfluorohexanoic acid (PFHxA)	ng/L	--	--	--	--	--	--	--	--
Perfluoroheptanoic acid (PFHpA)	ng/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorononanoic acid (PFNA)	ng/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorobutanesulfonic acid (PFBS)	ng/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorodecanoic acid (PFDA)	ng/L	--	--	--	--	--	--	--	--
Perfluoroundecanoic acid (PFUnA)	ng/L	--	--	--	--	--	--	--	--
Perfluorododecanoic acid (PFDoA)	ng/L	--	--	--	--	--	--	--	--
Perfluorotridecanoic acid (PFTrDA)	ng/L	--	--	--	--	--	--	--	--
Perfluorotetradecanoic acid (PFTeA)	ng/L	--	--	--	--	--	--	--	--
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	ng/L	--	--	--	--	--	--	--	--
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	ng/L	--	--	--	--	--	--	--	--
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ng/L	--	--	--	--	--	--	--	--
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ng/L	--	--	--	--	--	--	--	--
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	ng/L	--	--	--	--	--	--	--	--
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	--	--	--	--	--	--	--	--
Perfluorooctanesulfonic acid (PFOS)	ng/L	<2.0	1.8 J	1.4 J	1.3 J	<2.0	<2.0	<2.0	<2.0
Perfluorooctanoic acid (PFOA)	ng/L	1.1 J	0.97 J	<2.0	0.84 J	<2.0	<2.0	<2.0	<2.0
LHA Combined (PFOS + PFOA)	ng/L	1.1 J‡	2.8 J	1.4 J‡	2.1 J	N/A	N/A	N/A	N/A

Notes:

DEC	Alaska Department of Environmental Conservation
DUP	Field-duplicate sample
EPA	United States Environmental Protection Agency
PFAS	per- and poly-fluoroalkyl substances
ng/L	nanograms per liter, equivalent to parts per trillion (ppt)
—	No applicable regulatory limit exists for the associated analyte.
<	Analyte was not detected; reported as less than the Reporting Limit (RL).
Bold	Detected concentration exceeds the DEC groundwater cleanup level reported in 18 AAC 75, Table C.
J	Estimated concentration, detected greater than the method detection limit (MDL) and less than the reporting limit (RL). 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. (*)
J*	Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (*)
‡	Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.

Table 11: Summary of Historical Water-Supply Well PFAS Results

Sample Name		PW-401												
Analyte	**Units**	9/25/18	10/31/18	3/8/19	6/9/19	10/11/19	9/1/2020 DUP	9/1/20	12/29/2020 DUP	12/29/20	3/23/2021 DUP	3/23/21	6/23/2021 DUP	6/23/21
Perfluorohexanesulfonic acid (PFHxS)	ng/L	18	20	20	15	16	9.9	9.6	6.9	6.6	6.5	7.7	1.8 J	2.2
Perfluorohexanoic acid (PFHxA)	ng/L	--	--	--	--	5.4	4.1	4.4	2.8	2.6	3.5	4.4	1.1 J	1.2 J
Perfluoroheptanoic acid (PFHpA)	ng/L	1.6 J	1.7 J	2.0	1.7 J	1.8 J	1.2 J	1.3 J	1.1 J	1.0 J	1.4 J	1.5 J	0.32 J	0.32 JH*
Perfluorononanoic acid (PFNA)	ng/L	<2.0	<2.0	<2.0	<2.0	<1.9	<1.9	<1.9	<2.0	<2.0	<1.9	<1.8	<2.0	<1.9
Perfluorobutanesulfonic acid (PFBS)	ng/L	2.4	2.3	1.8 J	1.2 J	1.3 J	0.90 J	0.89 J	<2.0	<2.0	0.45 J	0.74 J	<2.0	0.28 J
Perfluorodecanoic acid (PFDA)	ng/L	--	--	--	--	<1.9	<1.9	<1.9	<2.0	<2.0	<1.9	<1.8	<2.0	<1.9
Perfluoroundecanoic acid (PFUnA)	ng/L	--	--	--	--	<1.9	<1.9	<1.9	<2.0	<2.0	<1.9	<1.8	<2.0	<1.9
Perfluorododecanoic acid (PFDoA)	ng/L	--	--	--	--	<1.9	<1.9	<1.9	<2.0	<2.0	<1.9	<1.8	<2.0	<1.9
Perfluorotridecanoic acid (PFTrDA)	ng/L	--	--	--	--	<1.9	<1.9	<1.9	<2.0	<2.0	<1.9	<1.8	<2.0	<1.9
Perfluorotetradecanoic acid (PFTeA)	ng/L	--	--	--	--	<1.9	<1.9	<1.9	<2.0	<2.0	<1.9	<1.8	<2.0	<1.9
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	ng/L	--	--	--	--	<1.9	<1.9	<1.9	<2.0	<2.0	<4.7	<4.5	<4.9	<4.9
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	ng/L	--	--	--	--	<1.9	<1.9	<1.9	<2.0	<2.0	<4.7	<4.5	<4.9	<4.9
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ng/L	--	--	--	--	<1.9	<1.9	<1.9	<2.0	<2.0	<1.9	<1.8	<2.0	<1.9
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ng/L	--	--	--	--	<1.9	<1.9	<1.9	<2.0	<2.0	<1.9	<1.8	<2.0	<1.9
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	ng/L	--	--	--	--	<1.9	<1.9	<1.9	<2.0	<2.0	<1.9	<1.8	<2.0	<1.9
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	--	--	--	--	<1.9	<1.9	<1.9	<2.0	<2.0	<3.7	<3.6	<3.9	<3.9
Perfluorooctanesulfonic acid (PFOS)	ng/L	40	36	31	43	45	38	38	30	28	29	30	13	14
Perfluorooctanoic acid (PFOA)	ng/L	1.4 J	1.6 J	<2.0 B*	<2.0 B*	1.4 J	0.68 J	0.71 J	0.51 J	<2.0	<1.9	1.0 J	<2.0	<1.9
LHA Combined (PFOS + PFOA)	ng/L	41 J	38 J	31 B*‡	43 B*‡	46 J	39 J	39 J	31 J	28 ‡	29 ‡	31 J	13 ‡	14 ‡

Notes:

DEC	Alaska Department of Environmental Conservation
DUP	Field-duplicate sample
EPA	United States Environmental Protection Agency
PFAS	per- and poly-fluoroalkyl substances
ng/L	nanograms per liter, equivalent to parts per trillion (ppt)
—	No applicable regulatory limit exists for the associated analyte.
<	Analyte was not detected; reported as less than the Reporting Limit (RL).
Bold	Detected concentration exceeds the DEC groundwater cleanup level reported in 18 AAC 75, Table C.
J	Estimated concentration, detected greater than the method detection limit (MDL) and less than the reporting limit (RL). 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. (*)
J*	Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (*)
‡	Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.

Table 11: Summary of Historical Water-Supply Well PFAS Results

Sample Name		PW-402			PW-403			PW-405				
Analyte	**Units**	9/25/18	3/7/19	6/8/19	9/25/18	6/8/2019 DUP	6/8/19	9/25/18	12/8/18	3/7/19	3/7/19	6/8/19
Perfluorohexanesulfonic acid (PFHxS)	ng/L	36	30	22	41	30	30	44	27	28	27	20
Perfluorohexanoic acid (PFHxA)	ng/L	--	--	--	--	--	--	--	<9.3 B*	--	--	--
Perfluoroheptanoic acid (PFHpA)	ng/L	3.3	4.4	2.9	3.4	2.8	3.1	4.1	4.2 J	2.8	2.3	2.3
Perfluorononanoic acid (PFNA)	ng/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<3.8	<2.0	<2.0	<2.0
Perfluorobutanesulfonic acid (PFBS)	ng/L	3.7	2.2	1.7 J	5.7	3.1	3.2	3.8	2.0 J	2.8	2.8	1.7 J
Perfluorodecanoic acid (PFDA)	ng/L	--	--	--	--	--	--	--	<3.8	--	--	--
Perfluoroundecanoic acid (PFUnA)	ng/L	--	--	--	--	--	--	--	<3.8	--	--	--
Perfluorododecanoic acid (PFDoA)	ng/L	--	--	--	--	--	--	--	<3.8	--	--	--
Perfluorotridecanoic acid (PFTrDA)	ng/L	--	--	--	--	--	--	--	<3.8	--	--	--
Perfluorotetradecanoic acid (PFTeA)	ng/L	--	--	--	--	--	--	--	<3.8	--	--	--
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	ng/L	--	--	--	--	--	--	--	<15	--	--	--
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	ng/L	--	--	--	--	--	--	--	<15	--	--	--
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ng/L	--	--	--	--	--	--	--	--	--	--	--
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ng/L	--	--	--	--	--	--	--	--	--	--	--
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	ng/L	--	--	--	--	--	--	--	--	--	--	--
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	--	--	--	--	--	--	--	--	--	--	--
Perfluorooctanesulfonic acid (PFOS)	ng/L	**72**	**100**	**92**	**83**	67	65	**86**	**106**	**78**	**76**	66
Perfluorooctanoic acid (PFOA)	ng/L	3.4	<2.2 B*	1.5 J	3.3	<2.9 B*	2.6	3.9	<17 B*	2.7	2.5	<2.0 B*
LHA Combined (PFOS + PFOA)	ng/L	**75**	**100 B*‡**	**94 J**	**86**	67 B*‡	68	**90**	**106 B*‡**	**81**	**79**	66 B*‡

Notes:

DEC	Alaska Department of Environmental Conservation
DUP	Field-duplicate sample
EPA	United States Environmental Protection Agency
PFAS	per- and poly-fluoroalkyl substances
ng/L	nanograms per liter, equivalent to parts per trillion (ppt)
—	No applicable regulatory limit exists for the associated analyte.
<	Analyte was not detected; reported as less than the Reporting Limit (RL).
Bold	Detected concentration exceeds the DEC groundwater cleanup level reported in 18 AAC 75, Table C.
J	Estimated concentration, detected greater than the method detection limit (MDL) and less than the reporting limit (RL). 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. (*)
J*	Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (*)
‡	Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.

Table 11: Summary of Historical Water-Supply Well PFAS Results

Sample Name		PW-406					PW-408				PW-413	PW-414	
Analyte	**Units**	9/25/18	12/7/18	3/7/2019 DUP	3/7/19	6/8/19	9/26/18	12/8/18	3/7/19	6/7/19	9/27/18	6/8/19	9/1/20
Perfluorohexanesulfonic acid (PFHxS)	ng/L	36	24	28	30	24	30	21	22	28	<2.0	2.1	0.74 J
Perfluorohexanoic acid (PFHxA)	ng/L	--	12 JH*	--	--	--	--	8.7	--	--	--	--	<1.9
Perfluoroheptanoic acid (PFHpA)	ng/L	5.2	5.4 J	4.3	4.8	3.1	4.8	3.2 J	3.9	3.0	<2.0	<2.0	<1.9
Perfluorononanoic acid (PFNA)	ng/L	<2.0	<3.8	<2.0	<2.0	<2.0	<2.0	<3.8	<2.0	<2.0	<2.0	<2.0	<1.9
Perfluorobutanesulfonic acid (PFBS)	ng/L	2.6	2.0 J	2.2	2.3	2.7	2.1	<3.8	2.0	2.4	<2.0	<2.0	<1.9
Perfluorodecanoic acid (PFDA)	ng/L	--	<3.8	--	--	--	--	<3.8	--	--	--	--	<1.9
Perfluoroundecanoic acid (PFUnA)	ng/L	--	<3.8	--	--	--	--	<3.8	--	--	--	--	<1.9
Perfluorododecanoic acid (PFDoA)	ng/L	--	<3.8	--	--	--	--	<3.8	--	--	--	--	<1.9
Perfluorotridecanoic acid (PFTrDA)	ng/L	--	<3.8	--	--	--	--	<3.8	--	--	--	--	<1.9
Perfluorotetradecanoic acid (PFTeA)	ng/L	--	<3.8	--	--	--	--	<3.8	--	--	--	--	<1.9
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	ng/L	--	<15	--	--	--	--	<15	--	--	--	--	<1.9
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	ng/L	--	<15	--	--	--	--	<15	--	--	--	--	<1.9
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ng/L	--	--	--	--	--	--	--	--	--	--	--	<1.9
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ng/L	--	--	--	--	--	--	--	--	--	--	--	<1.9
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	ng/L	--	--	--	--	--	--	--	--	--	--	--	<1.9
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	--	--	--	--	--	--	--	--	--	--	--	<1.9
Perfluorooctanesulfonic acid (PFOS)	ng/L	**150**	**113**	**94**	**92**	**74**	**130**	**115**	**97**	**88**	<2.0	2.3	1.2 J
Perfluorooctanoic acid (PFOA)	ng/L	3.3	<13 B*	5.6 J*	8.9 J*	<2.1 B*	2.5	2.6 J	2.5	2.7	<2.0	<2.0	<1.9
LHA Combined (PFOS + PFOA)	ng/L	**153**	**113 B*‡**	**100 J***	**101 J***	**74 B*‡**	**133**	**118 J**	**100**	**91**	N/A	2.3 ‡	1.2 J‡

Notes:

DEC	Alaska Department of Environmental Conservation
DUP	Field-duplicate sample
EPA	United States Environmental Protection Agency
PFAS	per- and poly-fluoroalkyl substances
ng/L	nanograms per liter, equivalent to parts per trillion (ppt)
—	No applicable regulatory limit exists for the associated analyte.
<	Analyte was not detected; reported as less than the Reporting Limit (RL).
Bold	Detected concentration exceeds the DEC groundwater cleanup level reported in 18 AAC 75, Table C.
J	Estimated concentration, detected greater than the method detection limit (MDL) and less than the reporting limit (RL). 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. (*)
J*	Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (*)
‡	Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.

Table 11: Summary of Historical Water-Supply Well PFAS Results

Sample Name		PW-415		PW-418				PW-419			PW-430		PW-431	PW-432
Analyte	**Units**	6/7/19	10/11/19	9/27/18	3/8/19	6/9/19	6/9/19	6/8/19	9/2/20	6/22/21	10/31/2018 DUF	10/31/18	11/2/18	10/31/18
Perfluorohexanesulfonic acid (PFHxS)	ng/L	19	27	40	30	22	22	7.7	1.9	0.93 J	<2.0	<2.0	5.4	2.5
Perfluorohexanoic acid (PFHxA)	ng/L	--	15	--	--	--	--	--	0.54 J	<2.0	--	--	--	--
Perfluoroheptanoic acid (PFHpA)	ng/L	2.4	6.0	4.1	3.0	2.0	2.0	0.81 J	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorononanoic acid (PFNA)	ng/L	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorobutanesulfonic acid (PFBS)	ng/L	1.4 J	1.7 J	3.9	2.6	2.2	2.1	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorodecanoic acid (PFDA)	ng/L	--	<1.9	--	--	--	--	--	<1.9	<2.0	--	--	--	--
Perfluoroundecanoic acid (PFUnA)	ng/L	--	<1.9	--	--	--	--	--	<1.9	<2.0	--	--	--	--
Perfluorododecanoic acid (PFDoA)	ng/L	--	<1.9	--	--	--	--	--	<1.9	<2.0	--	--	--	--
Perfluorotridecanoic acid (PFTrDA)	ng/L	--	<1.9	--	--	--	--	--	<1.9	<2.0	--	--	--	--
Perfluorotetradecanoic acid (PFTeA)	ng/L	--	<1.9	--	--	--	--	--	<1.9	<2.0	--	--	--	--
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	ng/L	--	<1.9	--	--	--	--	--	<1.9	<5.0	--	--	--	--
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	ng/L	--	<1.9	--	--	--	--	--	<1.9	<5.0	--	--	--	--
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ng/L	--	<1.9	--	--	--	--	--	<1.9	<2.0	--	--	--	--
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ng/L	--	<1.9	--	--	--	--	--	<1.9	<2.0	--	--	--	--
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	ng/L	--	<1.9	--	--	--	--	--	<1.9	<2.0	--	--	--	--
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	--	<1.9	--	--	--	--	--	<1.9	<4.0	--	--	--	--
Perfluorooctanesulfonic acid (PFOS)	ng/L	67	**120**	**74**	**89**	63	66	14	3.4	1.5 J	<2.0	<2.0	6.1	2.0
Perfluorooctanoic acid (PFOA)	ng/L	1.6 J	2.4	3.4	<3.1 B*	<2.0 B*	<2.0 B*	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0
LHA Combined (PFOS + PFOA)	ng/L	69 J	**122**	**77**	**89 B*‡**	63 B*‡	66 B*‡	14 ‡	3.4 ‡	1.5 J‡	N/A	N/A	6.1 ‡	2.0 ‡

Notes:

DEC	Alaska Department of Environmental Conservation
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EPA	United States Environmental Protection Agency
PFAS	per- and poly-fluoroalkyl substances
ng/L	nanograms per liter, equivalent to parts per trillion (ppt)
—	No applicable regulatory limit exists for the associated analyte.
<	Analyte was not detected; reported as less than the Reporting Limit (RL).
Bold	Detected concentration exceeds the DEC groundwater cleanup level reported in 18 AAC 75, Table C.
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B*	Result is included in the same preparatory batch as a blank detection for the associated analyte. Flag applied by Shannon & Wilson, Inc. (*)
J*	Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (*)
‡	Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.

Table 11: Summary of Historical Water-Supply Well PFAS Results

Sample Name		PW-433	PW-434	PW-435	PW-436	PW-438	PW-440	PW-441	PW-442	PW-460	PW-461	PW-462		PW-463
Analyte	**Units**	6/9/19	10/31/18	10/31/18	10/31/18	8/31/20	11/1/18	6/7/19	12/7/18	11/2/18	11/2/18	6/7/19	9/2/20	6/8/19
Perfluorohexanesulfonic acid (PFHxS)	ng/L	1.3 J	4.6	<2.0	<2.0	1.9	<2.0	3.9	1.1 J	1.7 J	1.4 J	18	13	29
Perfluorohexanoic acid (PFHxA)	ng/L	--	--	--	--	0.52 J	--	--	--	--	--	--	4.9	--
Perfluoroheptanoic acid (PFHpA)	ng/L	<2.0	0.82 J	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	1.6 J	2.1	2.0	3.0
Perfluorononanoic acid (PFNA)	ng/L	<2.0	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.8	<2.0
Perfluorobutanesulfonic acid (PFBS)	ng/L	<2.0	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	1.4 J	<2.0	1.6 J	0.74 J	2.6
Perfluorodecanoic acid (PFDA)	ng/L	--	--	--	--	<1.9	--	--	--	--	--	--	<1.8	--
Perfluoroundecanoic acid (PFUnA)	ng/L	--	--	--	--	<1.9	--	--	--	--	--	--	<1.8	--
Perfluorododecanoic acid (PFDoA)	ng/L	--	--	--	--	<1.9	--	--	--	--	--	--	<1.8	--
Perfluorotridecanoic acid (PFTrDA)	ng/L	--	--	--	--	<1.9	--	--	--	--	--	--	<1.8	--
Perfluorotetradecanoic acid (PFTeA)	ng/L	--	--	--	--	<1.9	--	--	--	--	--	--	<1.8	--
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	ng/L	--	--	--	--	<1.9	--	--	--	--	--	--	<1.8	--
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	ng/L	--	--	--	--	<1.9	--	--	--	--	--	--	<1.8	--
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ng/L	--	--	--	--	<1.9	--	--	--	--	--	--	<1.8	--
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ng/L	--	--	--	--	<1.9	--	--	--	--	--	--	<1.8	--
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	ng/L	--	--	--	--	<1.9	--	--	--	--	--	--	<1.8	--
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	--	--	--	--	<1.9	--	--	--	--	--	--	<1.8	--
Perfluorooctanesulfonic acid (PFOS)	ng/L	<2.0	2.8	<2.0	<2.0	3.7	<2.0	1.4 J	<2.0	<2.0	1.3 J	48	68	**74**
Perfluorooctanoic acid (PFOA)	ng/L	<2.0	0.85 J	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.0	1.2 J	1.8 J	0.99 J	2.8
LHA Combined (PFOS + PFOA)	ng/L	N/A	3.7 J	N/A	N/A	3.7 ‡	N/A	1.4 J‡	N/A	N/A	2.5 J	50 J	69 J	**77**

Notes:

DEC	Alaska Department of Environmental Conservation
DUP	Field-duplicate sample
EPA	United States Environmental Protection Agency
PFAS	per- and poly-fluoroalkyl substances
ng/L	nanograms per liter, equivalent to parts per trillion (ppt)
—	No applicable regulatory limit exists for the associated analyte.
<	Analyte was not detected; reported as less than the Reporting Limit (RL).
Bold	Detected concentration exceeds the DEC groundwater cleanup level reported in 18 AAC 75, Table C.
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B*	Result is included in the same preparatory batch as a blank detection for the associated analyte. Flag applied by Shannon & Wilson, Inc. (*)
J*	Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (*)
‡	Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.

Table 11: Summary of Historical Water-Supply Well PFAS Results

Sample Name		PW-464	PW-465		PW-466
Analyte	**Units**	10/13/19	3/25/2021 DUP	3/25/21	1/1/21
Perfluorohexanesulfonic acid (PFHxS)	ng/L	2.1	18 J*	19 J*	<1.8
Perfluorohexanoic acid (PFHxA)	ng/L	0.51 J	9.7 J*	11 J*	<1.8
Perfluoroheptanoic acid (PFHpA)	ng/L	<2.0	5.1 J*	5.6 J*	<1.8
Perfluorononanoic acid (PFNA)	ng/L	<2.0	<1.8	0.30 J*	<1.8
Perfluorobutanesulfonic acid (PFBS)	ng/L	<2.0	0.93 J*	1.4 J*	<1.8
Perfluorodecanoic acid (PFDA)	ng/L	<2.0	<1.8	<1.8	<1.8
Perfluoroundecanoic acid (PFUnA)	ng/L	<2.0	<1.8	<1.8	<1.8
Perfluorododecanoic acid (PFDoA)	ng/L	<2.0	<1.8	<1.8	<1.8
Perfluorotridecanoic acid (PFTrDA)	ng/L	<2.0	<1.8	<1.8	<1.8
Perfluorotetradecanoic acid (PFTeA)	ng/L	<2.0	<1.8	<1.8	<1.8
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	ng/L	<2.0	<4.6	<4.6	<1.8
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	ng/L	<2.0	<4.6	<4.6	<1.8
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ng/L	<2.0	<1.8	<1.8	<1.8
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ng/L	<2.0	<1.8	<1.8	<1.8
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	ng/L	<2.0	<1.8	<1.8	<1.8
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	<2.0	<3.7	<3.7	<1.8
Perfluorooctanesulfonic acid (PFOS)	ng/L	1.6 J	**100 J***	**110 J***	<1.8
Perfluorooctanoic acid (PFOA)	ng/L	<2.0	3.4 J*	9.1 J*	<1.8
LHA Combined (PFOS + PFOA)	ng/L	1.6 J‡	**103 J***	**119 J***	N/A

Notes:

DEC	Alaska Department of Environmental Conservation
DUP	Field-duplicate sample
EPA	United States Environmental Protection Agency
PFAS	per- and poly-fluoroalkyl substances
ng/L	nanograms per liter, equivalent to parts per trillion (ppt)
—	No applicable regulatory limit exists for the associated analyte.
<	Analyte was not detected; reported as less than the Reporting Limit (RL).
Bold	Detected concentration exceeds the DEC groundwater cleanup level reported in 18 AAC 75, Table C.
J	Estimated concentration, detected greater than the method detection limit (MDL) and less than the reporting limit (RL). 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. (*)
J*	Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (*)
‡	Minimum concentration, the combined concentration includes one or more result that is not detected greater than the MDL.

Table 12 - Summary of Historical Water-Supply Well Selected PFAS Results and Trends

Sample Name	Monitoring Network	Quarterly Event	PFBS ng/L	PFHpA ng/L	PFHxA ng/L	PFHxS ng/L	PFOA ng/L	PFOS ng/L	LHA Combined † ng/L
NPS Well	Annual	Aug-18	1.3 J	1.8 J	—	12	4.6	23	28
		Sep-18	1.2 J	1.7 J	—	11	4.3	22	26
		Mar-19	1.4 J	1.9 J	—	13	3.5	13	17
		Jun-19	1.5 J	1.8 J	—	14	<3.4 B*	16	16 B*‡
		Oct-19	1.0 J*	1.4 J	2.2	10	2.9	19	22
		Sep-20	0.85 J	1.5 J	4.3	7.4	2.0	10	12
		Mar-21	1.0 J	2.2	5.1	10	2.7	7.1	9.8
		Trend:	**Stable**	**No Trend**	N/A	**Possibly Decreasing**	**Decreasing**	**Decreasing**	**Decreasing**
PW-010	Quarterly	Aug-18	<2.0	<2.0	—	<2.0	<2.0	<2.0	N/A
		Jun-19	<2.0	<2.0	—	<2.0	<2.0	<2.0	N/A
		Oct-19	<1.9	<1.9	1.0 J	2.9	<1.9	2.2	2.2 ‡
		Sep-20	<1.9	<1.9	<1.9	0.60 J	<1.9	0.88 J	0.88 J‡
		Dec-20	<1.8	<1.8	<1.8	<1.8	<1.8	0.46 J	0.46 J‡
		Mar-21	<1.8	<1.8	<1.8	<1.8	<1.8	0.79 J	0.79 J‡
		Jun-21	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
		Trend:	**Stable**	**Stable**	N/A	N/A	**Stable**	**Stable**	**Stable**
PW-012	Quarterly	Aug-18	1.8 J	0.81 J	—	8.9	0.77 J	7.7	8.5 J
		Mar-19	1.5 J	0.87 J	—	11	<2.0 B*	25	25 B*‡
		Jun-19	1.1 J	<2.0	—	7.0	0.81 J	14	15 J
		Oct-19	0.99 J	0.86 J	2.8	9.3	0.74 J	13	14 J
		Sep-20	0.50 J	<1.9	1.2 J	4.7	<1.9	15	15 ‡
		Jan-21	0.59 J	1.1 J	3.3	8.5	0.47 J	12	12 J
		Mar-21	<1.8	<1.8	0.62 J	1.5 J	<1.8	7.7	7.7 ‡
		Jun-21	0.27 J	<2.0	<2.0	5.2	<2.0	5.6	5.6 ‡
		Trend:	**Decreasing**	**Possibly Increasing**	**Possibly Increasing**	**Possibly Decreasing**	**No Trend**	**Possibly Decreasing**	**Possibly Decreasing**
PW-032	Annual	Aug-18	<2.0	<2.0	—	<2.0	<2.0	<2.0	N/A
		Sep-20	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
		Insuficient Data for Trend Analysis							
PW-037	Quarterly	Aug-18	<2.0	<2.0	—	<2.0	<2.0	<2.0	N/A
		Mar-19	<2.0	<2.0	—	<2.0	<2.0	<2.0	N/A
		Jun-19	<2.0	<2.0	—	<2.0	<2.0	<2.0	N/A
		Oct-19	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
		Sep-20	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
		Dec-20	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	N/A
		Mar-21	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	N/A
		Jun-21	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	N/A
		Trend:	**Stable**	**Stable**	**Stable**	**Stable**	**Stable**	**Stable**	N/A
PW-038	Quarterly	Aug-18	<2.0	<2.0	—	<2.0	<2.0	<2.0	N/A
		Mar-19	<2.0	<2.0	—	<2.0	<2.0	<2.0	N/A
		Jun-19	<2.0	<2.0	—	<2.0	<2.0	<2.0	N/A
		Oct-19	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	N/A
		Sep-20	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
		Dec-20	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
		Mar-21	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	N/A
		Jun-21	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
		Trend:	**Stable**	**Stable**	**Stable**	**Stable**	**Stable**	**Stable**	N/A
PW-039	Quarterly	Aug-18	<2.0	<2.0	—	<2.0	0.79 J	<2.0	0.79 J‡
		Mar-19	<2.0	<2.0	—	<2.0	<2.0	<2.0	N/A
		Jun-19	<2.0	<2.0	—	<2.0	<2.0	<2.0	N/A
		Oct-19	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	N/A
		Sep-20	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
		Dec-20	<1.8	<1.8	0.54 J	<1.8	<1.8	<1.8	N/A
		Mar-21	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	N/A
		Jun-21	<1.9	<1.9	0.92 J	<1.9	<1.9	<1.9	N/A
		Trend:	**Stable**	**Stable**	N/A	**Stable**	N/A	**Stable**	N/A
PW-040	Quarterly	Aug-18	<2.0	<2.0	—	<2.0	<2.0	<2.0	N/A
		Mar-19	<2.0	<2.0	—	<2.0	<2.0	<2.0	N/A
		Jun-19	<2.0	<2.0	—	<2.0	<2.0	<2.0	N/A
		Oct-19	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
		Sep-20	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
		Dec-20	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	N/A
		Mar-21	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	N/A
		Jun-21	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	N/A
		Trend:	**Stable**	**Stable**	**Stable**	**Stable**	**Stable**	**Stable**	**Stable**
PW-047	Annual	Aug-18	<2.0	<2.0	—	<2.0	<2.0	<2.0	N/A
		Insuficient Data for Trend Analysis							
PW-059	Quarterly	Aug-18	<2.0	<2.0	—	1.2 J	<2.0	<2.0	N/A
		Mar-19	<2.0	<2.0	—	0.98 J	<2.0	<2.0	N/A
		Jun-19	<2.0	<2.0	—	<2.0	<2.0	<2.0	N/A
		Oct-19	<1.9	<1.9	<1.9	1.1 J	<1.9	<1.9	N/A
		Sep-20	0.75 J	<1.9	<1.9	0.78 J	<1.9	<1.9	N/A
		Dec-20	0.72 J	<1.9	0.55 J	1.6 J	0.70 J	1.0 J	1.7 J
		Mar-21	1.3 J	0.26 J	1.1 J	1.7	0.96 J	1.6 J	2.6 J
		Jun-21	0.81 J	0.33 J	1.3 J	2.1	<2.0	1.4 J	1.4 J‡
		Trend:	**Decreasing**	N/A	N/A	**No Trend**	N/A	N/A	N/A
PW-061	Annual	Aug-18	<2.0	1.3 J		1.3 J	3.8	1.4 J	5.2 J
		Sep-20	0.49 J	0.82 J	1.5 J	0.85 J	1.9	0.49 J	2.4 J
		Insuficient Data for Trend Analysis							
PW-074	Annual	Sep-18	<2.0	<2.0	—	1.1 J	<2.0	<2.0	n/a
		Insuficient Data for Trend Analysis							

Table 12 - Summary of Historical Water-Supply Well Selected PFAS Results and Trends

Sample Name	Monitoring Network	Quarterly Event	PFBS ng/L	PFHpA ng/L	PFHxA ng/L	PFHxS ng/L	PFOA ng/L	PFOS ng/L	LHA Combined † ng/L
PW-200	POE, Quarterly	Sep-18	3.4	3.7	-	37	3.1	92	95
		Dec-18	2.2 J	2.8 J*	<7.7 B*	23	<7.7 B*	98	98 B*‡
		Mar-19	2.7	2.5	-	26	2.8	76	79
		Jun-19	2.3 JL*	3.0 JL*	-	28 JL*	2.1 JL*	74 JL*	76 JL*
		Oct-19	2.0	3.4	9.9	30	2.5	130	133
		Aug-20	1.6 J	5.2	12	25	2.0	98	100
		Dec-20	0.84 J	1.7 J	3.3	7.6	1.1 J	50	51 J
		Mar-21	1.2 J*	3.8	7.4	12	1.3 J	60	61 J
		Jun-21	0.68 J	2.8	8.1	12	1.4 J	45	46 J
		Trend:	**Decreasing**	**No Trend**	**Stable**	**Decreasing**	**Decreasing**	**Possibly Decreasing**	**Possibly Decreasing**
PW-203	Quarterly	Sep-18	<2.0	<2.0	—	<2.0	<2.0	<2.0	N/A
		Mar-19	<2.0	<2.0	—	<2.0	<2.0	<2.0	N/A
		Jun-19	<2.0	<2.0	—	<2.0	<2.0	<2.0	N/A
		Oct-19	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	N/A
		Sep-20	<1.9	<1.9	0.67 J	0.95 J	0.50 J	0.70 J	1.2 J
		Dec-20	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
		Mar-21	<1.7	<1.7	<1.7	0.90 J	<1.7	1.8	1.8 ‡
		Jun-21	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	N/A
		Trend:	**Stable**	**Stable**	N/A	N/A	N/A	N/A	N/A
PW-204	Removed, due to replacement well	Sep-18	<2.0	0.93 J	—	3.3	<2.0	5.4	5.4 ‡
		Jun-19	<2.0	<2.0	—	2.4	<2.0	4.7	4.7 ‡
		Sep-20	<1.9	0.47 J	0.97 J	3.2	0.75 J	6.1	6.9 J
		Insuficient Data for Trend Analysis							
PW-204.1	Quarterly	Jun-21	2.4	3.8	11	30	2.8	49	52
		Insuficient Data for Trend Analysis							
PW-205	Removed, due to replacement well	Jun-19	2.0	<2.0	—	11	0.93 J	9.0	9.9 J
		Oct-19	1.4 J	0.63 J	3.0	10	0.76 J	10	11 J
		Insuficient Data for Trend Analysis							
PW-205.1	Quarterly	Jun-21	0.27 J	<2.1	0.78 J	1.5 J	<2.1	2.2	2.2 ‡
		Insuficient Data for Trend Analysis							
PW-207	Annual	Jun-19	<2.0	<2.0	—	<2.0	1.0 J	<2.0	1.0 J‡
		Insuficient Data for Trend Analysis							
PW-208	Removed, due to replacement well	Jun-19	<2.0	<2.0	—	2.5	0.80 J	8.4	9.2 J I
		Mar-21	0.33 JH*	<1.8	2.3	0.52 J	<1.8	1.6 J	1.6 J‡
		Insuficient Data for Trend Analysis							
PW-211	Quarterly	Sep-18	<2.0	3.3	—	1.1 J	15	9.1	24
		Oct-19	1.4 J	0.51 J	0.83 J	<1.9	1.0 J	1.0 J	2.0 J
		Aug-20	<1.9	<1.9	<1.9	<1.9	<1.9	0.65 J	0.65 J‡
		Dec-20	<1.9	<1.9	<1.9	<1.9	<1.9	0.60 J	0.60 J‡
		Mar-21	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	N/A
		Jun-21	<2.0	<2.0	<2.0	0.76 J	<2.0	<2.0	N/A
		Trend:	N/A	N/A	N/A	N/A	N/A	**No Trend**	**No Trend**
PW-212	Annual	Sep-18	<2.0	<2.0	—	<2.0	<2.0	<2.0	N/A
		Oct-19	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
		Insuficient Data for Trend Analysis							
PW-218	Annual	Nov-18	<2.0	<2.0		<2.0	<2.0	<2.0	N/A
		Dec-20	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
		Insuficient Data for Trend Analysis							
PW-219	Annual	Sep-18	<2.0	<2.0	—	<2.0	<2.0	<2.0	N/A
		Oct-19	1.2 J	0.49 J	0.74 J	<1.9	0.84 J	<1.9	0.84 J‡
		Aug-20	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
		Insuficient Data for Trend Analysis							
PW-221	Quarterly	Nov-18	<2.0	<2.0	—	<2.0	<2.0	<2.0	N/A
		Jun-19	<2.0	<2.0	—	<2.0	<2.0	<2.0	N/A
		Oct-19	<1.9	<1.9	0.87 J	2.1	<1.9	2.4	2.4 ‡
		Sep-20	<2.0	<2.0	<2.0	0.86 J	<2.0	1.5 J	1.5 J‡
		Dec-20	<2.0	<2.0	<2.0	1.3 J	<2.1	1.7 J	1.7 J‡
		Mar-21	<1.8	<1.8	0.52 J	0.90 J	<1.8	2.1	2.1 ‡
		Jun-21	<2.0	<2.0	<2.0	0.60 J	<2.0	0.97 J	0.97 J‡
		Trend:	**Stable**	**Stable**	N/A	**Decreasing**	**Stable**	**Stable**	**Stable**
PW-230	Annual	Oct-18	<2.0	<2.0	—	1.2 J	1.1 J	<2.0	1.1 J‡
		Sep-20	<1.8	<1.8	<1.8	0.71 J	1.0 J	0.68 J	1.7 J
		Insuficient Data for Trend Analysis							
PW-240	Annual	Nov-18	<2.0	<2.0	—	3.3	<2.0	<2.0	n/a
		Sep-20	<1.9	<1.9	<1.9	2.0	<1.9	1.8 J	1.8 J‡
		Insuficient Data for Trend Analysis							
PW-241	Annual	Nov-18	<2.0	<2.0	—	6.1	0.98 J	2.9	3.9 J
		Insuficient Data for Trend Analysis							
PW-401	Quarterly	Sep-18	2.4	1.6 J	—	18	1.4 J	40	41 J
		Oct-18	2.3	1.7 J	—	20	1.6 J	36	38 J
		Mar-19	1.8 J	2.0	—	20	<2.0 B*	31	31 B*‡
		Jun-19	1.2 J	1.7 J	—	15	<2.0 B*	43	43 B*‡
		Oct-19	1.3 J	1.8 J	5.4	16	1.4 J	45	46 J
		Sep-20	0.90 J	1.3 J	4.4	9.9	0.71 J	38	39 J
		Dec-20	<2.0	1.1 J	2.8	6.9	0.51 J	30	31 J
		Mar-21	0.74 J	1.5 J	4.4	7.7	1.0 J	30	31 J
		Jun-21	0.28 J	0.32 JH*	1.2 J	2.2	<2.0	14	14 ‡
		Trend:	**Decreasing**	**Decreasing**	**Possibly Increasing**	**Decreasing**	**Stable**	**Decreasing**	**Possibly Decreasing**

Table 12 - Summary of Historical Water-Supply Well Selected PFAS Results and Trends

Sample Name	Monitoring Network	Quarterly Event	PFBS ng/L	PFHpA ng/L	PFHxA ng/L	PFHxS ng/L	PFOA ng/L	PFOS ng/L	LHA Combined † ng/L
PW-414	Annual	Jun-19	<2.0	<2.0	—	2.1	<2.0	2.3	2.3 ‡
		Sep-20	<1.9	<1.9	<1.9	0.74 J	<1.9	1.2 J	1.2 J‡
			Insuficient Data for Trend Analysis						
PW-419	Quarterly	Jun-19	<2.0	0.81 J	—	7.7	<2.0	14	14 ‡
		Sep-20	<1.9	<1.9	0.54 J	1.9	<1.9	3.4	3.4 ‡
		Jun-21	<2.0	<2.0	<2.0	0.93 J	<2.0	1.5 J	1.5 J‡
			Insuficient Data for Trend Analysis						
PW-438	Annual	Aug-20	<1.9	<1.9	0.52 J	1.9	<1.9	3.7	3.7 ‡
			Insuficient Data for Trend Analysis						
PW-462	Removed, due to well category	Jun-19	1.6 J	2.1	—	18	1.8 J	48	50 J
		Sep-20	0.74 J*	2.0 J*	4.9 J*	13 J*	0.99 J*	68 J*	69 J*
			Insuficient Data for Trend Analysis						

Notes: Table includes the results of Mann-Kendall nonparametric trend analysis with Monitoring and Remediation Optimization System (MAROS) classification.
Trend analyses requires at least four samples for the data set in order to provide a meaningful statistical assessment. Sample locations with less than four data points are omitted from statistical analysis.
Sample locations with greater than or equal to 50 percent non-detect results are omitted form statistical analysis.

ng/L nanograms per liter, equivalent to parts per trillion
PFBS perfluorobutanesulfonic acid
PFHpA perfluoroheptanoic acid
PFHxA perfluorohexanoic acid
PFHxS perfluorohexanesulfonic acid
PFOA perfluorooctanoic acid
PFOS perfluorooctane sulfonic acid
† U.S. Environmental Protection Agency (EPA) Lifetime Health Advisory (LHA) level is 70 ng/L for PFOS and PFOA combined.
< Analyte was not detected; reported as < the laboratory reporting limit (RL)
— Analyte not requested
J Estimated concentration, detected greater than the detection limit (DL) and less than the limit of quantitation (LOQ). Flag applied by the laboratory.
J* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc.
JL* Estimated concentration, biased low due to quality control failures. 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 considered not detected due to quality control failures; see checklist for details. Flag applied by Shannon & Wilson, Inc.
N/A Not applicable. The LHA Combined concentration could not be calculated because PFOS and PFOA were not detected in the project sample or there is insufficient data or a lack of quantifiable results (less than 50 percent) from which to conduct a Mann-Kendall analysis.
‡ Minimum concentration, the LHA Combined concentration includes one or more result that is not detected greater than the MDL.

Table 13 - Summary of Historical Monitoring Well Selected PFAS Results and Trends

Sample Name	Quarterly Event	PFBS ng/L	PFHpA ng/L	PFHxA ng/L	PFHxS ng/L	PFNA ng/L	PFOA ng/L	PFOS ng/L	LHA Combined † ng/L
MW-1-15	Oct-19	<1.8	<1.8	<1.8	1.1 J	<1.8	<1.8	<1.8	N/A
	Aug-20	0.33 J	<1.7	<1.7	<1.7 B*	<1.7	<1.7	<1.7	N/A
	Dec-20	0.20 J	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	N/A
	Mar-21	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	N/A
	Jun-21	<1.7	<1.7	<1.7	0.61 J	<1.7	<1.7	1.4 J	1.4 J‡
	Trend:	N/A	**Stable**	**Stable**	N/A	**Stable**	**Stable**	N/A	N/A
MW-1-40	Oct-19	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
	Aug-20	<1.7	<1.7	<1.7	<1.7 B*	<1.7	<1.7	<1.7	N/A
	Dec-20	<1.8	<1.8	<1.8	1.1 J	<1.8	<1.8	0.56 J*	0.56 J*‡
	Mar-21	<1.7	<1.7	<1.7	0.68 J	<1.7	<1.7	<1.7	N/A
	Jun-21	<1.8	<1.8	<1.8	0.68 J	<1.8	<1.8	<1.8	N/A
	Trend:	**Stable**	**Stable**	**Stable**	**Decreasing**	**Stable**	**Stable**	N/A	N/A
MW-2-20	Oct-19	<1.9	0.95 J	4.6	3.9	<1.9	1.5 J	3.8	5.3 J
	Sep-20	3.0	37	84	32	4.0	36	260	296
	Dec-20	9.5	54	63	64	4.0	67	250	317
	Mar-21	2.4	26	31	100	4.0	78	250	328
	Jun-21	2	27	48	120	15	32	450	482
	Trend:	**Stable**	**No Trend**	**Stable**	**Increasing**	**Increasing**	**No Trend**	**Stable**	**Increasing**
MW-2-30	Oct-19	1.5 J	<1.8	<1.8	1.4 J	<1.8	<1.8	<1.8	N/A
	Sep-20	1.3 J	<1.7	<1.7	<1.7 B*	<1.7	<1.7	<1.7	N/A
	Dec-20	1.4 J	0.70 J	<1.8	<1.8	0.48 J	1.4 J	<1.8	1.4 J‡
	Mar-21	0.91 J	<1.8	<1.8	0.54 J	<1.8	<1.8	<1.8	N/A
	Jun-21	1.2 J	<1.8	0.60 J	<1.8	<1.8	<1.8	<1.8	N/A
	Trend:	**Stable**	N/A	N/A	N/A	N/A	N/A	**Stable**	N/A
MW-3-15	Oct-19	<1.8	<1.8	<1.8	3.7	<1.8	<1.8	9.5	9.5 ‡
	Sep-20	0.57 J	0.44 J	1.0 J	4.5	<1.7	<1.7	6.7	6.7 ‡
	Dec-20	1.2 J	2.7	5.1	3.6	<1.8	0.94 J	5.1	6.0 J
	Mar-21	0.24 J*	<1.7 J*	0.87 J*	1.9 J*	<1.7 J*	<1.7 J*	3.1 J*	3.1 J‡
	Jun-21	<1.7	<1.7	0.62 J	1.2 J	<1.7	<1.7	2.0	2.0 ‡
	Trend:	**Stable**	N/A	**Stable**	**Decreasing**	**Stable**	N/A	**Decreasing**	**Decreasing**
MW-3-40	Oct-19	3.2	1.1 J	5.3	32	<1.9	2.8	9.0 J*	11 J*
	Sep-20	1.9	0.63 J	2.9	19	<1.7	2.2	12	14
	Dec-20	1.2 J	0.43 J	1.6 J	14	<1.8	1.3 J	13 J*	14 J*
	Mar-21	0.93 J	<1.7	2.4	17	<1.6	1.7	13	15
	Jun-21	1.1 J	0.43 J	2.1	15	<1.7	1.5 J	15	17 J
	Trend:	**Decreasing**	**Stable**	**Stable**	**Stable**	**Stable**	**Stable**	**Increasing**	**Increasing**
MW-4-20	Oct-19	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	N/A
	Sep-20	0.32 J	0.28 J	<1.7	<1.7 B*	<1.7	<1.7	<1.7	N/A
	Dec-20	0.46 J*	<1.8	<1.8	0.65 J	<1.8	<1.8	<1.8	N/A
	Mar-21	<1.7	<1.7	<1.7	0.50 J	<1.7	<1.7	<1.7	N/A
	Jun-21	0.19 J	<1.7	<1.7	0.63 J	<1.7	<1.7	<1.7	N/A
	Trend:	**Stable**	N/A	**Stable**	**Decreasing**	**Stable**	**Stable**	**Stable**	N/A
MW-5-20	Oct-19	0.31 J	<1.9	<1.9	3.1	<1.9	<1.9	<1.9	N/A
	Sep-20	0.29 J	0.22 J	0.76 J	<1.7 B*	<1.7	<1.7	2.0	2.0 ‡
	Jan-21	0.44 J	<1.8	<1.8	1.3 J	<1.8	1.0 J	1.7 J	2.7 J
	Mar-21	0.45 J	<1.7	0.89 J	1.4 J	0.65 J	0.87 J	2.7	3.6 J
	Jun-21	0.45 J	0.96 J	2.1	2.8	0.51 J	2.1	3.5	5.6
	Trend:	**Probably Increasing**	N/A	**No Trend**	**Stable**	N/A	**Stable**	**No Trend**	**Increasing**
MW-6-20	Oct-19	<1.9	<1.9	<1.9	2.9	<1.9	<1.9	<1.9	N/A
	Sep-20	0.30 J	<1.7	<1.7	<1.8 B*	<1.7	<1.7	0.91 J	0.91 J‡
	Jan-21	0.37 J	0.29 J*	<1.7	2.7	<1.8	<1.8	1.3 J*	1.3 J*‡
	Mar-21	0.30 J*	<1.8 J*	<1.8 J*	1.0 J*	<1.8	<1.8	1.5 J*	1.5 J*‡
	Jun-21	<1.7	<1.7	<1.7	1.1 J	<1.7	<1.7	<1.7	N/A
	Trend:	**Stable**	N/A	**Stable**	**Stable**	**Stable**	**Stable**	**No Trend**	**No Trend**
MW-7-20	Oct-19	0.35 J	0.56 J	1.1 J	1.5 JH*	<1.9	1.4 J	1.3 J	2.7 J
	Sep-20	0.45 J	0.84 J	1.2 J	<1.7 B*	<1.7	2.7	3.9	6.6
	Dec-20	0.43 J	0.91 J	1.2 J	1.1 J	<1.9	1.3 J	4.8	5.9 J
	Mar-21	<1.7	1.0 J	1.3 J	0.98 J	<1.7	2.3	5.0	7.3
	Jun-21	0.46 J	0.96 J	1.2 J	1.0 J	<1.8	6.7	6.2	13
	Trend:	**No Trend**	**Increasing**	**No Trend**	**Stable**	**Stable**	**No Trend**	**Increasing**	**Increasing**
MW-8-20	Oct-19	<1.9	<1.9	<1.9	<1.9 B*	<1.9	<1.9	0.81 J	0.81 J‡
	Sep-20	<1.7	<1.7	<1.7	<1.7 B*	<1.7	<1.7	<1.7	N/A
	Jan-21	<1.7	<1.7	<1.7	0.62 J	<1.7	<1.7	<1.7	N/A
	Mar-21	<1.8 J*	<1.8 J*	<1.8 J*	0.57 J*	<1.8 J*	<1.8 J*	<1.8 J*	N/A
	Jun-21	<1.7	0.23 J	<1.7	0.49 J	<1.7	<1.7	<1.7	N/A
	Trend:	**Stable**	N/A	**Stable**	**Decreasing**	**Stable**	**Stable**	N/A	N/A
MW-9-30	Oct-19	1.2 J	2.2	5.5	15 B	<1.9	1.5 J	97	99 J
	Sep-20	1.6 J	6.0	16	23	<1.7	2.3	88	90
	Dec-20	0.66 J	2.0	4.6	11	<1.8	1.0 J	92	93 J
	Mar-21	1.2 J	3.0	8.9	15	<1.8	1.0 J	97	98 J
	Jun-21	0.79 J	3.2	7.0	15	<1.8	1.1 J	95	96 J
	Trend:	**Stable**	**No Trend**	**Stable**	**Stable**	**Stable**	**Stable**	**No Trend**	**Stable**
MW-10-20	Oct-19	0.75 J	2.3	5.6	12	<1.9	1.2 J	49	50 J
	Sep-20	0.64 J	4.5	11	13	0.42 J	2.6	140	143
	Jan-21	0.42 J	1.8	5.3	5.4	<1.8	<1.8	39	39 ‡
	Mar-21	1.3 J*	4.8	16 J*	17 J*	<1.7	1.9	37 J*	39 J*
	Jun-21	0.87 J	5.6	15	21	<1.8	2.0	95	97
	Trend:	**No Trend**	**No Trend**	**No Trend**	**No Trend**	N/A	**No Trend**	**Stable**	**Stable**

Table 13 - Summary of Historical Monitoring Well Selected PFAS Results and Trends

Sample Name	Quarterly Event	PFBS ng/L	PFHpA ng/L	PFHxA ng/L	PFHxS ng/L	PFNA ng/L	PFOA ng/L	PFOS ng/L	LHA Combined † ng/L
MW-11-15	Oct-19	1.3 J	4.8	18	12 B	1.0 J	1.9	39	41
	Sep-20	2.2	7.0	27	15	1.4 J	2.4	76	78
	Dec-20	35	19	180	830	2.2	92	6,100	6,192
	Mar-21	1.4 J	3.0	15	20	0.62 J	2.2	210	212
	Jun-21	1.0 J	3.0	18	13	0.88 J	2.1	140	142
	Trend:	**No Trend**	**Stable**	**No Trend**	**No Trend**	**Stable**	**No Trend**	**No Trend**	**No Trend**
MW-12-10	Oct-19	3.1	10	17	52 B	0.83 J	8.4	180	188
	Sep-20	1.8	15	17	52	0.97 J	9.8	210	220
	Dec-20	0.71 J	15	13	31	2.6	9.5	100	110
	Mar-21	0.52 J	3.8	4.8	9.4	0.64 J	2.9	36	39
	Jun-21	0.61 J	5.5	5.6	14	0.66 J	2.6	50	53
	Trend:	**Stable**	**Stable**	**Probably Decreasing**	**Probably Decreasing**	**Stable**	**Stable**	**Stable**	**Stable**

Notes: Table includes the results of Mann-Kendall nonparametric trend analysis with Monitoring and Remediation Optimization System (MAROS) classification.

Trend analyses requires at least four samples for the data set in order to provide a meaningful statistical assessment. Sample locations with less than four data points are omitted from statistical analysis.

Sample locations with greater than or equal to 50 percent non-detect results are omitted form statistical analysis.

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

PFBS perfluorobutanesulfonic acid

PFHpA perfluoroheptanoic acid

PFHxA perfluorohexanoic acid

PFHxS perfluorohexanesulfonic acid

PFNA perfluorononanoic acid

PFOA perfluorooctanoic acid

PFOS perfluorooctane sulfonic acid

† U.S. Environmental Protection Agency (EPA) Lifetime Health Advisory (LHA) level is 70 ng/L for PFOS and PFOA combined.

< Analyte was not detected; reported as < the laboratory reporting limit (RL)

— Analyte not requested

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

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

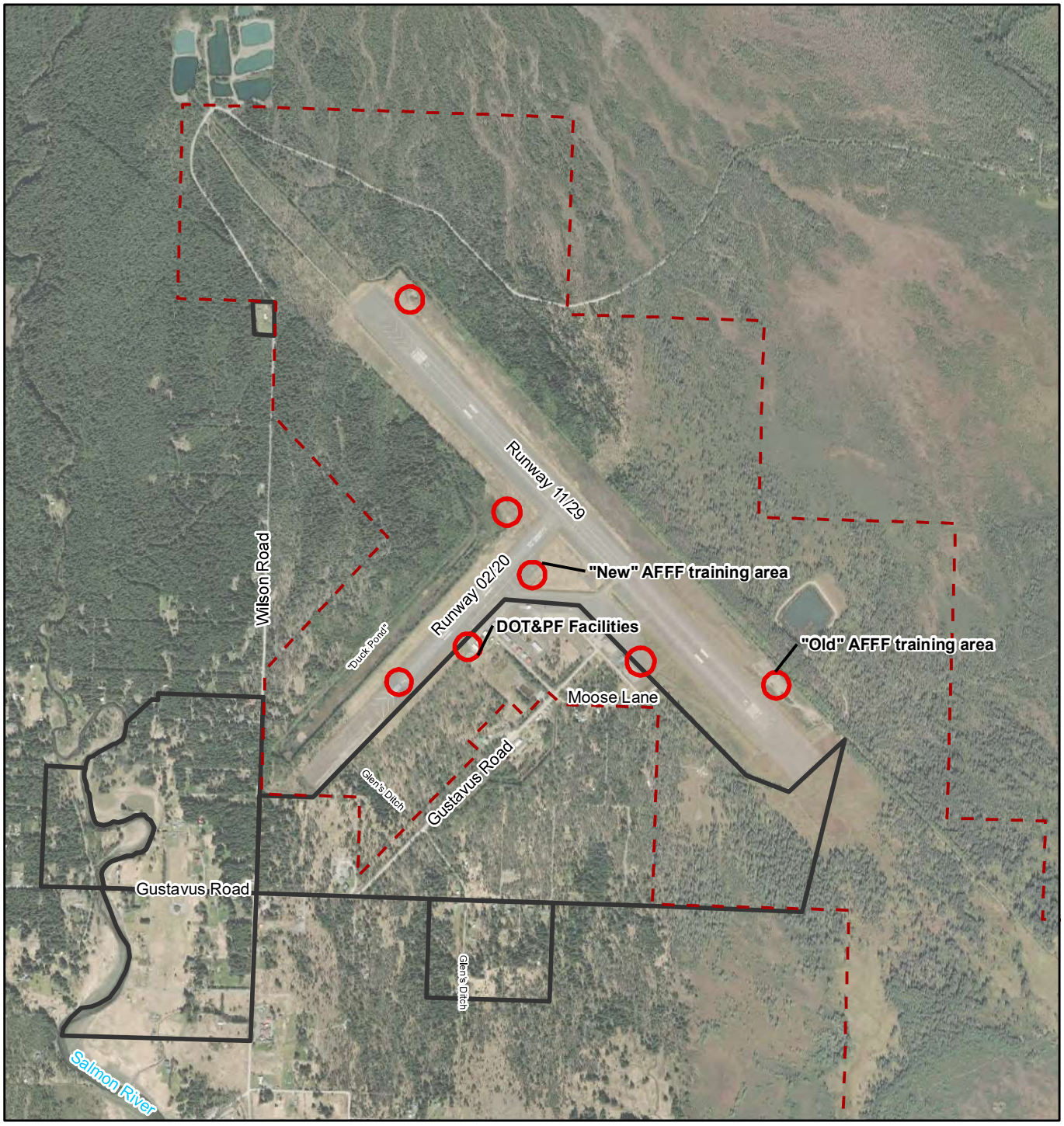
JL* Estimated concentration, biased low due to quality control failures. Flag applied by Shannon & Wilson, Inc.

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

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

N/A Not applicable. The LHA Combined concentration could not be calculated because PFOS and PFOA were not detected in the project sample or there is insufficient data or a lack of quantifiable results (less than 50 percent) from which to conduct a Mann-Kendall analysis.

‡ Minimum concentration, the LHA Combined oconcentration includes one or more result that is not detected greater than the MDL.



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

0 0.5 1

Miles

LEGEND

- Airport Property Boundary
- Well Search and Sampling Boundaries
- Potential and Known AFFF Use Areas

N

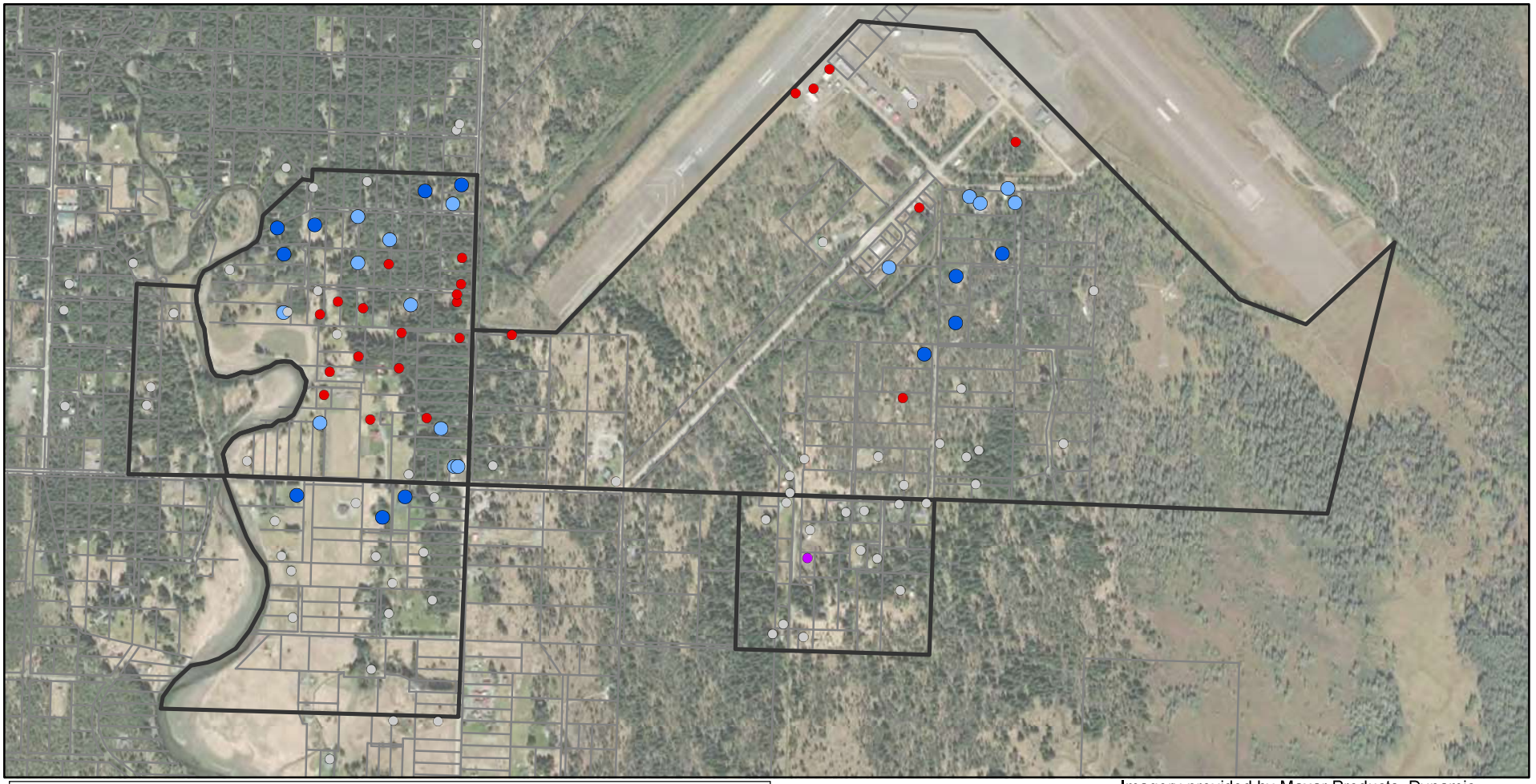
Gustavus Airport
PFAS Site Characterization Report
Gustavus, Alaska

SITE MAP

December 2022 102599-018

SHANNON & WILSON, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Figure 1



Legend

- Quarterly
- Annually
- Affected property, not monitored
- Affected, DEC project site
- Not part of monitoring program*
- Well Search Areas
- Property Lines

* Location does not meet monitoring criteria due to well category or results

N

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Gustavus Airport
Gustavus, Alaska

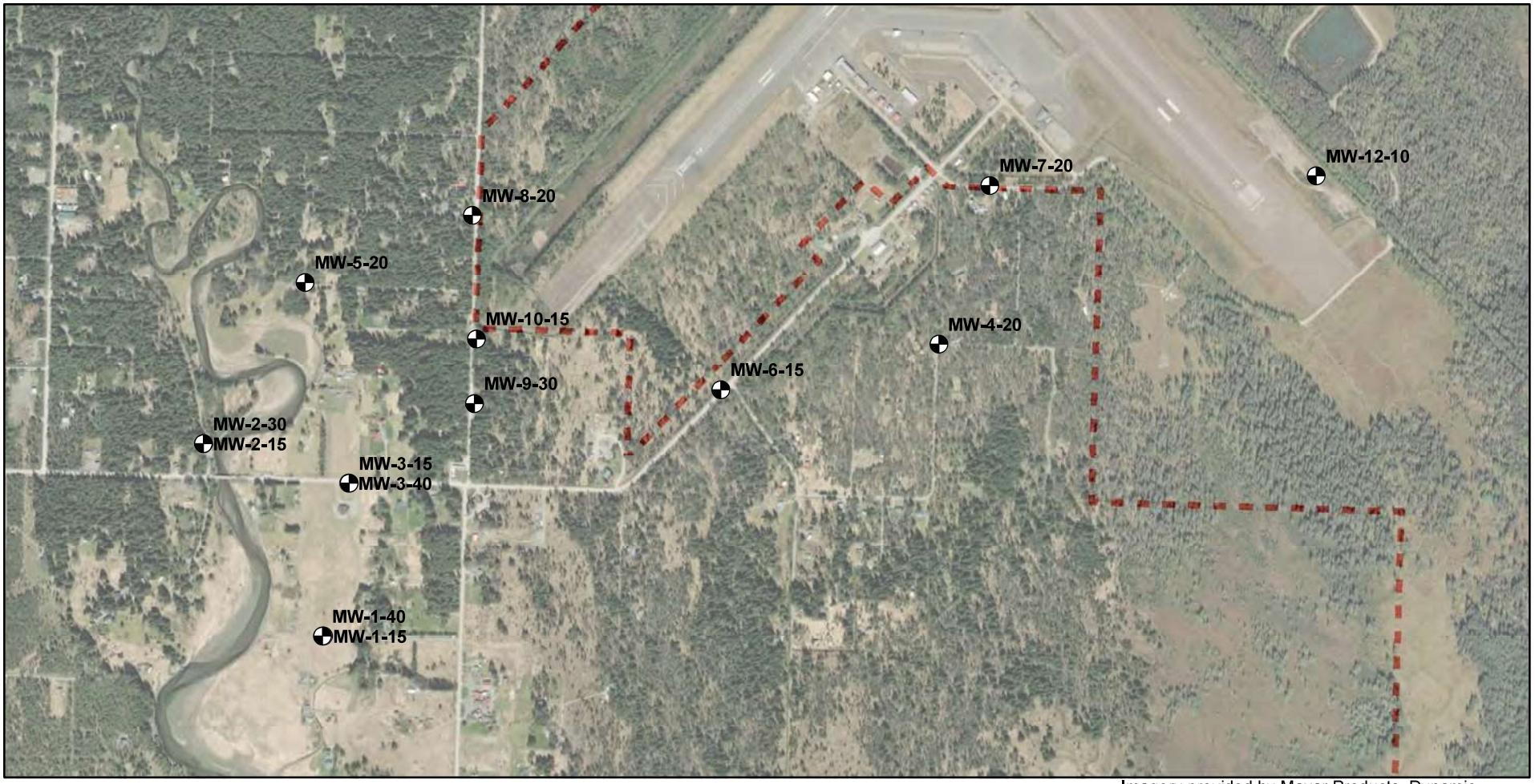
QUARTERLY & ANNUAL WATER-SUPPLY WELL SAMPLING LOCATIONS

December 2022

102599-018

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Figure 2



Imagery provided by Maxar Products. Dynamic Mosaic © 2020 Maxar Technologies Inc., Alaska

Legend

- Monitoring well
- Airport Property Boundary

N

Gustavus Airport
Gustavus, Alaska

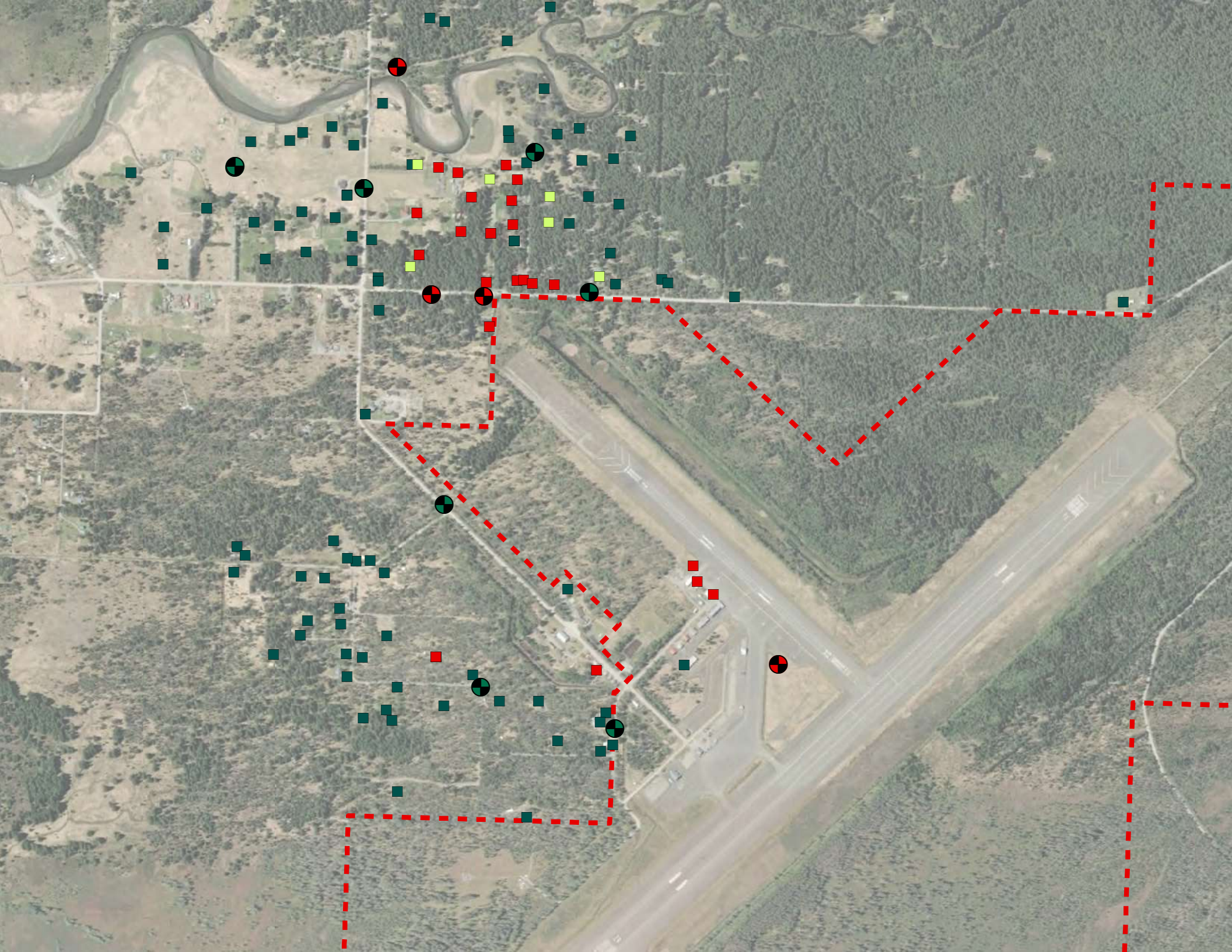
MONITORING WELL LOCATIONS

December 2022

102599-018

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Figure 3



APPENDIX A: FIELD NOTES

Appendix A
Field Notes

CONTENTS

Redacted for Privacy

APPENDIX B: PUBLIC INFORMATION

Appendix B

Public Information

CONTENTS

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

January 20, 2021

Full Name/s
Mailing Address
Gustavus, AK 99826

RE: RESULTS OF DECEMBER 2020/JANUARY 2021 PFAS PRIVATE WELL SAMPLING, GUSTAVUS AIRPORT

Dear Mr. and Ms. Name,

Thank you for participating in our private-well sampling program to evaluate the potential presence of per- and polyfluoroalkyl substances (PFAS) in groundwater near the Gustavus Airport. Shannon & Wilson, Inc. collected a water sample on December , 2020, from the well at your residence/business. Enclosed are the analytical results for the sample from your residential/commercial water-supply well at PHYSICAL ADDRESS. We have prepared an identical letter for your tenant/s NAME.

The well-water sample was analyzed for perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA), and other PFAS compounds. We compare these concentrations to the U.S. Environmental Protection Agency's (EPA) health advisory level for drinking water. The lifetime health advisory level is 70 parts per trillion (ppt) for the sum of PFOS and PFOA. Please note that these units are equivalent to nanograms per liter (ng/L).

Results of the analysis conducted by TestAmerica Laboratories, Inc. indicate that PFOS was not/was detected at X ppt, and PFOA was not/was detected at X ppt in the water sample from your well. The sum of these PFOS and PFOA concentrations is less than the lifetime health advisory level. The portions of the original laboratory report that apply to your well (sample number *XXXXXX* and field-duplicate sample *XXXXXX*) are enclosed for your records.

The Alaska Department of Transportation and Public Facilities (DOT&PF) is providing an alternate source of drinking water to the occupants of homes and businesses whose well water exceeds the health advisory level, and who use their water for drinking or cooking.

2355 HILL ROAD
FAIRBANKS, ALASKA 99709-5326
907-479-0600 • FAX 907-479-5691

We sampled over 116 private water-supply wells near the Gustavus Airport on behalf of DOT&PF. Please see the enclosed PFAS fact sheet for a link to the DOT&PF project website, as results are received, we will update the website map. Feel free to contact us if you have questions regarding your results.

Sincerely,

SHANNON & WILSON, INC.

Amber Masters
Environmental Scientist

Enc: Select Pages of Test America Laboratory Report No. 320-68521-1
PFAS Fact Sheet - Gustavus Airport

2355 HILL ROAD
FAIRBANKS, ALASKA 99709-5326
907-479-0600 • FAX 907-479-5691

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Transportation and Public Facilities

STATEWIDE AVIATION

P.O. Box 196900, 99519-6900
4111 Aviation Avenue, 99502
Anchorage, AK
Main: 907.269.0730
Fax: 907.269.0489
dot.state.ak.us

PFAS Fact Sheet – Gustavus Airport

June 2021

Per- and polyfluoroalkyl substances (PFAS) are a group of manmade chemicals used for a wide variety of residential, commercial, and industrial uses. PFAS are considered emerging environmental contaminants and the health effects are not well known.

The presumed source of PFAS in groundwater in your community is the use of a fire-fighting foam called aqueous film forming foam (AFFF). Airport firefighters used the foam to extinguish petroleum fires during training exercises and emergency events.

The Alaska Department of Transportation & Public Facilities (DOT&PF) has tested 120 private water-supply wells starting in August 2018. Private wells on airport property and wells along and off the southern portion of Wilson Road were found to be impacted.

The DOT&PF has hired Shannon & Wilson to test private wells for perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA). The U.S. Environmental Protection Agency (EPA) lifetime health advisory (LHA) level for drinking water is **70 parts per trillion** for the sum of PFOS and PFOA.

We advise residents with test results above this level not to use their water for drinking or cooking. If your well is considered affected, you can continue to shower, clean, and do laundry.

Test results are typically available within three to four weeks of sample collection. If your well is found to have PFAS above the EPA LHA, DOT&PF will assist with access to an alternate source of drinking water.

For results and sampling area map:
www.dot.alaska.gov/airportwater/gustavus

For questions about well testing:
Shannon & Wilson, Inc.
Kristen Freiburger, Project Manager
Phone: 907-458-3146
Email: krf@shanwil.com

For regulatory questions:
Dept. of Environmental Conservation
Erin Gleason, Contaminated Sites Program
Phone: 907-269-7556
Email: erin.gleason@alaska.gov

For questions about PFAS and health:
Dept. of Health & Social Services
Sarah Yoder, Public Health Scientist
Phone: 907-269-8054
Email: sarah.yoder@alaska.gov

To arrange your next water delivery:
Jarred Mitrea
Phone: 559-515-3680

To file an insurance claim:
Dept. of Admin., Risk Management
Scott Jordan, Risk Assessor
Phone: 907-465-2183
Email: scott.jordan@alaska.gov

For questions about fire training and other inquiries:
DOT&PF - Statewide Aviation
Sammy Cummings, Project Manager
Phone: 907-888-5671
Email: airportwater@alaska.gov

APPENDIX C: ANALYTICAL RESULTS

Appendix C

Analytical Results

CONTENTS

ACROYNMS

°C	degrees Celsius
BTEX	benzene, toluene, ethylbenzene, and xylenes
COC	chain-of-custody
DEC	Alaska Department of Environmental Conservation
DRO	diesel range organics
DQO	data quality objective
GRO	gasoline range organics
HFPO-DA	hexafluoropropylene oxide dimer acid
IDA	isotope dilution analysis
LCS	laboratory control samples
LCSD	LCS duplicate
LDRC	Laboratory Data Review Checklist
LOD	limit of detection
LOQ	limit of quantitation
MB	method blank
MS	matrix spike
MSD	MS duplicate
PAH	polycyclic aromatic hydrocarbons
PFAS	per- and polyfluoroalkyl substances
PFBS	perfluorobutanesulfonic acid
PFDA	perluorodecanoic acid
PFDoA	perluorododecanoic acid
PFHpA	perfluoroheptanoic acid
PFHxA	perfluorohexanoic acid
PFHxS	perfluorohexanesulfonic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonic acid
PFTrDA or PFTriA	perfluorotridecanoic acid
PFUnA	perfluoroundecanoic acid
QA	quality assurance
QC	quality control
RL	reporting limit
RPD	relative percent difference
RRO	residual range organics
SGS	SGS North America, Inc.
TB	trip blank
WO	work order

APPENDIX C: ANALYTICAL RESULTS

QA/QC SUMMARY

Quality Assurance/Quality Control (QA/QC) procedures assist in producing data of acceptable quality and reliability. Shannon & Wilson reviewed the analytical results for laboratory QC samples and conducted a QA assessment for this project. Staff reviewed the chain-of-custody records and laboratory-receipt forms to verify 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. QA review procedures 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.

Please note, the laboratory applies the flag 'J' to a detection reported less than the reporting limit but greater than the detection limit; this "flagged" datum is considered an estimated concentration. Qualified environmental staff reviewed the data using the current DEC laboratory data review checklist (LDRC) and applied standardized qualifiers to any result found to have been affected by a QC issue. Unless rejected, a qualified result is considered usable data. During the QC review, flags were applied to indicate estimated data or analytical bias, as applicable.

Our summary below provides details regarding QA/QC failures that resulted in flags being applied to the data set. For further details of failures not resulting in flags, please refer to the LDRCs.

SAMPLE HANDLING

Monitoring well samples are collected following stabilization of parameters, as noted in Section 2.1 or once three well volumes have been purged. The following samples were collected prior to full stabilization.

- Eurofins 320-71798: per- and polyfluoroalkyl substances (PFAS) samples *MW-3-15* and *MW-8-20* were collected prior to full stabilization. The sample results are considered estimated, flagged with a 'J' for detected results and a 'UJ' for non-detect results.

Our water-supply well sampling protocols describe sampling directly from the homes plumbing system to prevent PFAS contamination not associated with the drinking-water system. However, samples *PW-465* and *PW-565* associated with Eurofins 320-71797 were collected through a hose due to plumbing repairs at the time. Detected results have been flagged 'J' as estimated for a deviation from the sampling method.
Coolers containing water samples were shipped via Alaska Goldstreak to the laboratories to perform the analyses noted on the chain-of-custody (COC). The coolers with water samples

contained a temperature blank to measure whether samples were kept appropriately cold. Lab personnel measured the temperature blank at the time the samples arrived at each of their facilities; the temperature blank was recorded within the proper temperature range upon arrival at the laboratories, with the following exception.

- SGS North America, Inc. (SGS) work order (WO) 1210031: the sample cooler was measured at 7.6 degrees Celsius (°C) and the associated gasoline range organics (GRO), diesel range organics (DRO), residual range organics (RRO), benzene, toluene, ethylbenzene, and xylenes (BTEX) and polyaromatic hydrocarbon (PAH) results are considered affected. Results are considered estimated, biased low due to the above-range cooler temperature. Detected results are flagged 'JL' and non-detect results are flagged 'UJ' unless flagged due to other QC failures.

Our review of COC records and laboratory sample-receipt documents did not reveal sample-handling anomalies that would affect the quality or usability of the data, and the samples were processed within the appropriate method holding times. Data is considered usable with the flags noted above.

ANALYTICAL SENSITIVITY

Shannon & Wilson compared groundwater-sample limits of detection (LODs) for SGS data and reporting limits (RLs) for Eurofins data to the DEC regulatory levels. For groundwater data, LODs and RLs were less than DEC-established cleanup or action levels, where applicable, with the following exceptions.

- The LODs for analyte 1,2,3-trichloropropane is reported above the DEC regulatory limit for SGS WO 1204821.

PFAS analysis uses isotope dilution method for analysis. This analytical technique requires the observation of the transition mass ratios. The ratios associated with PFAS analysis were within limit for the project data set with the following exceptions.

- Eurofins 320-68519: the following analytes for the listed samples are considered estimated and flagged 'J' in the associated data tables due to transition mass ratios outside of laboratory limits: perfluorooctane sulfonic acid (PFOS) results for samples *MW-1-40, MW-3-40,* and *MW-6-20 / MW-106-20;* perfluoroheptanoic acid (PFHpA) results for *MW-106-20;* and perfluorobutanesulfonic acid (PFBS) results for *MW-4-20.*
- Eurofins 320-71796: the transition mass ratio was outside of established ratio limits for PFBS for sample *PW-208*. The laboratory noted a potential for high bias; therefore, this analyte has been flagged with a 'JH' in the analytical tables.

- Eurofins 320-71800: the transition mass ratio was outside of established limits for PFBS for sample *PW-200*. The laboratory noted a potential for high bias; therefore, this analyte has been flagged with a 'JH' in the analytical tables.
- Eurofins 320-75575: the transition mass ratio was outside of established ratio limits for PFHpA for sample *PW-401*. The laboratory noted a potential for high bias; therefore, this analyte has been flagged with a 'JH' in the analytical tables.

The laboratory analyzes a method blank (MB) with each sample batch to provide information regarding potential for analyte carryover during analysis. Project analytes were not detected in the MBs associated with the project WOs with the following exceptions.

- Eurofins 320-64368: perfluorohexanesulfonic acid (PFHxS) was detected below RL in the MB affecting samples *MW-1-15, MW-1-40/ MW-1-140, MW-2-30, MW-4-20, MW-5-20, MW-6-20/ MW-6-120, MW-7-20,* and *MW-8-20/ MW-8-120*. PFHxS results for these samples are considered not-detected due to sample contamination identified in the MB and are flagged 'UB' at the RL or detected concentration, whichever is greater.
- SGS 1210031: DRO and RRO were detected below the limit of quantitation (LOQ) in the MB. Results for samples *MW-11-15, MW-12-10,* and *MW-112-10* are considered not-detected, flagged with a 'UB' at the LOQ.
- SGS 1211331: ethylbenzene, o-xylene, p&m-xylenes, total xylenes, and toluene were detected below the LOQ in the BTEX MB associated with this WO. These analytes were also detected below the LOQ in *MW-11-15, MW-111-15,* and *MW-12-10*. These analytes are considered not detected and have been flagged 'UB' at the LOQ for the affected samples.

The laboratory noted arsenic sample *PW-200* for SGS 1213677 was received with ice present in the sample. The result for this sample is considered estimated, flagged with a 'J' in the analytical data table.

Shannon & Wilson submits a laboratory-provided trip blank (TB) with each of the volatile analyses for this project. A TB is used to determine if cross-contamination associated with sample handling and transport is contributing to the project sample results. TB results did not affect the project samples with the following exception.

- SGS 1211331: GRO detected in project sample *MW-12-10* is considered not detected due to a detection in the TB. The result is flagged 'UB' at the LOQ.

Shannon & Wilson also collected equipment blanks for each sampling event where sampling was conducted with reusable equipment. These samples are collected to detect residual contamination on equipment that may contribute to cross contamination in the

project samples. Project analytes were not detected in the project samples with the following exceptions.

- SGS 1204821: RRO were detected below the LOQ in the equipment blank affecting samples *MW-11-15*, *MW-11-115*, and *MW-12-10.* The RRO results associated with the project samples are considered not detected at the LOQ, flagged with a 'UB' to denote the QC failure.

ACCURACY

The laboratory assessed the accuracy of its analytical procedures by analyzing laboratory control samples (LCS), LCS duplicate samples (LCSD) matrix spike samples (MS), MS duplicate samples (MSD) and laboratory duplicate samples. LCS/LCSD analysis allows the laboratory to evaluate their ability to recover analytes added to clean aqueous matrices, and MS/MSD analysis allows the laboratory to evaluate their ability to recovery analytes added to project sample matrices.

LCS/LCSD and MS/MSD recoveries were within laboratory limits for the project samples, where reported.

The laboratory also assessed the accuracy of isotope dilution analysis (IDA) analytes and surrogates added to individual project samples. IDAs and surrogates allow the laboratory to assess the accuracy of their analytical method using chemically similar compounds as those requested for the project sample set. Surrogate and IDA recoveries were within QC limits for the project samples with the following exceptions.
Eurofins 320-71798: IDA recoveries associated with perfluorohexanoic acid (PFHxA), perluorodecanoic acid (PFDA), perfluoroundecanoic acid (PFUnA), perluorododecanoic acid (PFDoA), perfluorotridecanoic acid (PFTDA), PFBS, PFHxS, PFOS, d3-NMeFOSAA, d5-NEtFOSAA, and hexafluoropropylene oxide dimer acid (HFPO-DA) for project sample *MW-10-20* and PFHxA, PFHpA, PFDA, PFUnA, PFDoA, PFTDA, PFBS, PFHxS, PFOS, d3-NMeFOSAA, d5-NEtFOSAA, and HFPO-DA for project sample *MW-6-20* were outside QC limits. The associated analytes for the listed project samples are considered estimated. Detected analytes are flagged 'J' and not detected analytes are flagged 'UJ' in the associated data tables.

PRECISION

Shannon & Wilson submitted twenty-four field duplicate samples in our WOs. To evaluate data precision and reproducibility of our sampling techniques, the relative percent difference (RPD) was calculated between the sample and its duplicate. Shannon & Wilson can only evaluate RPDs if the results of the analysis for both the sample and its duplicate are greater than the LOQ or RL for a given analyte. The field-duplicate RPDs for detected

analytes were within the project-specified data quality objective (DQO) of 30 percent for groundwater, with the following exception.

- Eurofins 320-64367: RPD for PFHxA exceeds the DQO for field duplicate pair *PW-203* / *PW-303*. Results for these samples are reported below the RL at an estimated value. No further flagging was added.
- Eurofins 320-71796: RPDs for PFBS exceeded the DQO for field duplicate pair *PW-401* / *PW-501*. Results for these samples are reported below the RL at an estimate value. No further flagging was added.
- Eurofins 320-71797: RPDs for perfluorooctanoic acid (PFOA) and PFBS exceed the DQO for field duplicate pair *PW-465* / *PW-565*. PFOA results for the duplicate pair are considered estimated, flagged with a 'J' to denote the imprecision. PFBS results were detected below the RL and are considered estimated by the laboratory; no further flagging was added.

DATA QUALITY SUMMARY

By working in general accordance with our proposed scope of services, Shannon & Wilson consider the samples collected for this project to be representative of site conditions at the locations and times they were obtained. Based on our QA review, no samples were rejected as unusable due to QC failures. 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.

Laboratory Report of Analysis

To: Shannon & Wilson-Fairbanks
2355 Hill Rd.
Fairbanks, AK 99701
(907)479-0600

Report Number: **1204821**

Client Project: **102599-012 Gustavus MWS**

Dear Kristen Freiburger,

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.

_____

Jennifer Dawkins Date
Project Manager
Jennifer.Dawkins@sgs.com

Case Narrative

SGS Client: **Shannon & Wilson-Fairbanks**
SGS Project: **1204821**
Project Name/Site: **102599-012 Gustavus MWS**
Project Contact: **Kristen Freiburger**

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.

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

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, indenmification 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.

SGS North America Inc. 200 West Potter Drive, Anchorage, AK 99518
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Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
MW-11-15	1204821001	09/02/2020	09/08/2020	Water (Surface, Eff., Ground)
MW-11-115	1204821002	09/02/2020	09/08/2020	Water (Surface, Eff., Ground)
MW-12-10	1204821003	09/02/2020	09/08/2020	Water (Surface, Eff., Ground)
EB-11-15	1204821004	09/02/2020	09/08/2020	Water (Surface, Eff., Ground)
Trip Blank	1204821005	09/02/2020	09/08/2020	Water (Surface, Eff., Ground)

Method	Method Description
8270D SIM LV (PAH)	8270 PAH SIM GC/MS LV
AK102	DRO/RRO Low Volume Water
AK103	DRO/RRO Low Volume Water
AK101	Gasoline Range Organics (W)
SW8260D	Volatile Organic Compounds (W) FULL

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Detectable Results Summary

Client Sample ID: **MW-11-15**
Lab Sample ID: 1204821001
Semivolatile Organic Fuels

Parameter	Result	Units
Residual Range Organics	0.235J	mg/L

Client Sample ID: **MW-11-115**
Lab Sample ID: 1204821002
Semivolatile Organic Fuels

Parameter	Result	Units
Residual Range Organics	0.367J	mg/L

Client Sample ID: **MW-12-10**
Lab Sample ID: 1204821003
Semivolatile Organic Fuels

Parameter	Result	Units
Residual Range Organics	0.316J	mg/L

Client Sample ID: **EB-11-15**
Lab Sample ID: 1204821004
Semivolatile Organic Fuels

Parameter	Result	Units
Residual Range Organics	0.319J	mg/L

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Results of **MW-11-15**

Client Sample ID: **MW-11-15**
Client Project ID: **102599-012 Gustavus MWS**
Lab Sample ID: 1204821001
Lab Project ID: 1204821

Collection Date: 09/02/20 12:04
Received Date: 09/08/20 08:21
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0232	U	0.0463	0.0139	ug/L	1		09/10/20 23:28
2-Methylnaphthalene	0.0232	U	0.0463	0.0139	ug/L	1		09/10/20 23:28
Acenaphthene	0.0232	U	0.0463	0.0139	ug/L	1		09/10/20 23:28
Acenaphthylene	0.0232	U	0.0463	0.0139	ug/L	1		09/10/20 23:28
Anthracene	0.0232	U	0.0463	0.0139	ug/L	1		09/10/20 23:28
Benzo(a)Anthracene	0.0232	U	0.0463	0.0139	ug/L	1		09/10/20 23:28
Benzo[a]pyrene	0.00925	U	0.0185	0.00574	ug/L	1		09/10/20 23:28
Benzo[b]Fluoranthene	0.0232	U	0.0463	0.0139	ug/L	1		09/10/20 23:28
Benzo[g,h,i]perylene	0.0232	U	0.0463	0.0139	ug/L	1		09/10/20 23:28
Benzo[k]fluoranthene	0.0232	U	0.0463	0.0139	ug/L	1		09/10/20 23:28
Chrysene	0.0232	U	0.0463	0.0139	ug/L	1		09/10/20 23:28
Dibenzo[a,h]anthracene	0.00925	U	0.0185	0.00574	ug/L	1		09/10/20 23:28
Fluoranthene	0.0232	U	0.0463	0.0139	ug/L	1		09/10/20 23:28
Fluorene	0.0232	U	0.0463	0.0139	ug/L	1		09/10/20 23:28
Indeno[1,2,3-c,d] pyrene	0.0232	U	0.0463	0.0139	ug/L	1		09/10/20 23:28
Naphthalene	0.0463	U	0.0926	0.0287	ug/L	1		09/10/20 23:28
Phenanthrene	0.0232	U	0.0463	0.0139	ug/L	1		09/10/20 23:28
Pyrene	0.0232	U	0.0463	0.0139	ug/L	1		09/10/20 23:28
Surrogates								
2-Methylnaphthalene-d10 (surr)	63.8		37-78		%	1		09/10/20 23:28
Fluoranthene-d10 (surr)	76.7		24-116		%	1		09/10/20 23:28

Batch Information

Analytical Batch: XMS12258
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 09/10/20 23:28
Container ID: 1204821001-C

Prep Batch: XXX43817
Prep Method: SW3535A
Prep Date/Time: 09/08/20 17:00
Prep Initial Wt./Vol.: 270 mL
Prep Extract Vol: 1 mL

Print Date: 09/16/2020 4:45:39PM

J flagging is activated

Results of **MW-11-15**

Client Sample ID: **MW-11-15**
Client Project ID: **102599-012 Gustavus MWS**
Lab Sample ID: 1204821001
Lab Project ID: 1204821

Collection Date: 09/02/20 12:04
Received Date: 09/08/20 08:21
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.288	U	0.577	0.173	mg/L	1		09/15/20 23:14
Surrogates								
5a Androstane (surr)	96.7		50-150		%	1		09/15/20 23:14

Batch Information

Analytical Batch: XFC15741
Analytical Method: AK102
Analyst: CDM
Analytical Date/Time: 09/15/20 23:14
Container ID: 1204821001-A

Prep Batch: XXX43852
Prep Method: SW3520C
Prep Date/Time: 09/14/20 16:11
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.235	J	0.481	0.144	mg/L	1		09/15/20 23:14
Surrogates								
n-Triacontane-d62 (surr)	104		50-150		%	1		09/15/20 23:14

Batch Information

Analytical Batch: XFC15741
Analytical Method: AK103
Analyst: CDM
Analytical Date/Time: 09/15/20 23:14
Container ID: 1204821001-A

Prep Batch: XXX43852
Prep Method: SW3520C
Prep Date/Time: 09/14/20 16:11
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Print Date: 09/16/2020 4:45:39PM

J flagging is activated

Results of **MW-11-15**

Client Sample ID: **MW-11-15**
Client Project ID: **102599-012 Gustavus MWS**
Lab Sample ID: 1204821001
Lab Project ID: 1204821

Collection Date: 09/02/20 12:04
Received Date: 09/08/20 08:21
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0500	U	0.100	0.0310	mg/L	1		09/11/20 18:31
Surrogates								
4-Bromofluorobenzene (surr)	95		50-150		%	1		09/11/20 18:31

Batch Information

Analytical Batch: VFC15340
Analytical Method: AK101
Analyst: ALJ
Analytical Date/Time: 09/11/20 18:31
Container ID: 1204821001-H

Prep Batch: VXX36331
Prep Method: SW5030B
Prep Date/Time: 09/11/20 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **MW-11-15**

Client Sample ID: **MW-11-15**
Client Project ID: **102599-012 Gustavus MWS**
Lab Sample ID: 1204821001
Lab Project ID: 1204821

Collection Date: 09/02/20 12:04
Received Date: 09/08/20 08:21
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		09/08/20 21:48
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:48
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		09/08/20 21:48
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		09/08/20 21:48
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:48
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:48
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:48
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:48
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:48
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:48
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:48
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		09/08/20 21:48
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		09/08/20 21:48
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:48
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		09/08/20 21:48
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:48
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:48
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:48
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		09/08/20 21:48
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		09/08/20 21:48
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:48
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		09/08/20 21:48
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:48
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		09/08/20 21:48
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:48
4-Isopropyltoluene	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:48
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		09/08/20 21:48
Benzene	0.200	U	0.400	0.120	ug/L	1		09/08/20 21:48
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:48
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:48
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		09/08/20 21:48
Bromoform	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:48
Bromomethane	2.50	U	5.00	2.00	ug/L	1		09/08/20 21:48
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		09/08/20 21:48
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:48
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		09/08/20 21:48
Chloroethane	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:48

Results of **MW-11-15**

Client Sample ID: **MW-11-15**
Client Project ID: **102599-012 Gustavus MWS**
Lab Sample ID: 1204821001
Lab Project ID: 1204821

Collection Date: 09/02/20 12:04
Received Date: 09/08/20 08:21
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:48
Chloromethane	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:48
cis-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:48
cis-1,3-Dichloropropene	0.250 U		0.500	0.150	ug/L	1		09/08/20 21:48
Dibromochloromethane	0.250 U		0.500	0.150	ug/L	1		09/08/20 21:48
Dibromomethane	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:48
Dichlorodifluoromethane	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:48
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:48
Freon-113	5.00 U		10.0	3.10	ug/L	1		09/08/20 21:48
Hexachlorobutadiene	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:48
Isopropylbenzene (Cumene)	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:48
Methylene chloride	5.00 U		10.0	3.10	ug/L	1		09/08/20 21:48
Methyl-t-butyl ether	5.00 U		10.0	3.10	ug/L	1		09/08/20 21:48
Naphthalene	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:48
n-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:48
n-Propylbenzene	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:48
o-Xylene	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:48
P & M -Xylene	1.00 U		2.00	0.620	ug/L	1		09/08/20 21:48
sec-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:48
Styrene	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:48
tert-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:48
Tetrachloroethene	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:48
Toluene	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:48
trans-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:48
trans-1,3-Dichloropropene	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:48
Trichloroethene	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:48
Trichlorofluoromethane	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:48
Vinyl acetate	5.00 U		10.0	3.10	ug/L	1		09/08/20 21:48
Vinyl chloride	0.0750 U		0.150	0.0500	ug/L	1		09/08/20 21:48
Xylenes (total)	1.50 U		3.00	1.00	ug/L	1		09/08/20 21:48
Surrogates								
1,2-Dichloroethane-D4 (surr)	102		81-118		%	1		09/08/20 21:48
4-Bromofluorobenzene (surr)	101		85-114		%	1		09/08/20 21:48
Toluene-d8 (surr)	97.1		89-112		%	1		09/08/20 21:48

Results of **MW-11-15**

Client Sample ID: **MW-11-15**
Client Project ID: **102599-012 Gustavus MWS**
Lab Sample ID: 1204821001
Lab Project ID: 1204821

Collection Date: 09/02/20 12:04
Received Date: 09/08/20 08:21
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS20292
Analytical Method: SW8260D
Analyst: NRB
Analytical Date/Time: 09/08/20 21:48
Container ID: 1204821001-E

Prep Batch: VXX36303
Prep Method: SW5030B
Prep Date/Time: 09/08/20 18:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **MW-11-115**

Client Sample ID: **MW-11-115**
Client Project ID: **102599-012 Gustavus MWS**
Lab Sample ID: 1204821002
Lab Project ID: 1204821

Collection Date: 09/02/20 11:54
Received Date: 09/08/20 08:21
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0232	U	0.0463	0.0139	ug/L	1		09/10/20 23:48
2-Methylnaphthalene	0.0232	U	0.0463	0.0139	ug/L	1		09/10/20 23:48
Acenaphthene	0.0232	U	0.0463	0.0139	ug/L	1		09/10/20 23:48
Acenaphthylene	0.0232	U	0.0463	0.0139	ug/L	1		09/10/20 23:48
Anthracene	0.0232	U	0.0463	0.0139	ug/L	1		09/10/20 23:48
Benzo(a)Anthracene	0.0232	U	0.0463	0.0139	ug/L	1		09/10/20 23:48
Benzo[a]pyrene	0.00925	U	0.0185	0.00574	ug/L	1		09/10/20 23:48
Benzo[b]Fluoranthene	0.0232	U	0.0463	0.0139	ug/L	1		09/10/20 23:48
Benzo[g,h,i]perylene	0.0232	U	0.0463	0.0139	ug/L	1		09/10/20 23:48
Benzo[k]fluoranthene	0.0232	U	0.0463	0.0139	ug/L	1		09/10/20 23:48
Chrysene	0.0232	U	0.0463	0.0139	ug/L	1		09/10/20 23:48
Dibenzo[a,h]anthracene	0.00925	U	0.0185	0.00574	ug/L	1		09/10/20 23:48
Fluoranthene	0.0232	U	0.0463	0.0139	ug/L	1		09/10/20 23:48
Fluorene	0.0232	U	0.0463	0.0139	ug/L	1		09/10/20 23:48
Indeno[1,2,3-c,d] pyrene	0.0232	U	0.0463	0.0139	ug/L	1		09/10/20 23:48
Naphthalene	0.0463	U	0.0926	0.0287	ug/L	1		09/10/20 23:48
Phenanthrene	0.0232	U	0.0463	0.0139	ug/L	1		09/10/20 23:48
Pyrene	0.0232	U	0.0463	0.0139	ug/L	1		09/10/20 23:48
Surrogates								
2-Methylnaphthalene-d10 (surr)	65.7		37-78		%	1		09/10/20 23:48
Fluoranthene-d10 (surr)	81.1		24-116		%	1		09/10/20 23:48

Batch Information

Analytical Batch: XMS12258
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 09/10/20 23:48
Container ID: 1204821002-C

Prep Batch: XXX43817
Prep Method: SW3535A
Prep Date/Time: 09/08/20 17:00
Prep Initial Wt./Vol.: 270 mL
Prep Extract Vol: 1 mL

Print Date: 09/16/2020 4:45:39PM

J flagging is activated

Results of **MW-11-115**

Client Sample ID: **MW-11-115**
Client Project ID: **102599-012 Gustavus MWS**
Lab Sample ID: 1204821002
Lab Project ID: 1204821

Collection Date: 09/02/20 11:54
Received Date: 09/08/20 08:21
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.288	U	0.577	0.173	mg/L	1		09/15/20 23:24
Surrogates								
5a Androstane (surr)	99.3		50-150		%	1		09/15/20 23:24

Batch Information

Analytical Batch: XFC15741
Analytical Method: AK102
Analyst: CDM
Analytical Date/Time: 09/15/20 23:24
Container ID: 1204821002-A

Prep Batch: XXX43852
Prep Method: SW3520C
Prep Date/Time: 09/14/20 16:11
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.367	J	0.481	0.144	mg/L	1		09/15/20 23:24
Surrogates								
n-Triacontane-d62 (surr)	107		50-150		%	1		09/15/20 23:24

Batch Information

Analytical Batch: XFC15741
Analytical Method: AK103
Analyst: CDM
Analytical Date/Time: 09/15/20 23:24
Container ID: 1204821002-A

Prep Batch: XXX43852
Prep Method: SW3520C
Prep Date/Time: 09/14/20 16:11
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Print Date: 09/16/2020 4:45:39PM

J flagging is activated

Results of **MW-11-115**

Client Sample ID: **MW-11-115**
Client Project ID: **102599-012 Gustavus MWS**
Lab Sample ID: 1204821002
Lab Project ID: 1204821

Collection Date: 09/02/20 11:54
Received Date: 09/08/20 08:21
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0500	U	0.100	0.0310	mg/L	1		09/11/20 18:49
Surrogates								
4-Bromofluorobenzene (surr)	97.7		50-150		%	1		09/11/20 18:49

Batch Information

Analytical Batch: VFC15340
Analytical Method: AK101
Analyst: ALJ
Analytical Date/Time: 09/11/20 18:49
Container ID: 1204821002-H

Prep Batch: VXX36331
Prep Method: SW5030B
Prep Date/Time: 09/11/20 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **MW-11-115**

Client Sample ID: **MW-11-115**
Client Project ID: **102599-012 Gustavus MWS**
Lab Sample ID: 1204821002
Lab Project ID: 1204821

Collection Date: 09/02/20 11:54
Received Date: 09/08/20 08:21
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		09/08/20 22:03
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:03
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		09/08/20 22:03
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		09/08/20 22:03
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:03
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:03
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:03
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:03
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:03
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:03
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:03
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		09/08/20 22:03
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		09/08/20 22:03
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:03
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		09/08/20 22:03
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:03
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:03
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:03
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		09/08/20 22:03
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		09/08/20 22:03
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:03
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		09/08/20 22:03
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:03
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		09/08/20 22:03
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:03
4-Isopropyltoluene	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:03
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		09/08/20 22:03
Benzene	0.200	U	0.400	0.120	ug/L	1		09/08/20 22:03
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:03
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:03
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		09/08/20 22:03
Bromoform	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:03
Bromomethane	2.50	U	5.00	2.00	ug/L	1		09/08/20 22:03
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		09/08/20 22:03
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:03
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		09/08/20 22:03
Chloroethane	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:03

Print Date: 09/16/2020 4:45:39PM

J flagging is activated

Results of **MW-11-115**

Client Sample ID: **MW-11-115**
Client Project ID: **102599-012 Gustavus MWS**
Lab Sample ID: 1204821002
Lab Project ID: 1204821

Collection Date: 09/02/20 11:54
Received Date: 09/08/20 08:21
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:03
Chloromethane	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:03
cis-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:03
cis-1,3-Dichloropropene	0.250 U		0.500	0.150	ug/L	1		09/08/20 22:03
Dibromochloromethane	0.250 U		0.500	0.150	ug/L	1		09/08/20 22:03
Dibromomethane	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:03
Dichlorodifluoromethane	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:03
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:03
Freon-113	5.00 U		10.0	3.10	ug/L	1		09/08/20 22:03
Hexachlorobutadiene	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:03
Isopropylbenzene (Cumene)	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:03
Methylene chloride	5.00 U		10.0	3.10	ug/L	1		09/08/20 22:03
Methyl-t-butyl ether	5.00 U		10.0	3.10	ug/L	1		09/08/20 22:03
Naphthalene	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:03
n-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:03
n-Propylbenzene	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:03
o-Xylene	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:03
P & M -Xylene	1.00 U		2.00	0.620	ug/L	1		09/08/20 22:03
sec-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:03
Styrene	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:03
tert-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:03
Tetrachloroethene	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:03
Toluene	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:03
trans-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:03
trans-1,3-Dichloropropene	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:03
Trichloroethene	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:03
Trichlorofluoromethane	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:03
Vinyl acetate	5.00 U		10.0	3.10	ug/L	1		09/08/20 22:03
Vinyl chloride	0.0750 U		0.150	0.0500	ug/L	1		09/08/20 22:03
Xylenes (total)	1.50 U		3.00	1.00	ug/L	1		09/08/20 22:03
Surrogates								
1,2-Dichloroethane-D4 (surr)	101		81-118		%	1		09/08/20 22:03
4-Bromofluorobenzene (surr)	101		85-114		%	1		09/08/20 22:03
Toluene-d8 (surr)	99.2		89-112		%	1		09/08/20 22:03

Print Date: 09/16/2020 4:45:39PM

J flagging is activated

Results of **MW-11-115**

Client Sample ID: **MW-11-115**
Client Project ID: **102599-012 Gustavus MWS**
Lab Sample ID: 1204821002
Lab Project ID: 1204821

Collection Date: 09/02/20 11:54
Received Date: 09/08/20 08:21
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS20292
Analytical Method: SW8260D
Analyst: NRB
Analytical Date/Time: 09/08/20 22:03
Container ID: 1204821002-E

Prep Batch: VXX36303
Prep Method: SW5030B
Prep Date/Time: 09/08/20 18:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **MW-12-10**

Client Sample ID: **MW-12-10**
Client Project ID: **102599-012 Gustavus MWS**
Lab Sample ID: 1204821003
Lab Project ID: 1204821

Collection Date: 09/02/20 14:09
Received Date: 09/08/20 08:21
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0232	U	0.0463	0.0139	ug/L	1		09/11/20 00:09
2-Methylnaphthalene	0.0232	U	0.0463	0.0139	ug/L	1		09/11/20 00:09
Acenaphthene	0.0232	U	0.0463	0.0139	ug/L	1		09/11/20 00:09
Acenaphthylene	0.0232	U	0.0463	0.0139	ug/L	1		09/11/20 00:09
Anthracene	0.0232	U	0.0463	0.0139	ug/L	1		09/11/20 00:09
Benzo(a)Anthracene	0.0232	U	0.0463	0.0139	ug/L	1		09/11/20 00:09
Benzo[a]pyrene	0.00925	U	0.0185	0.00574	ug/L	1		09/11/20 00:09
Benzo[b]Fluoranthene	0.0232	U	0.0463	0.0139	ug/L	1		09/11/20 00:09
Benzo[g,h,i]perylene	0.0232	U	0.0463	0.0139	ug/L	1		09/11/20 00:09
Benzo[k]fluoranthene	0.0232	U	0.0463	0.0139	ug/L	1		09/11/20 00:09
Chrysene	0.0232	U	0.0463	0.0139	ug/L	1		09/11/20 00:09
Dibenzo[a,h]anthracene	0.00925	U	0.0185	0.00574	ug/L	1		09/11/20 00:09
Fluoranthene	0.0232	U	0.0463	0.0139	ug/L	1		09/11/20 00:09
Fluorene	0.0232	U	0.0463	0.0139	ug/L	1		09/11/20 00:09
Indeno[1,2,3-c,d] pyrene	0.0232	U	0.0463	0.0139	ug/L	1		09/11/20 00:09
Naphthalene	0.0463	U	0.0926	0.0287	ug/L	1		09/11/20 00:09
Phenanthrene	0.0232	U	0.0463	0.0139	ug/L	1		09/11/20 00:09
Pyrene	0.0232	U	0.0463	0.0139	ug/L	1		09/11/20 00:09
Surrogates								
2-Methylnaphthalene-d10 (surr)	66.7		37-78		%	1		09/11/20 00:09
Fluoranthene-d10 (surr)	81.6		24-116		%	1		09/11/20 00:09

Batch Information

Analytical Batch: XMS12258
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 09/11/20 00:09
Container ID: 1204821003-C

Prep Batch: XXX43817
Prep Method: SW3535A
Prep Date/Time: 09/08/20 17:00
Prep Initial Wt./Vol.: 270 mL
Prep Extract Vol: 1 mL

Print Date: 09/16/2020 4:45:39PM

J flagging is activated

Results of **MW-12-10**

Client Sample ID: **MW-12-10**
Client Project ID: **102599-012 Gustavus MWS**
Lab Sample ID: 1204821003
Lab Project ID: 1204821

Collection Date: 09/02/20 14:09
Received Date: 09/08/20 08:21
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.288	U	0.577	0.173	mg/L	1		09/15/20 23:34
Surrogates								
5a Androstane (surr)	93.7		50-150		%	1		09/15/20 23:34

Batch Information

Analytical Batch: XFC15741
Analytical Method: AK102
Analyst: CDM
Analytical Date/Time: 09/15/20 23:34
Container ID: 1204821003-A

Prep Batch: XXX43852
Prep Method: SW3520C
Prep Date/Time: 09/14/20 16:11
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.316	J	0.481	0.144	mg/L	1		09/15/20 23:34
Surrogates								
n-Triacontane-d62 (surr)	101		50-150		%	1		09/15/20 23:34

Batch Information

Analytical Batch: XFC15741
Analytical Method: AK103
Analyst: CDM
Analytical Date/Time: 09/15/20 23:34
Container ID: 1204821003-A

Prep Batch: XXX43852
Prep Method: SW3520C
Prep Date/Time: 09/14/20 16:11
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Results of **MW-12-10**

Client Sample ID: **MW-12-10**
Client Project ID: **102599-012 Gustavus MWS**
Lab Sample ID: 1204821003
Lab Project ID: 1204821

Collection Date: 09/02/20 14:09
Received Date: 09/08/20 08:21
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0500	U	0.100	0.0310	mg/L	1		09/11/20 19:07
Surrogates								
4-Bromofluorobenzene (surr)	93		50-150		%	1		09/11/20 19:07

Batch Information

Analytical Batch: VFC15340
Analytical Method: AK101
Analyst: ALJ
Analytical Date/Time: 09/11/20 19:07
Container ID: 1204821003-H

Prep Batch: VXX36331
Prep Method: SW5030B
Prep Date/Time: 09/11/20 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Results of **MW-12-10**

Client Sample ID: **MW-12-10**
Client Project ID: **102599-012 Gustavus MWS**
Lab Sample ID: 1204821003
Lab Project ID: 1204821

Collection Date: 09/02/20 14:09
Received Date: 09/08/20 08:21
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		09/08/20 21:34
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:34
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		09/08/20 21:34
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		09/08/20 21:34
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:34
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:34
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:34
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:34
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:34
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:34
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:34
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		09/08/20 21:34
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		09/08/20 21:34
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:34
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		09/08/20 21:34
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:34
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:34
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:34
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		09/08/20 21:34
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		09/08/20 21:34
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:34
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		09/08/20 21:34
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:34
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		09/08/20 21:34
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:34
4-Isopropyltoluene	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:34
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		09/08/20 21:34
Benzene	0.200	U	0.400	0.120	ug/L	1		09/08/20 21:34
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:34
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:34
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		09/08/20 21:34
Bromoform	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:34
Bromomethane	2.50	U	5.00	2.00	ug/L	1		09/08/20 21:34
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		09/08/20 21:34
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:34
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		09/08/20 21:34
Chloroethane	0.500	U	1.00	0.310	ug/L	1		09/08/20 21:34

Results of **MW-12-10**

Client Sample ID: **MW-12-10**
Client Project ID: **102599-012 Gustavus MWS**
Lab Sample ID: 1204821003
Lab Project ID: 1204821

Collection Date: 09/02/20 14:09
Received Date: 09/08/20 08:21
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:34
Chloromethane	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:34
cis-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:34
cis-1,3-Dichloropropene	0.250 U		0.500	0.150	ug/L	1		09/08/20 21:34
Dibromochloromethane	0.250 U		0.500	0.150	ug/L	1		09/08/20 21:34
Dibromomethane	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:34
Dichlorodifluoromethane	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:34
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:34
Freon-113	5.00 U		10.0	3.10	ug/L	1		09/08/20 21:34
Hexachlorobutadiene	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:34
Isopropylbenzene (Cumene)	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:34
Methylene chloride	5.00 U		10.0	3.10	ug/L	1		09/08/20 21:34
Methyl-t-butyl ether	5.00 U		10.0	3.10	ug/L	1		09/08/20 21:34
Naphthalene	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:34
n-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:34
n-Propylbenzene	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:34
o-Xylene	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:34
P & M -Xylene	1.00 U		2.00	0.620	ug/L	1		09/08/20 21:34
sec-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:34
Styrene	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:34
tert-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:34
Tetrachloroethene	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:34
Toluene	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:34
trans-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:34
trans-1,3-Dichloropropene	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:34
Trichloroethene	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:34
Trichlorofluoromethane	0.500 U		1.00	0.310	ug/L	1		09/08/20 21:34
Vinyl acetate	5.00 U		10.0	3.10	ug/L	1		09/08/20 21:34
Vinyl chloride	0.0750 U		0.150	0.0500	ug/L	1		09/08/20 21:34
Xylenes (total)	1.50 U		3.00	1.00	ug/L	1		09/08/20 21:34
Surrogates								
1,2-Dichloroethane-D4 (surr)	102		81-118		%	1		09/08/20 21:34
4-Bromofluorobenzene (surr)	101		85-114		%	1		09/08/20 21:34
Toluene-d8 (surr)	99.7		89-112		%	1		09/08/20 21:34

Print Date: 09/16/2020 4:45:39PM

J flagging is activated

Results of **MW-12-10**

Client Sample ID: **MW-12-10**
Client Project ID: **102599-012 Gustavus MWS**
Lab Sample ID: 1204821003
Lab Project ID: 1204821

Collection Date: 09/02/20 14:09
Received Date: 09/08/20 08:21
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS20292
Analytical Method: SW8260D
Analyst: NRB
Analytical Date/Time: 09/08/20 21:34
Container ID: 1204821003-E

Prep Batch: VXX36303
Prep Method: SW5030B
Prep Date/Time: 09/08/20 18:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **EB-11-15**

Client Sample ID: **EB-11-15**
Client Project ID: **102599-012 Gustavus MWS**
Lab Sample ID: 1204821004
Lab Project ID: 1204821

Collection Date: 09/02/20 12:40
Received Date: 09/08/20 08:21
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0232	U	0.0463	0.0139	ug/L	1		09/11/20 00:30
2-Methylnaphthalene	0.0232	U	0.0463	0.0139	ug/L	1		09/11/20 00:30
Acenaphthene	0.0232	U	0.0463	0.0139	ug/L	1		09/11/20 00:30
Acenaphthylene	0.0232	U	0.0463	0.0139	ug/L	1		09/11/20 00:30
Anthracene	0.0232	U	0.0463	0.0139	ug/L	1		09/11/20 00:30
Benzo(a)Anthracene	0.0232	U	0.0463	0.0139	ug/L	1		09/11/20 00:30
Benzo[a]pyrene	0.00925	U	0.0185	0.00574	ug/L	1		09/11/20 00:30
Benzo[b]Fluoranthene	0.0232	U	0.0463	0.0139	ug/L	1		09/11/20 00:30
Benzo[g,h,i]perylene	0.0232	U	0.0463	0.0139	ug/L	1		09/11/20 00:30
Benzo[k]fluoranthene	0.0232	U	0.0463	0.0139	ug/L	1		09/11/20 00:30
Chrysene	0.0232	U	0.0463	0.0139	ug/L	1		09/11/20 00:30
Dibenzo[a,h]anthracene	0.00925	U	0.0185	0.00574	ug/L	1		09/11/20 00:30
Fluoranthene	0.0232	U	0.0463	0.0139	ug/L	1		09/11/20 00:30
Fluorene	0.0232	U	0.0463	0.0139	ug/L	1		09/11/20 00:30
Indeno[1,2,3-c,d] pyrene	0.0232	U	0.0463	0.0139	ug/L	1		09/11/20 00:30
Naphthalene	0.0463	U	0.0926	0.0287	ug/L	1		09/11/20 00:30
Phenanthrene	0.0232	U	0.0463	0.0139	ug/L	1		09/11/20 00:30
Pyrene	0.0232	U	0.0463	0.0139	ug/L	1		09/11/20 00:30
Surrogates								
2-Methylnaphthalene-d10 (surr)	62.6		37-78		%	1		09/11/20 00:30
Fluoranthene-d10 (surr)	71.3		24-116		%	1		09/11/20 00:30

Batch Information

Analytical Batch: XMS12258
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 09/11/20 00:30
Container ID: 1204821004-C

Prep Batch: XXX43817
Prep Method: SW3535A
Prep Date/Time: 09/08/20 17:00
Prep Initial Wt./Vol.: 270 mL
Prep Extract Vol: 1 mL

Print Date: 09/16/2020 4:45:39PM

J flagging is activated

Results of **EB-11-15**

Client Sample ID: **EB-11-15**
Client Project ID: **102599-012 Gustavus MWS**
Lab Sample ID: 1204821004
Lab Project ID: 1204821

Collection Date: 09/02/20 12:40
Received Date: 09/08/20 08:21
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.313	U	0.625	0.188	mg/L	1		09/15/20 23:43
Surrogates								
5a Androstane (surr)	97		50-150		%	1		09/15/20 23:43

Batch Information

Analytical Batch: XFC15741
Analytical Method: AK102
Analyst: CDM
Analytical Date/Time: 09/15/20 23:43
Container ID: 1204821004-A

Prep Batch: XXX43852
Prep Method: SW3520C
Prep Date/Time: 09/14/20 16:11
Prep Initial Wt./Vol.: 240 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.319	J	0.521	0.156	mg/L	1		09/15/20 23:43
Surrogates								
n-Triacontane-d62 (surr)	103		50-150		%	1		09/15/20 23:43

Batch Information

Analytical Batch: XFC15741
Analytical Method: AK103
Analyst: CDM
Analytical Date/Time: 09/15/20 23:43
Container ID: 1204821004-A

Prep Batch: XXX43852
Prep Method: SW3520C
Prep Date/Time: 09/14/20 16:11
Prep Initial Wt./Vol.: 240 mL
Prep Extract Vol: 1 mL

Results of **EB-11-15**

Client Sample ID: **EB-11-15**
Client Project ID: **102599-012 Gustavus MWS**
Lab Sample ID: 1204821004
Lab Project ID: 1204821

Collection Date: 09/02/20 12:40
Received Date: 09/08/20 08:21
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0500	U	0.100	0.0310	mg/L	1		09/11/20 19:25
Surrogates								
4-Bromofluorobenzene (surr)	95.5		50-150		%	1		09/11/20 19:25

Batch Information

Analytical Batch: VFC15340
Analytical Method: AK101
Analyst: ALJ
Analytical Date/Time: 09/11/20 19:25
Container ID: 1204821004-H

Prep Batch: VXX36331
Prep Method: SW5030B
Prep Date/Time: 09/11/20 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 09/16/2020 4:45:39PM

J flagging is activated

Results of **EB-11-15**

Client Sample ID: **EB-11-15**
Client Project ID: **102599-012 Gustavus MWS**
Lab Sample ID: 1204821004
Lab Project ID: 1204821

Collection Date: 09/02/20 12:40
Received Date: 09/08/20 08:21
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		09/08/20 22:18
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:18
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		09/08/20 22:18
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		09/08/20 22:18
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:18
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:18
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:18
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:18
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:18
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:18
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:18
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		09/08/20 22:18
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		09/08/20 22:18
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:18
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		09/08/20 22:18
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:18
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:18
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:18
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		09/08/20 22:18
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		09/08/20 22:18
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:18
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		09/08/20 22:18
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:18
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		09/08/20 22:18
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:18
4-Isopropyltoluene	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:18
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		09/08/20 22:18
Benzene	0.200	U	0.400	0.120	ug/L	1		09/08/20 22:18
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:18
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:18
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		09/08/20 22:18
Bromoform	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:18
Bromomethane	2.50	U	5.00	2.00	ug/L	1		09/08/20 22:18
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		09/08/20 22:18
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:18
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		09/08/20 22:18
Chloroethane	0.500	U	1.00	0.310	ug/L	1		09/08/20 22:18

Print Date: 09/16/2020 4:45:39PM

J flagging is activated

Results of **EB-11-15**

Client Sample ID: **EB-11-15**
Client Project ID: **102599-012 Gustavus MWS**
Lab Sample ID: 1204821004
Lab Project ID: 1204821

Collection Date: 09/02/20 12:40
Received Date: 09/08/20 08:21
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:18
Chloromethane	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:18
cis-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:18
cis-1,3-Dichloropropene	0.250 U		0.500	0.150	ug/L	1		09/08/20 22:18
Dibromochloromethane	0.250 U		0.500	0.150	ug/L	1		09/08/20 22:18
Dibromomethane	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:18
Dichlorodifluoromethane	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:18
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:18
Freon-113	5.00 U		10.0	3.10	ug/L	1		09/08/20 22:18
Hexachlorobutadiene	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:18
Isopropylbenzene (Cumene)	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:18
Methylene chloride	5.00 U		10.0	3.10	ug/L	1		09/08/20 22:18
Methyl-t-butyl ether	5.00 U		10.0	3.10	ug/L	1		09/08/20 22:18
Naphthalene	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:18
n-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:18
n-Propylbenzene	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:18
o-Xylene	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:18
P & M -Xylene	1.00 U		2.00	0.620	ug/L	1		09/08/20 22:18
sec-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:18
Styrene	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:18
tert-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:18
Tetrachloroethene	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:18
Toluene	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:18
trans-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:18
trans-1,3-Dichloropropene	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:18
Trichloroethene	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:18
Trichlorofluoromethane	0.500 U		1.00	0.310	ug/L	1		09/08/20 22:18
Vinyl acetate	5.00 U		10.0	3.10	ug/L	1		09/08/20 22:18
Vinyl chloride	0.0750 U		0.150	0.0500	ug/L	1		09/08/20 22:18
Xylenes (total)	1.50 U		3.00	1.00	ug/L	1		09/08/20 22:18
Surrogates								
1,2-Dichloroethane-D4 (surr)	102		81-118		%	1		09/08/20 22:18
4-Bromofluorobenzene (surr)	101		85-114		%	1		09/08/20 22:18
Toluene-d8 (surr)	101		89-112		%	1		09/08/20 22:18

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Results of **EB-11-15**

Client Sample ID: **EB-11-15**
Client Project ID: **102599-012 Gustavus MWS**
Lab Sample ID: 1204821004
Lab Project ID: 1204821

Collection Date: 09/02/20 12:40
Received Date: 09/08/20 08:21
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS20292
Analytical Method: SW8260D
Analyst: NRB
Analytical Date/Time: 09/08/20 22:18
Container ID: 1204821004-E

Prep Batch: VXX36303
Prep Method: SW5030B
Prep Date/Time: 09/08/20 18:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **102599-012 Gustavus MWS**
Lab Sample ID: 1204821005
Lab Project ID: 1204821

Collection Date: 09/02/20 11:54
Received Date: 09/08/20 08:21
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0500	U	0.100	0.0310	mg/L	1		09/11/20 15:31
Surrogates								
4-Bromofluorobenzene (surr)	92.3		50-150		%	1		09/11/20 15:31

Batch Information

Analytical Batch: VFC15340
Analytical Method: AK101
Analyst: ALJ
Analytical Date/Time: 09/11/20 15:31
Container ID: 1204821005-D

Prep Batch: VXX36331
Prep Method: SW5030B
Prep Date/Time: 09/11/20 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **102599-012 Gustavus MWS**
Lab Sample ID: 1204821005
Lab Project ID: 1204821

Collection Date: 09/02/20 11:54
Received Date: 09/08/20 08:21
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		09/08/20 20:50
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		09/08/20 20:50
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		09/08/20 20:50
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		09/08/20 20:50
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		09/08/20 20:50
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		09/08/20 20:50
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		09/08/20 20:50
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/08/20 20:50
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		09/08/20 20:50
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/08/20 20:50
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		09/08/20 20:50
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		09/08/20 20:50
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		09/08/20 20:50
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/08/20 20:50
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		09/08/20 20:50
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		09/08/20 20:50
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		09/08/20 20:50
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/08/20 20:50
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		09/08/20 20:50
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		09/08/20 20:50
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		09/08/20 20:50
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		09/08/20 20:50
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		09/08/20 20:50
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		09/08/20 20:50
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		09/08/20 20:50
4-Isopropyltoluene	0.500	U	1.00	0.310	ug/L	1		09/08/20 20:50
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		09/08/20 20:50
Benzene	0.200	U	0.400	0.120	ug/L	1		09/08/20 20:50
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		09/08/20 20:50
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		09/08/20 20:50
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		09/08/20 20:50
Bromoform	0.500	U	1.00	0.310	ug/L	1		09/08/20 20:50
Bromomethane	2.50	U	5.00	2.00	ug/L	1		09/08/20 20:50
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		09/08/20 20:50
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		09/08/20 20:50
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		09/08/20 20:50
Chloroethane	0.500	U	1.00	0.310	ug/L	1		09/08/20 20:50

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J flagging is activated

Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **102599-012 Gustavus MWS**
Lab Sample ID: 1204821005
Lab Project ID: 1204821

Collection Date: 09/02/20 11:54
Received Date: 09/08/20 08:21
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500 U		1.00	0.310	ug/L	1		09/08/20 20:50
Chloromethane	0.500 U		1.00	0.310	ug/L	1		09/08/20 20:50
cis-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		09/08/20 20:50
cis-1,3-Dichloropropene	0.250 U		0.500	0.150	ug/L	1		09/08/20 20:50
Dibromochloromethane	0.250 U		0.500	0.150	ug/L	1		09/08/20 20:50
Dibromomethane	0.500 U		1.00	0.310	ug/L	1		09/08/20 20:50
Dichlorodifluoromethane	0.500 U		1.00	0.310	ug/L	1		09/08/20 20:50
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		09/08/20 20:50
Freon-113	5.00 U		10.0	3.10	ug/L	1		09/08/20 20:50
Hexachlorobutadiene	0.500 U		1.00	0.310	ug/L	1		09/08/20 20:50
Isopropylbenzene (Cumene)	0.500 U		1.00	0.310	ug/L	1		09/08/20 20:50
Methylene chloride	5.00 U		10.0	3.10	ug/L	1		09/08/20 20:50
Methyl-t-butyl ether	5.00 U		10.0	3.10	ug/L	1		09/08/20 20:50
Naphthalene	0.500 U		1.00	0.310	ug/L	1		09/08/20 20:50
n-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/08/20 20:50
n-Propylbenzene	0.500 U		1.00	0.310	ug/L	1		09/08/20 20:50
o-Xylene	0.500 U		1.00	0.310	ug/L	1		09/08/20 20:50
P & M -Xylene	1.00 U		2.00	0.620	ug/L	1		09/08/20 20:50
sec-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/08/20 20:50
Styrene	0.500 U		1.00	0.310	ug/L	1		09/08/20 20:50
tert-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/08/20 20:50
Tetrachloroethene	0.500 U		1.00	0.310	ug/L	1		09/08/20 20:50
Toluene	0.500 U		1.00	0.310	ug/L	1		09/08/20 20:50
trans-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		09/08/20 20:50
trans-1,3-Dichloropropene	0.500 U		1.00	0.310	ug/L	1		09/08/20 20:50
Trichloroethene	0.500 U		1.00	0.310	ug/L	1		09/08/20 20:50
Trichlorofluoromethane	0.500 U		1.00	0.310	ug/L	1		09/08/20 20:50
Vinyl acetate	5.00 U		10.0	3.10	ug/L	1		09/08/20 20:50
Vinyl chloride	0.0750 U		0.150	0.0500	ug/L	1		09/08/20 20:50
Xylenes (total)	1.50 U		3.00	1.00	ug/L	1		09/08/20 20:50
Surrogates								
1,2-Dichloroethane-D4 (surr)	102		81-118		%	1		09/08/20 20:50
4-Bromofluorobenzene (surr)	101		85-114		%	1		09/08/20 20:50
Toluene-d8 (surr)	99.7		89-112		%	1		09/08/20 20:50

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Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **102599-012 Gustavus MWS**
Lab Sample ID: 1204821005
Lab Project ID: 1204821

Collection Date: 09/02/20 11:54
Received Date: 09/08/20 08:21
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS20292
Analytical Method: SW8260D
Analyst: NRB
Analytical Date/Time: 09/08/20 20:50
Container ID: 1204821005-A

Prep Batch: VXX36303
Prep Method: SW5030B
Prep Date/Time: 09/08/20 18:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Method Blank

Blank ID: MB for HBN 1811438 [VXX/36303]
Blank Lab ID: 1580035

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1204821001, 1204821002, 1204821003, 1204821004, 1204821005

Results by **SW8260D**

Parameter	Results	LOQ/CL	DL	Units
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

Method Blank

Blank ID: MB for HBN 1811438 [VXX/36303]
Blank Lab ID: 1580035

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1204821001, 1204821002, 1204821003, 1204821004, 1204821005

Results by **SW8260D**

Parameter	Results	LOQ/CL	DL	Units
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)	102	81-118		%
4-Bromofluorobenzene (surr)	102	85-114		%
Toluene-d8 (surr)	99.9	89-112		%

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Method Blank

Blank ID: MB for HBN 1811438 [VXX/36303]
Blank Lab ID: 1580035

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1204821001, 1204821002, 1204821003, 1204821004, 1204821005

Results by **SW8260D**

Parameter	Results	LOQ/CL	DL	Units

Batch Information

Analytical Batch: VMS20292
Analytical Method: SW8260D
Instrument: Agilent 7890-75MS
Analyst: NRB
Analytical Date/Time: 9/8/2020 6:08:00PM

Prep Batch: VXX36303
Prep Method: SW5030B
Prep Date/Time: 9/8/2020 6:00:00PM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1204821 [VXX36303]
Blank Spike Lab ID: 1580036
Date Analyzed: 09/08/2020 18:23

Spike Duplicate ID: LCSD for HBN 1204821 [VXX36303]
Spike Duplicate Lab ID: 1580037
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1204821001, 1204821002, 1204821003, 1204821004, 1204821005

Results by **SW8260D**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,1,1,2-Tetrachloroethane	30	29.5	98	30	29.3	98	(78-124)	0.65	(< 20)
1,1,1-Trichloroethane	30	29.2	97	30	30.3	101	(74-131)	3.80	(< 20)
1,1,2,2-Tetrachloroethane	30	31.8	106	30	32.2	107	(71-121)	1.30	(< 20)
1,1,2-Trichloroethane	30	30.5	102	30	30.5	102	(80-119)	0.00	(< 20)
1,1-Dichloroethane	30	31.9	106	30	33.1	110	(77-125)	3.90	(< 20)
1,1-Dichloroethene	30	35.0	117	30	35.6	119	(71-131)	1.70	(< 20)
1,1-Dichloropropene	30	30.5	102	30	31.4	105	(79-125)	2.80	(< 20)
1,2,3-Trichlorobenzene	30	29.0	97	30	32.0	107	(69-129)	9.80	(< 20)
1,2,3-Trichloropropane	30	29.8	99	30	30.5	102	(73-122)	2.30	(< 20)
1,2,4-Trichlorobenzene	30	28.8	96	30	31.2	104	(69-130)	7.80	(< 20)
1,2,4-Trimethylbenzene	30	31.1	104	30	31.6	105	(79-124)	1.50	(< 20)
1,2-Dibromo-3-chloropropane	30	29.8	99	30	30.9	103	(62-128)	3.80	(< 20)
1,2-Dibromoethane	30	30.0	100	30	30.1	100	(77-121)	0.47	(< 20)
1,2-Dichlorobenzene	30	29.6	99	30	30.3	101	(80-119)	2.30	(< 20)
1,2-Dichloroethane	30	29.1	97	30	30.4	101	(73-128)	4.50	(< 20)
1,2-Dichloropropane	30	32.5	108	30	33.5	112	(78-122)	3.00	(< 20)
1,3,5-Trimethylbenzene	30	30.3	101	30	30.9	103	(75-124)	1.90	(< 20)
1,3-Dichlorobenzene	30	30.5	102	30	30.5	102	(80-119)	0.09	(< 20)
1,3-Dichloropropane	30	30.8	103	30	30.9	103	(80-119)	0.55	(< 20)
1,4-Dichlorobenzene	30	29.9	100	30	30.3	101	(79-118)	1.10	(< 20)
2,2-Dichloropropane	30	31.6	105	30	32.6	109	(60-139)	2.90	(< 20)
2-Butanone (MEK)	90	99.0	110	90	106	118	(56-143)	7.20	(< 20)
2-Chlorotoluene	30	31.8	106	30	31.7	106	(79-122)	0.25	(< 20)
2-Hexanone	90	91.2	101	90	95.3	106	(57-139)	4.40	(< 20)
4-Chlorotoluene	30	31.4	105	30	31.4	105	(78-122)	0.26	(< 20)
4-Isopropyltoluene	30	31.0	103	30	31.7	106	(77-127)	2.30	(< 20)
4-Methyl-2-pentanone (MIBK)	90	91.6	102	90	99.0	110	(67-130)	7.80	(< 20)
Benzene	30	31.5	105	30	32.1	107	(79-120)	1.90	(< 20)
Bromobenzene	30	30.0	100	30	29.8	99	(80-120)	0.59	(< 20)
Bromochloromethane	30	29.2	97	30	30.7	102	(78-123)	5.20	(< 20)
Bromodichloromethane	30	30.9	103	30	32.1	107	(79-125)	3.90	(< 20)
Bromoform	30	28.8	96	30	29.4	98	(66-130)	2.10	(< 20)
Bromomethane	30	27.4	92	30	27.3	91	(53-141)	0.59	(< 20)
Carbon disulfide	45	46.6	103	45	46.7	104	(64-133)	0.31	(< 20)

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1204821 [VXX36303]
Blank Spike Lab ID: 1580036
Date Analyzed: 09/08/2020 18:23

Spike Duplicate ID: LCSD for HBN 1204821 [VXX36303]
Spike Duplicate Lab ID: 1580037
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1204821001, 1204821002, 1204821003, 1204821004, 1204821005

Results by **SW8260D**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Carbon tetrachloride	30	30.6	102	30	31.3	104	(72-136)	2.30	(< 20)
Chlorobenzene	30	29.2	98	30	29.3	98	(82-118)	0.20	(< 20)
Chloroethane	30	30.6	102	30	27.2	91	(60-138)	11.60	(< 20)
Chloroform	30	28.8	96	30	30.0	100	(79-124)	3.80	(< 20)
Chloromethane	30	28.1	94	30	28.5	95	(50-139)	1.50	(< 20)
cis-1,2-Dichloroethene	30	31.2	104	30	32.6	109	(78-123)	4.20	(< 20)
cis-1,3-Dichloropropene	30	31.4	105	30	32.4	108	(75-124)	3.20	(< 20)
Dibromochloromethane	30	29.8	100	30	30.1	100	(74-126)	0.75	(< 20)
Dibromomethane	30	30.8	103	30	32.2	107	(79-123)	4.70	(< 20)
Dichlorodifluoromethane	30	26.7	89	30	26.9	90	(32-152)	0.54	(< 20)
Ethylbenzene	30	32.2	107	30	32.3	108	(79-121)	0.20	(< 20)
Freon-113	45	45.7	102	45	46.5	103	(70-136)	1.80	(< 20)
Hexachlorobutadiene	30	32.0	107	30	33.3	111	(66-134)	4.00	(< 20)
Isopropylbenzene (Cumene)	30	32.3	108	30	32.5	108	(72-131)	0.53	(< 20)
Methylene chloride	30	32.4	108	30	34.3	114	(74-124)	5.50	(< 20)
Methyl-t-butyl ether	45	45.9	102	45	48.5	108	(71-124)	5.60	(< 20)
Naphthalene	30	27.5	92	30	29.8	99	(61-128)	7.90	(< 20)
n-Butylbenzene	30	34.3	114	30	35.3	118	(75-128)	3.10	(< 20)
n-Propylbenzene	30	33.3	111	30	33.4	111	(76-126)	0.27	(< 20)
o-Xylene	30	33.1	110	30	33.6	112	(78-122)	1.60	(< 20)
P & M -Xylene	60	67.1	112	60	67.1	112	(80-121)	0.03	(< 20)
sec-Butylbenzene	30	32.6	109	30	33.6	112	(77-126)	3.00	(< 20)
Styrene	30	31.4	105	30	31.9	106	(78-123)	1.30	(< 20)
tert-Butylbenzene	30	31.4	105	30	31.5	105	(78-124)	0.42	(< 20)
Tetrachloroethene	30	29.6	99	30	29.4	98	(74-129)	0.73	(< 20)
Toluene	30	29.7	99	30	29.6	99	(80-121)	0.61	(< 20)
trans-1,2-Dichloroethene	30	32.1	107	30	33.2	111	(75-124)	3.40	(< 20)
trans-1,3-Dichloropropene	30	31.5	105	30	31.6	105	(73-127)	0.22	(< 20)
Trichloroethene	30	30.9	103	30	31.4	105	(79-123)	1.60	(< 20)
Trichlorofluoromethane	30	29.4	98	30	29.4	98	(65-141)	0.02	(< 20)
Vinyl acetate	30	33.4	111	30	35.8	119	(54-146)	7.00	(< 20)
Vinyl chloride	30	28.3	95	30	28.6	95	(58-137)	0.73	(< 20)
Xylenes (total)	90	100	111	90	101	112	(79-121)	0.52	(< 20)

Blank Spike Summary

Blank Spike ID: LCS for HBN 1204821 [VXX36303]
Blank Spike Lab ID: 1580036
Date Analyzed: 09/08/2020 18:23

Spike Duplicate ID: LCSD for HBN 1204821 [VXX36303]
Spike Duplicate Lab ID: 1580037
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1204821001, 1204821002, 1204821003, 1204821004, 1204821005

Results by **SW8260D**

	Blank Spike (%)			Spike Duplicate (%)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Surrogates									
1,2-Dichloroethane-D4 (surr)	30	96.9	97	30	100	100	(81-118)	3.60	
4-Bromofluorobenzene (surr)	30	101	101	30	99.1	99	(85-114)	2.20	
Toluene-d8 (surr)	30	98.4	98	30	98.3	98	(89-112)	0.15	

Batch Information

Analytical Batch: **VMS20292**
Analytical Method: **SW8260D**
Instrument: **Agilent 7890-75MS**
Analyst: **NRB**

Prep Batch: **VXX36303**
Prep Method: **SW5030B**
Prep Date/Time: **09/08/2020 18:00**
Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

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Method Blank

Blank ID: MB for HBN 1811626 [VXX/36331]
Blank Lab ID: 1580882

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1204821001, 1204821002, 1204821003, 1204821004, 1204821005

Results by **AK101**

Parameter	Results	LOQ/CL	DL	Units
Gasoline Range Organics	0.0500U	0.100	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene (surr)	98.2	50-150		%

Batch Information

Analytical Batch: VFC15340
Analytical Method: AK101
Instrument: Agilent 7890 PID/FID
Analyst: ALJ
Analytical Date/Time: 9/11/2020 11:24:00AM

Prep Batch: VXX36331
Prep Method: SW5030B
Prep Date/Time: 9/11/2020 12:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1204821 [VXX36331]
Blank Spike Lab ID: 1580885
Date Analyzed: 09/11/2020 12:18

Spike Duplicate ID: LCSD for HBN 1204821 [VXX36331]
Spike Duplicate Lab ID: 1580886
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1204821001, 1204821002, 1204821003, 1204821004, 1204821005

Results by **AK101**

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Gasoline Range Organics	1.00	1.01	101	1.00	0.977	98	(60-120)	3.60	(< 20)
Surrogates									
4-Bromofluorobenzene (surr)	0.0500	103	103	0.0500	101	101	(50-150)	1.40	

Batch Information

Analytical Batch: **VFC15340**
Analytical Method: **AK101**
Instrument: **Agilent 7890 PID/FID**
Analyst: **ALJ**

Prep Batch: **VXX36331**
Prep Method: **SW5030B**
Prep Date/Time: **09/11/2020 00:00**
Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL

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Method Blank

Blank ID: MB for HBN 1811390 [XXX/43817]
Blank Lab ID: 1579793

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1204821001, 1204821002, 1204821003, 1204821004

Results by **8270D SIM LV (PAH)**

Parameter	Results	LOQ/CL	DL	Units
1-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
2-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
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)	50.7	37-78		%
Fluoranthene-d10 (surr)	72.8	24-116		%

Batch Information

Analytical Batch: XMS12258
Analytical Method: 8270D SIM LV (PAH)
Instrument: Agilent GC 7890B/5977A SWA
Analyst: DSD
Analytical Date/Time: 9/10/2020 10:26:00PM

Prep Batch: XXX43817
Prep Method: SW3535A
Prep Date/Time: 9/8/2020 5:00:54PM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 09/16/2020 4:45:52PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1204821 [XXX43817]
Blank Spike Lab ID: 1579794
Date Analyzed: 09/10/2020 22:47

Spike Duplicate ID: LCSD for HBN 1204821 [XXX43817]
Spike Duplicate Lab ID: 1579795
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1204821001, 1204821002, 1204821003, 1204821004

Results by **8270D SIM LV (PAH)**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1-Methylnaphthalene	2	1.22	61	2	1.28	64	(41-115)	4.60	(< 20)
2-Methylnaphthalene	2	1.23	62	2	1.28	64	(39-114)	4.20	(< 20)
Acenaphthene	2	1.39	70	2	1.39	70	(48-114)	0.02	(< 20)
Acenaphthylene	2	1.49	75	2	1.49	75	(35-121)	0.04	(< 20)
Anthracene	2	1.53	76	2	1.49	74	(53-119)	2.70	(< 20)
Benzo(a)Anthracene	2	1.44	72	2	1.35	67	(59-120)	6.40	(< 20)
Benzo[a]pyrene	2	1.89	94	2	1.76	88	(53-120)	7.10	(< 20)
Benzo[b]Fluoranthene	2	1.72	86	2	1.62	81	(53-126)	6.30	(< 20)
Benzo[g,h,i]perylene	2	1.77	88	2	1.54	77	(44-128)	13.40	(< 20)
Benzo[k]fluoranthene	2	1.75	88	2	1.63	82	(54-125)	7.40	(< 20)
Chrysene	2	1.71	85	2	1.61	81	(57-120)	5.60	(< 20)
Dibenzo[a,h]anthracene	2	1.86	93	2	1.62	81	(44-131)	14.10	(< 20)
Fluoranthene	2	1.60	80	2	1.46	73	(58-120)	8.90	(< 20)
Fluorene	2	1.48	74	2	1.45	72	(50-118)	2.30	(< 20)
Indeno[1,2,3-c,d] pyrene	2	1.96	98	2	1.73	87	(48-130)	12.50	(< 20)
Naphthalene	2	1.18	59	2	1.31	65	(43-114)	9.70	(< 20)
Phenanthrene	2	1.51	76	2	1.50	75	(53-115)	1.00	(< 20)
Pyrene	2	1.61	81	2	1.45	73	(53-121)	10.50	(< 20)
Surrogates									
2-Methylnaphthalene-d10 (surr)	2	59.6	60	2	62.1	62	(37-78)	4.10	
Fluoranthene-d10 (surr)	2	81	81	2	74.9	75	(24-116)	7.80	

Batch Information

Analytical Batch: **XMS12258**
Analytical Method: **8270D SIM LV (PAH)**
Instrument: **Agilent GC 7890B/5977A SWA**
Analyst: **DSD**

Prep Batch: **XXX43817**
Prep Method: **SW3535A**
Prep Date/Time: **09/08/2020 17:00**
Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

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Method Blank

Blank ID: MB for HBN 1811635 [XXX/43852]
Blank Lab ID: 1580965

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1204821001, 1204821002, 1204821003, 1204821004

Results by **AK102**

Parameter	Results	LOQ/CL	DL	Units
Diesel Range Organics	0.300U	0.600	0.180	mg/L
Surrogates				
5a Androstane (surr)	94.3	60-120		%

Batch Information

Analytical Batch: XFC15741
Analytical Method: AK102
Instrument: Agilent 7890B F
Analyst: CDM
Analytical Date/Time: 9/15/2020 8:18:00PM

Prep Batch: XXX43852
Prep Method: SW3520C
Prep Date/Time: 9/14/2020 4:11:56PM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1204821 [XXX43852]
Blank Spike Lab ID: 1580966
Date Analyzed: 09/15/2020 20:27

Spike Duplicate ID: LCSD for HBN 1204821 [XXX43852]
Spike Duplicate Lab ID: 1580967
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1204821001, 1204821002, 1204821003, 1204821004

Results by **AK102**

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Diesel Range Organics	20	21.7	109	20	20.5	103	(75-125)	5.60	(< 20)
Surrogates									
5a Androstane (surr)	0.4	112	112	0.4	108	108	(60-120)	3.60	

Batch Information

Analytical Batch: **XFC15741**
Analytical Method: **AK102**
Instrument: **Agilent 7890B F**
Analyst: **CDM**

Prep Batch: **XXX43852**
Prep Method: **SW3520C**
Prep Date/Time: **09/14/2020 16:11**
Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

Print Date: 09/16/2020 4:46:00PM

Method Blank

Blank ID: MB for HBN 1811635 [XXX/43852]
Blank Lab ID: 1580965

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1204821001, 1204821002, 1204821003, 1204821004

Results by **AK103**

Parameter	Results	LOQ/CL	DL	Units
Residual Range Organics	0.250U	0.500	0.150	mg/L
Surrogates				
n-Triacontane-d62 (surr)	102	60-120		%

Batch Information

Analytical Batch: XFC15741
Analytical Method: AK103
Instrument: Agilent 7890B F
Analyst: CDM
Analytical Date/Time: 9/15/2020 8:18:00PM

Prep Batch: XXX43852
Prep Method: SW3520C
Prep Date/Time: 9/14/2020 4:11:56PM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1204821 [XXX43852]
Blank Spike Lab ID: 1580966
Date Analyzed: 09/15/2020 20:27

Spike Duplicate ID: LCSD for HBN 1204821 [XXX43852]
Spike Duplicate Lab ID: 1580967
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1204821001, 1204821002, 1204821003, 1204821004

Results by **AK103**

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Residual Range Organics	20	21.8	109	20	20.3	102	(60-120)	6.80	(< 20)
Surrogates									
n-Triacontane-d62 (surr)	0.4	108	108	0.4	113	113	(60-120)	4.90	

Batch Information

Analytical Batch: **XFC15741**
Analytical Method: **AK103**
Instrument: **Agilent 7890B F**
Analyst: **CDM**

Prep Batch: **XXX43852**
Prep Method: **SW3520C**
Prep Date/Time: **09/14/2020 16:11**
Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

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CHAIN-OF-CUSTODY

1204821

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GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600
www.shannonwilson.com

Laboratory SGS
Attn: Jen Dawkins
Alternative if used)

Turn Around Time:	Quote No:
☒ Normal ☐ Rush	J-Flags: ☒ Yes ☐ No
Please Specify	P# 3471289 10

Sample Identity	Lab No.	Time	Date Sampled	VOC	GRO	DRO/RRO	PAH	Analysis	Analysis	Analysis	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
MW-11-15	1AJ	12:04	9/2/20	X	X	X	X				10	groundwater
MW-11-115	2AJ	11:54	9/2/20	X	X	X	X				10	↓
MW-12-10	3AJ	14:09	9/2/20	X	X	X	X				10	
EB-11-15	4AJ	12:40	9/2/20	X	X	X	X				10	
	5AJ											

Project Information	
Number:	102599-012
Name:	Gustavus MWs
Contact:	KRF
Ongoing Project?	Yes ☒ No ☐
Sampler:	VTY / ALF

Sample Receipt	
Total No. of Containers:	40
COC Seals/Intact? Y/N/NA	
Received Good Cond./Cold	
Temp:	
Delivery Method:	

Reliquished By: 1.	Reliquished By: 2.	Reliquished By: 3.
Signature: Andrew Frick Time: 9:43	Signature: Time:	Signature: Time:
Printed Name: Andrew Frick Date: 9-3-20	Printed Name: Date:	Printed Name: Date:
Company: S&W	Company:	Company:
Received By: 1.	**Received By: 2.**	**Received By: 3.**
Signature: Time:	Signature: Time:	Signature: Time: 0821
Printed Name: Date:	Printed Name: Date:	Printed Name: Michelle Albarran Date: 9/8/20
Company:	Company:	Company: SGS DJ 4.6 DSG IF

Notes:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

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No. 411496

Fridge

027 JNU 2357 2695

027-2357 2695

Shipper's Name and Address Shannon and Wilson Inc 2355 Hill Rd Fairbanks, AK 99712 USA Tel: 907-479-0600	**Shipper's Account Number** 27400200733 **Customer's ID Number** 10926
Not Negotiable **Air Waybill** Issued By Alaska AIR CARGO P.O. BOX 68900 SEATTLE, WA 98168 800-225-2752 ALASKACARGO.COM	
Consignee's Name and Address SGS North America Hfpu Anchorage, AK X USA Tel: 907 562 2343	**Consignee's Account Number**
Also notify Tel:	
Issuing Carrier's Agent and City	**Accounting Information** 10926 Shannon and Wilson Inc 2355 Hill Rd Fairbanks, AK 99712 USA
Agent's IATA Code / **Account No.**	
Airport of Departure (Addr. of First Carrier) and Requested Routing Juneau	GoldStreak

To	By First Carrier	To / By	To / By	Currency		WT/VAL		Other		Declared Value For Carriage	Declared Value For Customs
ANC	Alaska Airlines			USD	PX	X		X		NVD	NCV

Airport of Destination	Flight/Date	Flight/Date	Amount of Insurance
Anchorage	AS 073/05		XXX

Handling Information
NOA 907 562 2343
DIMS 14X16X28

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)
2	108.0	L	Q		108.0		AS AGREED	WATER SAMPLES Dims: 13 x 24 x16 x 2 GSX
2	108.0						AS AGREED	Volume: 5.778

Prepaid	Weight Charge	Collect	Other Charges
	AS AGREED		XBC 10.00
Valuation Charge			
Tax			
Total Other Charges Due Agent			
Total Other Charges Due Carrier			
Total Prepaid	Total Collect		
AS AGREED			

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.**

For: Shannon and Wilson Inc

Signature of Shipper or his Agent

KS THIS SHIPMENT DOES NOT CONTAIN DANGEROUS GOODS

☐ THIS SHIPMENT DOES CONTAIN DANGEROUS GOODS

Executed On (Date)	at (Place)	Signature of Issuing Carrier or its Agent
04 Sep 2020 11:41	Juneau	Alaska Airlines

Alert Expeditors Inc. **#406011**

Citywide Delivery • 440-3351
8421 Flamingo Drive • Anchorage, Alaska 99502

Date 9-8-20
From Shannon-Wilson

To SGS Labs Anc

Collect ❐	Prepay ❐	Advance Charges ❐
Job # SNW	PO# A52357-2675	

Samples
2 at 105 LBS

Shipped Signature [signature]

Total Charge

Received By:

e-Sample Receipt Form

SGS Workorder #: 1204821

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
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 @ 4.6 °C Therm. ID: D59
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?	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	Samples 4D, 3B, and 3D were received with a cracked lid. Proceeded by changing lids.
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

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition
1204821001-A	HCL to pH < 2	OK			
1204821001-B	HCL to pH < 2	OK			
1204821001-C	No Preservative Required	OK			
1204821001-D	No Preservative Required	OK			
1204821001-E	HCL to pH < 2	OK			
1204821001-F	HCL to pH < 2	OK			
1204821001-G	HCL to pH < 2	OK			
1204821001-H	HCL to pH < 2	OK			
1204821001-I	HCL to pH < 2	OK			
1204821001-J	HCL to pH < 2	OK			
1204821002-A	HCL to pH < 2	OK			
1204821002-B	HCL to pH < 2	OK			
1204821002-C	No Preservative Required	OK			
1204821002-D	No Preservative Required	OK			
1204821002-E	HCL to pH < 2	OK			
1204821002-F	HCL to pH < 2	OK			
1204821002-G	HCL to pH < 2	OK			
1204821002-H	HCL to pH < 2	OK			
1204821002-I	HCL to pH < 2	OK			
1204821002-J	HCL to pH < 2	OK			
1204821003-A	HCL to pH < 2	OK			
1204821003-B	HCL to pH < 2	OK			
1204821003-C	No Preservative Required	OK			
1204821003-D	No Preservative Required	OK			
1204821003-E	HCL to pH < 2	OK			
1204821003-F	HCL to pH < 2	OK			
1204821003-G	HCL to pH < 2	OK			
1204821003-H	HCL to pH < 2	OK			
1204821003-I	HCL to pH < 2	OK			
1204821003-J	HCL to pH < 2	OK			
1204821004-A	HCL to pH < 2	OK			
1204821004-B	HCL to pH < 2	OK			
1204821004-C	No Preservative Required	OK			
1204821004-D	No Preservative Required	OK			
1204821004-E	HCL to pH < 2	OK			
1204821004-F	HCL to pH < 2	OK			
1204821004-G	HCL to pH < 2	OK			
1204821004-H	HCL to pH < 2	OK			
1204821004-I	HCL to pH < 2	OK			
1204821004-J	HCL to pH < 2	OK			
1204821005-A	HCL to pH < 2	OK			
1204821005-B	HCL to pH < 2	OK			
1204821005-C	HCL to pH < 2	OK			
1204821005-D	HCL to pH < 2	OK			
1204821005-E	HCL to pH < 2	OK			
1204821005-F	HCL to pH < 2	OK			

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition

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:

Amber Masters

Title:

Environmental Scientist

Date:

September 24, 2020

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins / TestAmerica Laboratories, Inc. (TestAmerica)

Laboratory Report Number:

1204821

Laboratory Report Date:

September 16, 2020

CS Site Name:

DOT&PF Gustavus Airport Statewide PFAS

ADEC File Number:

2569.38.033

Hazard Identification Number:

26981

1204821

Laboratory Report Date:

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:

   The requested analyses were conducted by SGS, North America, Inc. in Anchorage, AK.

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 blanks were measured within the acceptable temperature range of 0° C to 6° C upon receipt at the laboratory.

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

   Yes☒ No☐ N/A☐ Comments:

   c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

   Yes☒ No☐ N/A☐ Comments:

   The sample receipt form notes that the lids on samples 4D, 3B, and 3D were cracked.

1204821

Laboratory Report Date:

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 3.c. above.

e. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected. The sample containers with cracked lids noted in 3.c. above were not used for analysis.

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 identify any QC failures, discrepancies, or errors.

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:

b. All applicable holding times met?

Yes☒ No☐ N/A☐ Comments:

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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 (RL) is less than the applicable DEC regulatory limits for the project, except for 1,2,3-trichloropropane. These results have been bolded on the associated data tables.

e. Data quality or usability affected?

The data quality and/or usability was 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:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes☒ No☐ N/A☐ Comments:

There were no method blank detections associated with this work order.

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes☐ No☐ N/A☒ Comments:

v. Data quality or usability affected?

Comments:

No; see above.

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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 were analyzed for VOC, PAH, GRO, 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:

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:

NA; 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:

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 was not affected; see above.

Laboratory Report Date:

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 performed for the requested analyses. However, the laboratory analyzed an LCS and LCSD to assess laboratory accuracy and precision.

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:

MS and MSD samples were not analyzed for this work order.

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:

MS and MSD samples were not analyzed for this work order.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

NA; MS and MSD samples were not analyzed for this work order.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes☐ No☐ N/A☒ Comments:

MS and MSD samples were not analyzed for this work order.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The 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 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 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:

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:

Only one cooler was used to transport the samples in this work order.

iii. All results less than LOQ and project specified objectives?

Yes☒ No☐ N/A☐ Comments:

There were no trip blank detections associated with this work order.

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above

v. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

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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 field duplicate pair *MW-11-15/MW-11-115* was submitted with this work order

iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water, 50% soil)

RPD (%) = 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 since the 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 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:

i. All results less than LOQ and project specified objectives?

Yes☒ No☐ N/A☐ Comments:

Results are less than the LOQ, however, RRO were detected in the equipment blank below the reporting limit.

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

RRO results in the following samples are considered not detected due to sample contamination identified in the equipment blank and have been flagged 'UB' at the LOQ in the analytical tables: *MW-11-15, MW-11-115,* and *MW-12-10.*

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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:

KRF

Laboratory Report of Analysis

To: Shannon & Wilson-Fairbanks
2355 Hill Rd.
Fairbanks, AK 99701
(907)479-0600

Report Number: **1204822**

Client Project: **101543-001 Gust. PFAS POE**

Dear Kristen Freiburger,

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.

_____

Jennifer Dawkins Date
Project Manager
Jennifer.Dawkins@sgs.com

SGS North America Inc. 200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Case Narrative

SGS Client: Shannon & Wilson-Fairbanks

SGS Project: 1204822

Project Name/Site: 101543-001 Gust. PFAS POE

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 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, indenmification 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.

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
PW-200	1204822001	08/31/2020	09/08/2020	Water (Surface, Eff., Ground)
PW-200-FPort Cancelled	1204822002	08/31/2020	09/08/2020	Water (Surface, Eff., Ground)
PW-200-Sink	1204822003	08/31/2020	09/08/2020	Water (Surface, Eff., Ground)

Method	Method Description
EP200.8	Metals in Water by 200.8 ICP-MS

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Detectable Results Summary

Client Sample ID: **PW-200**
Lab Sample ID: 1204822001
Metals by ICP/MS

Parameter	Result	Units
Arsenic	11.8	ug/L

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Results of **PW-200**

Client Sample ID: **PW-200**
Client Project ID: **101543-001 Gust. PFAS POE**
Lab Sample ID: 1204822001
Lab Project ID: 1204822

Collection Date: 08/31/20 11:06
Received Date: 09/08/20 08:21
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	11.8		5.00	1.50	ug/L	1		09/24/20 15:32

Batch Information

Analytical Batch: MMS10895
Analytical Method: EP200.8
Analyst: DMM
Analytical Date/Time: 09/24/20 15:32
Container ID: 1204822001-A

Prep Batch: MXX33622
Prep Method: E200.2
Prep Date/Time: 09/15/20 11:15
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 09/28/2020 2:17:45PM

J flagging is activated

Results of **PW-200-Sink**

Client Sample ID: **PW-200-Sink**
Client Project ID: **101543-001 Gust. PFAS POE**
Lab Sample ID: 1204822003
Lab Project ID: 1204822

Collection Date: 08/31/20 10:35
Received Date: 09/08/20 08:21
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	2.50	U	5.00	1.50	ug/L	1		09/18/20 17:33

Batch Information

Analytical Batch: MMS10887
Analytical Method: EP200.8
Analyst: DMM
Analytical Date/Time: 09/18/20 17:33
Container ID: 1204822003-A

Prep Batch: MXX33622
Prep Method: E200.2
Prep Date/Time: 09/15/20 11:15
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 09/28/2020 2:17:45PM

J flagging is activated

Method Blank

Blank ID: MB for HBN 1811706 [MXX/33622]
Blank Lab ID: 1581279

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1204822001, 1204822003

Results by **EP200.8**

Parameter	Results	LOQ/CL	DL	Units
Arsenic	2.50U	5.00	1.50	ug/L

Batch Information

Analytical Batch: MMS10887
Analytical Method: EP200.8
Instrument: Perkin Elmer NexIon P5
Analyst: DMM
Analytical Date/Time: 9/18/2020 5:18:09PM

Prep Batch: MXX33622
Prep Method: E200.2
Prep Date/Time: 9/15/2020 11:15:57AM
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Blank Spike Summary

Blank Spike ID: LCS for HBN 1204822 [MXX33622]
Blank Spike Lab ID: 1581280
Date Analyzed: 09/18/2020 17:21

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1204822001, 1204822003

Results by **EP200.8**

Blank Spike (ug/L)

Parameter	Spike	Result	Rec (%)	CL
Arsenic	1000	1030	103	(85-115)

Batch Information

Analytical Batch: **MMS10887**
Analytical Method: **EP200.8**
Instrument: **Perkin Elmer Nexlon P5**
Analyst: **DMM**

Prep Batch: **MXX33622**
Prep Method: **E200.2**
Prep Date/Time: **09/15/2020 11:15**
Spike Init Wt./Vol.: 1000 ug/L Extract Vol: 50 mL
Dupe Init Wt./Vol.: Extract Vol:

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Matrix Spike Summary

Original Sample ID: 1581282
MS Sample ID: 1581283 MS
MSD Sample ID:

Analysis Date: 09/18/2020 17:24
Analysis Date: 09/18/2020 17:27
Analysis Date:
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1204822001, 1204822003

Results by **EP200.8**

		Matrix Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Arsenic	5.96	1000	1030	103				70-130		

Batch Information

Analytical Batch: MMS10887
Analytical Method: EP200.8
Instrument: Perkin Elmer NexIon P5
Analyst: DMM
Analytical Date/Time: 9/18/2020 5:27:06PM

Prep Batch: MXX33622
Prep Method: DW Digest for Metals on ICP-MS
Prep Date/Time: 9/15/2020 11:15:57AM
Prep Initial Wt./Vol.: 20.00mL
Prep Extract Vol: 50.00mL

Print Date: 09/28/2020 2:18:20PM

Matrix Spike Summary

Original Sample ID: 1581284
MS Sample ID: 1581285 MS
MSD Sample ID:

Analysis Date: 09/18/2020 17:33
Analysis Date: 09/18/2020 17:36
Analysis Date:
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1204822001, 1204822003

Results by **EP200.8**

		Matrix Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Arsenic	2.50U	1000	1050	105				70-130		

Batch Information

Analytical Batch: MMS10887
Analytical Method: EP200.8
Instrument: Perkin Elmer NexIon P5
Analyst: DMM
Analytical Date/Time: 9/18/2020 5:36:04PM

Prep Batch: MXX33622
Prep Method: DW Digest for Metals on ICP-MS
Prep Date/Time: 9/15/2020 11:15:57AM
Prep Initial Wt./Vol.: 20.00mL
Prep Extract Vol: 50.00mL

Print Date: 09/28/2020 2:18:20PM

Dawkins, Jennifer A (Fairbanks)

From: Dawkins, Jennifer A (Fairbanks)
Sent: Monday, September 28, 2020 1:19 PM
To: Dawkins, Jennifer A (Fairbanks)
Subject: 1204822 Change Order

Please cancel PW-200-FPort, per client.

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

1204822

CHAIN-OF-CUSTODY

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600
www.shannonwilson.com

Page 1 of 1

Laboratory SGS
Attn: J. [redacted] Dawkins
Alternative if used)

Turn Around Time:	Quote No:
☒ Normal ☐ Rush	J-Flags: ☐ Yes ☐ No
Please Specify	#347128 x10

Sample Identity	Lab No.	Time	Date Sampled	Total Arsenic							Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
PW-200		1106	8/31/20	X	1A						2	groundwater
* PW-200-FPort *	Hold #	1043	8/31/20	X	2A						2	* Hold * 1
PW-200-Sink *		1035	8/31/20	X	3A						2	

Project Information	
Number:	101543-001
Name:	Gost. PFAS POE
Contact:	KRF
Ongoing Project?	Yes ☒ No ☐
Sampler:	ARM

Sample Receipt	
Total No. of Containers:	
COC Seals/Intact? Y/N/NA	
Received Good Cond./Cold	
Temp:	
Delivery Method:	

Notes:

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Time: 0930	Signature: Time:	Signature: Time:
Printed Name: A. Masters Date: 9/3/20	Printed Name: Date:	Printed Name: Date:
Company: Shannon + Wilson, Inc.	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time:	Signature: Time:	Signature: Time: 0821 MST
Printed Name: Date:	Printed Name: Date:	Printed Name: Michelle Allarcon Date: 9/8/20
Company:	Company:	Company: SGS 1) 4.6 DSY 1F

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

No. 411610

027 JNU 2357 2695 Fridge 027-2357 2695

Shipper's Name and Address Shannon and Wilson Inc 2355 Hill Rd Fairbanks, AK 99712 USA Tel: 907-479-0600	**Shipper's Account Number** 27400200733 **Customer's ID Number** 10926
Not Negotiable **Air Waybill** **Issued By** Alaska AIR CARGO P.O. BOX 68900 SEATTLE, WA 98168 800-225-2752 ALASKACARGO.COM	
Consignee's Name and Address SGS North America Hfpu Anchorage, AK X USA Tel: 907 562 2343	**Consignee's Account Number**
Also notify Tel:	
Issuing Carrier's Agent and City	**Accounting Information** 10926 Shannon and Wilson Inc 2355 Hill Rd Fairbanks, AK 99712 USA GoldStreak
Agent's IATA Code / **Account No.**	
Airport of Departure (Addr. of First Carrier) and Requested Routing Juneau	

To	By First Carrier	To / By	To / By	Currency		WT/VAL		Other		Declared Value For Carriage	Declared Value For Customs
ANC	Alaska Airlines			USD	PX	X		X		NVD	NCV

Airport of Destination	Flight/Date	Flight/Date	Amount of Insurance
Anchorage	AS 073/05		XXX

Handling Information
NOA 907 562 2343
DIMS 14X16X28

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)
2	108.0	L Q		108.0		AS AGREED	WATER SAMPLES Dims: 13 x 24 x16 x 2 GSX
2	108.0					AS AGREED	Volume: 5.778

Prepaid	Weight Charge	**Collect**
AS AGREED		
Valuation Charge		
Tax		
Total Other Charges Due Agent		
Total Other Charges Due Carrier		
Total Prepaid	Total Collect	
AS AGREED		

Other Charges
XBC 10.00

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.**

For: Shannon and Wilson Inc

Signature of Shipper or his Agent

KS THIS SHIPMENT DOES NOT CONTAIN DANGEROUS GOODS

☐ THIS SHIPMENT DOES CONTAIN DANGEROUS GOODS

Executed On (Date)	at (Place)	Signature of Issuing Carrier or its Agent
04 Sep 2020 11:41	Juneau	Alaska Airlines

027-2357 2695

Alert Expeditors Inc. **#406011**

Citywide Delivery • 440-3351
8421 Flamingo Drive • Anchorage, Alaska 99502

Date 9-8-23

From Shannon-Wilson

To SGS Labs Anc

Collect ☐ Prepay ☐ Advance Charges ☐

Job # SW 4 PO# A52357-RG95

Samples
3 at 10s LBS

Shipped Signature [signature]

Total Charge

Received By:

e-Sample Receipt Form

SGS Workorder #: 1204822

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
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 @ 4.6 °C Therm. ID: D59
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?	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	COC said there were two containers per sample. Only one container for each was received.
**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	
	Yes	***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?	N/A	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	N/A	
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

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition
1204822001-A	HNO3 to pH < 2	OK			
1204822002-A	HNO3 to pH < 2	OK			
1204822003-A	HNO3 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:

Veselina Yakimova

Title:

Geologist

Date:

10/05/2020

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

SGS

Laboratory Report Number:

1204822

Laboratory Report Date:

9/28/2020

CS Site Name:

DOT&PF Gustavus Airport Statewide PFAS

ADEC File Number:

2569.38.033

Hazard Identification Number:

26981

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, AK.

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:

   Chain of custody form indicates the temperature of the sample cooler was 4.6° C upon receipt.

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

   Yes☒ No☐ N/A☐ Comments:

   c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

   Yes☒ No☐ N/A☐ Comments:

   The sample receipt form notes 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:

   The sample receipt notes that the COC said there were two containers per sample. Only one container for each was received.

e. Data quality or usability affected?

Comments:

No effect on data quality/usability.

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 refers to the sample receipt form for information on sample condition.

c. Were all corrective actions documented?

Yes☐ No☐ N/A☒ Comments:

No corrective actions required. Arsenic requires only one container per sample.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The data quality/usability are unaffected.

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:

Reporting limits are below the EPA drinking water standard of 10 ppb.

e. Data quality or usability affected?

The data quality/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:

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

None; arsenic was 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:

Qualification of the data was not required.

v. Data quality or usability affected?

Comments:

The data quality/usability are 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:

Arsenic was the only analysis requested for this work order.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes☐ No☒ N/A☐ Comments:

An LCS was reported for arsenic analysis via EPA method 200.8. No sample duplicate was reported.

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:

An LCSD was not reported.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

None; 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☐ N/A☒ Comments:

No samples are affected. Qualification of the data is not required.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality/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:

Arsenic was the only analysis requested for this work order.

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes☒ No☐ N/A☐ Comments:

Two MS samples were reported for arsenic analysis via EPA method 200.8.

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:

An MSD was not reported.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

None; 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☐ N/A☒ Comments:

No samples are affected. Qualification of the data is not required.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality/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:

Arsenic was the only analysis requested for this work order.

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:

See above.

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/usability is 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:

Volatile analyses were not requested with this work order. A trip blank was 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:

A trip blank was not submitted with this work order.

iii. All results less than LOQ and project specified objectives?

Yes☐ No☐ N/A☒ Comments:

Trip blanks are not required for this project.

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

None; volatile analyses were not requested.

v. Data quality or usability affected?

Comments:

The data quality/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:

A field duplicate pair was not submitted as a part of the work order; however, the appropriate number of field duplicate pairs were submitted 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:

No effect on data quality or usability.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes☐ No☐ N/A☒ Comments:

Project samples are not collected with reusable equipment, so the prospect of foreign contaminants being introduced through equipment contamination is not plausible.

i. All results less than LOQ and project specified objectives?

Yes☐ No☐ N/A☒ Comments:

An equipment blank was not submitted with this work order.

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

None; an equipment blank was not required for this project.

iii. Data quality or usability affected?

Comments:

The data quality/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:

There were no other flags/qualifiers required.

Laboratory Report of Analysis

To: Shannon & Wilson-Fairbanks
2355 Hill Rd.
Fairbanks, AK 99701
(907)479-0600

Report Number: **1210031**

Client Project: **102599-011 ADOT+PF Gustavus**

Dear Kristen Freiburger,

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.

_____

Jennifer Dawkins Date
Project Manager
Jennifer.Dawkins@sgs.com

SGS North America Inc. 200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Case Narrative

SGS Client: **Shannon & Wilson-Fairbanks**
SGS Project: **1210031**
Project Name/Site: **102599-011 ADOT+PF Gustavus**
Project Contact: **Kristen Freiburger**

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.

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

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, indenmification 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

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
MW-11-15	1210031001	12/31/2020	01/04/2021	Water (Surface, Eff., Ground)
MW-12-10	1210031002	12/31/2020	01/04/2021	Water (Surface, Eff., Ground)
MW-112-10	1210031003	12/31/2020	01/04/2021	Water (Surface, Eff., Ground)
Trip Blank	1210031004	12/31/2020	01/04/2021	Water (Surface, Eff., Ground)

Method	Method Description
8270D SIM LV (PAH)	8270 PAH SIM GC/MS LV
AK101	AK101/8021 Combo.
SW8021B	AK101/8021 Combo.
AK102	DRO/RRO Low Volume Water
AK103	DRO/RRO Low Volume Water

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Detectable Results Summary

Client Sample ID: **MW-11-15**
Lab Sample ID: 1210031001
Semivolatile Organic Fuels

Parameter	Result	Units
Diesel Range Organics	0.308J	mg/L
Residual Range Organics	0.408J	mg/L

Client Sample ID: **MW-12-10**
Lab Sample ID: 1210031002
Semivolatile Organic Fuels

Parameter	Result	Units
Diesel Range Organics	0.374J	mg/L
Residual Range Organics	0.512J	mg/L

Client Sample ID: **MW-112-10**
Lab Sample ID: 1210031003
Semivolatile Organic Fuels

Parameter	Result	Units
Diesel Range Organics	0.233J	mg/L
Residual Range Organics	0.323J	mg/L

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Results of **MW-11-15**

Client Sample ID: **MW-11-15**
Client Project ID: **102599-011 ADOT+PF Gustavus**
Lab Sample ID: 1210031001
Lab Project ID: 1210031

Collection Date: 12/31/20 11:06
Received Date: 01/04/21 16:20
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0240	U	0.0481	0.0144	ug/L	1		01/11/21 17:30
2-Methylnaphthalene	0.0240	U	0.0481	0.0144	ug/L	1		01/11/21 17:30
Acenaphthene	0.0240	U	0.0481	0.0144	ug/L	1		01/11/21 17:30
Acenaphthylene	0.0240	U	0.0481	0.0144	ug/L	1		01/11/21 17:30
Anthracene	0.0240	U	0.0481	0.0144	ug/L	1		01/11/21 17:30
Benzo(a)Anthracene	0.0240	U	0.0481	0.0144	ug/L	1		01/11/21 17:30
Benzo[a]pyrene	0.00960	U	0.0192	0.00596	ug/L	1		01/11/21 17:30
Benzo[b]Fluoranthene	0.0240	U	0.0481	0.0144	ug/L	1		01/11/21 17:30
Benzo[g,h,i]perylene	0.0240	U	0.0481	0.0144	ug/L	1		01/11/21 17:30
Benzo[k]fluoranthene	0.0240	U	0.0481	0.0144	ug/L	1		01/11/21 17:30
Chrysene	0.0240	U	0.0481	0.0144	ug/L	1		01/11/21 17:30
Dibenzo[a,h]anthracene	0.00960	U	0.0192	0.00596	ug/L	1		01/11/21 17:30
Fluoranthene	0.0240	U	0.0481	0.0144	ug/L	1		01/11/21 17:30
Fluorene	0.0240	U	0.0481	0.0144	ug/L	1		01/11/21 17:30
Indeno[1,2,3-c,d] pyrene	0.0240	U	0.0481	0.0144	ug/L	1		01/11/21 17:30
Naphthalene	0.0481	U	0.0962	0.0298	ug/L	1		01/11/21 17:30
Phenanthrene	0.0240	U	0.0481	0.0144	ug/L	1		01/11/21 17:30
Pyrene	0.0240	U	0.0481	0.0144	ug/L	1		01/11/21 17:30
Surrogates								
2-Methylnaphthalene-d10 (surr)	65		37-78		%	1		01/11/21 17:30
Fluoranthene-d10 (surr)	70.8		24-116		%	1		01/11/21 17:30

Batch Information

Analytical Batch: XMS12462
Analytical Method: 8270D SIM LV (PAH)
Analyst: LAW
Analytical Date/Time: 01/11/21 17:30
Container ID: 1210031001-I

Prep Batch: XXX44348
Prep Method: SW3535A
Prep Date/Time: 01/05/21 14:44
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Print Date: 01/20/2021 2:31:43PM

J flagging is activated

Results of **MW-11-15**

Client Sample ID: **MW-11-15**
Client Project ID: **102599-011 ADOT+PF Gustavus**
Lab Sample ID: 1210031001
Lab Project ID: 1210031

Collection Date: 12/31/20 11:06
Received Date: 01/04/21 16:20
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.308	J	0.612	0.184	mg/L	1		01/08/21 11:36
Surrogates								
5a Androstane (surr)	92.9		50-150		%	1		01/08/21 11:36

Batch Information

Analytical Batch: XFC15841
Analytical Method: AK102
Analyst: IVM
Analytical Date/Time: 01/08/21 11:36
Container ID: 1210031001-G

Prep Batch: XXX44359
Prep Method: SW3520C
Prep Date/Time: 01/07/21 16:00
Prep Initial Wt./Vol.: 245 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.408	J	0.510	0.153	mg/L	1		01/08/21 11:36
Surrogates								
n-Triacontane-d62 (surr)	101		50-150		%	1		01/08/21 11:36

Batch Information

Analytical Batch: XFC15841
Analytical Method: AK103
Analyst: IVM
Analytical Date/Time: 01/08/21 11:36
Container ID: 1210031001-G

Prep Batch: XXX44359
Prep Method: SW3520C
Prep Date/Time: 01/07/21 16:00
Prep Initial Wt./Vol.: 245 mL
Prep Extract Vol: 1 mL

Print Date: 01/20/2021 2:31:43PM

J flagging is activated

Results of **MW-11-15**

Client Sample ID: **MW-11-15**
Client Project ID: **102599-011 ADOT+PF Gustavus**
Lab Sample ID: 1210031001
Lab Project ID: 1210031

Collection Date: 12/31/20 11:06
Received Date: 01/04/21 16:20
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0500	U	0.100	0.0310	mg/L	1		01/05/21 15:57
Surrogates								
4-Bromofluorobenzene (surr)	81.3		50-150		%	1		01/05/21 15:57

Batch Information

Analytical Batch: VFC15480
Analytical Method: AK101
Analyst: S.S
Analytical Date/Time: 01/05/21 15:57
Container ID: 1210031001-A

Prep Batch: VXX36772
Prep Method: SW5030B
Prep Date/Time: 01/05/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.250	U	0.500	0.150	ug/L	1		01/05/21 15:57
Ethylbenzene	0.500	U	1.00	0.310	ug/L	1		01/05/21 15:57
o-Xylene	0.500	U	1.00	0.310	ug/L	1		01/05/21 15:57
P & M -Xylene	1.00	U	2.00	0.620	ug/L	1		01/05/21 15:57
Toluene	0.500	U	1.00	0.310	ug/L	1		01/05/21 15:57
Xylenes (total)	1.50	U	3.00	0.930	ug/L	1		01/05/21 15:57
Surrogates								
1,4-Difluorobenzene (surr)	82.6		77-115		%	1		01/05/21 15:57

Batch Information

Analytical Batch: VFC15480
Analytical Method: SW8021B
Analyst: S.S
Analytical Date/Time: 01/05/21 15:57
Container ID: 1210031001-A

Prep Batch: VXX36772
Prep Method: SW5030B
Prep Date/Time: 01/05/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 01/20/2021 2:31:43PM

J flagging is activated

Results of **MW-12-10**

Client Sample ID: **MW-12-10**
Client Project ID: **102599-011 ADOT+PF Gustavus**
Lab Sample ID: 1210031002
Lab Project ID: 1210031

Collection Date: 12/31/20 09:33
Received Date: 01/04/21 16:20
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0250	U	0.0500	0.0150	ug/L	1		01/11/21 17:50
2-Methylnaphthalene	0.0250	U	0.0500	0.0150	ug/L	1		01/11/21 17:50
Acenaphthene	0.0250	U	0.0500	0.0150	ug/L	1		01/11/21 17:50
Acenaphthylene	0.0250	U	0.0500	0.0150	ug/L	1		01/11/21 17:50
Anthracene	0.0250	U	0.0500	0.0150	ug/L	1		01/11/21 17:50
Benzo(a)Anthracene	0.0250	U	0.0500	0.0150	ug/L	1		01/11/21 17:50
Benzo[a]pyrene	0.0100	U	0.0200	0.00620	ug/L	1		01/11/21 17:50
Benzo[b]Fluoranthene	0.0250	U	0.0500	0.0150	ug/L	1		01/11/21 17:50
Benzo[g,h,i]perylene	0.0250	U	0.0500	0.0150	ug/L	1		01/11/21 17:50
Benzo[k]fluoranthene	0.0250	U	0.0500	0.0150	ug/L	1		01/11/21 17:50
Chrysene	0.0250	U	0.0500	0.0150	ug/L	1		01/11/21 17:50
Dibenzo[a,h]anthracene	0.0100	U	0.0200	0.00620	ug/L	1		01/11/21 17:50
Fluoranthene	0.0250	U	0.0500	0.0150	ug/L	1		01/11/21 17:50
Fluorene	0.0250	U	0.0500	0.0150	ug/L	1		01/11/21 17:50
Indeno[1,2,3-c,d] pyrene	0.0250	U	0.0500	0.0150	ug/L	1		01/11/21 17:50
Naphthalene	0.0500	U	0.100	0.0310	ug/L	1		01/11/21 17:50
Phenanthrene	0.0250	U	0.0500	0.0150	ug/L	1		01/11/21 17:50
Pyrene	0.0250	U	0.0500	0.0150	ug/L	1		01/11/21 17:50
Surrogates								
2-Methylnaphthalene-d10 (surr)	57.7		37-78		%	1		01/11/21 17:50
Fluoranthene-d10 (surr)	63.9		24-116		%	1		01/11/21 17:50

Batch Information

Analytical Batch: XMS12462
Analytical Method: 8270D SIM LV (PAH)
Analyst: LAW
Analytical Date/Time: 01/11/21 17:50
Container ID: 1210031002-I

Prep Batch: XXX44348
Prep Method: SW3535A
Prep Date/Time: 01/05/21 14:44
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 01/20/2021 2:31:43PM

J flagging is activated

Results of **MW-12-10**

Client Sample ID: **MW-12-10**
Client Project ID: **102599-011 ADOT+PF Gustavus**
Lab Sample ID: 1210031002
Lab Project ID: 1210031

Collection Date: 12/31/20 09:33
Received Date: 01/04/21 16:20
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.374	J	0.625	0.188	mg/L	1		01/08/21 11:46
Surrogates								
5a Androstane (surr)	91.3		50-150		%	1		01/08/21 11:46

Batch Information

Analytical Batch: XFC15841
Analytical Method: AK102
Analyst: IVM
Analytical Date/Time: 01/08/21 11:46
Container ID: 1210031002-G

Prep Batch: XXX44359
Prep Method: SW3520C
Prep Date/Time: 01/07/21 16:00
Prep Initial Wt./Vol.: 240 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.512	J	0.521	0.156	mg/L	1		01/08/21 11:46
Surrogates								
n-Triacontane-d62 (surr)	100		50-150		%	1		01/08/21 11:46

Batch Information

Analytical Batch: XFC15841
Analytical Method: AK103
Analyst: IVM
Analytical Date/Time: 01/08/21 11:46
Container ID: 1210031002-G

Prep Batch: XXX44359
Prep Method: SW3520C
Prep Date/Time: 01/07/21 16:00
Prep Initial Wt./Vol.: 240 mL
Prep Extract Vol: 1 mL

Results of **MW-12-10**

Client Sample ID: **MW-12-10**
Client Project ID: **102599-011 ADOT+PF Gustavus**
Lab Sample ID: 1210031002
Lab Project ID: 1210031

Collection Date: 12/31/20 09:33
Received Date: 01/04/21 16:20
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0500	U	0.100	0.0310	mg/L	1		01/05/21 16:15
Surrogates								
4-Bromofluorobenzene (surr)	82.5		50-150		%	1		01/05/21 16:15

Batch Information

Analytical Batch: VFC15480
Analytical Method: AK101
Analyst: S.S
Analytical Date/Time: 01/05/21 16:15
Container ID: 1210031002-A

Prep Batch: VXX36772
Prep Method: SW5030B
Prep Date/Time: 01/05/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.250	U	0.500	0.150	ug/L	1		01/05/21 16:15
Ethylbenzene	0.500	U	1.00	0.310	ug/L	1		01/05/21 16:15
o-Xylene	0.500	U	1.00	0.310	ug/L	1		01/05/21 16:15
P & M -Xylene	1.00	U	2.00	0.620	ug/L	1		01/05/21 16:15
Toluene	0.500	U	1.00	0.310	ug/L	1		01/05/21 16:15
Xylenes (total)	1.50	U	3.00	0.930	ug/L	1		01/05/21 16:15
Surrogates								
1,4-Difluorobenzene (surr)	81		77-115		%	1		01/05/21 16:15

Batch Information

Analytical Batch: VFC15480
Analytical Method: SW8021B
Analyst: S.S
Analytical Date/Time: 01/05/21 16:15
Container ID: 1210031002-A

Prep Batch: VXX36772
Prep Method: SW5030B
Prep Date/Time: 01/05/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **MW-112-10**

Client Sample ID: **MW-112-10**
Client Project ID: **102599-011 ADOT+PF Gustavus**
Lab Sample ID: 1210031003
Lab Project ID: 1210031

Collection Date: 12/31/20 09:23
Received Date: 01/04/21 16:20
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0240	U	0.0481	0.0144	ug/L	1		01/11/21 18:11
2-Methylnaphthalene	0.0240	U	0.0481	0.0144	ug/L	1		01/11/21 18:11
Acenaphthene	0.0240	U	0.0481	0.0144	ug/L	1		01/11/21 18:11
Acenaphthylene	0.0240	U	0.0481	0.0144	ug/L	1		01/11/21 18:11
Anthracene	0.0240	U	0.0481	0.0144	ug/L	1		01/11/21 18:11
Benzo(a)Anthracene	0.0240	U	0.0481	0.0144	ug/L	1		01/11/21 18:11
Benzo[a]pyrene	0.00960	U	0.0192	0.00596	ug/L	1		01/11/21 18:11
Benzo[b]Fluoranthene	0.0240	U	0.0481	0.0144	ug/L	1		01/11/21 18:11
Benzo[g,h,i]perylene	0.0240	U	0.0481	0.0144	ug/L	1		01/11/21 18:11
Benzo[k]fluoranthene	0.0240	U	0.0481	0.0144	ug/L	1		01/11/21 18:11
Chrysene	0.0240	U	0.0481	0.0144	ug/L	1		01/11/21 18:11
Dibenzo[a,h]anthracene	0.00960	U	0.0192	0.00596	ug/L	1		01/11/21 18:11
Fluoranthene	0.0240	U	0.0481	0.0144	ug/L	1		01/11/21 18:11
Fluorene	0.0240	U	0.0481	0.0144	ug/L	1		01/11/21 18:11
Indeno[1,2,3-c,d] pyrene	0.0240	U	0.0481	0.0144	ug/L	1		01/11/21 18:11
Naphthalene	0.0481	U	0.0962	0.0298	ug/L	1		01/11/21 18:11
Phenanthrene	0.0240	U	0.0481	0.0144	ug/L	1		01/11/21 18:11
Pyrene	0.0240	U	0.0481	0.0144	ug/L	1		01/11/21 18:11
Surrogates								
2-Methylnaphthalene-d10 (surr)	55.9		37-78		%	1		01/11/21 18:11
Fluoranthene-d10 (surr)	62.2		24-116		%	1		01/11/21 18:11

Batch Information

Analytical Batch: XMS12462
Analytical Method: 8270D SIM LV (PAH)
Analyst: LAW
Analytical Date/Time: 01/11/21 18:11
Container ID: 1210031003-I

Prep Batch: XXX44348
Prep Method: SW3535A
Prep Date/Time: 01/05/21 14:44
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Print Date: 01/20/2021 2:31:43PM

J flagging is activated

Results of **MW-112-10**

Client Sample ID: **MW-112-10**
Client Project ID: **102599-011 ADOT+PF Gustavus**
Lab Sample ID: 1210031003
Lab Project ID: 1210031

Collection Date: 12/31/20 09:23
Received Date: 01/04/21 16:20
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.233	J	0.600	0.180	mg/L	1		01/08/21 11:56
Surrogates								
5a Androstane (surr)	89.4		50-150		%	1		01/08/21 11:56

Batch Information

Analytical Batch: XFC15841
Analytical Method: AK102
Analyst: IVM
Analytical Date/Time: 01/08/21 11:56
Container ID: 1210031003-G

Prep Batch: XXX44359
Prep Method: SW3520C
Prep Date/Time: 01/07/21 16:00
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.323	J	0.500	0.150	mg/L	1		01/08/21 11:56
Surrogates								
n-Triacontane-d62 (surr)	100		50-150		%	1		01/08/21 11:56

Batch Information

Analytical Batch: XFC15841
Analytical Method: AK103
Analyst: IVM
Analytical Date/Time: 01/08/21 11:56
Container ID: 1210031003-G

Prep Batch: XXX44359
Prep Method: SW3520C
Prep Date/Time: 01/07/21 16:00
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 01/20/2021 2:31:43PM

J flagging is activated

Results of **MW-112-10**

Client Sample ID: **MW-112-10**
Client Project ID: **102599-011 ADOT+PF Gustavus**
Lab Sample ID: 1210031003
Lab Project ID: 1210031

Collection Date: 12/31/20 09:23
Received Date: 01/04/21 16:20
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0500 U		0.100	0.0310	mg/L	1		01/05/21 16:33
Surrogates								
4-Bromofluorobenzene (surr)	87.4		50-150		%	1		01/05/21 16:33

Batch Information

Analytical Batch: VFC15480
Analytical Method: AK101
Analyst: S.S
Analytical Date/Time: 01/05/21 16:33
Container ID: 1210031003-A

Prep Batch: VXX36772
Prep Method: SW5030B
Prep Date/Time: 01/05/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.250 U		0.500	0.150	ug/L	1		01/05/21 16:33
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		01/05/21 16:33
o-Xylene	0.500 U		1.00	0.310	ug/L	1		01/05/21 16:33
P & M -Xylene	1.00 U		2.00	0.620	ug/L	1		01/05/21 16:33
Toluene	0.500 U		1.00	0.310	ug/L	1		01/05/21 16:33
Xylenes (total)	1.50 U		3.00	0.930	ug/L	1		01/05/21 16:33
Surrogates								
1,4-Difluorobenzene (surr)	80.9		77-115		%	1		01/05/21 16:33

Batch Information

Analytical Batch: VFC15480
Analytical Method: SW8021B
Analyst: S.S
Analytical Date/Time: 01/05/21 16:33
Container ID: 1210031003-A

Prep Batch: VXX36772
Prep Method: SW5030B
Prep Date/Time: 01/05/21 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: **102599-011 ADOT+PF Gustavus**
Lab Sample ID: 1210031004
Lab Project ID: 1210031

Collection Date: 12/31/20 09:23
Received Date: 01/04/21 16:20
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0500	U	0.100	0.0310	mg/L	1		01/05/21 15:21
Surrogates								
4-Bromofluorobenzene (surr)	89.3		50-150		%	1		01/05/21 15:21

Batch Information

Analytical Batch: VFC15480
Analytical Method: AK101
Analyst: S.S
Analytical Date/Time: 01/05/21 15:21
Container ID: 1210031004-A

Prep Batch: VXX36772
Prep Method: SW5030B
Prep Date/Time: 01/05/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.250	U	0.500	0.150	ug/L	1		01/05/21 15:21
Ethylbenzene	0.500	U	1.00	0.310	ug/L	1		01/05/21 15:21
o-Xylene	0.500	U	1.00	0.310	ug/L	1		01/05/21 15:21
P & M -Xylene	1.00	U	2.00	0.620	ug/L	1		01/05/21 15:21
Toluene	0.500	U	1.00	0.310	ug/L	1		01/05/21 15:21
Xylenes (total)	1.50	U	3.00	0.930	ug/L	1		01/05/21 15:21
Surrogates								
1,4-Difluorobenzene (surr)	81.2		77-115		%	1		01/05/21 15:21

Batch Information

Analytical Batch: VFC15480
Analytical Method: SW8021B
Analyst: S.S
Analytical Date/Time: 01/05/21 15:21
Container ID: 1210031004-A

Prep Batch: VXX36772
Prep Method: SW5030B
Prep Date/Time: 01/05/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1815219 [VXX/36772]
Blank Lab ID: 1597063

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1210031001, 1210031002, 1210031003, 1210031004

Results by **AK101**

Parameter	Results	LOQ/CL	DL	Units
Gasoline Range Organics	0.0500U	0.100	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene (surr)	87.9	50-150		%

Batch Information

Analytical Batch: VFC15480
Analytical Method: AK101
Instrument: Agilent 7890 PID/FID
Analyst: S.S
Analytical Date/Time: 1/5/2021 10:44:00AM

Prep Batch: VXX36772
Prep Method: SW5030B
Prep Date/Time: 1/5/2021 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1210031 [VXX36772]
Blank Spike Lab ID: 1597066
Date Analyzed: 01/05/2021 11:37

Spike Duplicate ID: LCSD for HBN 1210031 [VXX36772]
Spike Duplicate Lab ID: 1597067
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1210031001, 1210031002, 1210031003, 1210031004

Results by **AK101**

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Gasoline Range Organics	1.00	1.02	102	1.00	0.999	100	(60-120)	2.20	(< 20)
Surrogates									
4-Bromofluorobenzene (surr)	0.0500	87.9	88	0.0500	92.3	92	(50-150)	4.80	

Batch Information

Analytical Batch: **VFC15480**
Analytical Method: **AK101**
Instrument: **Agilent 7890 PID/FID**
Analyst: **S.S**

Prep Batch: **VXX36772**
Prep Method: **SW5030B**
Prep Date/Time: **01/05/2021 06:00**
Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL

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Method Blank

Blank ID: MB for HBN 1815219 [VXX/36772]
Blank Lab ID: 1597063

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1210031001, 1210031002, 1210031003, 1210031004

Results by **SW8021B**

Parameter	Results	LOQ/CL	DL	Units
Benzene	0.250U	0.500	0.150	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
Xylenes (total)	1.50U	3.00	0.930	ug/L
Surrogates				
1,4-Difluorobenzene (surr)	83.8	77-115		%

Batch Information

Analytical Batch: VFC15480
Analytical Method: SW8021B
Instrument: Agilent 7890 PID/FID
Analyst: S.S
Analytical Date/Time: 1/5/2021 10:44:00AM

Prep Batch: VXX36772
Prep Method: SW5030B
Prep Date/Time: 1/5/2021 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1210031 [VXX36772]
Blank Spike Lab ID: 1597064
Date Analyzed: 01/05/2021 11:19

Spike Duplicate ID: LCSD for HBN 1210031 [VXX36772]
Spike Duplicate Lab ID: 1597065
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1210031001, 1210031002, 1210031003, 1210031004

Results by **SW8021B**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Benzene	100	114	114	100	109	109	(80-120)	5.10	(< 20)
Ethylbenzene	100	112	112	100	106	106	(75-125)	5.30	(< 20)
o-Xylene	100	109	109	100	103	103	(80-120)	5.80	(< 20)
P & M -Xylene	200	219	110	200	207	104	(75-130)	5.60	(< 20)
Toluene	100	116	116	100	111	111	(75-120)	4.60	(< 20)
Xylenes (total)	300	328	109	300	310	103	(79-121)	5.60	(< 20)
Surrogates									
1,4-Difluorobenzene (surr)	50	94.8	95	50	97.7	98	(77-115)	3.00	

Batch Information

Analytical Batch: **VFC15480**
Analytical Method: **SW8021B**
Instrument: **Agilent 7890 PID/FID**
Analyst: **S.S**

Prep Batch: **VXX36772**
Prep Method: **SW5030B**
Prep Date/Time: **01/05/2021 06:00**
Spike Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1815194 [XXX/44348]
Blank Lab ID: 1597020

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1210031001, 1210031002, 1210031003

Results by **8270D SIM LV (PAH)**

Parameter	Results	LOQ/CL	DL	Units
1-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
2-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
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)	57.9	37-78		%
Fluoranthene-d10 (surr)	67	24-116		%

Batch Information

Analytical Batch: XMS12462
Analytical Method: 8270D SIM LV (PAH)
Instrument: SVA Agilent 780/5975 GC/MS
Analyst: LAW
Analytical Date/Time: 1/11/2021 4:28:00PM

Prep Batch: XXX44348
Prep Method: SW3535A
Prep Date/Time: 1/5/2021 2:44:25PM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1210031 [XXX44348]
Blank Spike Lab ID: 1597021
Date Analyzed: 01/11/2021 16:49

Spike Duplicate ID: LCSD for HBN 1210031 [XXX44348]
Spike Duplicate Lab ID: 1597022
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1210031001, 1210031002, 1210031003

Results by **8270D SIM LV (PAH)**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1-Methylnaphthalene	2	1.24	62	2	1.19	59	(41-115)	4.40	(< 20)
2-Methylnaphthalene	2	1.24	62	2	1.18	59	(39-114)	4.90	(< 20)
Acenaphthene	2	1.34	67	2	1.27	64	(48-114)	5.30	(< 20)
Acenaphthylene	2	1.30	65	2	1.29	65	(35-121)	0.35	(< 20)
Anthracene	2	1.45	73	2	1.42	71	(53-119)	2.10	(< 20)
Benzo(a)Anthracene	2	1.32	66	2	1.28	64	(59-120)	3.30	(< 20)
Benzo[a]pyrene	2	1.52	76	2	1.49	75	(53-120)	1.90	(< 20)
Benzo[b]Fluoranthene	2	1.58	79	2	1.51	76	(53-126)	4.30	(< 20)
Benzo[g,h,i]perylene	2	1.66	83	2	1.59	80	(44-128)	4.40	(< 20)
Benzo[k]fluoranthene	2	1.55	78	2	1.48	74	(54-125)	4.70	(< 20)
Chrysene	2	1.45	72	2	1.37	69	(57-120)	5.30	(< 20)
Dibenzo[a,h]anthracene	2	1.67	84	2	1.59	80	(44-131)	4.90	(< 20)
Fluoranthene	2	1.37	69	2	1.31	66	(58-120)	4.60	(< 20)
Fluorene	2	1.45	72	2	1.38	69	(50-118)	4.30	(< 20)
Indeno[1,2,3-c,d] pyrene	2	1.77	88	2	1.67	84	(48-130)	5.30	(< 20)
Naphthalene	2	1.19	60	2	1.14	57	(43-114)	4.10	(< 20)
Phenanthrene	2	1.60	80	2	1.53	76	(53-115)	5.00	(< 20)
Pyrene	2	1.34	67	2	1.28	64	(53-121)	4.40	(< 20)
Surrogates									
2-Methylnaphthalene-d10 (surr)	2	62.4	62	2	59.9	60	(37-78)	4.10	
Fluoranthene-d10 (surr)	2	68.1	68	2	65.2	65	(24-116)	4.40	

Batch Information

Analytical Batch: **XMS12462**
Analytical Method: **8270D SIM LV (PAH)**
Instrument: **SVA Agilent 780/5975 GC/MS**
Analyst: **LAW**

Prep Batch: **XXX44348**
Prep Method: **SW3535A**
Prep Date/Time: **01/05/2021 14:44**
Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

Print Date: 01/20/2021 2:31:57PM

Method Blank

Blank ID: MB for HBN 1815263 [XXX/44359]
Blank Lab ID: 1597256

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1210031001, 1210031002, 1210031003

Results by **AK102**

Parameter	Results	LOQ/CL	DL	Units
Diesel Range Organics	0.220J	0.600	0.180	mg/L
Surrogates				
5a Androstane (surr)	89.5	60-120		%

Batch Information

Analytical Batch: XFC15841
Analytical Method: AK102
Instrument: Agilent 7890B F
Analyst: IVM
Analytical Date/Time: 1/8/2021 10:56:00AM

Prep Batch: XXX44359
Prep Method: SW3520C
Prep Date/Time: 1/7/2021 4:00:47PM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1210031 [XXX44359]
Blank Spike Lab ID: 1597257
Date Analyzed: 01/08/2021 11:06

Spike Duplicate ID: LCSD for HBN 1210031 [XXX44359]
Spike Duplicate Lab ID: 1597258
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1210031001, 1210031002, 1210031003

Results by **AK102**

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Diesel Range Organics	20	18.4	92	20	18.8	94	(75-125)	2.10	(< 20)
Surrogates									
5a Androstane (surr)	0.4	105	105	0.4	103	103	(60-120)	1.30	

Batch Information

Analytical Batch: **XFC15841**
Analytical Method: **AK102**
Instrument: **Agilent 7890B F**
Analyst: **IVM**

Prep Batch: **XXX44359**
Prep Method: **SW3520C**
Prep Date/Time: **01/07/2021 16:00**
Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

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Method Blank

Blank ID: MB for HBN 1815263 [XXX/44359]
Blank Lab ID: 1597256

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1210031001, 1210031002, 1210031003

Results by **AK103**

Parameter	Results	LOQ/CL	DL	Units
Residual Range Organics	0.246J	0.500	0.150	mg/L
Surrogates				
n-Triacontane-d62 (surr)	102	60-120		%

Batch Information

Analytical Batch: XFC15841
Analytical Method: AK103
Instrument: Agilent 7890B F
Analyst: IVM
Analytical Date/Time: 1/8/2021 10:56:00AM

Prep Batch: XXX44359
Prep Method: SW3520C
Prep Date/Time: 1/7/2021 4:00:47PM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1210031 [XXX44359]
Blank Spike Lab ID: 1597257
Date Analyzed: 01/08/2021 11:06

Spike Duplicate ID: LCSD for HBN 1210031 [XXX44359]
Spike Duplicate Lab ID: 1597258
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1210031001, 1210031002, 1210031003

Results by **AK103**

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Residual Range Organics	20	19.3	96	20	19.8	99	(60-120)	2.90	(< 20)
Surrogates									
n-Triacontane-d62 (surr)	0.4	103	103	0.4	102	102	(60-120)	0.46	

Batch Information

Analytical Batch: **XFC15841**
Analytical Method: **AK103**
Instrument: **Agilent 7890B F**
Analyst: **IVM**

Prep Batch: **XXX44359**
Prep Method: **SW3520C**
Prep Date/Time: **01/07/2021 16:00**
Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

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1210031

CHAIN-OF-CUSTODY RECORD

INC.
SULTANTS
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www.shannonwilson.com

Page 1 of 1

Laboratory SGS
Attn: Jen Dawkins

Turn Around Time: [X] Normal [ ] Rush — Please Specify

Quote No:

J-Flags: [X] Yes [ ] No

Analytical Methods (include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	GRO (AK101) +HCl	DRO/RRO (AK102/AK103) +HCl	BTEX (8021B) +HCl	PAH (8270D-SIM)				Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
MW-11-15	1AF	1106	12/31/20	X	X	X	X				10	Groundwater
MW-12-10	2AF	933	12/31/20	|	|	|	|				|	|
MW-112-10	3AF	923	12/31/20	|	|	|	|				1	|
Trip Blank	4AF	—	—	X		X						Laboratory Provided

Project Information

Number: 102599-011
Name: ADOT+PF Gustavus
Contact: KRF
Ongoing Project? Yes [X] No [ ]
Sampler: RLW

Sample Receipt

Total No. of Containers:
COC Seals/Intact? Y/N/NA: 1 FILS
Received Good Cond./Cold:
Temp: 7.6 DSB
Delivery Method: Alert

Notes:

Trip Blank w/ samples in cooler at all times

Profile 347128 qm

Reliquished By: 1.	Reliquished By: 2.	Reliquished By: 3.
Signature: Time: 0900	Signature: Time:	Signature: Time:
Printed Name: Rachel Willis Date: 1/4/21	Printed Name: Date:	Printed Name: Date:
Company: Shannon + Wilson	Company:	Company:
Received By: 1.	**Received By: 2.**	**Received By: 3.**
Signature: Time:	Signature: Time:	Signature: Time: 16:20
Printed Name: Date:	Printed Name: Date:	Printed Name: Castilleja Nuzs Date: 1/4/21
Company:	Company:	Company: SGS

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

No. 38340

027 JNU 7057 2250 027-7057 2250

Shipper's Name and Address
Shannon and Wilson Inc
2355 Hill Rd
Fairbanks, AK 99712
USA
Tel: 907-479-0600

Shipper's Account Number
27400200733
Customer's ID Number
10926

Not Negotiable
Air Waybill
Issued By
Alaska AIR CARGO
P.O. BOX 68900 SEATTLE, WA 98168
800-225-2752 ALASKACARGO.COM

Consignee's Name and Address
SGS ANC LAB.
HFPU
ANC, AK 999
USA
Tel: 907-562-2343

Consignee's Account Number

Also notify
Tel:

Issuing Carrier's Agent and City

Accounting Information 10926
Shannon and Wilson Inc
2355 Hill Rd
Fairbanks, AK 99712
USA

GoldStreak

Agent's IATA Code

Account No.

Airport of Departure (Addr. of First Carrier) and Requested Routing
Juneau

To	By First Carrier	To / By		To / By		Currency		WT/VAL		Other		Declared Value For Carriage	Declared Value For Customs
ANC	Alaska Airlines					USD	PX	X		X		NVD	NCV

Airport of Destination	Flight/Date	Flight/Date	Amount of Insurance
Anchorage	AS 065/04		XXX

Handling Information
STORE IN COOLER WHEN POSSIBLE

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	48.0	L Q		60.0		AS AGREED	WATER SAMPLES Dims: 23 x 15 x14 x 1 GSX COL
1	48.0					AS AGREED	Volume: 2.795

Prepaid	Weight Charge	Collect	Other Charges
AS AGREED			XBC 10.00

Valuation Charge

Tax

Total Other Charges Due Agent

Total Other Charges Due Carrier

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.**

For: Shannon and Wilson Inc

Signature of Shipper or his Agent

☒ THIS SHIPMENT DOES NOT CONTAIN DANGEROUS GOODS

☐ THIS SHIPMENT DOES CONTAIN DANGEROUS GOODS

Total Prepaid	Total Collect
AS AGREED	

04 Jan 2021 09:49 — Executed On (Date)
Juneau — at (Place)
Alaska Airlines — Signature of Issuing Carrier or its Agent

027-7057 2250

Alert Expeditors Inc. **#409663**

Citywide Delivery • 440-3351
8421 Flamingo Drive • Anchorage, Alaska 99502

Date 1/4/21

From

To

Collect ❐	Prepay ❐	Advance Charges ❐
Job #	PO#	

Shipped Signature

Total Charge

Received By:

e-Sample Receipt Form

SGS Workorder #: **1210031** | 1210031

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	1F1LS
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)?	No	Cooler ID: 1 @ 7.6 °C Therm. ID: D58
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?	No	
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):

Sample Containers and Preservatives

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition
1210031001-A	HCL to pH < 2	OK			
1210031001-B	HCL to pH < 2	OK			
1210031001-C	HCL to pH < 2	OK			
1210031001-D	HCL to pH < 2	OK			
1210031001-E	HCL to pH < 2	OK			
1210031001-F	HCL to pH < 2	OK			
1210031001-G	HCL to pH < 2	OK			
1210031001-H	HCL to pH < 2	OK			
1210031001-I	No Preservative Required	OK			
1210031001-J	No Preservative Required	OK			
1210031002-A	HCL to pH < 2	OK			
1210031002-B	HCL to pH < 2	OK			
1210031002-C	HCL to pH < 2	OK			
1210031002-D	HCL to pH < 2	OK			
1210031002-E	HCL to pH < 2	OK			
1210031002-F	HCL to pH < 2	OK			
1210031002-G	HCL to pH < 2	OK			
1210031002-H	HCL to pH < 2	OK			
1210031002-I	No Preservative Required	OK			
1210031002-J	No Preservative Required	OK			
1210031003-A	HCL to pH < 2	OK			
1210031003-B	HCL to pH < 2	OK			
1210031003-C	HCL to pH < 2	OK			
1210031003-D	HCL to pH < 2	OK			
1210031003-E	HCL to pH < 2	OK			
1210031003-F	HCL to pH < 2	OK			
1210031003-G	HCL to pH < 2	OK			
1210031003-H	HCL to pH < 2	OK			
1210031003-I	No Preservative Required	OK			
1210031003-J	No Preservative Required	OK			
1210031004-A	HCL to pH < 2	OK			
1210031004-B	HCL to pH < 2	OK			
1210031004-C	HCL to pH < 2	OK			
1210031004-D	HCL to pH < 2	OK			
1210031004-E	HCL to pH < 2	OK			
1210031004-F	HCL to pH < 2	OK			

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition

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:

Amber Masters

Title:

Environmental Scientist

Date:

January 21, 2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins / TestAmerica Laboratories, Inc. (TestAmerica)

Laboratory Report Number:

1200031

Laboratory Report Date:

1/20/2021

CS Site Name:

DOT&PF Gustavus Airport Statewide PFAS

ADEC File Number:

2569.38.033

Hazard Identification Number:

26981

1200031

Laboratory Report Date:

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 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:

   The requested analyses were conducted by SGS, North America, Inc. in Anchorage, AK.

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 receipt form indicates the temperature of the sample cooler was above range measured at 7.6° 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:

   c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

   Yes☒ No☐ N/A☐ Comments:

   The sample receipt form noted the samples arrived in good condition.

1200031

Laboratory Report Date:

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 item 3.a. above.

e. Data quality or usability affected?

Comments:

Yes, results are considered estimated, biased low due to the above-range cooler temperature. Detected results are flagged "JL" and non-detect results are flagged "UJ" in the analytical tables unless flagged for additional QC failures. See Section 6 below.

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 identify any QC failures, discrepancies, or errors.

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:

b. All applicable holding times met?

Yes☒ No☐ N/A☐ Comments:

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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?

The data quality and/or usability was 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:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes☒ No☐ N/A☐ Comments:

There were no method blank detections above LOQ; however, diesel range and residual range organics were detected below LOQ in the MBs associated with this work order.

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

DRO and RRO results in the following samples are affected: *MW-11-15, MW-12-10,* and *MW-112-10.*

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes☒ No☐ N/A☒ Comments:

DRO and RRO results in the following samples are considered not detected and are flagged "UB" at the LOQ in the analytical table: *MW-11-15, MW-12-10,* and *MW-112-10.*

v. Data quality or usability affected?

Comments:

Yes; see above.

1200031

Laboratory Report Date:

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 were analyzed for BTEX, PAH, GRO, 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:

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:

NA; 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:

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 was not affected; see above.

Laboratory Report Date:

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 performed for the requested analyses. However, the laboratory analyzed an LCS and LCSD to assess laboratory accuracy and precision.

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:

MS and MSD samples were not analyzed for this work order.

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:

MS and MSD samples were not analyzed for this work order.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

NA; MS and MSD samples were not analyzed for this work order.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes☐ No☐ N/A☒ Comments:

MS and MSD samples were not analyzed for this work order.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The 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:

Laboratory Report Date:

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 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:

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:

Only one cooler was used to transport the samples in this work order.

iii. All results less than LOQ and project specified objectives?

Yes☒ No☐ N/A☐ Comments:

There were no trip blank detections associated with this work order.

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above

v. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

Laboratory Report Date:

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 field duplicate pair *MW-12-10/MW-112-10* was submitted with this work order

iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water, 50% soil)

RPD (%) = 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 for DRO and RRO were greater than project specified objectives.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

DRO and RRO results are considered not detected and flagged due to method blank detection. No further flagging has been applied due to the field duplicate RPD failures.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes☐ No☐ N/A☒ Comments:

Project samples were not collected with reusable equipment, so the prospect of foreign contaminants being introduced through equipment contamination is not plausible.

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:

iii. Data quality or usability affected?

Comments:

No; see above.

1200031

Laboratory Report Date:

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

   a. Defined and appropriate?

      Yes☐ No☐ N/A☒ Comments:

KRF

Laboratory Report of Analysis

To: Shannon & Wilson-Fairbanks
2355 Hill Rd.
Fairbanks, AK 99701
(907)479-0600

Report Number: **1210032**

Client Project: **101543-001 RISK-GUS**

Dear Kristen Freiburger,

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.

_____

Jennifer Dawkins Date
Project Manager
Jennifer.Dawkins@sgs.com

SGS North America Inc. 200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Case Narrative

SGS Client: **Shannon & Wilson-Fairbanks**
SGS Project: **1210032**
Project Name/Site: **101543-001 RISK-GUS**
Project Contact: **Kristen Freiburger**

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.

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

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, indenmification 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.

SGS North America Inc. 200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
PW-200	1210032001	12/30/2020	01/04/2021	Water (Surface, Eff., Ground)
PW-200-F Port CANCELLED	1210032002	12/30/2020	01/04/2021	Water (Surface, Eff., Ground)
PW-200-Sink	1210032003	12/30/2020	01/04/2021	Water (Surface, Eff., Ground)

Method	Method Description
EP200.8	Metals in Water by 200.8 ICP-MS

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Detectable Results Summary

Client Sample ID: **PW-200**
Lab Sample ID: 1210032001
Metals by ICP/MS

Parameter	Result	Units
Arsenic	19.5	ug/L

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200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Results of **PW-200**

Client Sample ID: **PW-200**
Client Project ID: **101543-001 RISK-GUS**
Lab Sample ID: 1210032001
Lab Project ID: 1210032

Collection Date: 12/30/20 11:39
Received Date: 01/04/21 16:20
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	19.5		5.00	1.50	ug/L	1		01/11/21 18:37

Batch Information

Analytical Batch: MMS10985
Analytical Method: EP200.8
Analyst: DMM
Analytical Date/Time: 01/11/21 18:37
Container ID: 1210032001-A

Prep Batch: MXX33926
Prep Method: E200.2
Prep Date/Time: 01/06/21 14:46
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 01/18/2021 2:02:43PM

J flagging is activated

Results of **PW-200-Sink**

Client Sample ID: **PW-200-Sink**
Client Project ID: **101543-001 RISK-GUS**
Lab Sample ID: 1210032003
Lab Project ID: 1210032

Collection Date: 12/30/20 11:09
Received Date: 01/04/21 16:20
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	2.50	U	5.00	1.50	ug/L	1		01/11/21 18:40

Batch Information

Analytical Batch: MMS10985
Analytical Method: EP200.8
Analyst: DMM
Analytical Date/Time: 01/11/21 18:40
Container ID: 1210032003-A

Prep Batch: MXX33926
Prep Method: E200.2
Prep Date/Time: 01/06/21 14:46
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 01/18/2021 2:02:43PM

J flagging is activated

Method Blank

Blank ID: MB for HBN 1815243 [MXX/33926]
Blank Lab ID: 1597170

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1210032001, 1210032003

Results by **EP200.8**

Parameter	Results	LOQ/CL	DL	Units
Arsenic	2.50U	5.00	1.50	ug/L

Batch Information

Analytical Batch: MMS10985
Analytical Method: EP200.8
Instrument: Perkin Elmer NexIon P5
Analyst: DMM
Analytical Date/Time: 1/11/2021 6:16:48PM

Prep Batch: MXX33926
Prep Method: E200.2
Prep Date/Time: 1/6/2021 2:46:37PM
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Blank Spike Summary

Blank Spike ID: LCS for HBN 1210032 [MXX33926]
Blank Spike Lab ID: 1597171
Date Analyzed: 01/11/2021 18:19

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1210032001, 1210032003

Results by **EP200.8**

Blank Spike (ug/L)

Parameter	Spike	Result	Rec (%)	CL
Arsenic	1000	952	95	(85-115)

Batch Information

Analytical Batch: **MMS10985**
Analytical Method: **EP200.8**
Instrument: **Perkin Elmer Nexlon P5**
Analyst: **DMM**

Prep Batch: **MXX33926**
Prep Method: **E200.2**
Prep Date/Time: **01/06/2021 14:46**
Spike Init Wt./Vol.: 1000 ug/L Extract Vol: 50 mL
Dupe Init Wt./Vol.: Extract Vol:

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Matrix Spike Summary

Original Sample ID: 1597173
MS Sample ID: 1597174 MS
MSD Sample ID:

Analysis Date: 01/14/2021 12:56
Analysis Date: 01/14/2021 12:59
Analysis Date:
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1210032001, 1210032003

Results by **EP200.8**

		Matrix Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Arsenic	25.0U	1000	1010	101				70-130		

Batch Information

Analytical Batch: MMS10986
Analytical Method: EP200.8
Instrument: Perkin Elmer NexIon P5
Analyst: DMM
Analytical Date/Time: 1/14/2021 12:59:49PM

Prep Batch: MXX33926
Prep Method: DW Digest for Metals on ICP-MS
Prep Date/Time: 1/6/2021 2:46:37PM
Prep Initial Wt./Vol.: 20.00mL
Prep Extract Vol: 50.00mL

Print Date: 01/18/2021 2:02:49PM

Dawkins, Jennifer A (Fairbanks)

From: Dawkins, Jennifer A (Fairbanks)
Sent: Tuesday, January 5, 2021 4:11 PM
To: Dawkins, Jennifer A (Fairbanks)
Subject: 1210032 Change Order

Sample “PW-200-F Port” should be put on HOLD pending results of the other samples, per client.
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

Dawkins, Jennifer A (Fairbanks)

From: Dawkins, Jennifer A (Fairbanks)
Sent: Monday, January 18, 2021 11:13 AM
To: Dawkins, Jennifer A (Fairbanks)
Subject: 1210032 Change Order

Please cancel sample PW-200-F Port, per client.

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

1210032

INC.
ULTANTS

CHAIN-OF-CUSTODY RECORD

Laboratory SGS Page 1 of 1

Attn:

www.shannonwilson.com

Analytical Methods (include preservative if used)

Turn Around Time:	Quote No:	J-Flags:
[X] Normal [ ] Rush		[X] Yes [ ] No
Please Specify		

Sample Identity	Lab No.	Time	Date Sampled	Total Arsenic - HNO3						Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
PW-200	1A	1139	12/30/20	X						1	Drinking Water
PW-200-F Part	2A	1111	"	X						1	"
PW-200-Sink	3A	1109	"	X						1	"

Project Information	
Number:	101543-001
Name:	RISR-GUS
Contact:	RRF
Ongoing Project?	Yes [X] No [ ]
Sampler:	ARM

Sample Receipt	
Total No. of Containers:	
COC Seals/Intact?	Y/N/NA HFILS
Received Good Cond./Cold	
Temp:	7.6 D58
Delivery Method:	Alert

Reliquished By: 1.	Reliquished By: 2.	Reliquished By: 3.
Signature: Time: 0900	Signature: Time:	Signature: Time:
Printed Name: Rachel Willis Date: 1/4/21	Printed Name: Date:	Printed Name: Date:
Company: Shannon + Wilson	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time:	Signature: Time:	Signature: Time: 16:20
Printed Name: Date:	Printed Name: Date:	Printed Name: Date: 1/4/21
Company:	Company:	Company: SGS

Notes:

Profile 347128 QM

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

No. 36344

027 JNU 7057 2250

027-7057 2250

Shipper's Name and Address
Shannon and Wilson Inc
2355 Hill Rd
Fairbanks, AK 99712
USA
Tel: 907-479-0600

Shipper's Account Number
27400200733

Customer's ID Number
10926

Not Negotiable
Air Waybill
Issued By
Alaska AIR CARGO
P.O. BOX 68900 SEATTLE, WA 98168
800-225-2752 ALASKACARGO.COM

Consignee's Name and Address
SGS ANC LAB
HFPU
ANC, AK 999
USA
Tel: 907-562-2343

Consignee's Account Number

Also notify
Tel:

Issuing Carrier's Agent and City

Accounting Information 10926
Shannon and Wilson Inc
2355 Hill Rd
Fairbanks, AK 99712
USA

GoldStreak

Agent's IATA Code

Account No.

Airport of Departure (Addr. of First Carrier) and Requested Routing
Juneau

To	By First Carrier	To / By		To / By		Currency		WT/VAL		Other		Declared Value For Carriage	Declared Value For Customs
ANC	Alaska Airlines					USD	PX	X		X		NVD	NCV

Airport of Destination	Flight/Date	Flight/Date	Amount of Insurance
Anchorage	AS 065/04		XXX

Handling Information
STORE IN COOLER WHEN POSSIBLE

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	48.0	L Q		60.0		AS AGREED	WATER SAMPLES Dims: 23 x 15 x14 x 1 GSX COL
1	48.0					AS AGREED	Volume: 2.795

Prepaid	Weight Charge	Collect	Other Charges
AS AGREED			XBC 10.00

Valuation Charge

Tax

Total Other Charges Due Agent

Total Other Charges Due Carrier

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.**

For: Shannon and Wilson Inc

Signature of Shipper or his Agent

☐ THIS SHIPMENT DOES NOT CONTAIN DANGEROUS GOODS

☐ THIS SHIPMENT DOES CONTAIN DANGEROUS GOODS

Total Prepaid	Total Collect
AS AGREED	

04 Jan 2021 09:49 — Executed On (Date)

Juneau — at (Place)

Alaska Airlines — Signature of Issuing Carrier or its Agent

027-7057 2250

Alert Expeditors Inc. **#409663**

Citywide Delivery • 440-3351
8421 Flamingo Drive • Anchorage, Alaska 99502

Date 1/4/21

From

To

Collect ❐	Prepay ❐	Advance Charges ❐
Job #	PO#	

Shipped Signature

Total Charge

Received By:

e-Sample Receipt Form

SGS Workorder #: **1210032** | 1210032

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	1F1LS
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)?	No	Cooler ID: 1 @ 7.6 °C Therm. ID: D58
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?	No	
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):

Sample Containers and Preservatives

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition
1210032001-A	HNO3 to pH < 2	OK			
1210032002-A	HNO3 to pH < 2	OK			
1210032003-A	HNO3 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:

Amber Masters

Title:

Environmental Scientist

Date:

January 20, 2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

SGS

Laboratory Report Number:

1210032

Laboratory Report Date:

January 18, 2021

CS Site Name:

DOT&PF Gustavus Airport Statewide PFAS

ADEC File Number:

2569.38.033

Hazard Identification Number:

26981

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, AK.

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:

   Chain of custody form indicates the temperature of the sample cooler was 7.6° upon receipt at the laboratory.

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

   Yes☒ No☐ N/A☐ Comments:

   c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

   Yes☒ No☐ N/A☐ Comments:

   The sample receipt form notes the samples arrived in good condition, except for the temperature discrepancy noted above.

   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 the temperature of the cooler was outside of the acceptable temperature range.

e. Data quality or usability affected?

Comments:

No, we do not consider the arsenic result to be affected by the slightly elevated cooler temperature. Samples were received by the laboratory on the same day they were shipped.

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 refers to the sample receipt form for information on sample condition.

c. Were all corrective actions documented?

Yes☐ No☐ N/A☒ Comments:

No corrective actions required.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The data quality/usability are unaffected.

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:

e. Data quality or usability affected?

The data quality/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:

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

None; arsenic was 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:

Qualification of the data was not required.

v. Data quality or usability affected?

Comments:

The data quality/usability are 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:

Arsenic was the only analysis requested for this work order.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes☐ No☒ N/A☐ Comments:

An LCS was reported for arsenic analysis via EPA method 200.8. No sample duplicate was reported.

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:

An LCSD was not reported.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

None; 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☐ N/A☒ Comments:

Samples are not affected. Qualification of the data is not required.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality/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:

Arsenic was the only analysis requested for this work order.

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes☐ No☒ N/A☐ Comments:

An MSD was not reported for the 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:

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:

An MSD was not reported.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

None; 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☐ N/A☒ Comments:

No samples are affected. Qualification of the data is not required.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality/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:

Arsenic was the only analysis requested for this work order.

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:

See above.

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/usability is 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:

Volatile analyses were not requested with this work order. A trip blank was 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:

A trip blank was not submitted with this work order.

iii. All results less than LOQ and project specified objectives?

Yes☐ No☐ N/A☒ Comments:

Trip blanks are not required for this project.

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

None; volatile analyses were not requested.

v. Data quality or usability affected?

Comments:

The data quality/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:

A field duplicate pair was not submitted as a part of the work order.

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:

No affect on data quality or usability.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes☐ No☐ N/A☒ Comments:

Project samples are not collected with reusable equipment, so the prospect of foreign contaminants being introduced through equipment contamination is not plausible.

i. All results less than LOQ and project specified objectives?

Yes☐ No☐ N/A☒ Comments:

An equipment blank was not submitted with this work order.

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

None; an equipment blank was not required for this project.

iii. Data quality or usability affected?

Comments:

The data quality/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:

There were no other flags/qualifiers required.

Laboratory Report of Analysis

To: Shannon & Wilson-Fairbanks
2355 Hill Rd.
Fairbanks, AK 99701
(907)479-0600

Report Number: **1211330**

Client Project: **101543-001 Gus PFAS-DRM**

Dear Kristen Freiburger,

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.

_____

Jennifer Dawkins Date
Project Manager
Jennifer.Dawkins@sgs.com

Case Narrative

SGS Client: **Shannon & Wilson-Fairbanks**
SGS Project: **1211330**
Project Name/Site: **101543-001 Gus PFAS-DRM**
Project Contact: **Kristen Freiburger**

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.

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

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, indenmification 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.

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
PW-200-Sink	1211330001	03/23/2021	03/29/2021	Drinking Water
Canceled PW-200-F Port	1211330002	03/23/2021	03/29/2021	Drinking Water
PW-200	1211330003	03/23/2021	03/29/2021	Drinking Water

Method	Method Description
EP200.8	Metals in Water by ICP-MS

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Detectable Results Summary

Client Sample ID: **PW-200**
Lab Sample ID: 1211330003
Metals by ICP/MS

Parameter	Result	Units
Arsenic	20.7	ug/L

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200 West Potter Drive, Anchorage, AK 99518
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Results of **PW-200-Sink**

Client Sample ID: **PW-200-Sink**
Client Project ID: **101543-001 Gus PFAS-DRM**
Lab Sample ID: 1211330001
Lab Project ID: 1211330

Collection Date: 03/23/21 14:38
Received Date: 03/29/21 08:04
Matrix: Drinking Water
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	2.50	U	5.00	1.50	ug/L	1	(<10)	04/01/21 15:30

Batch Information

Analytical Batch: MMS11056
Analytical Method: EP200.8
Analyst: ACF
Analytical Date/Time: 04/01/21 15:30
Container ID: 1211330001-A

Prep Batch: MXX34059
Prep Method: E200.2
Prep Date/Time: 03/30/21 10:00
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 04/13/2021 9:42:54AM

J flagging is activated

Results of **PW-200**

Client Sample ID: **PW-200**
Client Project ID: **101543-001 Gus PFAS-DRM**
Lab Sample ID: 1211330003
Lab Project ID: 1211330

Collection Date: 03/23/21 15:16
Received Date: 03/29/21 08:04
Matrix: Drinking Water
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	20.7	*	5.00	1.50	ug/L	1	(<10)	04/01/21 15:33

Batch Information

Analytical Batch: MMS11056
Analytical Method: EP200.8
Analyst: ACF
Analytical Date/Time: 04/01/21 15:33
Container ID: 1211330003-A

Prep Batch: MXX34059
Prep Method: E200.2
Prep Date/Time: 03/30/21 10:00
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 04/13/2021 9:42:54AM

J flagging is activated

Method Blank

Blank ID: MB for HBN 1817274 [MXX/34059]
Blank Lab ID: 1604394

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1211330001, 1211330003

Results by **EP200.8**

Parameter	Results	LOQ/CL	DL	Units
Arsenic	2.50U	5.00	1.50	ug/L

Batch Information

Analytical Batch: MMS11056
Analytical Method: EP200.8
Instrument: Perkin Elmer NexIon P5
Analyst: ACF
Analytical Date/Time: 4/1/2021 3:09:01PM

Prep Batch: MXX34059
Prep Method: E200.2
Prep Date/Time: 3/30/2021 10:00:00AM
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Blank Spike Summary

Blank Spike ID: LCS for HBN 1211330 [MXX34059]
Blank Spike Lab ID: 1604395
Date Analyzed: 04/01/2021 15:12

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1211330001, 1211330003

Results by **EP200.8**

Blank Spike (ug/L)

Parameter	Spike	Result	Rec (%)	CL
Arsenic	1000	1010	101	(85-115)

Batch Information

Analytical Batch: **MMS11056**
Analytical Method: **EP200.8**
Instrument: **Perkin Elmer Nexlon P5**
Analyst: **ACF**

Prep Batch: **MXX34059**
Prep Method: **E200.2**
Prep Date/Time: **03/30/2021 10:00**
Spike Init Wt./Vol.: 1000 ug/L Extract Vol: 50 mL
Dupe Init Wt./Vol.: Extract Vol:

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Matrix Spike Summary

Original Sample ID: 1604393
MS Sample ID: 1604397 MS
MSD Sample ID:

Analysis Date: 04/01/2021 15:15
Analysis Date: 04/01/2021 15:18
Analysis Date:
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1211330001, 1211330003

Results by **EP200.8**

		Matrix Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Arsenic	2.50U	1000	1010	101				70-130		

Batch Information

Analytical Batch: MMS11056
Analytical Method: EP200.8
Instrument: Perkin Elmer NexIon P5
Analyst: ACF
Analytical Date/Time: 4/1/2021 3:18:05PM

Prep Batch: MXX34059
Prep Method: DW Digest for Metals on ICP-MS
Prep Date/Time: 3/30/2021 10:00:00AM
Prep Initial Wt./Vol.: 20.00mL
Prep Extract Vol: 50.00mL

Print Date: 04/13/2021 9:43:00AM

Matrix Spike Summary

Original Sample ID: 1604398
MS Sample ID: 1604399 MS
MSD Sample ID:

Analysis Date: 04/01/2021 15:21
Analysis Date: 04/01/2021 15:24
Analysis Date:
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1211330001, 1211330003

Results by **EP200.8**

		Matrix Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Arsenic	2.18J	1000	1050	104				70-130		

Batch Information

Analytical Batch: MMS11056
Analytical Method: EP200.8
Instrument: Perkin Elmer NexIon P5
Analyst: ACF
Analytical Date/Time: 4/1/2021 3:24:08PM

Prep Batch: MXX34059
Prep Method: DW Digest for Metals on ICP-MS
Prep Date/Time: 3/30/2021 10:00:00AM
Prep Initial Wt./Vol.: 20.00mL
Prep Extract Vol: 50.00mL

Print Date: 04/13/2021 9:43:00AM

Dawkins, Jennifer A (Fairbanks)

From: Dawkins, Jennifer A (Fairbanks)
Sent: Tuesday, April 6, 2021 11:28 AM
To: Dawkins, Jennifer A (Fairbanks)
Subject: 1211330 Change Order

Cancel sample PW-200-FPort, per client.

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

P# 347128ch

CHAIN-OF-CUSTODY RECORD

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600
www.shannonwilson.com

Page 1 of 1

Laboratory SGS

Attn:

Analytical Methods (include preservative if used)

1211330

Turn Around Time:	Quote No:
[X] Normal [ ] Rush	J-Flags: [ ] Yes [ ] No
Please Specify	

	Sample Identity	Lab No.	Time	Date Sampled	Arsenic							Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
1A	PW-200-SINK		1438	3/23/21	X							1	water
2A	PW-200-F PORT * HOLD		1447	3/23/21	X							1	
3A	PW-200		1516	3/23/21	X							1	

Project Information	
Number:	101543-001
Name:	GUS PFAS-DRM
Contact:	KRF
Ongoing Project?	Yes [X] No [ ]
Sampler:	ARM

Sample Receipt	
Total No. of Containers:	
COC Seals/Intact? Y/N/NA	
Received Good Cond./Cold	
Temp:	
Delivery Method:	

Reliquished By: 1.	Reliquished By: 2.	Reliquished By: 3.
Signature: Time: 0900	Signature: Time:	Signature: Time:
Printed Name: A. Mastos Date: 3/26/21	Printed Name: Date:	Printed Name: Date:
Company: Shannon + Wilson, Inc.	Company:	Company:
Received By: 1.	**Received By: 2.**	**Received By: 3.**
Signature: Time:	Signature: Time:	Signature: MA Time: 0804
Printed Name: Date:	Printed Name: Date:	Printed Name: Michelle Alberran Date: 3/29/21
Company:	Company:	Company: SGS MA 3.29.21 IF, TB, RS 2.5 DSG

Notes:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

No. 13 36386

027 JNU 8148 7232 Alert Cooler ✓3/28 027-8148 7232

Shipper's Name and Address Shannon and Wilson Inc 2355 Hill Rd Fairbanks, AK 99712 USA Tel: 907-479-0600	**Shipper's Account Number** 27400200733 **Customer's ID Number** 10926
Not Negotiable **Air Waybill** Issued By Alaska. AIR CARGO P.O. BOX 68900 SEATTLE, WA 98168 800-225-2752 ALASKACARGO.COM	14 of 17
Consignee's Name and Address SGS North America 200 W Potter Drive Anchorage, AK 99518 USA Tel: 907-562-2343	**Consignee's Account Number** 27400215947
Also notify N Tel:	
Issuing Carrier's Agent and City	**Accounting Information** 10926 Shannon and Wilson Inc 2355 Hill Rd Fairbanks, AK 99712 USA **1211330** SRN/102599 GoldStreak
Agent's IATA Code / **Account No.**	
Airport of Departure (Addr. of First Carrier) and Requested Routing Juneau	

To	By First Carrier	To / By	To / By	Currency		WT/VAL		Other		Declared Value For Carriage	Declared Value For Customs
ANC	Alaska Airlines			USD	PX	X		X		NVD	NCV

Airport of Destination	Flight/Date	Flight/Date	Amount of Insurance
Anchorage	AS 065/26		XXX

Handling Information
STORE IN COOLER WHEN POSSIBLE

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	38.0	L	N		38.0		AS AGREED	WATER SAMPLES KEEP COOL Dims: 13 x 14 x24 x 1 GSX COL
1	38.0						AS AGREED	Volume: 2.528

Prepaid	Weight Charge	Collect	Other Charges
	AS AGREED		XBC 10.00
Valuation Charge			
Tax			
Total Other Charges Due Agent			
Total Other Charges Due Carrier			
Total Prepaid		Total Collect	
AS AGREED			

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.**

For: Shannon and Wilson Inc

Signature of Shipper or his Agent

☐ THIS SHIPMENT DOES NOT CONTAIN DANGEROUS GOODS

☐ THIS SHIPMENT DOES CONTAIN DANGEROUS GOODS

Executed On (Date)	at (Place)	Signature of Issuing Carrier or its Agent
26 Mar 2021 11:52	Juneau	Alaska Airlines

027-8148 7232

Alert Expeditors Inc. **#411556**

Citywide Delivery • 440-3351
8421 Flamingo Drive • Anchorage, Alaska 99502

Date 3-29-01

From Shannon - W 1504

To SGS Labs Anc

Collect ❐	Prepay ❐	Advance Charges ❐
Job # SA-4	PO# AS 5178-2222	

Samples

Shipped Signature

Total Charge

Received By:

e-Sample Receipt Form

SGS Workorder #: 1211330

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, 1RS
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 @ 2.5 °C Therm. ID: D59
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?	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,200.8/6020B).
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?	N/A	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	N/A	
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

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition
1211330001-A	HNO3 to pH < 2	OK			
1211330002-A	HNO3 to pH < 2	OK			
1211330003-A	HNO3 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:

Amber Masters

Title:

Environmental Scientist

Date:

April 14, 2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

SGS

Laboratory Report Number:

1211330

Laboratory Report Date:

April 13, 2021

CS Site Name:

DRM Gustavus Airport Statewide PFAS

ADEC File Number:

2569.38.033

Hazard Identification Number:

26981

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, AK.

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:

   c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

   Yes☒ No☐ N/A☐ Comments:

   The sample receipt form notes the samples arrived in good condition, at a temperature of 2.5° C.

   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 forms did not note any discrepancies.

e. Data quality or usability affected?

Comments:

N/A; 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 refers to the sample receipt form for information on sample condition.

c. Were all corrective actions documented?

Yes☐ No☐ N/A☒ Comments:

No corrective actions required.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The data quality/usability are unaffected.

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:

e. Data quality or usability affected?

The data quality/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:

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

None; arsenic was 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:

Qualification of the data was not required.

v. Data quality or usability affected?

Comments:

The data quality/usability are 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:

Arsenic was the only analysis requested for this work order.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes☐ No☒ N/A☐ Comments:

An LCS was reported for arsenic analysis via EPA method 200.8. No sample duplicate was reported.

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:

An LCSD or laboratory duplicate was not reported.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

None; 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☐ N/A☒ Comments:

Samples are not affected. Qualification of the data is not required.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality/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:

Arsenic was the only analysis requested for this work order.

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes☐ No☒ N/A☐ Comments:

An MSD was not reported for the work order. Two MS samples were reported.

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:

An MSD was not reported.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

None; 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☐ N/A☒ Comments:

No samples are affected. Qualification of the data is not required.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality/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:

Arsenic was the only analysis requested for this work order. Surrogates are not reported for metals analysis.

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:

See above.

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/usability is 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:

Volatile analyses were not requested with this work order. A trip blank was 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:

A trip blank was not submitted with this work order.

iii. All results less than LOQ and project specified objectives?

Yes☐ No☐ N/A☒ Comments:

Trip blanks are not required for this project.

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

None; volatile analyses were not requested.

v. Data quality or usability affected?

Comments:

The data quality/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:

A field duplicate pair was not submitted as a part of the work order.

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)

RPD (%) = 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:

No affect on data quality or usability.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes☐ No☐ N/A☒ Comments:

Project samples are not collected with reusable equipment, so the prospect of foreign contaminants being introduced through equipment contamination is not plausible.

i. All results less than LOQ and project specified objectives?

Yes☐ No☐ N/A☒ Comments:

An equipment blank was not submitted with this work order.

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

None; an equipment blank was not required for this project.

iii. Data quality or usability affected?

Comments:

The data quality/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:

There were no other flags/qualifiers required.

KRF

Laboratory Report of Analysis

To: Shannon & Wilson-Fairbanks
2355 Hill Rd.
Fairbanks, AK 99701
(907)479-0600

Report Number: **1211331**

Client Project: **102599-012 Gus PFAS DOT-MW**

Dear Kristen Freiburger,

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.

_____

Jennifer Dawkins Date
Project Manager
Jennifer.Dawkins@sgs.com

Case Narrative

SGS Client: **Shannon & Wilson-Fairbanks**
SGS Project: **1211331**
Project Name/Site: **102599-012 Gus PFAS DOT-MW**
Project Contact: **Kristen Freiburger**

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.

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

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, indenmification 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.

SGS North America Inc. 200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
MW-111-15	1211331001	03/25/2021	03/29/2021	Water (Surface, Eff., Ground)
MW-11-15	1211331002	03/25/2021	03/29/2021	Water (Surface, Eff., Ground)
MW-12-10	1211331003	03/25/2021	03/29/2021	Water (Surface, Eff., Ground)
Trip Blank	1211331004	03/25/2021	03/29/2021	Water (Surface, Eff., Ground)

Method	Method Description
8270D SIM LV (PAH)	8270 PAH SIM GC/MS LV
AK101	AK101/8021 Combo.
SW8021B	AK101/8021 Combo.
AK102	DRO/RRO Low Volume Water
AK103	DRO/RRO Low Volume Water

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Detectable Results Summary

Client Sample ID: **MW-111-15**
Lab Sample ID: 1211331001
Volatile Fuels

Parameter	Result	Units
Ethylbenzene	0.440J	ug/L
o-Xylene	0.390J	ug/L
P & M -Xylene	0.850J	ug/L
Toluene	0.390J	ug/L
Xylenes (total)	1.24J	ug/L

Client Sample ID: **MW-11-15**
Lab Sample ID: 1211331002
Polynuclear Aromatics GC/MS
Volatile Fuels

Parameter	Result	Units
Phenanthrene	0.0151J	ug/L
Ethylbenzene	0.430J	ug/L
o-Xylene	0.390J	ug/L
P & M -Xylene	0.830J	ug/L
Toluene	0.380J	ug/L
Xylenes (total)	1.22J	ug/L

Client Sample ID: **MW-12-10**
Lab Sample ID: 1211331003
Volatile Fuels

Parameter	Result	Units
Ethylbenzene	0.420J	ug/L
Gasoline Range Organics	0.0721J	mg/L
o-Xylene	0.380J	ug/L
P & M -Xylene	0.830J	ug/L
Toluene	0.380J	ug/L
Xylenes (total)	1.21J	ug/L

Client Sample ID: **Trip Blank**
Lab Sample ID: 1211331004
Volatile Fuels

Parameter	Result	Units
Ethylbenzene	0.430J	ug/L
Gasoline Range Organics	0.0339J	mg/L
o-Xylene	0.410J	ug/L
P & M -Xylene	0.850J	ug/L
Toluene	0.400J	ug/L
Xylenes (total)	1.26J	ug/L

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Results of **MW-111-15**

Client Sample ID: **MW-111-15**
Client Project ID: **102599-012 Gus PFAS DOT-MW**
Lab Sample ID: 1211331001
Lab Project ID: 1211331

Collection Date: 03/25/21 10:25
Received Date: 03/29/21 08:04
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0240	U	0.0481	0.0144	ug/L	1		04/02/21 13:40
2-Methylnaphthalene	0.0240	U	0.0481	0.0144	ug/L	1		04/02/21 13:40
Acenaphthene	0.0240	U	0.0481	0.0144	ug/L	1		04/02/21 13:40
Acenaphthylene	0.0240	U	0.0481	0.0144	ug/L	1		04/02/21 13:40
Anthracene	0.0240	U	0.0481	0.0144	ug/L	1		04/02/21 13:40
Benzo(a)Anthracene	0.0240	U	0.0481	0.0144	ug/L	1		04/02/21 13:40
Benzo[a]pyrene	0.00960	U	0.0192	0.00596	ug/L	1		04/02/21 13:40
Benzo[b]Fluoranthene	0.0240	U	0.0481	0.0144	ug/L	1		04/02/21 13:40
Benzo[g,h,i]perylene	0.0240	U	0.0481	0.0144	ug/L	1		04/02/21 13:40
Benzo[k]fluoranthene	0.0240	U	0.0481	0.0144	ug/L	1		04/02/21 13:40
Chrysene	0.0240	U	0.0481	0.0144	ug/L	1		04/02/21 13:40
Dibenzo[a,h]anthracene	0.00960	U	0.0192	0.00596	ug/L	1		04/02/21 13:40
Fluoranthene	0.0240	U	0.0481	0.0144	ug/L	1		04/02/21 13:40
Fluorene	0.0240	U	0.0481	0.0144	ug/L	1		04/02/21 13:40
Indeno[1,2,3-c,d] pyrene	0.0240	U	0.0481	0.0144	ug/L	1		04/02/21 13:40
Naphthalene	0.0481	U	0.0962	0.0298	ug/L	1		04/02/21 13:40
Phenanthrene	0.0240	U	0.0481	0.0144	ug/L	1		04/02/21 13:40
Pyrene	0.0240	U	0.0481	0.0144	ug/L	1		04/02/21 13:40
Surrogates								
2-Methylnaphthalene-d10 (surr)	58.8		42-86		%	1		04/02/21 13:40
Fluoranthene-d10 (surr)	61.8		50-97		%	1		04/02/21 13:40

Batch Information

Analytical Batch: XMS12550
Analytical Method: 8270D SIM LV (PAH)
Analyst: CDM
Analytical Date/Time: 04/02/21 13:40
Container ID: 1211331001-A

Prep Batch: XXX44570
Prep Method: SW3535A
Prep Date/Time: 03/31/21 14:00
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Print Date: 04/07/2021 1:17:11PM

J flagging is activated

Results of **MW-111-15**

Client Sample ID: **MW-111-15**
Client Project ID: **102599-012 Gus PFAS DOT-MW**
Lab Sample ID: 1211331001
Lab Project ID: 1211331

Collection Date: 03/25/21 10:25
Received Date: 03/29/21 08:04
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.288	U	0.577	0.173	mg/L	1		04/02/21 11:56
Surrogates								
5a Androstane (surr)	80.3		50-150		%	1		04/02/21 11:56

Batch Information

Analytical Batch: XFC15884
Analytical Method: AK102
Analyst: A.A
Analytical Date/Time: 04/02/21 11:56
Container ID: 1211331001-C

Prep Batch: XXX44572
Prep Method: SW3520C
Prep Date/Time: 03/31/21 16:37
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.240	U	0.481	0.144	mg/L	1		04/02/21 11:56
Surrogates								
n-Triacontane-d62 (surr)	86.6		50-150		%	1		04/02/21 11:56

Batch Information

Analytical Batch: XFC15884
Analytical Method: AK103
Analyst: A.A
Analytical Date/Time: 04/02/21 11:56
Container ID: 1211331001-C

Prep Batch: XXX44572
Prep Method: SW3520C
Prep Date/Time: 03/31/21 16:37
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Results of **MW-111-15**

Client Sample ID: **MW-111-15**
Client Project ID: **102599-012 Gus PFAS DOT-MW**
Lab Sample ID: 1211331001
Lab Project ID: 1211331

Collection Date: 03/25/21 10:25
Received Date: 03/29/21 08:04
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0500	U	0.100	0.0310	mg/L	1		03/30/21 17:55
Surrogates								
4-Bromofluorobenzene (surr)	95.9		50-150		%	1		03/30/21 17:55

Batch Information

Analytical Batch: VFC15533
Analytical Method: AK101
Analyst: S.S
Analytical Date/Time: 03/30/21 17:55
Container ID: 1211331001-E

Prep Batch: VXX36909
Prep Method: SW5030B
Prep Date/Time: 03/30/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.250	U	0.500	0.150	ug/L	1		03/30/21 17:55
Ethylbenzene	0.440	J	1.00	0.310	ug/L	1		03/30/21 17:55
o-Xylene	0.390	J	1.00	0.310	ug/L	1		03/30/21 17:55
P & M -Xylene	0.850	J	2.00	0.620	ug/L	1		03/30/21 17:55
Toluene	0.390	J	1.00	0.310	ug/L	1		03/30/21 17:55
Xylenes (total)	1.24	J	3.00	0.930	ug/L	1		03/30/21 17:55
Surrogates								
1,4-Difluorobenzene (surr)	95		77-115		%	1		03/30/21 17:55

Batch Information

Analytical Batch: VFC15533
Analytical Method: SW8021B
Analyst: S.S
Analytical Date/Time: 03/30/21 17:55
Container ID: 1211331001-E

Prep Batch: VXX36909
Prep Method: SW5030B
Prep Date/Time: 03/30/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 04/07/2021 1:17:11PM

J flagging is activated

Results of **MW-11-15**

Client Sample ID: **MW-11-15**
Client Project ID: **102599-012 Gus PFAS DOT-MW**
Lab Sample ID: 1211331002
Lab Project ID: 1211331

Collection Date: 03/25/21 10:35
Received Date: 03/29/21 08:04
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0240	U	0.0481	0.0144	ug/L	1		04/02/21 14:01
2-Methylnaphthalene	0.0240	U	0.0481	0.0144	ug/L	1		04/02/21 14:01
Acenaphthene	0.0240	U	0.0481	0.0144	ug/L	1		04/02/21 14:01
Acenaphthylene	0.0240	U	0.0481	0.0144	ug/L	1		04/02/21 14:01
Anthracene	0.0240	U	0.0481	0.0144	ug/L	1		04/02/21 14:01
Benzo(a)Anthracene	0.0240	U	0.0481	0.0144	ug/L	1		04/02/21 14:01
Benzo[a]pyrene	0.00960	U	0.0192	0.00596	ug/L	1		04/02/21 14:01
Benzo[b]Fluoranthene	0.0240	U	0.0481	0.0144	ug/L	1		04/02/21 14:01
Benzo[g,h,i]perylene	0.0240	U	0.0481	0.0144	ug/L	1		04/02/21 14:01
Benzo[k]fluoranthene	0.0240	U	0.0481	0.0144	ug/L	1		04/02/21 14:01
Chrysene	0.0240	U	0.0481	0.0144	ug/L	1		04/02/21 14:01
Dibenzo[a,h]anthracene	0.00960	U	0.0192	0.00596	ug/L	1		04/02/21 14:01
Fluoranthene	0.0240	U	0.0481	0.0144	ug/L	1		04/02/21 14:01
Fluorene	0.0240	U	0.0481	0.0144	ug/L	1		04/02/21 14:01
Indeno[1,2,3-c,d] pyrene	0.0240	U	0.0481	0.0144	ug/L	1		04/02/21 14:01
Naphthalene	0.0481	U	0.0962	0.0298	ug/L	1		04/02/21 14:01
Phenanthrene	0.0151	J	0.0481	0.0144	ug/L	1		04/02/21 14:01
Pyrene	0.0240	U	0.0481	0.0144	ug/L	1		04/02/21 14:01
Surrogates								
2-Methylnaphthalene-d10 (surr)	64.3		42-86		%	1		04/02/21 14:01
Fluoranthene-d10 (surr)	65.6		50-97		%	1		04/02/21 14:01

Batch Information

Analytical Batch: XMS12550
Analytical Method: 8270D SIM LV (PAH)
Analyst: CDM
Analytical Date/Time: 04/02/21 14:01
Container ID: 1211331002-A

Prep Batch: XXX44570
Prep Method: SW3535A
Prep Date/Time: 03/31/21 14:00
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Print Date: 04/07/2021 1:17:11PM

J flagging is activated

Results of **MW-11-15**

Client Sample ID: **MW-11-15**
Client Project ID: **102599-012 Gus PFAS DOT-MW**
Lab Sample ID: 1211331002
Lab Project ID: 1211331

Collection Date: 03/25/21 10:35
Received Date: 03/29/21 08:04
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.283	U	0.566	0.170	mg/L	1		04/02/21 12:06
Surrogates								
5a Androstane (surr)	82.3		50-150		%	1		04/02/21 12:06

Batch Information

Analytical Batch: XFC15884
Analytical Method: AK102
Analyst: A.A
Analytical Date/Time: 04/02/21 12:06
Container ID: 1211331002-C

Prep Batch: XXX44572
Prep Method: SW3520C
Prep Date/Time: 03/31/21 16:37
Prep Initial Wt./Vol.: 265 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.236	U	0.472	0.142	mg/L	1		04/02/21 12:06
Surrogates								
n-Triacontane-d62 (surr)	87.3		50-150		%	1		04/02/21 12:06

Batch Information

Analytical Batch: XFC15884
Analytical Method: AK103
Analyst: A.A
Analytical Date/Time: 04/02/21 12:06
Container ID: 1211331002-C

Prep Batch: XXX44572
Prep Method: SW3520C
Prep Date/Time: 03/31/21 16:37
Prep Initial Wt./Vol.: 265 mL
Prep Extract Vol: 1 mL

Print Date: 04/07/2021 1:17:11PM

J flagging is activated

Results of **MW-11-15**

Client Sample ID: **MW-11-15**
Client Project ID: **102599-012 Gus PFAS DOT-MW**
Lab Sample ID: 1211331002
Lab Project ID: 1211331

Collection Date: 03/25/21 10:35
Received Date: 03/29/21 08:04
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0500	U	0.100	0.0310	mg/L	1		03/30/21 18:13
Surrogates								
4-Bromofluorobenzene (surr)	96.2		50-150		%	1		03/30/21 18:13

Batch Information

Analytical Batch: VFC15533
Analytical Method: AK101
Analyst: S.S
Analytical Date/Time: 03/30/21 18:13
Container ID: 1211331002-E

Prep Batch: VXX36909
Prep Method: SW5030B
Prep Date/Time: 03/30/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.250	U	0.500	0.150	ug/L	1		03/30/21 18:13
Ethylbenzene	0.430	J	1.00	0.310	ug/L	1		03/30/21 18:13
o-Xylene	0.390	J	1.00	0.310	ug/L	1		03/30/21 18:13
P & M -Xylene	0.830	J	2.00	0.620	ug/L	1		03/30/21 18:13
Toluene	0.380	J	1.00	0.310	ug/L	1		03/30/21 18:13
Xylenes (total)	1.22	J	3.00	0.930	ug/L	1		03/30/21 18:13
Surrogates								
1,4-Difluorobenzene (surr)	94.5		77-115		%	1		03/30/21 18:13

Batch Information

Analytical Batch: VFC15533
Analytical Method: SW8021B
Analyst: S.S
Analytical Date/Time: 03/30/21 18:13
Container ID: 1211331002-E

Prep Batch: VXX36909
Prep Method: SW5030B
Prep Date/Time: 03/30/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **MW-12-10**

Client Sample ID: **MW-12-10**
Client Project ID: **102599-012 Gus PFAS DOT-MW**
Lab Sample ID: 1211331003
Lab Project ID: 1211331

Collection Date: 03/25/21 12:05
Received Date: 03/29/21 08:04
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0239	U	0.0477	0.0143	ug/L	1		04/02/21 14:21
2-Methylnaphthalene	0.0239	U	0.0477	0.0143	ug/L	1		04/02/21 14:21
Acenaphthene	0.0239	U	0.0477	0.0143	ug/L	1		04/02/21 14:21
Acenaphthylene	0.0239	U	0.0477	0.0143	ug/L	1		04/02/21 14:21
Anthracene	0.0239	U	0.0477	0.0143	ug/L	1		04/02/21 14:21
Benzo(a)Anthracene	0.0239	U	0.0477	0.0143	ug/L	1		04/02/21 14:21
Benzo[a]pyrene	0.00955	U	0.0191	0.00592	ug/L	1		04/02/21 14:21
Benzo[b]Fluoranthene	0.0239	U	0.0477	0.0143	ug/L	1		04/02/21 14:21
Benzo[g,h,i]perylene	0.0239	U	0.0477	0.0143	ug/L	1		04/02/21 14:21
Benzo[k]fluoranthene	0.0239	U	0.0477	0.0143	ug/L	1		04/02/21 14:21
Chrysene	0.0239	U	0.0477	0.0143	ug/L	1		04/02/21 14:21
Dibenzo[a,h]anthracene	0.00955	U	0.0191	0.00592	ug/L	1		04/02/21 14:21
Fluoranthene	0.0239	U	0.0477	0.0143	ug/L	1		04/02/21 14:21
Fluorene	0.0239	U	0.0477	0.0143	ug/L	1		04/02/21 14:21
Indeno[1,2,3-c,d] pyrene	0.0239	U	0.0477	0.0143	ug/L	1		04/02/21 14:21
Naphthalene	0.0477	U	0.0954	0.0296	ug/L	1		04/02/21 14:21
Phenanthrene	0.0239	U	0.0477	0.0143	ug/L	1		04/02/21 14:21
Pyrene	0.0239	U	0.0477	0.0143	ug/L	1		04/02/21 14:21
Surrogates								
2-Methylnaphthalene-d10 (surr)	57		42-86		%	1		04/02/21 14:21
Fluoranthene-d10 (surr)	61.7		50-97		%	1		04/02/21 14:21

Batch Information

Analytical Batch: XMS12550
Analytical Method: 8270D SIM LV (PAH)
Analyst: CDM
Analytical Date/Time: 04/02/21 14:21
Container ID: 1211331003-A

Prep Batch: XXX44570
Prep Method: SW3535A
Prep Date/Time: 03/31/21 14:00
Prep Initial Wt./Vol.: 262 mL
Prep Extract Vol: 1 mL

Print Date: 04/07/2021 1:17:11PM

J flagging is activated

Results of **MW-12-10**

Client Sample ID: **MW-12-10**
Client Project ID: **102599-012 Gus PFAS DOT-MW**
Lab Sample ID: 1211331003
Lab Project ID: 1211331

Collection Date: 03/25/21 12:05
Received Date: 03/29/21 08:04
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.283	U	0.566	0.170	mg/L	1		04/02/21 12:16
Surrogates								
5a Androstane (surr)	84		50-150		%	1		04/02/21 12:16

Batch Information

Analytical Batch: XFC15884
Analytical Method: AK102
Analyst: A.A
Analytical Date/Time: 04/02/21 12:16
Container ID: 1211331003-C

Prep Batch: XXX44572
Prep Method: SW3520C
Prep Date/Time: 03/31/21 16:37
Prep Initial Wt./Vol.: 265 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.236	U	0.472	0.142	mg/L	1		04/02/21 12:16
Surrogates								
n-Triacontane-d62 (surr)	88.1		50-150		%	1		04/02/21 12:16

Batch Information

Analytical Batch: XFC15884
Analytical Method: AK103
Analyst: A.A
Analytical Date/Time: 04/02/21 12:16
Container ID: 1211331003-C

Prep Batch: XXX44572
Prep Method: SW3520C
Prep Date/Time: 03/31/21 16:37
Prep Initial Wt./Vol.: 265 mL
Prep Extract Vol: 1 mL

Print Date: 04/07/2021 1:17:11PM

J flagging is activated

Results of **MW-12-10**

Client Sample ID: **MW-12-10**
Client Project ID: **102599-012 Gus PFAS DOT-MW**
Lab Sample ID: 1211331003
Lab Project ID: 1211331

Collection Date: 03/25/21 12:05
Received Date: 03/29/21 08:04
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0721	J	0.100	0.0310	mg/L	1		03/30/21 18:31
Surrogates								
4-Bromofluorobenzene (surr)	95.8		50-150		%	1		03/30/21 18:31

Batch Information

Analytical Batch: VFC15533
Analytical Method: AK101
Analyst: S.S
Analytical Date/Time: 03/30/21 18:31
Container ID: 1211331003-E

Prep Batch: VXX36909
Prep Method: SW5030B
Prep Date/Time: 03/30/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.250	U	0.500	0.150	ug/L	1		03/30/21 18:31
Ethylbenzene	0.420	J	1.00	0.310	ug/L	1		03/30/21 18:31
o-Xylene	0.380	J	1.00	0.310	ug/L	1		03/30/21 18:31
P & M -Xylene	0.830	J	2.00	0.620	ug/L	1		03/30/21 18:31
Toluene	0.380	J	1.00	0.310	ug/L	1		03/30/21 18:31
Xylenes (total)	1.21	J	3.00	0.930	ug/L	1		03/30/21 18:31
Surrogates								
1,4-Difluorobenzene (surr)	96.1		77-115		%	1		03/30/21 18:31

Batch Information

Analytical Batch: VFC15533
Analytical Method: SW8021B
Analyst: S.S
Analytical Date/Time: 03/30/21 18:31
Container ID: 1211331003-E

Prep Batch: VXX36909
Prep Method: SW5030B
Prep Date/Time: 03/30/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 04/07/2021 1:17:11PM

J flagging is activated

Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **102599-012 Gus PFAS DOT-MW**
Lab Sample ID: 1211331004
Lab Project ID: 1211331

Collection Date: 03/25/21 10:25
Received Date: 03/29/21 08:04
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0339	J	0.100	0.0310	mg/L	1		03/30/21 17:19
Surrogates								
4-Bromofluorobenzene (surr)	92.4		50-150		%	1		03/30/21 17:19

Batch Information

Analytical Batch: VFC15533
Analytical Method: AK101
Analyst: S.S
Analytical Date/Time: 03/30/21 17:19
Container ID: 1211331004-A

Prep Batch: VXX36909
Prep Method: SW5030B
Prep Date/Time: 03/30/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.250	U	0.500	0.150	ug/L	1		03/30/21 17:19
Ethylbenzene	0.430	J	1.00	0.310	ug/L	1		03/30/21 17:19
o-Xylene	0.410	J	1.00	0.310	ug/L	1		03/30/21 17:19
P & M -Xylene	0.850	J	2.00	0.620	ug/L	1		03/30/21 17:19
Toluene	0.400	J	1.00	0.310	ug/L	1		03/30/21 17:19
Xylenes (total)	1.26	J	3.00	0.930	ug/L	1		03/30/21 17:19
Surrogates								
1,4-Difluorobenzene (surr)	96.1		77-115		%	1		03/30/21 17:19

Batch Information

Analytical Batch: VFC15533
Analytical Method: SW8021B
Analyst: S.S
Analytical Date/Time: 03/30/21 17:19
Container ID: 1211331004-A

Prep Batch: VXX36909
Prep Method: SW5030B
Prep Date/Time: 03/30/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 04/07/2021 1:17:11PM

J flagging is activated

Method Blank

Blank ID: MB for HBN 1817302 [VXX/36909]
Blank Lab ID: 1604522

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1211331001, 1211331002, 1211331003, 1211331004

Results by **AK101**

Parameter	Results	LOQ/CL	DL	Units
Gasoline Range Organics	0.0500U	0.100	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene (surr)	97.8	50-150		%

Batch Information

Analytical Batch: VFC15533
Analytical Method: AK101
Instrument: Agilent 7890A PID/FID
Analyst: S.S
Analytical Date/Time: 3/30/2021 9:48:00AM

Prep Batch: VXX36909
Prep Method: SW5030B
Prep Date/Time: 3/30/2021 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1211331 [VXX36909]
Blank Spike Lab ID: 1604525
Date Analyzed: 03/30/2021 10:42

Spike Duplicate ID: LCSD for HBN 1211331 [VXX36909]
Spike Duplicate Lab ID: 1604526
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1211331001, 1211331002, 1211331003, 1211331004

Results by **AK101**

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Gasoline Range Organics	1.00	1.08	108	1.00	1.07	107	(60-120)	0.41	(< 20)
Surrogates									
4-Bromofluorobenzene (surr)	0.0500		100	0.0500		101	(50-150)	1.50	

Batch Information

Analytical Batch: **VFC15533**
Analytical Method: **AK101**
Instrument: **Agilent 7890A PID/FID**
Analyst: **S.S**

Prep Batch: **VXX36909**
Prep Method: **SW5030B**
Prep Date/Time: **03/30/2021 06:00**
Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Method Blank

Blank ID: MB for HBN 1817302 [VXX/36909]
Blank Lab ID: 1604522

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1211331001, 1211331002, 1211331003, 1211331004

Results by **SW8021B**

Parameter	Results	LOQ/CL	DL	Units
Benzene	0.250U	0.500	0.150	ug/L
Ethylbenzene	0.420J	1.00	0.310	ug/L
o-Xylene	0.380J	1.00	0.310	ug/L
P & M -Xylene	0.840J	2.00	0.620	ug/L
Toluene	0.390J	1.00	0.310	ug/L
Xylenes (total)	1.22J	3.00	0.930	ug/L
Surrogates				
1,4-Difluorobenzene (surr)	95.5	77-115		%

Batch Information

Analytical Batch: VFC15533
Analytical Method: SW8021B
Instrument: Agilent 7890A PID/FID
Analyst: S.S
Analytical Date/Time: 3/30/2021 9:48:00AM

Prep Batch: VXX36909
Prep Method: SW5030B
Prep Date/Time: 3/30/2021 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1211331 [VXX36909]
Blank Spike Lab ID: 1604523
Date Analyzed: 03/30/2021 10:24

Spike Duplicate ID: LCSD for HBN 1211331 [VXX36909]
Spike Duplicate Lab ID: 1604524
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1211331001, 1211331002, 1211331003, 1211331004

Results by **SW8021B**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Benzene	100	117	117	100	117	117	(80-120)	0.38	(< 20)
Ethylbenzene	100	97.0	97	100	95.7	96	(75-125)	1.40	(< 20)
o-Xylene	100	96.9	97	100	95.4	95	(80-120)	1.60	(< 20)
P & M -Xylene	200	193	96	200	189	95	(75-130)	1.60	(< 20)
Toluene	100	103	103	100	102	102	(75-120)	0.93	(< 20)
Xylenes (total)	300	290	97	300	285	95	(79-121)	1.60	(< 20)
Surrogates									
1,4-Difluorobenzene (surr)	50		104	50		102	(77-115)	1.60	

Batch Information

Analytical Batch: **VFC15533**
Analytical Method: **SW8021B**
Instrument: **Agilent 7890A PID/FID**
Analyst: **S.S**

Prep Batch: **VXX36909**
Prep Method: **SW5030B**
Prep Date/Time: **03/30/2021 06:00**
Spike Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL

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Method Blank

Blank ID: MB for HBN 1817321 [XXX/44570]
Blank Lab ID: 1604607

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1211331001, 1211331002, 1211331003

Results by **8270D SIM LV (PAH)**

Parameter	Results	LOQ/CL	DL	Units
1-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
2-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
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)	53.8	42-86		%
Fluoranthene-d10 (surr)	57.6	50-97		%

Batch Information

Analytical Batch: XMS12550
Analytical Method: 8270D SIM LV (PAH)
Instrument: SVA Agilent 780/5975 GC/MS
Analyst: CDM
Analytical Date/Time: 4/2/2021 12:18:00PM

Prep Batch: XXX44570
Prep Method: SW3535A
Prep Date/Time: 3/31/2021 2:00:32PM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 04/07/2021 1:17:24PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1211331 [XXX44570]
Blank Spike Lab ID: 1604608
Date Analyzed: 04/02/2021 12:39

Spike Duplicate ID: LCSD for HBN 1211331 [XXX44570]
Spike Duplicate Lab ID: 1604609
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1211331001, 1211331002, 1211331003

Results by **8270D SIM LV (PAH)**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1-Methylnaphthalene	2	1.14	57	2	1.02	51	(41-115)	10.40	(< 20)
2-Methylnaphthalene	2	1.14	57	2	1.00	50	(39-114)	12.80	(< 20)
Acenaphthene	2	1.19	59	2	1.13	57	(48-114)	4.60	(< 20)
Acenaphthylene	2	1.31	66	2	1.28	64	(35-121)	2.00	(< 20)
Anthracene	2	1.22	61	2	1.21	61	(53-119)	0.38	(< 20)
Benzo(a)Anthracene	2	1.30	65	2	1.22	61	(59-120)	6.50	(< 20)
Benzo[a]pyrene	2	1.53	77	2	1.45	72	(53-120)	5.90	(< 20)
Benzo[b]Fluoranthene	2	1.56	78	2	1.45	73	(53-126)	6.80	(< 20)
Benzo[g,h,i]perylene	2	1.63	82	2	1.54	77	(44-128)	6.00	(< 20)
Benzo[k]fluoranthene	2	1.55	78	2	1.46	73	(54-125)	6.10	(< 20)
Chrysene	2	1.37	69	2	1.30	65	(57-120)	5.10	(< 20)
Dibenzo[a,h]anthracene	2	1.77	89	2	1.66	83	(44-131)	6.40	(< 20)
Fluoranthene	2	1.32	66	2	1.28	64	(58-120)	3.30	(< 20)
Fluorene	2	1.26	63	2	1.25	62	(50-118)	0.81	(< 20)
Indeno[1,2,3-c,d] pyrene	2	1.83	92	2	1.72	86	(48-130)	6.30	(< 20)
Naphthalene	2	1.21	60	2	1.05	53	(43-114)	13.60	(< 20)
Phenanthrene	2	1.21	61	2	1.22	61	(53-115)	1.20	(< 20)
Pyrene	2	1.21	60	2	1.17	58	(53-121)	3.20	(< 20)
Surrogates									
2-Methylnaphthalene-d10 (surr)	2		51	2		46	(42-86)	10.30	
Fluoranthene-d10 (surr)	2		58	2		56	(50-97)	2.70	

Batch Information

Analytical Batch: **XMS12550**
Analytical Method: **8270D SIM LV (PAH)**
Instrument: **SVA Agilent 780/5975 GC/MS**
Analyst: **CDM**

Prep Batch: **XXX44570**
Prep Method: **SW3535A**
Prep Date/Time: **03/31/2021 14:00**
Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

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Method Blank

Blank ID: MB for HBN 1817337 [XXX/44572]
Blank Lab ID: 1604683

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1211331001, 1211331002, 1211331003

Results by **AK102**

Parameter	Results	LOQ/CL	DL	Units
Diesel Range Organics	0.300U	0.600	0.180	mg/L
Surrogates				
5a Androstane (surr)	79.7	60-120		%

Batch Information

Analytical Batch: XFC15884
Analytical Method: AK102
Instrument: Agilent 7890B R
Analyst: A.A
Analytical Date/Time: 4/2/2021 11:17:00AM

Prep Batch: XXX44572
Prep Method: SW3520C
Prep Date/Time: 3/31/2021 4:37:04PM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1211331 [XXX44572]
Blank Spike Lab ID: 1604684
Date Analyzed: 04/02/2021 11:27

Spike Duplicate ID: LCSD for HBN 1211331 [XXX44572]
Spike Duplicate Lab ID: 1604685
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1211331001, 1211331002, 1211331003

Results by **AK102**

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Diesel Range Organics	20	19.7	99	20	18.8	94	(75-125)	4.60	(< 20)
Surrogates									
5a Androstane (surr)	0.4		103	0.4		102	(60-120)	1.40	

Batch Information

Analytical Batch: **XFC15884**
Analytical Method: **AK102**
Instrument: **Agilent 7890B R**
Analyst: **A.A**

Prep Batch: **XXX44572**
Prep Method: **SW3520C**
Prep Date/Time: **03/31/2021 16:37**
Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

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Method Blank

Blank ID: MB for HBN 1817337 [XXX/44572]
Blank Lab ID: 1604683

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1211331001, 1211331002, 1211331003

Results by **AK103**

Parameter	Results	LOQ/CL	DL	Units
Residual Range Organics	0.250U	0.500	0.150	mg/L
Surrogates				
n-Triacontane-d62 (surr)	89.2	60-120		%

Batch Information

Analytical Batch: XFC15884
Analytical Method: AK103
Instrument: Agilent 7890B R
Analyst: A.A
Analytical Date/Time: 4/2/2021 11:17:00AM

Prep Batch: XXX44572
Prep Method: SW3520C
Prep Date/Time: 3/31/2021 4:37:04PM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1211331 [XXX44572]
Blank Spike LabID: 1604684
Date Analyzed: 04/02/2021 11:27

Spike Duplicate ID: LCSD for HBN 1211331 [XXX44572]
Spike Duplicate Lab ID: 1604685
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1211331001, 1211331002, 1211331003

Results by AK103

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Residual Range Organics	20	20.2	101	20	19.2	96	(60-120)	5.30	(<20)
Surrogates									
n- Triacontane-d62 (surr)	0.4		98	0.4		91	(60-120)	8.00	

Batch Information

Analytical Batch: **XFC15884**
Analytical Method: **AK103**
Instrument: **Agilent 7890B R**
Analyst: **A.A**

Prep Batch: **XXX44572**
Prep Method: **SW3520C**
Prep Date/Time: **03/31/2021 16:37**
Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

Print Date: 04/07/2021 1:17:35PM

P# 347128 dn

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600
www.shannonwilson.com

CHAIN-OF-CUSTODY RECORD

Laboratory SGS
Attn:

1211331

Turn Around Time:	Quote No:	J-Flags:
[X] Normal [ ] Rush		[X] Yes [ ] No
Please Specify		

Analytical Methods (include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	GRO/BTEX	DRO/RRO	PAH	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
MW-111-15	1AG	1025	3/25/21	X	X	X	3	groundwater
MW-11-15	2AG	1035	3/25/21	X	X	X	3	
MW-12-10	3AG	1205	3/25/21	X	X	X	3	1
	4AC							

Project Information		Sample Receipt	
Number:	102599-012	Total No. of Containers:	
Name:	GUS DFAS DOT-MW	COC Seals/Intact? Y/N/NA	
Contact:	KRF	Received Good Cond./Cold	
Ongoing Project?	Yes [X] No [ ]	Temp:	
Sampler:	JKR	Delivery Method:	

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature:	Signature:	Signature:
Time: 0900	Time:	Time:
Printed Name: A. Masters	Printed Name:	Printed Name:
Date: 3/29/21	Date:	Date:
Company: Shannon & Wilson, Inc	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature:	Signature:	Signature: Michelle Allaman MIA
Time:	Time:	Time: 0804
Printed Name:	Printed Name:	Printed Name: Michelle Allaman
Date:	Date:	Date: 3/29/21
Company:	Company:	Company: IF, IRS
		SGS 2.5 DSG

Notes:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

No. 36324

027 JNU 8148 7232 Merx Cooler 3/28 027-8148 7232

Shipper's Name and Address Shannon and Wilson Inc 2355 Hill Rd Fairbanks, AK 99712 USA Tel: 907-479-0600	Shipper's Account Number 27400200733 Customer's ID Number 10926
Not Negotiable **Air Waybill** Issued By Alaska AIR CARGO P.O. BOX 68900 SEATTLE, WA 98168 800-225-2752 ALASKACARGO.COM	
Consignee's Name and Address SGS North America 200 W Potter Drive Anchorage, AK 99518 USA Tel: 907-562-2343	Consignee's Account Number 27400215947
Also notify N Tel:	
Issuing Carrier's Agent and City	Accounting Information 10926 Shannon and Wilson Inc 2355 Hill Rd Fairbanks, AK 99712 USA SRN/102599 GoldStreak
Agent's IATA Code / Account No.	
Airport of Departure (Addr. of First Carrier) and Requested Routing Juneau	

To	By First Carrier	To / By	To / By	Currency		WT/VAL		Other		Declared Value For Carriage	Declared Value For Customs
ANC	Alaska Airlines			USD	PX	X		X		NVD	NCV

Airport of Destination	Flight/Date	Flight/Date	Amount of Insurance
Anchorage	AS 065/26		XXX

Handling Information
STORE IN COOLER WHEN POSSIBLE

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	38.0	L	N		38.0		AS AGREED	WATER SAMPLES KEEP COOL Dims: 13 x 14 x24 x 1 GSX COL
1	38.0						AS AGREED	Volume: 2.528

Prepaid	Weight Charge	Collect	Other Charges
AS AGREED			XBC 10.00
Valuation Charge			
Tax			
Total Other Charges Due Agent			
Total Other Charges Due Carrier			
Total Prepaid	Total Collect		
AS AGREED			

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.**

For: Shannon and Wilson Inc

Signature of Shipper or his Agent

☒ THIS SHIPMENT DOES NOT CONTAIN DANGEROUS GOODS

☐ THIS SHIPMENT DOES CONTAIN DANGEROUS GOODS

Executed On (Date)	at (Place)	Signature of Issuing Carrier or its Agent
26 Mar 2021 11:52	Juneau	Alaska Airlines

027-8148 7232

Alert Expeditors Inc. **#411556**

Citywide Delivery • 440-3351
8421 Flamingo Drive • Anchorage, Alaska 99502

Date 3-29-21
From Shannon - Wilson
To SGS Labs Anc

Collect ❒ | Prepay ❒ | Advance Charges ❒

Job # SWI | PO# AS 8118-7232

Samples

Shipped Signature

Total Charge

Received By:

e-Sample Receipt Form

SGS Workorder #: 1211331

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, 1RS
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 @ 2.5 °C Therm. ID: D59
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?	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,200.8/6020B).
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):

Sample Containers and Preservatives

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition
1211331001-A	No Preservative Required	OK			
1211331001-B	No Preservative Required	OK			
1211331001-C	HCL to pH < 2	OK			
1211331001-D	HCL to pH < 2	OK			
1211331001-E	HCL to pH < 2	OK			
1211331001-F	HCL to pH < 2	OK			
1211331001-G	HCL to pH < 2	OK			
1211331002-A	No Preservative Required	OK			
1211331002-B	No Preservative Required	OK			
1211331002-C	HCL to pH < 2	OK			
1211331002-D	HCL to pH < 2	OK			
1211331002-E	HCL to pH < 2	OK			
1211331002-F	HCL to pH < 2	OK			
1211331002-G	HCL to pH < 2	OK			
1211331003-A	No Preservative Required	OK			
1211331003-B	No Preservative Required	OK			
1211331003-C	HCL to pH < 2	OK			
1211331003-D	HCL to pH < 2	OK			
1211331003-E	HCL to pH < 2	OK			
1211331003-F	HCL to pH < 2	OK			
1211331003-G	HCL to pH < 2	OK			
1211331004-A	HCL to pH < 2	OK			
1211331004-B	HCL to pH < 2	OK			
1211331004-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 8, 2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

SGS

Laboratory Report Number:

1211331

Laboratory Report Date:

4/7/2021

CS Site Name:

DOT&PF Gustavus Airport Statewide PFAS

ADEC File Number:

2569.38.033

Hazard Identification Number:

26981

1211331

Laboratory Report Date:

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 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:

   The requested analyses were conducted by SGS, North America, Inc. in Anchorage, AK.

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:

   Cooler 1 was received at 2.5°C.

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

   Yes☒ No☐ N/A☐ Comments:

   c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

   Yes☒ No☐ N/A☐ Comments:

   The sample receipt form noted the samples arrived in good condition.

1211331

Laboratory Report Date:

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 discrepancies were noted.

e. Data quality or usability affected?

Comments:

The 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 case narrative does not identify any QC failures, discrepancies, or errors.

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 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:

1211331

Laboratory Report Date:

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?

The data quality and/or usability was 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:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes☒ No☐ N/A☐ Comments:

There were no method blank detections above the LOQ; however, ethylbenzene, o-Xylene, p&m-xylenes, total xylenes, and toluene were detected below the LOQ in the BTEX MB associated with this work order.

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

Results in the following samples are affected: *MW-11-15, MW-111-15, MW-12-10,* and *Trip Blank.*

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes☒ No☐ N/A☒ Comments:

Ethylbenzene, o-xylene, p&m-xylenes, total xylenes, and toluene were detected below the LOQ in the following project samples: *MW-11-15, MW-111-15, MW-12-10,* and *Trip Blank*. These results are considered not detected and have been flagged 'UB' at the LOQ.

v. Data quality or usability affected?

Comments:

Yes; see above.

1211331

Laboratory Report Date:

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 were analyzed for BTEX, PAH, GRO, 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:

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:

N/A; 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:

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 was not affected; see above.

Laboratory Report Date:

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 performed for the requested analyses. However, the laboratory analyzed an LCS and LCSD to assess laboratory accuracy and precision.

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:

MS and MSD samples were not analyzed for this work order.

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:

MS and MSD samples were not analyzed for this work order.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A; MS and MSD samples were not analyzed for this work order.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes☐ No☐ N/A☒ Comments:

MS and MSD samples were not analyzed for this work order.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The 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 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 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:

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:

Only one cooler was used to transport the samples in this work order.

iii. All results less than LOQ and project specified objectives?

Yes☒ No☐ N/A☐ Comments:

GRO was detected below the LOQ.

Ethylbenzene, o-xylene, p&m-xylenes, and toluene were also detected below the LOQ; however, these analytes are due to a method blank failure (see 6.iv). No qualifiers required.

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

Project samples *MW-11-15, MW-111-15* and *MW-12-10* are associated with the TB.

GRO detected in sample *MW-12-10* are considered not detected and have been flagged 'UB' at the LOQ.

GRO were not detected in *MW-11-15* and *MW-111-15.* No qualifiers are required.

v. Data quality or usability affected?

Comments:

The data quality and/or usability was 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:

The field duplicate pair *MW-11-15/MW-111-15* was 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:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The 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:

Project samples were not collected with reusable equipment, so the prospect of foreign contaminants being introduced through equipment contamination is not plausible.

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:

1211331

Laboratory Report Date:

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:

KRF

Laboratory Report of Analysis

To: Shannon & Wilson-Fairbanks
2355 Hill Rd.
Fairbanks, AK 99701
(907)479-0600

Report Number: **1213677**

Client Project: **101543-001 GUS PFAS-DRM**

Dear Kristen Freiburger,

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.

_____

Jennifer Dawkins Date
Project Manager
Jennifer.Dawkins@sgs.com

Case Narrative

SGS Client: **Shannon & Wilson-Fairbanks**
SGS Project: **1213677**
Project Name/Site: **101543-001 GUS PFAS-DRM**
Project Contact: **Kristen Freiburger**

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.

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

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, indenmification 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 (Provisionally Certified as of 05/27/2021 for Mercury by EPA200.8, Nitrate as N by SM 4500NO3-F and VOCs by EPA 524.2) & 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

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.

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
PW-200-F Port	1213677001	06/21/2021	06/25/2021	Water (Surface, Eff., Ground)
PW-200-Sink	1213677002	06/21/2021	06/25/2021	Water (Surface, Eff., Ground)
PW-200	1213677003	06/21/2021	06/25/2021	Water (Surface, Eff., Ground)

Method	Method Description
EP200.8	Metals in Water by 200.8 ICP-MS

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
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Detectable Results Summary

Client Sample ID: **PW-200**
Lab Sample ID: 1213677003
Metals by ICP/MS

Parameter	Result	Units
Arsenic	14.9	ug/L

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Results of **PW-200-F Port**

Client Sample ID: **PW-200-F Port**
Client Project ID: **101543-001 GUS PFAS-DRM**
Lab Sample ID: 1213677001
Lab Project ID: 1213677

Collection Date: 06/21/21 15:52
Received Date: 06/25/21 07:50
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	2.50	U	5.00	1.50	ug/L	1		07/08/21 08:50

Batch Information

Analytical Batch: MMS11183
Analytical Method: EP200.8
Analyst: AKA
Analytical Date/Time: 07/08/21 08:50
Container ID: 1213677001-A

Prep Batch: MXX34349
Prep Method: E200.2
Prep Date/Time: 07/03/21 14:16
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 07/13/2021 8:32:05AM

J flagging is activated

Results of **PW-200-Sink**

Client Sample ID: **PW-200-Sink**
Client Project ID: **101543-001 GUS PFAS-DRM**
Lab Sample ID: 1213677002
Lab Project ID: 1213677

Collection Date: 06/21/21 15:44
Received Date: 06/25/21 07:50
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	2.50	U	5.00	1.50	ug/L	1		07/08/21 09:33

Batch Information

Analytical Batch: MMS11183
Analytical Method: EP200.8
Analyst: AKA
Analytical Date/Time: 07/08/21 09:33
Container ID: 1213677002-A

Prep Batch: MXX34349
Prep Method: E200.2
Prep Date/Time: 07/03/21 14:16
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 07/13/2021 8:32:05AM

J flagging is activated

Results of **PW-200**

Client Sample ID: **PW-200**
Client Project ID: **101543-001 GUS PFAS-DRM**
Lab Sample ID: 1213677003
Lab Project ID: 1213677

Collection Date: 06/21/21 16:15
Received Date: 06/25/21 07:50
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	14.9		5.00	1.50	ug/L	1		07/08/21 09:42

Batch Information

Analytical Batch: MMS11183
Analytical Method: EP200.8
Analyst: AKA
Analytical Date/Time: 07/08/21 09:42
Container ID: 1213677003-A

Prep Batch: MXX34349
Prep Method: E200.2
Prep Date/Time: 07/03/21 14:16
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 07/13/2021 8:32:05AM

J flagging is activated

Method Blank

Blank ID: MB for HBN 1821716 [MXX/34349]
Blank Lab ID: 1620528

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1213677001, 1213677002, 1213677003

Results by **EP200.8**

Parameter	Results	LOQ/CL	DL	Units
Arsenic	2.50U	5.00	1.50	ug/L

Batch Information

Analytical Batch: MMS11183
Analytical Method: EP200.8
Instrument: P7 Agilent 7800
Analyst: AKA
Analytical Date/Time: 7/8/2021 8:37:17AM

Prep Batch: MXX34349
Prep Method: E200.2
Prep Date/Time: 7/3/2021 2:16:49PM
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Blank Spike Summary

Blank Spike ID: LCS for HBN 1213677 [MXX34349]
Blank Spike Lab ID: 1620529
Date Analyzed: 07/08/2021 08:39

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1213677001, 1213677002, 1213677003

Results by **EP200.8**

Blank Spike (ug/L)

Parameter	Spike	Result	Rec (%)	CL
Arsenic	1000	1010	101	(85-115)

Batch Information

Analytical Batch: **MMS11183**
Analytical Method: **EP200.8**
Instrument: **P7 Agilent 7800**
Analyst: **AKA**

Prep Batch: **MXX34349**
Prep Method: **E200.2**
Prep Date/Time: **07/03/2021 14:16**
Spike Init Wt./Vol.: 1000 ug/L Extract Vol: 50 mL
Dupe Init Wt./Vol.: Extract Vol:

Print Date: 07/13/2021 8:32:09AM

Matrix Spike Summary

Original Sample ID: 1620531
MS Sample ID: 1620532 MS
MSD Sample ID:

Analysis Date: 07/08/2021 8:50
Analysis Date: 07/08/2021 8:53
Analysis Date:
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1213677001, 1213677002, 1213677003

Results by **EP200.8**

		Matrix Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Arsenic	2.50U	1000	1010	101				70-130		

Batch Information

Analytical Batch: MMS11183
Analytical Method: EP200.8
Instrument: P7 Agilent 7800
Analyst: AKA
Analytical Date/Time: 7/8/2021 8:53:26AM

Prep Batch: MXX34349
Prep Method: DW Digest for Metals on ICP-MS
Prep Date/Time: 7/3/2021 2:16:49PM
Prep Initial Wt./Vol.: 20.00mL
Prep Extract Vol: 50.00mL

Print Date: 07/13/2021 8:32:11AM

Coolers 1

CHAIN-OF-CUSTODY RECORD

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600
www.shannonwilson.com

Page 1 of 1

Laboratory SGS

Attn:

Analytical Methods (include preservative if used)

1213677

Turn Around Time:	Quote No:	MSA Number: MSA-SGS-2016	J-Flags: ☒ Yes ☐ No
☒ Normal ☐ Rush			
Please Specify			

Sample Identity	Lab No.	Time	Date Sampled	Arsenic, Total	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
PW-200-F Part Hold *	(1A)	1552	6/21/21	X	1	groundwater 1
PW-200-SINK	(2A)	1544	6/21/21	X	1	
PW-200	(3A)	1615	6/21/21	X	1	

Project Information	Sample Receipt	Reliquished By: 1.	Reliquished By: 2.	Reliquished By: 3.
Number: 101543-09	Total No. of Containers:	Signature: Time: 0800	Signature: Time:	Signature: Time:
Name: GUS PFAS-DRM	COC Seals/Intact? Y/N/NA (H.D.)	Printed Name: A. Masters Date: 6/25/21	Printed Name: Date:	Printed Name: Date:
Contact: KRF	Received Good Cond./Cold: Y	Company: Shannon + Wilson, Inc	Company:	Company:
Ongoing Project? Yes ☒ No ☐	Temp: 5.7°C #D23			
Sampler: ARM	Delivery Method: H.D.			

Notes:	Received By: 1.	Received By: 2.	Received By: 3.
pt# 347128	Signature: Time:	Signature: Time:	Signature: Time: 0750
	Printed Name: Date:	Printed Name: Date:	Printed Name: Allie Daniel Date: 06/25/21
	Company:	Company:	Company: SGS N.A.

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

cooler temp. 1.8 DH5

No.

e-Sample Receipt Form

SGS Workorder #: **1213677** | 1213677

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	absent
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: D45
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?	N/A	
If <0°C, were sample containers ice free?	No	Sample 3A was received with ice in container. Proceed with analysis.
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	
	Yes	***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?	N/A	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	N/A	
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

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition
1213677001-A	HNO3 to pH < 2	OK			
1213677002-A	HNO3 to pH < 2	OK			
1213677003-A	HNO3 to pH < 2	FR			

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:

Rachel Willis

Title:

Environmental Scientist

Date:

July 16, 2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

SGS North America, Inc. (SGS)

Laboratory Report Number:

1213677

Laboratory Report Date:

July 17, 2021

CS Site Name:

DRM Gustavus PFAS

ADEC File Number:

1507.38.017

Hazard Identification Number:

26904

1213677

Laboratory Report Date:

July 17, 2021

CS Site Name:

DRM Gustavus 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:

   The samples were analyzed by SGS.

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:

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DRM Gustavus PFAS

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes☒ No☐ N/A☐ Comments:

The sample receipt forms note that sample 3A was received with ice in the container.

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 laboratory proceeded with analysis. The arsenic result for sample *PW-200* is considered estimated, flagged with a "J" on the analytical table.

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 refers to the sample receipt to discuss sample condition.

c. Were all corrective actions documented?

Yes☐ No☐ N/A☒ Comments:

The laboratory does not discuss any corrective actions.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The results are unaffected.

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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 included 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 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:

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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:

The results are unaffected; see below.

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:

Organics were not reported with this work order.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes☐ No☒ N/A☐ Comments:

An LCS and MS were reported with this analysis. We do not have a measure of precision for these analytes.

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:

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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 laboratory did not run a duplicate for the LCS or MS sample. We do not have a measure of precision

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

None.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes☐ No☐ N/A☒ Comments:

No flags are required.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Data quality 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:

Organics were not included with this work order.

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes☐ No☐ N/A☒ Comments:

An LCS and MS were reported for metals analysis. We do not have a measure of precision for these analyses.

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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:

See above.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

None; 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 or usability is 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:

Organic analyses were not included with this work order.

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:

See above.

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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:

Flags are not required; see above.

iv. Data quality or usability affected?

Comments:

Data quality 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:

Volatile compounds were not requested for this project. A trip blank is not required for the requested analyses.

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:

See above.

v. Data quality or usability affected?

Comments:

Data quality or usability are not affected.

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f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes☐ No☐ N/A☒ Comments:

Only three project samples were submitted with this work order.

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)

RPD (%) = 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 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 sample was not collected with reusable equipment, therefore an equipment blank is not necessary.

i. All results less than LOQ and project specified objectives?

Yes☐ No☐ N/A☒ Comments:

See above.

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ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

None; see above.

iii. Data quality or usability affected?

Comments:

Data quality or usability are not affected.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes☐ No☐ N/A☒ Comments:

N/A

KRF

Laboratory Report of Analysis

To: Shannon & Wilson-Fairbanks
2355 Hill Rd.
Fairbanks, AK 99701
(907)479-0600

Report Number: **1213682**

Client Project: **102599-012 DOT GUS PFAS**

Dear Kristen Freiburger,

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.

_____

Jennifer Dawkins Date
Project Manager
Jennifer.Dawkins@sgs.com

SGS North America Inc. 200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Case Narrative

SGS Client: **Shannon & Wilson-Fairbanks**
SGS Project: **1213682**
Project Name/Site: **102599-012 DOT GUS PFAS**
Project Contact: **Kristen Freiburger**

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.

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

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, indenmification 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 (Provisionally Certified as of 05/27/2021 for Mercury by EPA200.8, Nitrate as N by SM 4500NO3-F and VOCs by EPA 524.2) & 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

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.

SGS North America Inc. 200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
MW-111-15	1213682001	06/23/2021	06/25/2021	Water (Surface, Eff., Ground)
MW-11-15	1213682002	06/23/2021	06/25/2021	Water (Surface, Eff., Ground)
MW-12-10	1213682003	06/23/2021	06/25/2021	Water (Surface, Eff., Ground)
Trip Blank	1213682004	06/23/2021	06/25/2021	Water (Surface, Eff., Ground)

Method	Method Description
8270D SIM LV (PAH)	8270 PAH SIM GC/MS LV
AK101	AK101/8021 Combo.
SW8021B	AK101/8021 Combo.
AK102	DRO/RRO Low Volume Water
AK103	DRO/RRO Low Volume Water

Detectable Results Summary

Client Sample ID: **MW-111-15**
Lab Sample ID: 1213682001
Polynuclear Aromatics GC/MS
Semivolatile Organic Fuels

Parameter	Result	Units
Phenanthrene	0.0250J	ug/L
Diesel Range Organics	0.233J	mg/L

Client Sample ID: **MW-11-15**
Lab Sample ID: 1213682002
Polynuclear Aromatics GC/MS
Semivolatile Organic Fuels

Parameter	Result	Units
Phenanthrene	0.0227J	ug/L
Diesel Range Organics	0.225J	mg/L

Client Sample ID: **MW-12-10**
Lab Sample ID: 1213682003
Polynuclear Aromatics GC/MS
Semivolatile Organic Fuels

Parameter	Result	Units
Phenanthrene	0.0233J	ug/L
Diesel Range Organics	0.235J	mg/L

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Results of **MW-111-15**

Client Sample ID: **MW-111-15**
Client Project ID: **102599-012 DOT GUS PFAS**
Lab Sample ID: 1213682001
Lab Project ID: 1213682

Collection Date: 06/23/21 10:03
Received Date: 06/25/21 07:50
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0232	U	0.0463	0.0139	ug/L	1		07/14/21 23:25
2-Methylnaphthalene	0.0232	U	0.0463	0.0139	ug/L	1		07/14/21 23:25
Acenaphthene	0.0232	U	0.0463	0.0139	ug/L	1		07/14/21 23:25
Acenaphthylene	0.0232	U	0.0463	0.0139	ug/L	1		07/14/21 23:25
Anthracene	0.0232	U	0.0463	0.0139	ug/L	1		07/14/21 23:25
Benzo(a)Anthracene	0.0232	U	0.0463	0.0139	ug/L	1		07/14/21 23:25
Benzo[a]pyrene	0.00925	U	0.0185	0.00574	ug/L	1		07/14/21 23:25
Benzo[b]Fluoranthene	0.0232	U	0.0463	0.0139	ug/L	1		07/14/21 23:25
Benzo[g,h,i]perylene	0.0232	U	0.0463	0.0139	ug/L	1		07/14/21 23:25
Benzo[k]fluoranthene	0.0232	U	0.0463	0.0139	ug/L	1		07/14/21 23:25
Chrysene	0.0232	U	0.0463	0.0139	ug/L	1		07/14/21 23:25
Dibenzo[a,h]anthracene	0.00925	U	0.0185	0.00574	ug/L	1		07/14/21 23:25
Fluoranthene	0.0232	U	0.0463	0.0139	ug/L	1		07/14/21 23:25
Fluorene	0.0232	U	0.0463	0.0139	ug/L	1		07/14/21 23:25
Indeno[1,2,3-c,d] pyrene	0.0232	U	0.0463	0.0139	ug/L	1		07/14/21 23:25
Naphthalene	0.0463	U	0.0926	0.0287	ug/L	1		07/14/21 23:25
Phenanthrene	0.0250	J	0.0463	0.0139	ug/L	1		07/14/21 23:25
Pyrene	0.0232	U	0.0463	0.0139	ug/L	1		07/14/21 23:25
Surrogates								
2-Methylnaphthalene-d10 (surr)	69.1		42-86		%	1		07/14/21 23:25
Fluoranthene-d10 (surr)	73.9		50-97		%	1		07/14/21 23:25

Batch Information

Analytical Batch: XMS12742
Analytical Method: 8270D SIM LV (PAH)
Analyst: LAW
Analytical Date/Time: 07/14/21 23:25
Container ID: 1213682001-C

Prep Batch: XXX45053
Prep Method: SW3535A
Prep Date/Time: 06/28/21 13:00
Prep Initial Wt./Vol.: 270 mL
Prep Extract Vol: 1 mL

Results of **MW-111-15**

Client Sample ID: **MW-111-15**
Client Project ID: **102599-012 DOT GUS PFAS**
Lab Sample ID: 1213682001
Lab Project ID: 1213682

Collection Date: 06/23/21 10:03
Received Date: 06/25/21 07:50
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.233	J	0.577	0.173	mg/L	1		07/01/21 13:26
Surrogates								
5a Androstane (surr)	84.6		50-150		%	1		07/01/21 13:26

Batch Information

Analytical Batch: XFC15982
Analytical Method: AK102
Analyst: IVM
Analytical Date/Time: 07/01/21 13:26
Container ID: 1213682001-A

Prep Batch: XXX45080
Prep Method: SW3520C
Prep Date/Time: 06/30/21 16:39
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.240	U	0.481	0.144	mg/L	1		07/01/21 13:26
Surrogates								
n-Triacontane-d62 (surr)	93		50-150		%	1		07/01/21 13:26

Batch Information

Analytical Batch: XFC15982
Analytical Method: AK103
Analyst: IVM
Analytical Date/Time: 07/01/21 13:26
Container ID: 1213682001-A

Prep Batch: XXX45080
Prep Method: SW3520C
Prep Date/Time: 06/30/21 16:39
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Results of **MW-111-15**

Client Sample ID: **MW-111-15**
Client Project ID: **102599-012 DOT GUS PFAS**
Lab Sample ID: 1213682001
Lab Project ID: 1213682

Collection Date: 06/23/21 10:03
Received Date: 06/25/21 07:50
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0500 U		0.100	0.0310	mg/L	1		07/02/21 20:22
Surrogates								
4-Bromofluorobenzene (surr)	84.1		50-150		%	1		07/02/21 20:22

Batch Information

Analytical Batch: VFC15692
Analytical Method: AK101
Analyst: MDT
Analytical Date/Time: 07/02/21 20:22
Container ID: 1213682001-E

Prep Batch: VXX37369
Prep Method: SW5030B
Prep Date/Time: 07/02/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.250 U		0.500	0.150	ug/L	1		07/02/21 20:22
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		07/02/21 20:22
o-Xylene	0.500 U		1.00	0.310	ug/L	1		07/02/21 20:22
P & M -Xylene	1.00 U		2.00	0.620	ug/L	1		07/02/21 20:22
Toluene	0.500 U		1.00	0.310	ug/L	1		07/02/21 20:22
Xylenes (total)	1.50 U		3.00	0.930	ug/L	1		07/02/21 20:22
Surrogates								
1,4-Difluorobenzene (surr)	101		77-115		%	1		07/02/21 20:22

Batch Information

Analytical Batch: VFC15692
Analytical Method: SW8021B
Analyst: MDT
Analytical Date/Time: 07/02/21 20:22
Container ID: 1213682001-E

Prep Batch: VXX37369
Prep Method: SW5030B
Prep Date/Time: 07/02/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **MW-11-15**

Client Sample ID: **MW-11-15**
Client Project ID: **102599-012 DOT GUS PFAS**
Lab Sample ID: 1213682002
Lab Project ID: 1213682

Collection Date: 06/23/21 10:13
Received Date: 06/25/21 07:50
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0240	U	0.0481	0.0144	ug/L	1		07/14/21 23:45
2-Methylnaphthalene	0.0240	U	0.0481	0.0144	ug/L	1		07/14/21 23:45
Acenaphthene	0.0240	U	0.0481	0.0144	ug/L	1		07/14/21 23:45
Acenaphthylene	0.0240	U	0.0481	0.0144	ug/L	1		07/14/21 23:45
Anthracene	0.0240	U	0.0481	0.0144	ug/L	1		07/14/21 23:45
Benzo(a)Anthracene	0.0240	U	0.0481	0.0144	ug/L	1		07/14/21 23:45
Benzo[a]pyrene	0.00960	U	0.0192	0.00596	ug/L	1		07/14/21 23:45
Benzo[b]Fluoranthene	0.0240	U	0.0481	0.0144	ug/L	1		07/14/21 23:45
Benzo[g,h,i]perylene	0.0240	U	0.0481	0.0144	ug/L	1		07/14/21 23:45
Benzo[k]fluoranthene	0.0240	U	0.0481	0.0144	ug/L	1		07/14/21 23:45
Chrysene	0.0240	U	0.0481	0.0144	ug/L	1		07/14/21 23:45
Dibenzo[a,h]anthracene	0.00960	U	0.0192	0.00596	ug/L	1		07/14/21 23:45
Fluoranthene	0.0240	U	0.0481	0.0144	ug/L	1		07/14/21 23:45
Fluorene	0.0240	U	0.0481	0.0144	ug/L	1		07/14/21 23:45
Indeno[1,2,3-c,d] pyrene	0.0240	U	0.0481	0.0144	ug/L	1		07/14/21 23:45
Naphthalene	0.0481	U	0.0962	0.0298	ug/L	1		07/14/21 23:45
Phenanthrene	0.0227	J	0.0481	0.0144	ug/L	1		07/14/21 23:45
Pyrene	0.0240	U	0.0481	0.0144	ug/L	1		07/14/21 23:45
Surrogates								
2-Methylnaphthalene-d10 (surr)	70.7		42-86		%	1		07/14/21 23:45
Fluoranthene-d10 (surr)	71.1		50-97		%	1		07/14/21 23:45

Batch Information

Analytical Batch: XMS12742
Analytical Method: 8270D SIM LV (PAH)
Analyst: LAW
Analytical Date/Time: 07/14/21 23:45
Container ID: 1213682002-C

Prep Batch: XXX45053
Prep Method: SW3535A
Prep Date/Time: 06/28/21 13:00
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Results of **MW-11-15**

Client Sample ID: **MW-11-15**
Client Project ID: **102599-012 DOT GUS PFAS**
Lab Sample ID: 1213682002
Lab Project ID: 1213682

Collection Date: 06/23/21 10:13
Received Date: 06/25/21 07:50
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.225	J	0.588	0.176	mg/L	1		07/01/21 13:36
Surrogates								
5a Androstane (surr)	86.5		50-150		%	1		07/01/21 13:36

Batch Information

Analytical Batch: XFC15982
Analytical Method: AK102
Analyst: IVM
Analytical Date/Time: 07/01/21 13:36
Container ID: 1213682002-A

Prep Batch: XXX45080
Prep Method: SW3520C
Prep Date/Time: 06/30/21 16:39
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.245	U	0.490	0.147	mg/L	1		07/01/21 13:36
Surrogates								
n-Triacontane-d62 (surr)	93.5		50-150		%	1		07/01/21 13:36

Batch Information

Analytical Batch: XFC15982
Analytical Method: AK103
Analyst: IVM
Analytical Date/Time: 07/01/21 13:36
Container ID: 1213682002-A

Prep Batch: XXX45080
Prep Method: SW3520C
Prep Date/Time: 06/30/21 16:39
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Results of **MW-11-15**

Client Sample ID: **MW-11-15**
Client Project ID: **102599-012 DOT GUS PFAS**
Lab Sample ID: 1213682002
Lab Project ID: 1213682

Collection Date: 06/23/21 10:13
Received Date: 06/25/21 07:50
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0500 U		0.100	0.0310	mg/L	1		07/02/21 20:40
Surrogates								
4-Bromofluorobenzene (surr)	90.2		50-150		%	1		07/02/21 20:40

Batch Information

Analytical Batch: VFC15692
Analytical Method: AK101
Analyst: MDT
Analytical Date/Time: 07/02/21 20:40
Container ID: 1213682002-E

Prep Batch: VXX37369
Prep Method: SW5030B
Prep Date/Time: 07/02/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.250 U		0.500	0.150	ug/L	1		07/02/21 20:40
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		07/02/21 20:40
o-Xylene	0.500 U		1.00	0.310	ug/L	1		07/02/21 20:40
P & M -Xylene	1.00 U		2.00	0.620	ug/L	1		07/02/21 20:40
Toluene	0.500 U		1.00	0.310	ug/L	1		07/02/21 20:40
Xylenes (total)	1.50 U		3.00	0.930	ug/L	1		07/02/21 20:40
Surrogates								
1,4-Difluorobenzene (surr)	101		77-115		%	1		07/02/21 20:40

Batch Information

Analytical Batch: VFC15692
Analytical Method: SW8021B
Analyst: MDT
Analytical Date/Time: 07/02/21 20:40
Container ID: 1213682002-E

Prep Batch: VXX37369
Prep Method: SW5030B
Prep Date/Time: 07/02/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **MW-12-10**

Client Sample ID: **MW-12-10**
Client Project ID: **102599-012 DOT GUS PFAS**
Lab Sample ID: 1213682003
Lab Project ID: 1213682

Collection Date: 06/23/21 08:50
Received Date: 06/25/21 07:50
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0250	U	0.0500	0.0150	ug/L	1		07/15/21 13:38
2-Methylnaphthalene	0.0250	U	0.0500	0.0150	ug/L	1		07/15/21 13:38
Acenaphthene	0.0250	U	0.0500	0.0150	ug/L	1		07/15/21 13:38
Acenaphthylene	0.0250	U	0.0500	0.0150	ug/L	1		07/15/21 13:38
Anthracene	0.0250	U	0.0500	0.0150	ug/L	1		07/15/21 13:38
Benzo(a)Anthracene	0.0250	U	0.0500	0.0150	ug/L	1		07/15/21 13:38
Benzo[a]pyrene	0.0100	U	0.0200	0.00620	ug/L	1		07/15/21 13:38
Benzo[b]Fluoranthene	0.0250	U	0.0500	0.0150	ug/L	1		07/15/21 13:38
Benzo[g,h,i]perylene	0.0250	U	0.0500	0.0150	ug/L	1		07/15/21 13:38
Benzo[k]fluoranthene	0.0250	U	0.0500	0.0150	ug/L	1		07/15/21 13:38
Chrysene	0.0250	U	0.0500	0.0150	ug/L	1		07/15/21 13:38
Dibenzo[a,h]anthracene	0.0100	U	0.0200	0.00620	ug/L	1		07/15/21 13:38
Fluoranthene	0.0250	U	0.0500	0.0150	ug/L	1		07/15/21 13:38
Fluorene	0.0250	U	0.0500	0.0150	ug/L	1		07/15/21 13:38
Indeno[1,2,3-c,d] pyrene	0.0250	U	0.0500	0.0150	ug/L	1		07/15/21 13:38
Naphthalene	0.0500	U	0.100	0.0310	ug/L	1		07/15/21 13:38
Phenanthrene	0.0233	J	0.0500	0.0150	ug/L	1		07/15/21 13:38
Pyrene	0.0250	U	0.0500	0.0150	ug/L	1		07/15/21 13:38
Surrogates								
2-Methylnaphthalene-d10 (surr)	67.8		42-86		%	1		07/15/21 13:38
Fluoranthene-d10 (surr)	68.9		50-97		%	1		07/15/21 13:38

Batch Information

Analytical Batch: XMS12744
Analytical Method: 8270D SIM LV (PAH)
Analyst: LAW
Analytical Date/Time: 07/15/21 13:38
Container ID: 1213682003-C

Prep Batch: XXX45053
Prep Method: SW3535A
Prep Date/Time: 06/28/21 13:00
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Results of **MW-12-10**

Client Sample ID: **MW-12-10**
Client Project ID: **102599-012 DOT GUS PFAS**
Lab Sample ID: 1213682003
Lab Project ID: 1213682

Collection Date: 06/23/21 08:50
Received Date: 06/25/21 07:50
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.235	J	0.556	0.167	mg/L	1		07/01/21 13:46
Surrogates								
5a Androstane (surr)	81.3		50-150		%	1		07/01/21 13:46

Batch Information

Analytical Batch: XFC15982
Analytical Method: AK102
Analyst: IVM
Analytical Date/Time: 07/01/21 13:46
Container ID: 1213682003-A

Prep Batch: XXX45080
Prep Method: SW3520C
Prep Date/Time: 06/30/21 16:39
Prep Initial Wt./Vol.: 270 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.232	U	0.463	0.139	mg/L	1		07/01/21 13:46
Surrogates								
n-Triacontane-d62 (surr)	90.7		50-150		%	1		07/01/21 13:46

Batch Information

Analytical Batch: XFC15982
Analytical Method: AK103
Analyst: IVM
Analytical Date/Time: 07/01/21 13:46
Container ID: 1213682003-A

Prep Batch: XXX45080
Prep Method: SW3520C
Prep Date/Time: 06/30/21 16:39
Prep Initial Wt./Vol.: 270 mL
Prep Extract Vol: 1 mL

Results of **MW-12-10**

Client Sample ID: **MW-12-10**
Client Project ID: **102599-012 DOT GUS PFAS**
Lab Sample ID: 1213682003
Lab Project ID: 1213682

Collection Date: 06/23/21 08:50
Received Date: 06/25/21 07:50
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0500 U		0.100	0.0310	mg/L	1		07/02/21 20:58
Surrogates								
4-Bromofluorobenzene (surr)	85.7		50-150		%	1		07/02/21 20:58

Batch Information

Analytical Batch: VFC15692
Analytical Method: AK101
Analyst: MDT
Analytical Date/Time: 07/02/21 20:58
Container ID: 1213682003-E

Prep Batch: VXX37369
Prep Method: SW5030B
Prep Date/Time: 07/02/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.250 U		0.500	0.150	ug/L	1		07/02/21 20:58
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		07/02/21 20:58
o-Xylene	0.500 U		1.00	0.310	ug/L	1		07/02/21 20:58
P & M -Xylene	1.00 U		2.00	0.620	ug/L	1		07/02/21 20:58
Toluene	0.500 U		1.00	0.310	ug/L	1		07/02/21 20:58
Xylenes (total)	1.50 U		3.00	0.930	ug/L	1		07/02/21 20:58
Surrogates								
1,4-Difluorobenzene (surr)	101		77-115		%	1		07/02/21 20:58

Batch Information

Analytical Batch: VFC15692
Analytical Method: SW8021B
Analyst: MDT
Analytical Date/Time: 07/02/21 20:58
Container ID: 1213682003-E

Prep Batch: VXX37369
Prep Method: SW5030B
Prep Date/Time: 07/02/21 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: **102599-012 DOT GUS PFAS**
Lab Sample ID: 1213682004
Lab Project ID: 1213682

Collection Date: 06/23/21 08:50
Received Date: 06/25/21 07:50
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0500 U		0.100	0.0310	mg/L	1		07/02/21 18:18
Surrogates								
4-Bromofluorobenzene (surr)	81.6		50-150		%	1		07/02/21 18:18

Batch Information

Analytical Batch: VFC15692
Analytical Method: AK101
Analyst: MDT
Analytical Date/Time: 07/02/21 18:18
Container ID: 1213682004-A

Prep Batch: VXX37369
Prep Method: SW5030B
Prep Date/Time: 07/02/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.250 U		0.500	0.150	ug/L	1		07/02/21 18:18
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		07/02/21 18:18
o-Xylene	0.500 U		1.00	0.310	ug/L	1		07/02/21 18:18
P & M -Xylene	1.00 U		2.00	0.620	ug/L	1		07/02/21 18:18
Toluene	0.500 U		1.00	0.310	ug/L	1		07/02/21 18:18
Xylenes (total)	1.50 U		3.00	0.930	ug/L	1		07/02/21 18:18
Surrogates								
1,4-Difluorobenzene (surr)	100		77-115		%	1		07/02/21 18:18

Batch Information

Analytical Batch: VFC15692
Analytical Method: SW8021B
Analyst: MDT
Analytical Date/Time: 07/02/21 18:18
Container ID: 1213682004-A

Prep Batch: VXX37369
Prep Method: SW5030B
Prep Date/Time: 07/02/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1821967 [VXX/37369]
Blank Lab ID: 1621672

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1213682001, 1213682002, 1213682003, 1213682004

Results by **AK101**

Parameter	Results	LOQ/CL	DL	Units
Gasoline Range Organics	0.0500U	0.100	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene (surr)	52	50-150		%

Batch Information

Analytical Batch: VFC15692
Analytical Method: AK101
Instrument: Agilent 7890A PID/FID
Analyst: MDT
Analytical Date/Time: 7/2/2021 11:20:00AM

Prep Batch: VXX37369
Prep Method: SW5030B
Prep Date/Time: 7/2/2021 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1213682 [VXX37369]
Blank Spike Lab ID: 1621677
Date Analyzed: 07/02/2021 10:43

Spike Duplicate ID: LCSD for HBN 1213682 [VXX37369]
Spike Duplicate Lab ID: 1621678
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1213682001, 1213682002, 1213682003, 1213682004

Results by **AK101**

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Gasoline Range Organics	1.00	1.15	115	1.00	1.12	112	(60-120)	2.90	(< 20)
Surrogates									
4-Bromofluorobenzene (surr)	0.0500		100	0.0500		101	(50-150)	0.42	

Batch Information

Analytical Batch: **VFC15692**
Analytical Method: **AK101**
Instrument: **Agilent 7890A PID/FID**
Analyst: **MDT**

Prep Batch: **VXX37369**
Prep Method: **SW5030B**
Prep Date/Time: **07/02/2021 06:00**
Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL

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Method Blank

Blank ID: MB for HBN 1821967 [VXX/37369]
Blank Lab ID: 1621672

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1213682001, 1213682002, 1213682003, 1213682004

Results by **SW8021B**

Parameter	Results	LOQ/CL	DL	Units
Benzene	0.250U	0.500	0.150	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
Xylenes (total)	1.50U	3.00	0.930	ug/L
Surrogates				
1,4-Difluorobenzene (surr)	102	77-115		%

Batch Information

Analytical Batch: VFC15692
Analytical Method: SW8021B
Instrument: Agilent 7890A PID/FID
Analyst: MDT
Analytical Date/Time: 7/2/2021 11:20:00AM

Prep Batch: VXX37369
Prep Method: SW5030B
Prep Date/Time: 7/2/2021 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1213682 [VXX37369]
Blank Spike Lab ID: 1621673
Date Analyzed: 07/02/2021 10:25

Spike Duplicate ID: LCSD for HBN 1213682 [VXX37369]
Spike Duplicate Lab ID: 1621674
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1213682001, 1213682002, 1213682003, 1213682004

Results by **SW8021B**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Benzene	100	104	104	100	108	108	(80-120)	3.10	(< 20)
Ethylbenzene	100	88.2	88	100	90.0	90	(75-125)	1.90	(< 20)
o-Xylene	100	85.4	85	100	87.3	87	(80-120)	2.20	(< 20)
P & M -Xylene	200	172	86	200	177	89	(75-130)	3.10	(< 20)
Toluene	100	94.3	94	100	96.4	96	(75-120)	2.20	(< 20)
Xylenes (total)	300	257	86	300	265	88	(79-121)	2.80	(< 20)
Surrogates									
1,4-Difluorobenzene (surr)	50		105	50		105	(77-115)	0.32	

Batch Information

Analytical Batch: **VFC15692**
Analytical Method: **SW8021B**
Instrument: **Agilent 7890A PID/FID**
Analyst: **MDT**

Prep Batch: **VXX37369**
Prep Method: **SW5030B**
Prep Date/Time: **07/02/2021 06:00**
Spike Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL

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Method Blank

Blank ID: MB for HBN 1821392 [XXX/45053]
Blank Lab ID: 1618950

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1213682001, 1213682002, 1213682003

Results by **8270D SIM LV (PAH)**

Parameter	Results	LOQ/CL	DL	Units
1-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
2-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
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)	66.5	42-86		%
Fluoranthene-d10 (surr)	69.7	50-97		%

Batch Information

Analytical Batch: XMS12708
Analytical Method: 8270D SIM LV (PAH)
Instrument: SVA Agilent 780/5975 GC/MS
Analyst: LAW
Analytical Date/Time: 7/1/2021 8:26:00PM

Prep Batch: XXX45053
Prep Method: SW3535A
Prep Date/Time: 6/28/2021 1:00:27PM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1213682 [XXX45053]
Blank Spike Lab ID: 1618951
Date Analyzed: 07/01/2021 20:47

Spike Duplicate ID: LCSD for HBN 1213682 [XXX45053]
Spike Duplicate Lab ID: 1618952
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1213682001, 1213682002, 1213682003

Results by **8270D SIM LV (PAH)**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1-Methylnaphthalene	2	1.68	84	2	1.40	70	(41-115)	18.10	(< 20)
2-Methylnaphthalene	2	1.67	84	2	1.39	70	(39-114)	18.20	(< 20)
Acenaphthene	2	1.75	88	2	1.50	75	(48-114)	15.40	(< 20)
Acenaphthylene	2	1.77	89	2	1.59	79	(35-121)	11.00	(< 20)
Anthracene	2	1.70	85	2	1.54	77	(53-119)	10.00	(< 20)
Benzo(a)Anthracene	2	1.58	79	2	1.40	70	(59-120)	11.90	(< 20)
Benzo[a]pyrene	2	1.73	87	2	1.60	80	(53-120)	7.70	(< 20)
Benzo[b]Fluoranthene	2	1.63	82	2	1.42	71	(53-126)	13.80	(< 20)
Benzo[g,h,i]perylene	2	1.92	96	2	1.81	91	(44-128)	5.50	(< 20)
Benzo[k]fluoranthene	2	1.73	86	2	1.63	81	(54-125)	6.10	(< 20)
Chrysene	2	1.63	82	2	1.49	75	(57-120)	8.80	(< 20)
Dibenzo[a,h]anthracene	2	1.95	97	2	1.84	92	(44-131)	5.50	(< 20)
Fluoranthene	2	1.55	78	2	1.39	70	(58-120)	10.70	(< 20)
Fluorene	2	1.78	89	2	1.57	78	(50-118)	12.60	(< 20)
Indeno[1,2,3-c,d] pyrene	2	1.90	95	2	1.78	89	(48-130)	6.60	(< 20)
Naphthalene	2	1.71	86	2	1.43	72	(43-114)	17.70	(< 20)
Phenanthrene	2	1.73	87	2	1.55	77	(53-115)	11.20	(< 20)
Pyrene	2	1.57	78	2	1.41	70	(53-121)	10.80	(< 20)
Surrogates									
2-Methylnaphthalene-d10 (surr)	2		76	2		68	(42-86)	10.80	
Fluoranthene-d10 (surr)	2		76	2		71	(50-97)	6.60	

Batch Information

Analytical Batch: **XMS12708**
Analytical Method: **8270D SIM LV (PAH)**
Instrument: **SVA Agilent 780/5975 GC/MS**
Analyst: **LAW**

Prep Batch: **XXX45053**
Prep Method: **SW3535A**
Prep Date/Time: **06/28/2021 13:00**
Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

Print Date: 07/19/2021 2:28:53PM

Matrix Spike Summary

Original Sample ID: 1213714007
MS Sample ID: 1618953 MS
MSD Sample ID: 1618954 MSD

Analysis Date: 07/01/2021 22:29
Analysis Date: 07/01/2021 22:50
Analysis Date: 07/01/2021 23:10
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1213682001, 1213682002, 1213682003

Results by **8270D SIM LV (PAH)**

		Matrix Spike (ug/L)				Spike Duplicate (ug/L)					
Parameter	Sample	Spike	Result	Rec (%)		Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1-Methylnaphthalene	7.87	2.04	8.08	10	*	2.04	9.17	64	41-115	12.70	(< 20)
2-Methylnaphthalene	7.03	2.04	7.41	19	*	2.04	8.56	75	39-114	14.40	(< 20)
Acenaphthene	0.0261U	2.04	1.5	74		2.04	1.53	75	48-114	2.00	(< 20)
Acenaphthylene	0.0261U	2.04	1.49	73		2.04	1.47	72	35-121	1.20	(< 20)
Anthracene	0.0261U	2.04	1.61	79		2.04	1.50	74	53-119	6.60	(< 20)
Benzo(a)Anthracene	0.0261U	2.04	1.82	89		2.04	1.67	82	59-120	8.60	(< 20)
Benzo[a]pyrene	0.0104U	2.04	1.87	91		2.04	1.72	84	53-120	8.20	(< 20)
Benzo[b]Fluoranthene	0.0261U	2.04	1.84	90		2.04	1.69	83	53-126	8.70	(< 20)
Benzo[g,h,i]perylene	0.0261U	2.04	1.83	90		2.04	1.70	83	44-128	7.60	(< 20)
Benzo[k]fluoranthene	0.0261U	2.04	1.81	89		2.04	1.67	82	54-125	8.00	(< 20)
Chrysene	0.0261U	2.04	1.87	92		2.04	1.71	84	57-120	8.70	(< 20)
Dibenzo[a,h]anthracene	0.0104U	2.04	1.88	92		2.04	1.76	86	44-131	6.60	(< 20)
Fluoranthene	0.0261U	2.04	1.66	81		2.04	1.50	73	58-120	10.10	(< 20)
Fluorene	0.671	2.04	2.12	71		2.04	2.10	70	50-118	1.20	(< 20)
Indeno[1,2,3-c,d] pyrene	0.0261U	2.04	1.82	89		2.04	1.70	83	48-130	7.30	(< 20)
Naphthalene	3.89	2.04	4.62	36	*	2.04	5.26	67	43-114	12.90	(< 20)
Phenanthrene	0.765	2.04	2.29	75		2.04	2.15	68	53-115	6.60	(< 20)
Pyrene	0.105	2.04	1.71	79		2.04	1.55	71	53-121	9.80	(< 20)
Surrogates											
2-Methylnaphthalene-d10 (surr)		2.04	1.25	61		2.04	1.43	70	42-86	12.90	
Fluoranthene-d10 (surr)		2.04	1.61	79		2.04	1.47	72	50-97	9.20	

Batch Information

Analytical Batch: XMS12708
Analytical Method: 8270D SIM LV (PAH)
Instrument: SVA Agilent 780/5975 GC/MS
Analyst: LAW
Analytical Date/Time: 7/1/2021 10:50:00PM

Prep Batch: XXX45053
Prep Method: 3535 Solid Phase Ext for 8270 PAH SIM LV
Prep Date/Time: 6/28/2021 1:00:27PM
Prep Initial Wt./Vol.: 245.00mL
Prep Extract Vol: 1.00mL

Print Date: 07/19/2021 2:28:55PM

Method Blank

Blank ID: MB for HBN 1821571 [XXX/45080]
Blank Lab ID: 1619781

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1213682001, 1213682002, 1213682003

Results by **AK102**

Parameter	Results	LOQ/CL	DL	Units
Diesel Range Organics	0.0750U	0.150	0.0450	mg/L
Surrogates				
5a Androstane (surr)	95.8	60-120		%

Batch Information

Analytical Batch: XFC15982
Analytical Method: AK102
Instrument: Agilent 7890B F
Analyst: IVM
Analytical Date/Time: 7/1/2021 11:48:00AM

Prep Batch: XXX45080
Prep Method: SW3520C
Prep Date/Time: 6/30/2021 4:39:56PM
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Blank Spike Summary

Blank Spike ID: LCS for HBN 1213682 [XXX45080]
Blank Spike Lab ID: 1619782
Date Analyzed: 07/01/2021 12:08

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1213682001, 1213682002, 1213682003

Results by **AK102**

Blank Spike (mg/L)

Parameter	Spike	Result	Rec (%)	CL
Diesel Range Organics	5	4.65	93	(75-125)
Surrogates				
5a Androstane (surr)	0.1		101	(60-120)

Batch Information

Analytical Batch: **XFC15982**
Analytical Method: **AK102**
Instrument: **Agilent 7890B F**
Analyst: **IVM**

Prep Batch: **XXX45080**
Prep Method: **SW3520C**
Prep Date/Time: **06/30/2021 16:39**
Spike Init Wt./Vol.: 5 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: Extract Vol:

Print Date: 07/19/2021 2:28:59PM

Method Blank

Blank ID: MB for HBN 1821571 [XXX/45080]
Blank Lab ID: 1619781

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1213682001, 1213682002, 1213682003

Results by **AK103**

Parameter	Results	LOQ/CL	DL	Units
Residual Range Organics	0.0625U	0.125	0.0375	mg/L
Surrogates				
n-Triacontane-d62 (surr)	106	60-120		%

Batch Information

Analytical Batch: XFC15982
Analytical Method: AK103
Instrument: Agilent 7890B F
Analyst: IVM
Analytical Date/Time: 7/1/2021 11:48:00AM

Prep Batch: XXX45080
Prep Method: SW3520C
Prep Date/Time: 6/30/2021 4:39:56PM
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1213682 [XXX45080]
Blank Spike Lab ID: 1619782
Date Analyzed: 07/01/2021 12:08

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1213682001, 1213682002, 1213682003

Results by **AK103**

Blank Spike (mg/L)

Parameter	Spike	Result	Rec (%)	CL
Residual Range Organics	5	4.94	99	(60-120)
Surrogates				
n-Triacontane-d62 (surr)	0.1		99	(60-120)

Batch Information

Analytical Batch: **XFC15982**
Analytical Method: **AK103**
Instrument: **Agilent 7890B F**
Analyst: **IVM**

Prep Batch: **XXX45080**
Prep Method: **SW3520C**
Prep Date/Time: **06/30/2021 16:39**
Spike Init Wt./Vol.: 5 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: Extract Vol:

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600
www.shannonwilson.com

CHAIN-OF-CUSTODY RECORD

Laboratory SGS
Attn:

Turn Around Time: [X] Normal [ ] Rush — Please Specify

Quote No:

MSA Number: ~~MSA~~ MSA-SGS-2016

J-Flags: [X] Yes [ ] No

Analytical Methods (include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	PAH	DRO/RRO	GRO/BTEX	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
MW-111-15	1AG	1103	6/23/21	X	X	X	7	groundwater
MW-11-15	2AG	1013	6/23/21	X	X	X	7	1
MW-12-10	3AG	0850	6/23/21	X	X	X	7	
	4AG							

1213682

Project Information	Sample Receipt
Number: 102594-012	Total No. of Containers:
Name: DOT GUS PFAS MO	COC Seals/Intact? Y/N/NA (H.D.)
Contact: KRF	Received Good Cond./Cold
Ongoing Project? Yes [X] No [ ]	Temp: 5.7°C #D23
Sampler: JKR	Delivery Method: H.D.

Notes:

#347128

Reliquished By: 1.	Reliquished By: 2.	Reliquished By: 3.
Signature: Time: 0800	Signature: Time:	Signature: Time:
Printed Name: A. Masters Date: 6/25/21	Printed Name: Date:	Printed Name: Date:
Company: Shannon + Wilson, Inc	Company:	Company:
Received By: 1.	**Received By: 2.**	**Received By: 3.**
Signature: Time:	Signature: Time:	Signature: Time: 1750
Printed Name: Date:	Printed Name: Date:	Printed Name: Ryan Conlon Date: 6/25/21
Company:	Company:	Company: SGS 1F 1B

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

18 DHS No.

e-Sample Receipt Form

SGS Workorder #: **1213682** | 1213682

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	absent
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: D45
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?	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):

Sample Containers and Preservatives

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition
1213682001-A	HCL to pH < 2	OK			
1213682001-B	HCL to pH < 2	OK			
1213682001-C	No Preservative Required	OK			
1213682001-D	No Preservative Required	OK			
1213682001-E	HCL to pH < 2	OK			
1213682001-F	HCL to pH < 2	OK			
1213682001-G	HCL to pH < 2	OK			
1213682002-A	HCL to pH < 2	OK			
1213682002-B	HCL to pH < 2	OK			
1213682002-C	No Preservative Required	OK			
1213682002-D	No Preservative Required	OK			
1213682002-E	HCL to pH < 2	OK			
1213682002-F	HCL to pH < 2	OK			
1213682002-G	HCL to pH < 2	OK			
1213682003-A	HCL to pH < 2	OK			
1213682003-B	HCL to pH < 2	OK			
1213682003-C	No Preservative Required	OK			
1213682003-D	No Preservative Required	OK			
1213682003-E	HCL to pH < 2	OK			
1213682003-F	HCL to pH < 2	OK			
1213682003-G	HCL to pH < 2	OK			
1213682004-A	HCL to pH < 2	OK			
1213682004-B	HCL to pH < 2	OK			
1213682004-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:

August 7, 2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

SGS

Laboratory Report Number:

1213682

Laboratory Report Date:

7/19/2021

CS Site Name:

DOT&PF Gustavus Airport Statewide PFAS

ADEC File Number:

1507.38.017

Hazard Identification Number:

26904

1213682

Laboratory Report Date:

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 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:

   The requested analyses were conducted by SGS, North America, Inc. in Anchorage, AK.

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:

   Cooler 1 was received at 1.8°C.

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

   Yes☒ No☐ N/A☐ Comments:

   c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

   Yes☒ No☐ N/A☐ Comments:

   The sample receipt form noted the samples arrived in good condition.

Laboratory Report Date:

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 discrepancies were noted.

e. Data quality or usability affected?

Comments:

The 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 case narrative does not identify any QC failures, discrepancies, or errors.

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 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:

1213682

Laboratory Report Date:

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?

The 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:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes☒ No☐ N/A☐ Comments:

None of the requested analytes were detected in the method blanks.

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 is not affected.

1213682

Laboratory Report Date:

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 were analyzed for BTEX, PAH, and GRO analyses. An LCS was performed for DRO and RRO.

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:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A; 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:

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 was not affected; see above.

Laboratory Report Date:

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 performed for PAH analysis. The laboratory analyzed an LCS and LCSD to assess laboratory accuracy and precision for other analyses except DRO and RRO.

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:

Percent recovery for 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene were below QC 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 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:

Analytical accuracy and precision are demonstrated by the LCS/LCSD samples to be within acceptable limits. Additionally, the parent sample was not a part of the project set. Therefore, the results are determined to be unaffected.

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; 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:

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 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:

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:

Only one cooler was used to transport the samples in this work order.

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 analytes were detected in the trip blank.

v. Data quality or usability affected?

Comments:

The 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:

The field duplicate pair *MW-11-15/MW-111-15* was 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:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The 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:

Project samples were not collected with reusable equipment, so the prospect of foreign contaminants being introduced through equipment contamination is not plausible.

i. All results less than LOQ and project specified objectives?

Yes☐ No☐ N/A☒ Comments:

An equipment blank was not required for this project; see above.

1213682

Laboratory Report Date:

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above.

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:

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-64367-1
Client Project/Site: Gus. Annual

For:
Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

Attn: Kristen Freiburger

Authorized for release by:
9/10/2020 12:18:05 PM

David Alltucker, Project Manager I
(916)374-4383
David.Alltucker@Eurofinset.com

Table of Contents

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: Gus. Annual

Job ID: 320-64367-1

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.
¤	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

Job ID: 320-64367-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative
320-64367-1

Receipt
The samples were received on 9/5/2020 2:55 PM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 6.0º C.

Receipt Exceptions
The following samples had a slight discoloration in both containers. PW-219 (320-64367-1), PW-438 (320-64367-3), PW-303 (320-64367-6), PW-061 (320-64367-7), PW-037 (320-64367-8), PW-039 (320-64367-10), PW-230 (320-64367-12), PW-032 (320-64367-14), PW-401 (320-64367-16), PW-501 (320-64367-18), PW-1001 (320-64367-20), PW-462 (320-64367-24), PW-2001 (320-64367-25), PW-204 (320-64367-26), PW-112 (320-64367-27) and PW-012 (320-64367-28)

The Chain-of-Custody (COC) was incomplete as received and/or improperly completed. The second two pages of the COC was not relinquished.

LCMS
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep
Method 537.1 DW: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-410395 and 320-410395.

Method 537.1 DW: The following samples PW-203 (320-64367-5), PW-303 (320-64367-6), PW-039 (320-64367-10), PW-059 (320-64367-13), PW-032 (320-64367-14), PW-401 (320-64367-16), PW-501 (320-64367-18) and PW-221 (320-64367-19) in preparation batch 320-410395 and 320-410395 were observed to be light yellow in color prior to extraction.

Method 537.1 DW: The following samples PW-219 (320-64367-1), PW-438 (320-64367-3), PW-061 (320-64367-7), PW-037 (320-64367-8) and PW-230 (320-64367-12) in preparation batch 320-410395 were observed to be yellow in color prior to extraction.

Method 537.1 DW: The following samples PW-219 (320-64367-1), PW-438 (320-64367-3), PW-061 (320-64367-7), PW-230 (320-64367-12) and PW-501 (320-64367-18) in preparation batch 320-410395 were observed to contain a thin layer of sediment at the bottom of the bottles.

Method 537.1 DW: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-410412.

Method 537.1 DW: The following samples PW-419 (320-64367-21), PW-204 (320-64367-26) and PW-112 (320-64367-27) in preparation batch 320-410412 were observed to be light yellow in color prior to extraction.

Method 537.1 DW: The following samples PW-1001 (320-64367-20), PW-010 (320-64367-23), PW-2001 (320-64367-25) and PW-012 (320-64367-28) in preparation batch 320-410412 were observed to be yellow in color prior to extraction.

Method 537.1 DW: The following samples PW-1001 (320-64367-20), PW-010 (320-64367-23), PW-462 (320-64367-24), PW-2001 (320-64367-25), PW-204 (320-64367-26) and PW-112 (320-64367-27) in preparation batch 320-410412 were observed to contain a thin layer of sediment at the bottom of the bottles.

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: Gus. Annual

Job ID: 320-64367-1

Client Sample ID: PW-219 — Lab Sample ID: 320-64367-1

No Detections.

Client Sample ID: PW-211 — Lab Sample ID: 320-64367-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	0.65	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA

Client Sample ID: PW-438 — Lab Sample ID: 320-64367-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.52	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.9		1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.7		1.9	0.48	ng/L	1		537.1 DW	Total/NA

Client Sample ID: PW-212 — Lab Sample ID: 320-64367-4

No Detections.

Client Sample ID: PW-203 — Lab Sample ID: 320-64367-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.67	J	1.9	0.46	ng/L	1		537.1 DW	Total/NA
Perfluorooctanoic acid (PFOA)	0.50	J	1.9	0.46	ng/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.95	J	1.9	0.46	ng/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.70	J	1.9	0.46	ng/L	1		537.1 DW	Total/NA

Client Sample ID: PW-303 — Lab Sample ID: 320-64367-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.48	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.81	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA

Client Sample ID: PW-061 — Lab Sample ID: 320-64367-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.5	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.82	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorooctanoic acid (PFOA)	1.9		1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.49	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.85	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.49	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA

Client Sample ID: PW-037 — Lab Sample ID: 320-64367-8

No Detections.

Client Sample ID: PW-240 — Lab Sample ID: 320-64367-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	2.0		1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.8	J	1.9	0.47	ng/L	1		537.1 DW	Total/NA

Client Sample ID: PW-039 — Lab Sample ID: 320-64367-10

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: Gus. Annual

Job ID: 320-64367-1

Client Sample ID: PW-040 — Lab Sample ID: 320-64367-11

No Detections.

Client Sample ID: PW-230 — Lab Sample ID: 320-64367-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	1.0	J	1.8	0.46	ng/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.71	J	1.8	0.46	ng/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.68	J	1.8	0.46	ng/L	1		537.1 DW	Total/NA

Client Sample ID: PW-059 — Lab Sample ID: 320-64367-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.75	J	1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.78	J	1.9	0.47	ng/L	1		537.1 DW	Total/NA

Client Sample ID: PW-032 — Lab Sample ID: 320-64367-14

No Detections.

Client Sample ID: PW-038 — Lab Sample ID: 320-64367-15

No Detections.

Client Sample ID: PW-401 — Lab Sample ID: 320-64367-16

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	4.4		1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.3	J	1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluorooctanoic acid (PFOA)	0.71	J	1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.89	J	1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	9.6		1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	38		1.9	0.47	ng/L	1		537.1 DW	Total/NA

Client Sample ID: PW-414 — Lab Sample ID: 320-64367-17

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.74	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.2	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA

Client Sample ID: PW-501 — Lab Sample ID: 320-64367-18

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	4.1		1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.2	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorooctanoic acid (PFOA)	0.68	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.90	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	9.9		1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	38		1.9	0.48	ng/L	1		537.1 DW	Total/NA

Client Sample ID: PW-221 — Lab Sample ID: 320-64367-19

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.86	J	2.0	0.49	ng/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.5	J	2.0	0.49	ng/L	1		537.1 DW	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: Gus. Annual

Job ID: 320-64367-1

Client Sample ID: PW-1001 — Lab Sample ID: 320-64367-20

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	4.3		1.8	0.46	ng/L	1		537.1 DW	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.5	J	1.8	0.46	ng/L	1		537.1 DW	Total/NA
Perfluorooctanoic acid (PFOA)	2.0		1.8	0.46	ng/L	1		537.1 DW	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.84	J	1.8	0.46	ng/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	7.4		1.8	0.46	ng/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	10		1.8	0.46	ng/L	1		537.1 DW	Total/NA

Client Sample ID: PW-419 — Lab Sample ID: 320-64367-21

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.54	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.9		1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.4		1.9	0.48	ng/L	1		537.1 DW	Total/NA

Client Sample ID: PW-213 — Lab Sample ID: 320-64367-22

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	6.7		1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.5		1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorooctanoic acid (PFOA)	1.4	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.6	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	17		1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	61		1.9	0.48	ng/L	1		537.1 DW	Total/NA

Client Sample ID: PW-010 — Lab Sample ID: 320-64367-23

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.60	J	1.9	0.49	ng/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.88	J	1.9	0.49	ng/L	1		537.1 DW	Total/NA

Client Sample ID: PW-462 — Lab Sample ID: 320-64367-24

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	4.9		1.8	0.46	ng/L	1		537.1 DW	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.0		1.8	0.46	ng/L	1		537.1 DW	Total/NA
Perfluorooctanoic acid (PFOA)	0.99	J	1.8	0.46	ng/L	1		537.1 DW	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.74	J	1.8	0.46	ng/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	13		1.8	0.46	ng/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	68		1.8	0.46	ng/L	1		537.1 DW	Total/NA

Client Sample ID: PW-2001 — Lab Sample ID: 320-64367-25

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	4.2		1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.5	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorooctanoic acid (PFOA)	1.9		1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.85	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	7.3		1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	9.7		1.9	0.48	ng/L	1		537.1 DW	Total/NA

Client Sample ID: PW-204 — Lab Sample ID: 320-64367-26

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.97	J	1.9	0.47	ng/L	1		537.1 DW	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

Client Sample ID: PW-204 (Continued) — Lab Sample ID: 320-64367-26

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.47	J	1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluorooctanoic acid (PFOA)	0.75	J	1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	3.2		1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	6.1		1.9	0.47	ng/L	1		537.1 DW	Total/NA

Client Sample ID: PW-112 — Lab Sample ID: 320-64367-27

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.2	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.50	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	4.7		1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	15		1.9	0.48	ng/L	1		537.1 DW	Total/NA

Client Sample ID: PW-012 — Lab Sample ID: 320-64367-28

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.1	J	1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	4.2		1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	14		1.9	0.47	ng/L	1		537.1 DW	Total/NA

This Detection Summary does not include radiochemical test results.

Client: Shannon & Wilson, Inc
Project/Site: Gus. Annual

Job ID: 320-64367-1

Client Sample ID: PW-219
Date Collected: 08/31/20 17:06
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-1
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.46	ng/L		09/08/20 13:10	09/09/20 10:19	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.46	ng/L		09/08/20 13:10	09/09/20 10:19	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.46	ng/L		09/08/20 13:10	09/09/20 10:19	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.46	ng/L		09/08/20 13:10	09/09/20 10:19	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.46	ng/L		09/08/20 13:10	09/09/20 10:19	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.46	ng/L		09/08/20 13:10	09/09/20 10:19	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.46	ng/L		09/08/20 13:10	09/09/20 10:19	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.46	ng/L		09/08/20 13:10	09/09/20 10:19	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.46	ng/L		09/08/20 13:10	09/09/20 10:19	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.46	ng/L		09/08/20 13:10	09/09/20 10:19	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.46	ng/L		09/08/20 13:10	09/09/20 10:19	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.46	ng/L		09/08/20 13:10	09/09/20 10:19	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.46	ng/L		09/08/20 13:10	09/09/20 10:19	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.46	ng/L		09/08/20 13:10	09/09/20 10:19	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.46	ng/L		09/08/20 13:10	09/09/20 10:19	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.46	ng/L		09/08/20 13:10	09/09/20 10:19	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.46	ng/L		09/08/20 13:10	09/09/20 10:19	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.46	ng/L		09/08/20 13:10	09/09/20 10:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*89*		*70 - 130*	*09/08/20 13:10*	*09/09/20 10:19*	*1*
13C2 PFDA	*88*		*70 - 130*	*09/08/20 13:10*	*09/09/20 10:19*	*1*
d5-NEtFOSAA	*84*		*70 - 130*	*09/08/20 13:10*	*09/09/20 10:19*	*1*
13C3 HFPO-DA	*81*		*70 - 130*	*09/08/20 13:10*	*09/09/20 10:19*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Gus. Annual

Job ID: 320-64367-1

Client Sample ID: PW-211
Date Collected: 08/31/20 16:09
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-2
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:27	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:27	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:27	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:27	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:27	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:27	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:27	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:27	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:27	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:27	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:27	1
Perfluorooctanesulfonic acid (PFOS)	**0.65**	**J**	1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:27	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:27	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:27	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:27	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:27	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:27	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*88*		*70 - 130*	*09/08/20 13:10*	*09/09/20 10:27*	*1*
13C2 PFDA	*86*		*70 - 130*	*09/08/20 13:10*	*09/09/20 10:27*	*1*
d5-NEtFOSAA	*82*		*70 - 130*	*09/08/20 13:10*	*09/09/20 10:27*	*1*
13C3 HFPO-DA	*82*		*70 - 130*	*09/08/20 13:10*	*09/09/20 10:27*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Gus. Annual

Job ID: 320-64367-1

Client Sample ID: PW-438
Date Collected: 08/31/20 14:42
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-3
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**0.52**	**J**	1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:35	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:35	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:35	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:35	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:35	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:35	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:35	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:35	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:35	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:35	1
Perfluorohexanesulfonic acid (PFHxS)	**1.9**		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:35	1
Perfluorooctanesulfonic acid (PFOS)	**3.7**		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:35	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:35	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:35	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:35	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:35	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:35	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*84*		*70 - 130*	*09/08/20 13:10*	*09/09/20 10:35*	*1*
13C2 PFDA	*84*		*70 - 130*	*09/08/20 13:10*	*09/09/20 10:35*	*1*
d5-NEtFOSAA	*83*		*70 - 130*	*09/08/20 13:10*	*09/09/20 10:35*	*1*
13C3 HFPO-DA	*80*		*70 - 130*	*09/08/20 13:10*	*09/09/20 10:35*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Gus. Annual

Job ID: 320-64367-1

Client Sample ID: PW-212
Date Collected: 08/31/20 15:35
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-4
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 10:42	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 10:42	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 10:42	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 10:42	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 10:42	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 10:42	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 10:42	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 10:42	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 10:42	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 10:42	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 10:42	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 10:42	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 10:42	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 10:42	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 10:42	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 10:42	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 10:42	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 10:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*85*		*70 - 130*	*09/08/20 13:10*	*09/09/20 10:42*	*1*
13C2 PFDA	*87*		*70 - 130*	*09/08/20 13:10*	*09/09/20 10:42*	*1*
d5-NEtFOSAA	*84*		*70 - 130*	*09/08/20 13:10*	*09/09/20 10:42*	*1*
13C3 HFPO-DA	*83*		*70 - 130*	*09/08/20 13:10*	*09/09/20 10:42*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Gus. Annual

Job ID: 320-64367-1

Client Sample ID: PW-203
Date Collected: 09/01/20 16:55
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-5
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**0.67**	**J**	1.9	0.46	ng/L		09/08/20 13:10	09/09/20 10:50	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.46	ng/L		09/08/20 13:10	09/09/20 10:50	1
Perfluorooctanoic acid (PFOA)	**0.50**	**J**	1.9	0.46	ng/L		09/08/20 13:10	09/09/20 10:50	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.46	ng/L		09/08/20 13:10	09/09/20 10:50	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.46	ng/L		09/08/20 13:10	09/09/20 10:50	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.46	ng/L		09/08/20 13:10	09/09/20 10:50	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.46	ng/L		09/08/20 13:10	09/09/20 10:50	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.46	ng/L		09/08/20 13:10	09/09/20 10:50	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.46	ng/L		09/08/20 13:10	09/09/20 10:50	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.46	ng/L		09/08/20 13:10	09/09/20 10:50	1
Perfluorohexanesulfonic acid (PFHxS)	**0.95**	**J**	1.9	0.46	ng/L		09/08/20 13:10	09/09/20 10:50	1
Perfluorooctanesulfonic acid (PFOS)	**0.70**	**J**	1.9	0.46	ng/L		09/08/20 13:10	09/09/20 10:50	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.46	ng/L		09/08/20 13:10	09/09/20 10:50	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.46	ng/L		09/08/20 13:10	09/09/20 10:50	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.46	ng/L		09/08/20 13:10	09/09/20 10:50	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.46	ng/L		09/08/20 13:10	09/09/20 10:50	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.46	ng/L		09/08/20 13:10	09/09/20 10:50	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.46	ng/L		09/08/20 13:10	09/09/20 10:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*88*		*70 - 130*	*09/08/20 13:10*	*09/09/20 10:50*	*1*
13C2 PFDA	*83*		*70 - 130*	*09/08/20 13:10*	*09/09/20 10:50*	*1*
d5-NEtFOSAA	*82*		*70 - 130*	*09/08/20 13:10*	*09/09/20 10:50*	*1*
13C3 HFPO-DA	*79*		*70 - 130*	*09/08/20 13:10*	*09/09/20 10:50*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Gus. Annual

Job ID: 320-64367-1

Client Sample ID: PW-303

Date Collected: 09/01/20 16:45
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-6

Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**0.48**	**J**	1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:58	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:58	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:58	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:58	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:58	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:58	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:58	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:58	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:58	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:58	1
Perfluorohexanesulfonic acid (PFHxS)	**0.81**	**J**	1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:58	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:58	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:58	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:58	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:58	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:58	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:58	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 10:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*86*		*70 - 130*	*09/08/20 13:10*	*09/09/20 10:58*	*1*
13C2 PFDA	*90*		*70 - 130*	*09/08/20 13:10*	*09/09/20 10:58*	*1*
d5-NEtFOSAA	*86*		*70 - 130*	*09/08/20 13:10*	*09/09/20 10:58*	*1*
13C3 HFPO-DA	*81*		*70 - 130*	*09/08/20 13:10*	*09/09/20 10:58*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Gus. Annual

Job ID: 320-64367-1

Client Sample ID: PW-061
Date Collected: 09/01/20 15:54
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-7
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**1.5**	**J**	1.9	0.48	ng/L		09/08/20 13:10	09/09/20 11:06	1
Perfluoroheptanoic acid (PFHpA)	**0.82**	**J**	1.9	0.48	ng/L		09/08/20 13:10	09/09/20 11:06	1
Perfluorooctanoic acid (PFOA)	**1.9**		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 11:06	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 11:06	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 11:06	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 11:06	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 11:06	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 11:06	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 11:06	1
Perfluorobutanesulfonic acid (PFBS)	**0.49**	**J**	1.9	0.48	ng/L		09/08/20 13:10	09/09/20 11:06	1
Perfluorohexanesulfonic acid (PFHxS)	**0.85**	**J**	1.9	0.48	ng/L		09/08/20 13:10	09/09/20 11:06	1
Perfluorooctanesulfonic acid (PFOS)	**0.49**	**J**	1.9	0.48	ng/L		09/08/20 13:10	09/09/20 11:06	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 11:06	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 11:06	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 11:06	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 11:06	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 11:06	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 11:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*85*		*70 - 130*	*09/08/20 13:10*	*09/09/20 11:06*	*1*
13C2 PFDA	*85*		*70 - 130*	*09/08/20 13:10*	*09/09/20 11:06*	*1*
d5-NEtFOSAA	*75*		*70 - 130*	*09/08/20 13:10*	*09/09/20 11:06*	*1*
13C3 HFPO-DA	*80*		*70 - 130*	*09/08/20 13:10*	*09/09/20 11:06*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Gus. Annual

Job ID: 320-64367-1

Client Sample ID: PW-037
Date Collected: 09/01/20 13:39
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-8
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 11:13	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 11:13	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 11:13	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 11:13	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 11:13	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 11:13	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 11:13	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 11:13	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 11:13	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 11:13	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 11:13	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 11:13	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 11:13	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 11:13	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 11:13	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 11:13	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 11:13	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 11:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*89*		*70 - 130*	*09/08/20 13:10*	*09/09/20 11:13*	*1*
13C2 PFDA	*90*		*70 - 130*	*09/08/20 13:10*	*09/09/20 11:13*	*1*
d5-NEtFOSAA	*78*		*70 - 130*	*09/08/20 13:10*	*09/09/20 11:13*	*1*
13C3 HFPO-DA	*80*		*70 - 130*	*09/08/20 13:10*	*09/09/20 11:13*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Gus. Annual

Job ID: 320-64367-1

Client Sample ID: PW-240

Date Collected: 09/01/20 08:06
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-9

Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 11:44	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 11:44	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 11:44	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 11:44	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 11:44	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 11:44	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 11:44	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 11:44	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 11:44	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 11:44	1
Perfluorohexanesulfonic acid (PFHxS)	**2.0**		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 11:44	1
Perfluorooctanesulfonic acid (PFOS)	**1.8**	**J**	1.9	0.47	ng/L		09/08/20 13:10	09/09/20 11:44	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 11:44	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 11:44	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 11:44	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 11:44	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 11:44	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 11:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*86*		*70 - 130*	*09/08/20 13:10*	*09/09/20 11:44*	*1*
13C2 PFDA	*92*		*70 - 130*	*09/08/20 13:10*	*09/09/20 11:44*	*1*
d5-NEtFOSAA	*85*		*70 - 130*	*09/08/20 13:10*	*09/09/20 11:44*	*1*
13C3 HFPO-DA	*84*		*70 - 130*	*09/08/20 13:10*	*09/09/20 11:44*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Gus. Annual

Job ID: 320-64367-1

Client Sample ID: PW-039

Date Collected: 09/01/20 14:22
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-10

Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.49	ng/L		09/08/20 13:10	09/09/20 11:52	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.49	ng/L		09/08/20 13:10	09/09/20 11:52	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.49	ng/L		09/08/20 13:10	09/09/20 11:52	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.49	ng/L		09/08/20 13:10	09/09/20 11:52	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.49	ng/L		09/08/20 13:10	09/09/20 11:52	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.49	ng/L		09/08/20 13:10	09/09/20 11:52	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.49	ng/L		09/08/20 13:10	09/09/20 11:52	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.49	ng/L		09/08/20 13:10	09/09/20 11:52	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.49	ng/L		09/08/20 13:10	09/09/20 11:52	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.49	ng/L		09/08/20 13:10	09/09/20 11:52	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.49	ng/L		09/08/20 13:10	09/09/20 11:52	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.49	ng/L		09/08/20 13:10	09/09/20 11:52	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.49	ng/L		09/08/20 13:10	09/09/20 11:52	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.49	ng/L		09/08/20 13:10	09/09/20 11:52	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.49	ng/L		09/08/20 13:10	09/09/20 11:52	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.49	ng/L		09/08/20 13:10	09/09/20 11:52	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.49	ng/L		09/08/20 13:10	09/09/20 11:52	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.49	ng/L		09/08/20 13:10	09/09/20 11:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*92*		*70 - 130*	*09/08/20 13:10*	*09/09/20 11:52*	*1*
13C2 PFDA	*92*		*70 - 130*	*09/08/20 13:10*	*09/09/20 11:52*	*1*
d5-NEtFOSAA	*79*		*70 - 130*	*09/08/20 13:10*	*09/09/20 11:52*	*1*
13C3 HFPO-DA	*83*		*70 - 130*	*09/08/20 13:10*	*09/09/20 11:52*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Gus. Annual

Job ID: 320-64367-1

Client Sample ID: PW-040
Date Collected: 09/01/20 14:45
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-11
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 11:59	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 11:59	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 11:59	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 11:59	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 11:59	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 11:59	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 11:59	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 11:59	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 11:59	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 11:59	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 11:59	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 11:59	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 11:59	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 11:59	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 11:59	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 11:59	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 11:59	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 11:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*85*		*70 - 130*	*09/08/20 13:10*	*09/09/20 11:59*	*1*
13C2 PFDA	*89*		*70 - 130*	*09/08/20 13:10*	*09/09/20 11:59*	*1*
d5-NEtFOSAA	*87*		*70 - 130*	*09/08/20 13:10*	*09/09/20 11:59*	*1*
13C3 HFPO-DA	*79*		*70 - 130*	*09/08/20 13:10*	*09/09/20 11:59*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Gus. Annual

Job ID: 320-64367-1

Client Sample ID: PW-230

Date Collected: 09/01/20 12:26
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-12

Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.46	ng/L		09/08/20 13:10	09/09/20 12:07	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.46	ng/L		09/08/20 13:10	09/09/20 12:07	1
Perfluorooctanoic acid (PFOA)	**1.0**	**J**	1.8	0.46	ng/L		09/08/20 13:10	09/09/20 12:07	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.46	ng/L		09/08/20 13:10	09/09/20 12:07	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.46	ng/L		09/08/20 13:10	09/09/20 12:07	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.46	ng/L		09/08/20 13:10	09/09/20 12:07	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.46	ng/L		09/08/20 13:10	09/09/20 12:07	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	0.46	ng/L		09/08/20 13:10	09/09/20 12:07	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.46	ng/L		09/08/20 13:10	09/09/20 12:07	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.46	ng/L		09/08/20 13:10	09/09/20 12:07	1
Perfluorohexanesulfonic acid (PFHxS)	**0.71**	**J**	1.8	0.46	ng/L		09/08/20 13:10	09/09/20 12:07	1
Perfluorooctanesulfonic acid (PFOS)	**0.68**	**J**	1.8	0.46	ng/L		09/08/20 13:10	09/09/20 12:07	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.8	0.46	ng/L		09/08/20 13:10	09/09/20 12:07	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.8	0.46	ng/L		09/08/20 13:10	09/09/20 12:07	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.8	0.46	ng/L		09/08/20 13:10	09/09/20 12:07	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.8	0.46	ng/L		09/08/20 13:10	09/09/20 12:07	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.8	0.46	ng/L		09/08/20 13:10	09/09/20 12:07	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.46	ng/L		09/08/20 13:10	09/09/20 12:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*86*		*70 - 130*	*09/08/20 13:10*	*09/09/20 12:07*	*1*
13C2 PFDA	*88*		*70 - 130*	*09/08/20 13:10*	*09/09/20 12:07*	*1*
d5-NEtFOSAA	*90*		*70 - 130*	*09/08/20 13:10*	*09/09/20 12:07*	*1*
13C3 HFPO-DA	*81*		*70 - 130*	*09/08/20 13:10*	*09/09/20 12:07*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Gus. Annual

Job ID: 320-64367-1

Client Sample ID: PW-059
Date Collected: 09/01/20 11:28
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-13
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 12:15	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 12:15	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 12:15	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 12:15	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 12:15	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 12:15	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 12:15	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 12:15	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 12:15	1
Perfluorobutanesulfonic acid (PFBS)	**0.75**	**J**	1.9	0.47	ng/L		09/08/20 13:10	09/09/20 12:15	1
Perfluorohexanesulfonic acid (PFHxS)	**0.78**	**J**	1.9	0.47	ng/L		09/08/20 13:10	09/09/20 12:15	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 12:15	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 12:15	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 12:15	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 12:15	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 12:15	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 12:15	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 12:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*89*		*70 - 130*	*09/08/20 13:10*	*09/09/20 12:15*	*1*
13C2 PFDA	*89*		*70 - 130*	*09/08/20 13:10*	*09/09/20 12:15*	*1*
d5-NEtFOSAA	*85*		*70 - 130*	*09/08/20 13:10*	*09/09/20 12:15*	*1*
13C3 HFPO-DA	*83*		*70 - 130*	*09/08/20 13:10*	*09/09/20 12:15*	*1*

Client Sample ID: PW-032

Date Collected: 09/01/20 09:37
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-14

Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:23	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:23	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:23	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:23	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:23	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:23	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:23	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:23	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:23	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:23	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:23	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:23	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:23	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:23	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:23	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:23	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:23	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*90*		*70 - 130*	*09/08/20 13:10*	*09/09/20 12:23*	*1*
13C2 PFDA	*92*		*70 - 130*	*09/08/20 13:10*	*09/09/20 12:23*	*1*
d5-NEtFOSAA	*85*		*70 - 130*	*09/08/20 13:10*	*09/09/20 12:23*	*1*
13C3 HFPO-DA	*82*		*70 - 130*	*09/08/20 13:10*	*09/09/20 12:23*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Gus. Annual

Job ID: 320-64367-1

Client Sample ID: PW-038
Date Collected: 09/01/20 13:13
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-15
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:30	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:30	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:30	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:30	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:30	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:30	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:30	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:30	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:30	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:30	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:30	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:30	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:30	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:30	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:30	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:30	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:30	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*94*		*70 - 130*	*09/08/20 13:10*	*09/09/20 12:30*	*1*
13C2 PFDA	*95*		*70 - 130*	*09/08/20 13:10*	*09/09/20 12:30*	*1*
d5-NEtFOSAA	*94*		*70 - 130*	*09/08/20 13:10*	*09/09/20 12:30*	*1*
13C3 HFPO-DA	*83*		*70 - 130*	*09/08/20 13:10*	*09/09/20 12:30*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Gus. Annual

Job ID: 320-64367-1

Client Sample ID: PW-401
Date Collected: 09/01/20 10:29
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-16
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**4.4**		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 12:38	1
Perfluoroheptanoic acid (PFHpA)	**1.3**	**J**	1.9	0.47	ng/L		09/08/20 13:10	09/09/20 12:38	1
Perfluorooctanoic acid (PFOA)	**0.71**	**J**	1.9	0.47	ng/L		09/08/20 13:10	09/09/20 12:38	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 12:38	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 12:38	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 12:38	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 12:38	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 12:38	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 12:38	1
Perfluorobutanesulfonic acid (PFBS)	**0.89**	**J**	1.9	0.47	ng/L		09/08/20 13:10	09/09/20 12:38	1
Perfluorohexanesulfonic acid (PFHxS)	**9.6**		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 12:38	1
Perfluorooctanesulfonic acid (PFOS)	**38**		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 12:38	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 12:38	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 12:38	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 12:38	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 12:38	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 12:38	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.47	ng/L		09/08/20 13:10	09/09/20 12:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*87*		*70 - 130*	*09/08/20 13:10*	*09/09/20 12:38*	*1*
13C2 PFDA	*90*		*70 - 130*	*09/08/20 13:10*	*09/09/20 12:38*	*1*
d5-NEtFOSAA	*83*		*70 - 130*	*09/08/20 13:10*	*09/09/20 12:38*	*1*
13C3 HFPO-DA	*84*		*70 - 130*	*09/08/20 13:10*	*09/09/20 12:38*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Gus. Annual

Job ID: 320-64367-1

Client Sample ID: PW-414
Date Collected: 09/01/20 08:59
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-17
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:46	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:46	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:46	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:46	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:46	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:46	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:46	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:46	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:46	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:46	1
Perfluorohexanesulfonic acid (PFHxS)	**0.74**	**J**	1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:46	1
Perfluorooctanesulfonic acid (PFOS)	**1.2**	**J**	1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:46	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:46	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:46	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:46	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:46	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:46	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 12:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*91*		*70 - 130*	*09/08/20 13:10*	*09/09/20 12:46*	*1*
13C2 PFDA	*95*		*70 - 130*	*09/08/20 13:10*	*09/09/20 12:46*	*1*
d5-NEtFOSAA	*87*		*70 - 130*	*09/08/20 13:10*	*09/09/20 12:46*	*1*
13C3 HFPO-DA	*87*		*70 - 130*	*09/08/20 13:10*	*09/09/20 12:46*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Gus. Annual

Job ID: 320-64367-1

Client Sample ID: PW-501
Date Collected: 09/01/20 10:19
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-18
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**4.1**		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 13:17	1
Perfluoroheptanoic acid (PFHpA)	**1.2**	**J**	1.9	0.48	ng/L		09/08/20 13:10	09/09/20 13:17	1
Perfluorooctanoic acid (PFOA)	**0.68**	**J**	1.9	0.48	ng/L		09/08/20 13:10	09/09/20 13:17	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 13:17	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 13:17	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 13:17	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 13:17	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 13:17	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 13:17	1
Perfluorobutanesulfonic acid (PFBS)	**0.90**	**J**	1.9	0.48	ng/L		09/08/20 13:10	09/09/20 13:17	1
Perfluorohexanesulfonic acid (PFHxS)	**9.9**		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 13:17	1
Perfluorooctanesulfonic acid (PFOS)	**38**		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 13:17	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 13:17	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 13:17	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 13:17	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 13:17	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 13:17	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.48	ng/L		09/08/20 13:10	09/09/20 13:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*87*		*70 - 130*	*09/08/20 13:10*	*09/09/20 13:17*	*1*
13C2 PFDA	*88*		*70 - 130*	*09/08/20 13:10*	*09/09/20 13:17*	*1*
d5-NEtFOSAA	*83*		*70 - 130*	*09/08/20 13:10*	*09/09/20 13:17*	*1*
13C3 HFPO-DA	*85*		*70 - 130*	*09/08/20 13:10*	*09/09/20 13:17*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Gus. Annual

Job ID: 320-64367-1

Client Sample ID: PW-221
Date Collected: 09/02/20 08:56
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-19
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.49	ng/L		09/08/20 13:11	09/09/20 13:24	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.49	ng/L		09/08/20 13:11	09/09/20 13:24	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.49	ng/L		09/08/20 13:11	09/09/20 13:24	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.49	ng/L		09/08/20 13:11	09/09/20 13:24	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.49	ng/L		09/08/20 13:11	09/09/20 13:24	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.49	ng/L		09/08/20 13:11	09/09/20 13:24	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.49	ng/L		09/08/20 13:11	09/09/20 13:24	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	0.49	ng/L		09/08/20 13:11	09/09/20 13:24	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.49	ng/L		09/08/20 13:11	09/09/20 13:24	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.49	ng/L		09/08/20 13:11	09/09/20 13:24	1
Perfluorohexanesulfonic acid (PFHxS)	**0.86**	**J**	2.0	0.49	ng/L		09/08/20 13:11	09/09/20 13:24	1
Perfluorooctanesulfonic acid (PFOS)	**1.5**	**J**	2.0	0.49	ng/L		09/08/20 13:11	09/09/20 13:24	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.0	0.49	ng/L		09/08/20 13:11	09/09/20 13:24	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.0	0.49	ng/L		09/08/20 13:11	09/09/20 13:24	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		2.0	0.49	ng/L		09/08/20 13:11	09/09/20 13:24	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		2.0	0.49	ng/L		09/08/20 13:11	09/09/20 13:24	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		2.0	0.49	ng/L		09/08/20 13:11	09/09/20 13:24	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.49	ng/L		09/08/20 13:11	09/09/20 13:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*85*		*70 - 130*	*09/08/20 13:11*	*09/09/20 13:24*	*1*
13C2 PFDA	*89*		*70 - 130*	*09/08/20 13:11*	*09/09/20 13:24*	*1*
d5-NEtFOSAA	*85*		*70 - 130*	*09/08/20 13:11*	*09/09/20 13:24*	*1*
13C3 HFPO-DA	*81*		*70 - 130*	*09/08/20 13:11*	*09/09/20 13:24*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Gus. Annual

Job ID: 320-64367-1

Client Sample ID: PW-1001
Date Collected: 09/02/20 10:16
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-20
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**4.3**		1.8	0.46	ng/L		09/08/20 13:48	09/09/20 14:41	1
Perfluoroheptanoic acid (PFHpA)	**1.5**	**J**	1.8	0.46	ng/L		09/08/20 13:48	09/09/20 14:41	1
Perfluorooctanoic acid (PFOA)	**2.0**		1.8	0.46	ng/L		09/08/20 13:48	09/09/20 14:41	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.46	ng/L		09/08/20 13:48	09/09/20 14:41	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.46	ng/L		09/08/20 13:48	09/09/20 14:41	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.46	ng/L		09/08/20 13:48	09/09/20 14:41	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.46	ng/L		09/08/20 13:48	09/09/20 14:41	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	0.46	ng/L		09/08/20 13:48	09/09/20 14:41	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.46	ng/L		09/08/20 13:48	09/09/20 14:41	1
Perfluorobutanesulfonic acid (PFBS)	**0.84**	**J**	1.8	0.46	ng/L		09/08/20 13:48	09/09/20 14:41	1
Perfluorohexanesulfonic acid (PFHxS)	**7.4**		1.8	0.46	ng/L		09/08/20 13:48	09/09/20 14:41	1
Perfluorooctanesulfonic acid (PFOS)	**10**		1.8	0.46	ng/L		09/08/20 13:48	09/09/20 14:41	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.8	0.46	ng/L		09/08/20 13:48	09/09/20 14:41	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.8	0.46	ng/L		09/08/20 13:48	09/09/20 14:41	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.8	0.46	ng/L		09/08/20 13:48	09/09/20 14:41	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.8	0.46	ng/L		09/08/20 13:48	09/09/20 14:41	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.8	0.46	ng/L		09/08/20 13:48	09/09/20 14:41	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.46	ng/L		09/08/20 13:48	09/09/20 14:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*90*		*70 - 130*	*09/08/20 13:48*	*09/09/20 14:41*	*1*
13C2 PFDA	*88*		*70 - 130*	*09/08/20 13:48*	*09/09/20 14:41*	*1*
d5-NEtFOSAA	*84*		*70 - 130*	*09/08/20 13:48*	*09/09/20 14:41*	*1*
13C3 HFPO-DA	*82*		*70 - 130*	*09/08/20 13:48*	*09/09/20 14:41*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Gus. Annual

Job ID: 320-64367-1

Client Sample ID: PW-419

Date Collected: 09/02/20 12:03
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-21

Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**0.54**	**J**	1.9	0.48	ng/L		09/08/20 13:48	09/09/20 14:49	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 14:49	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 14:49	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 14:49	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 14:49	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 14:49	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 14:49	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 14:49	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 14:49	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 14:49	1
Perfluorohexanesulfonic acid (PFHxS)	**1.9**		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 14:49	1
Perfluorooctanesulfonic acid (PFOS)	**3.4**		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 14:49	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 14:49	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 14:49	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 14:49	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 14:49	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 14:49	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 14:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*87*		*70 - 130*	*09/08/20 13:48*	*09/09/20 14:49*	*1*
13C2 PFDA	*90*		*70 - 130*	*09/08/20 13:48*	*09/09/20 14:49*	*1*
d5-NEtFOSAA	*85*		*70 - 130*	*09/08/20 13:48*	*09/09/20 14:49*	*1*
13C3 HFPO-DA	*83*		*70 - 130*	*09/08/20 13:48*	*09/09/20 14:49*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Gus. Annual

Job ID: 320-64367-1

Client Sample ID: PW-213
Date Collected: 09/02/20 11:33
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-22
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**6.7**		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 14:57	1
Perfluoroheptanoic acid (PFHpA)	**2.5**		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 14:57	1
Perfluorooctanoic acid (PFOA)	**1.4**	**J**	1.9	0.48	ng/L		09/08/20 13:48	09/09/20 14:57	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 14:57	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 14:57	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 14:57	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 14:57	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 14:57	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 14:57	1
Perfluorobutanesulfonic acid (PFBS)	**1.6**	**J**	1.9	0.48	ng/L		09/08/20 13:48	09/09/20 14:57	1
Perfluorohexanesulfonic acid (PFHxS)	**17**		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 14:57	1
Perfluorooctanesulfonic acid (PFOS)	**61**		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 14:57	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 14:57	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 14:57	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 14:57	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 14:57	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 14:57	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 14:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*87*		*70 - 130*	*09/08/20 13:48*	*09/09/20 14:57*	*1*
13C2 PFDA	*92*		*70 - 130*	*09/08/20 13:48*	*09/09/20 14:57*	*1*
d5-NEtFOSAA	*89*		*70 - 130*	*09/08/20 13:48*	*09/09/20 14:57*	*1*
13C3 HFPO-DA	*80*		*70 - 130*	*09/08/20 13:48*	*09/09/20 14:57*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Gus. Annual

Job ID: 320-64367-1

Client Sample ID: PW-010
Date Collected: 09/02/20 12:56
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-23
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.49	ng/L		09/08/20 13:48	09/09/20 15:04	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.49	ng/L		09/08/20 13:48	09/09/20 15:04	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.49	ng/L		09/08/20 13:48	09/09/20 15:04	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.49	ng/L		09/08/20 13:48	09/09/20 15:04	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.49	ng/L		09/08/20 13:48	09/09/20 15:04	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.49	ng/L		09/08/20 13:48	09/09/20 15:04	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.49	ng/L		09/08/20 13:48	09/09/20 15:04	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.49	ng/L		09/08/20 13:48	09/09/20 15:04	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.49	ng/L		09/08/20 13:48	09/09/20 15:04	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.49	ng/L		09/08/20 13:48	09/09/20 15:04	1
Perfluorohexanesulfonic acid (PFHxS)	**0.60**	**J**	1.9	0.49	ng/L		09/08/20 13:48	09/09/20 15:04	1
Perfluorooctanesulfonic acid (PFOS)	**0.88**	**J**	1.9	0.49	ng/L		09/08/20 13:48	09/09/20 15:04	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.49	ng/L		09/08/20 13:48	09/09/20 15:04	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.49	ng/L		09/08/20 13:48	09/09/20 15:04	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.49	ng/L		09/08/20 13:48	09/09/20 15:04	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.49	ng/L		09/08/20 13:48	09/09/20 15:04	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.49	ng/L		09/08/20 13:48	09/09/20 15:04	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.49	ng/L		09/08/20 13:48	09/09/20 15:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*86*		*70 - 130*	*09/08/20 13:48*	*09/09/20 15:04*	*1*
13C2 PFDA	*88*		*70 - 130*	*09/08/20 13:48*	*09/09/20 15:04*	*1*
d5-NEtFOSAA	*89*		*70 - 130*	*09/08/20 13:48*	*09/09/20 15:04*	*1*
13C3 HFPO-DA	*79*		*70 - 130*	*09/08/20 13:48*	*09/09/20 15:04*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Gus. Annual

Job ID: 320-64367-1

Client Sample ID: PW-462
Date Collected: 09/02/20 09:09
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-24
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**4.9**		1.8	0.46	ng/L		09/08/20 13:48	09/09/20 15:12	1
Perfluoroheptanoic acid (PFHpA)	**2.0**		1.8	0.46	ng/L		09/08/20 13:48	09/09/20 15:12	1
Perfluorooctanoic acid (PFOA)	**0.99**	**J**	1.8	0.46	ng/L		09/08/20 13:48	09/09/20 15:12	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.46	ng/L		09/08/20 13:48	09/09/20 15:12	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.46	ng/L		09/08/20 13:48	09/09/20 15:12	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.46	ng/L		09/08/20 13:48	09/09/20 15:12	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.46	ng/L		09/08/20 13:48	09/09/20 15:12	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	0.46	ng/L		09/08/20 13:48	09/09/20 15:12	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.46	ng/L		09/08/20 13:48	09/09/20 15:12	1
Perfluorobutanesulfonic acid (PFBS)	**0.74**	**J**	1.8	0.46	ng/L		09/08/20 13:48	09/09/20 15:12	1
Perfluorohexanesulfonic acid (PFHxS)	**13**		1.8	0.46	ng/L		09/08/20 13:48	09/09/20 15:12	1
Perfluorooctanesulfonic acid (PFOS)	**68**		1.8	0.46	ng/L		09/08/20 13:48	09/09/20 15:12	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.8	0.46	ng/L		09/08/20 13:48	09/09/20 15:12	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.8	0.46	ng/L		09/08/20 13:48	09/09/20 15:12	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.8	0.46	ng/L		09/08/20 13:48	09/09/20 15:12	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.8	0.46	ng/L		09/08/20 13:48	09/09/20 15:12	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.8	0.46	ng/L		09/08/20 13:48	09/09/20 15:12	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.46	ng/L		09/08/20 13:48	09/09/20 15:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*88*		*70 - 130*	*09/08/20 13:48*	*09/09/20 15:12*	*1*
13C2 PFDA	*90*		*70 - 130*	*09/08/20 13:48*	*09/09/20 15:12*	*1*
d5-NEtFOSAA	*84*		*70 - 130*	*09/08/20 13:48*	*09/09/20 15:12*	*1*
13C3 HFPO-DA	*79*		*70 - 130*	*09/08/20 13:48*	*09/09/20 15:12*	*1*

Client Sample ID: PW-2001
Date Collected: 09/02/20 10:06
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-25
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**4.2**		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 15:20	1
Perfluoroheptanoic acid (PFHpA)	**1.5**	**J**	1.9	0.48	ng/L		09/08/20 13:48	09/09/20 15:20	1
Perfluorooctanoic acid (PFOA)	**1.9**		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 15:20	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 15:20	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 15:20	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 15:20	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 15:20	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 15:20	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 15:20	1
Perfluorobutanesulfonic acid (PFBS)	**0.85**	**J**	1.9	0.48	ng/L		09/08/20 13:48	09/09/20 15:20	1
Perfluorohexanesulfonic acid (PFHxS)	**7.3**		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 15:20	1
Perfluorooctanesulfonic acid (PFOS)	**9.7**		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 15:20	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 15:20	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 15:20	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 15:20	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 15:20	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 15:20	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 15:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*87*		*70 - 130*	*09/08/20 13:48*	*09/09/20 15:20*	*1*
13C2 PFDA	*87*		*70 - 130*	*09/08/20 13:48*	*09/09/20 15:20*	*1*
d5-NEtFOSAA	*78*		*70 - 130*	*09/08/20 13:48*	*09/09/20 15:20*	*1*
13C3 HFPO-DA	*79*		*70 - 130*	*09/08/20 13:48*	*09/09/20 15:20*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Gus. Annual

Job ID: 320-64367-1

Client Sample ID: PW-204
Date Collected: 09/02/20 08:05
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-26
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**0.97**	**J**	1.9	0.47	ng/L		09/08/20 13:48	09/09/20 15:28	1
Perfluoroheptanoic acid (PFHpA)	**0.47**	**J**	1.9	0.47	ng/L		09/08/20 13:48	09/09/20 15:28	1
Perfluorooctanoic acid (PFOA)	**0.75**	**J**	1.9	0.47	ng/L		09/08/20 13:48	09/09/20 15:28	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.47	ng/L		09/08/20 13:48	09/09/20 15:28	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.47	ng/L		09/08/20 13:48	09/09/20 15:28	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.47	ng/L		09/08/20 13:48	09/09/20 15:28	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.47	ng/L		09/08/20 13:48	09/09/20 15:28	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.47	ng/L		09/08/20 13:48	09/09/20 15:28	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.47	ng/L		09/08/20 13:48	09/09/20 15:28	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.47	ng/L		09/08/20 13:48	09/09/20 15:28	1
Perfluorohexanesulfonic acid (PFHxS)	**3.2**		1.9	0.47	ng/L		09/08/20 13:48	09/09/20 15:28	1
Perfluorooctanesulfonic acid (PFOS)	**6.1**		1.9	0.47	ng/L		09/08/20 13:48	09/09/20 15:28	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.47	ng/L		09/08/20 13:48	09/09/20 15:28	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.47	ng/L		09/08/20 13:48	09/09/20 15:28	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.47	ng/L		09/08/20 13:48	09/09/20 15:28	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.47	ng/L		09/08/20 13:48	09/09/20 15:28	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.47	ng/L		09/08/20 13:48	09/09/20 15:28	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.47	ng/L		09/08/20 13:48	09/09/20 15:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*86*		*70 - 130*	*09/08/20 13:48*	*09/09/20 15:28*	*1*
13C2 PFDA	*90*		*70 - 130*	*09/08/20 13:48*	*09/09/20 15:28*	*1*
d5-NEtFOSAA	*89*		*70 - 130*	*09/08/20 13:48*	*09/09/20 15:28*	*1*
13C3 HFPO-DA	*73*		*70 - 130*	*09/08/20 13:48*	*09/09/20 15:28*	*1*

Client Sample ID: PW-112

Date Collected: 09/03/20 14:01
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-27

Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**1.2**	**J**	1.9	0.48	ng/L		09/08/20 13:48	09/09/20 15:35	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 15:35	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 15:35	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 15:35	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 15:35	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 15:35	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 15:35	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 15:35	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 15:35	1
Perfluorobutanesulfonic acid (PFBS)	**0.50**	**J**	1.9	0.48	ng/L		09/08/20 13:48	09/09/20 15:35	1
Perfluorohexanesulfonic acid (PFHxS)	**4.7**		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 15:35	1
Perfluorooctanesulfonic acid (PFOS)	**15**		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 15:35	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 15:35	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 15:35	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 15:35	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 15:35	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 15:35	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.48	ng/L		09/08/20 13:48	09/09/20 15:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*87*		*70 - 130*	*09/08/20 13:48*	*09/09/20 15:35*	*1*
13C2 PFDA	*87*		*70 - 130*	*09/08/20 13:48*	*09/09/20 15:35*	*1*
d5-NEtFOSAA	*82*		*70 - 130*	*09/08/20 13:48*	*09/09/20 15:35*	*1*
13C3 HFPO-DA	*82*		*70 - 130*	*09/08/20 13:48*	*09/09/20 15:35*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Gus. Annual

Job ID: 320-64367-1

Client Sample ID: PW-012
Date Collected: 09/03/20 14:11
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-28
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**1.1**	**J**	1.9	0.47	ng/L		09/08/20 13:48	09/09/20 15:43	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.47	ng/L		09/08/20 13:48	09/09/20 15:43	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.47	ng/L		09/08/20 13:48	09/09/20 15:43	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.47	ng/L		09/08/20 13:48	09/09/20 15:43	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.47	ng/L		09/08/20 13:48	09/09/20 15:43	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.47	ng/L		09/08/20 13:48	09/09/20 15:43	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.47	ng/L		09/08/20 13:48	09/09/20 15:43	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.47	ng/L		09/08/20 13:48	09/09/20 15:43	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.47	ng/L		09/08/20 13:48	09/09/20 15:43	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.47	ng/L		09/08/20 13:48	09/09/20 15:43	1
Perfluorohexanesulfonic acid (PFHxS)	**4.2**		1.9	0.47	ng/L		09/08/20 13:48	09/09/20 15:43	1
Perfluorooctanesulfonic acid (PFOS)	**14**		1.9	0.47	ng/L		09/08/20 13:48	09/09/20 15:43	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.47	ng/L		09/08/20 13:48	09/09/20 15:43	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.47	ng/L		09/08/20 13:48	09/09/20 15:43	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.47	ng/L		09/08/20 13:48	09/09/20 15:43	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.47	ng/L		09/08/20 13:48	09/09/20 15:43	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.47	ng/L		09/08/20 13:48	09/09/20 15:43	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.47	ng/L		09/08/20 13:48	09/09/20 15:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*92*		*70 - 130*	*09/08/20 13:48*	*09/09/20 15:43*	*1*
13C2 PFDA	*94*		*70 - 130*	*09/08/20 13:48*	*09/09/20 15:43*	*1*
d5-NEtFOSAA	*90*		*70 - 130*	*09/08/20 13:48*	*09/09/20 15:43*	*1*
13C3 HFPO-DA	*85*		*70 - 130*	*09/08/20 13:48*	*09/09/20 15:43*	*1*

Surrogate Summary

Client: Shannon & Wilson, Inc
Project/Site: Gus. Annual

Job ID: 320-64367-1

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 (70-130)	PFDA (70-130)	d5NEFOS (70-130)	HFPODA (70-130)
320-64367-1	PW-219	89	88	84	81
320-64367-2	PW-211	88	86	82	82
320-64367-3	PW-438	84	84	83	80
320-64367-4	PW-212	85	87	84	83
320-64367-5	PW-203	88	83	82	79
320-64367-6	PW-303	86	90	86	81
320-64367-7	PW-061	85	85	75	80
320-64367-8	PW-037	89	90	78	80
320-64367-9	PW-240	86	92	85	84
320-64367-10	PW-039	92	92	79	83
320-64367-11	PW-040	85	89	87	79
320-64367-12	PW-230	86	88	90	81
320-64367-13	PW-059	89	89	85	83
320-64367-14	PW-032	90	92	85	82
320-64367-15	PW-038	94	95	94	83
320-64367-16	PW-401	87	90	83	84
320-64367-17	PW-414	91	95	87	87
320-64367-18	PW-501	87	88	83	85
320-64367-19	PW-221	85	89	85	81
320-64367-20	PW-1001	90	88	84	82
320-64367-21	PW-419	87	90	85	83
320-64367-22	PW-213	87	92	89	80
320-64367-23	PW-010	86	88	89	79
320-64367-24	PW-462	88	90	84	79
320-64367-25	PW-2001	87	87	78	79
320-64367-26	PW-204	86	90	89	73
320-64367-27	PW-112	87	87	82	82
320-64367-28	PW-012	92	94	90	85
LCS 320-410395/2-A	Lab Control Sample	84	86	87	83
LCSD 320-410395/3-A	Lab Control Sample Dup	91	91	85	86
LLCS 320-410412/2-A	Lab Control Sample	90	91	94	85
LLCSD 320-410412/3-A	Lab Control Sample Dup	85	90	86	83
MB 320-410395/1-A	Method Blank	97	93	90	87
MB 320-410412/1-A	Method Blank	88	96	94	83

Surrogate Legend

PFHxA = 13C2 PFHxA
PFDA = 13C2 PFDA
d5NEFOS = d5-NEtFOSAA
HFPODA = 13C3 HFPO-DA

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Lab Sample ID: MB 320-410395/1-A
Matrix: Water
Analysis Batch: 410554

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 410395

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.50	ng/L		09/08/20 13:10	09/09/20 10:11	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.50	ng/L		09/08/20 13:10	09/09/20 10:11	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.50	ng/L		09/08/20 13:10	09/09/20 10:11	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.50	ng/L		09/08/20 13:10	09/09/20 10:11	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.50	ng/L		09/08/20 13:10	09/09/20 10:11	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.50	ng/L		09/08/20 13:10	09/09/20 10:11	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.50	ng/L		09/08/20 13:10	09/09/20 10:11	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	0.50	ng/L		09/08/20 13:10	09/09/20 10:11	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.50	ng/L		09/08/20 13:10	09/09/20 10:11	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.50	ng/L		09/08/20 13:10	09/09/20 10:11	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.50	ng/L		09/08/20 13:10	09/09/20 10:11	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.50	ng/L		09/08/20 13:10	09/09/20 10:11	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.0	0.50	ng/L		09/08/20 13:10	09/09/20 10:11	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.0	0.50	ng/L		09/08/20 13:10	09/09/20 10:11	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		2.0	0.50	ng/L		09/08/20 13:10	09/09/20 10:11	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		2.0	0.50	ng/L		09/08/20 13:10	09/09/20 10:11	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		2.0	0.50	ng/L		09/08/20 13:10	09/09/20 10:11	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.50	ng/L		09/08/20 13:10	09/09/20 10:11	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*97*		*70 - 130*	*09/08/20 13:10*	*09/09/20 10:11*	*1*
13C2 PFDA	*93*		*70 - 130*	*09/08/20 13:10*	*09/09/20 10:11*	*1*
d5-NEtFOSAA	*90*		*70 - 130*	*09/08/20 13:10*	*09/09/20 10:11*	*1*
13C3 HFPO-DA	*87*		*70 - 130*	*09/08/20 13:10*	*09/09/20 10:11*	*1*

Lab Sample ID: LCS 320-410395/2-A
Matrix: Water
Analysis Batch: 410607

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 410395

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid (PFHxA)	160	138		ng/L		86	70 - 130
Perfluoroheptanoic acid (PFHpA)	160	152		ng/L		95	70 - 130
Perfluorooctanoic acid (PFOA)	160	142		ng/L		88	70 - 130
Perfluorononanoic acid (PFNA)	160	144		ng/L		90	70 - 130
Perfluorodecanoic acid (PFDA)	160	151		ng/L		94	70 - 130
Perfluoroundecanoic acid (PFUnA)	160	146		ng/L		91	70 - 130
Perfluorododecanoic acid (PFDoA)	160	142		ng/L		89	70 - 130
Perfluorotridecanoic acid (PFTriA)	160	147		ng/L		92	70 - 130
Perfluorotetradecanoic acid (PFTeA)	160	150		ng/L		94	70 - 130
Perfluorobutanesulfonic acid (PFBS)	141	134		ng/L		95	70 - 130

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: LCS 320-410395/2-A
Matrix: Water
Analysis Batch: 410607

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 410395

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Perfluorohexanesulfonic acid (PFHxS)			146	143		ng/L		98	70 - 130		
Perfluorooctanesulfonic acid (PFOS)			148	137		ng/L		92	70 - 130		
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			160	136		ng/L		85	70 - 130		
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			160	134		ng/L		84	70 - 130		
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O			149	147		ng/L		98	70 - 130		
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF			151	140		ng/L		93	70 - 130		
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			160	135		ng/L		85	70 - 130		
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			151	131		ng/L		87	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*84*		*70 - 130*
13C2 PFDA	*86*		*70 - 130*
d5-NEtFOSAA	*87*		*70 - 130*
13C3 HFPO-DA	*83*		*70 - 130*

Lab Sample ID: LCSD 320-410395/3-A
Matrix: Water
Analysis Batch: 410607

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 410395

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)			160	147		ng/L		92	70 - 130	6	30
Perfluoroheptanoic acid (PFHpA)			160	155		ng/L		97	70 - 130	2	30
Perfluorooctanoic acid (PFOA)			160	145		ng/L		91	70 - 130	3	30
Perfluorononanoic acid (PFNA)			160	157		ng/L		98	70 - 130	8	30
Perfluorodecanoic acid (PFDA)			160	162		ng/L		101	70 - 130	7	30
Perfluoroundecanoic acid (PFUnA)			160	156		ng/L		98	70 - 130	7	30
Perfluorododecanoic acid (PFDoA)			160	155		ng/L		97	70 - 130	9	30
Perfluorotridecanoic acid (PFTriA)			160	148		ng/L		92	70 - 130	1	30
Perfluorotetradecanoic acid (PFTeA)			160	162		ng/L		102	70 - 130	8	30
Perfluorobutanesulfonic acid (PFBS)			141	131		ng/L		93	70 - 130	2	30
Perfluorohexanesulfonic acid (PFHxS)			146	136		ng/L		94	70 - 130	5	30
Perfluorooctanesulfonic acid (PFOS)			148	133		ng/L		90	70 - 130	3	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			160	140		ng/L		88	70 - 130	3	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			160	139		ng/L		87	70 - 130	4	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O			149	140		ng/L		94	70 - 130	5	30

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: LCSD 320-410395/3-A
Matrix: Water
Analysis Batch: 410607

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 410395

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	151	138		ng/L		92	70 - 130	1	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	160	144		ng/L		90	70 - 130	6	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	151	145		ng/L		96	70 - 130	10	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*91*		*70 - 130*
13C2 PFDA	*91*		*70 - 130*
d5-NEtFOSAA	*85*		*70 - 130*
13C3 HFPO-DA	*86*		*70 - 130*

Lab Sample ID: MB 320-410412/1-A
Matrix: Water
Analysis Batch: 410657

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 410412

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.50	ng/L		09/08/20 13:48	09/09/20 14:34	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.50	ng/L		09/08/20 13:48	09/09/20 14:34	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.50	ng/L		09/08/20 13:48	09/09/20 14:34	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.50	ng/L		09/08/20 13:48	09/09/20 14:34	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.50	ng/L		09/08/20 13:48	09/09/20 14:34	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.50	ng/L		09/08/20 13:48	09/09/20 14:34	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.50	ng/L		09/08/20 13:48	09/09/20 14:34	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	0.50	ng/L		09/08/20 13:48	09/09/20 14:34	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.50	ng/L		09/08/20 13:48	09/09/20 14:34	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.50	ng/L		09/08/20 13:48	09/09/20 14:34	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.50	ng/L		09/08/20 13:48	09/09/20 14:34	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.50	ng/L		09/08/20 13:48	09/09/20 14:34	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.0	0.50	ng/L		09/08/20 13:48	09/09/20 14:34	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.0	0.50	ng/L		09/08/20 13:48	09/09/20 14:34	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		2.0	0.50	ng/L		09/08/20 13:48	09/09/20 14:34	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		2.0	0.50	ng/L		09/08/20 13:48	09/09/20 14:34	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		2.0	0.50	ng/L		09/08/20 13:48	09/09/20 14:34	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.50	ng/L		09/08/20 13:48	09/09/20 14:34	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*88*		*70 - 130*	*09/08/20 13:48*	*09/09/20 14:34*	*1*
13C2 PFDA	*96*		*70 - 130*	*09/08/20 13:48*	*09/09/20 14:34*	*1*
d5-NEtFOSAA	*94*		*70 - 130*	*09/08/20 13:48*	*09/09/20 14:34*	*1*
13C3 HFPO-DA	*83*		*70 - 130*	*09/08/20 13:48*	*09/09/20 14:34*	*1*

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: LLCS 320-410412/2-A
Matrix: Water
Analysis Batch: 410658

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 410412

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid (PFHxA)	4.00	3.57		ng/L		89	50 - 150
Perfluoroheptanoic acid (PFHpA)	4.00	3.86		ng/L		96	50 - 150
Perfluorooctanoic acid (PFOA)	4.00	3.72		ng/L		93	50 - 150
Perfluorononanoic acid (PFNA)	4.00	3.87		ng/L		97	50 - 150
Perfluorodecanoic acid (PFDA)	4.00	3.86		ng/L		96	50 - 150
Perfluoroundecanoic acid (PFUnA)	4.00	3.85		ng/L		96	50 - 150
Perfluorododecanoic acid (PFDoA)	4.00	3.61		ng/L		90	50 - 150
Perfluorotridecanoic acid (PFTriA)	4.00	3.80		ng/L		95	50 - 150
Perfluorotetradecanoic acid (PFTeA)	4.00	4.12		ng/L		103	50 - 150
Perfluorobutanesulfonic acid (PFBS)	3.54	3.26		ng/L		92	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	3.64	3.44		ng/L		94	50 - 150
Perfluorooctanesulfonic acid (PFOS)	3.71	3.54		ng/L		95	50 - 150
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.00	3.50		ng/L		88	50 - 150
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.00	3.61		ng/L		90	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	3.73	3.29		ng/L		88	50 - 150
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	3.77	3.45		ng/L		92	50 - 150
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	4.00	3.43		ng/L		86	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	3.77	3.57		ng/L		95	50 - 150

Surrogate	*LLCS %Recovery*	*LLCS Qualifier*	*Limits*
13C2 PFHxA	*90*		*70 - 130*
13C2 PFDA	*91*		*70 - 130*
d5-NEtFOSAA	*94*		*70 - 130*
13C3 HFPO-DA	*85*		*70 - 130*

Lab Sample ID: LLCSD 320-410412/3-A
Matrix: Water
Analysis Batch: 410658

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 410412

Analyte	Spike Added	LLCSD Result	LLCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	4.00	3.49		ng/L		87	50 - 150	2	50
Perfluoroheptanoic acid (PFHpA)	4.00	3.79		ng/L		95	50 - 150	2	50
Perfluorooctanoic acid (PFOA)	4.00	3.75		ng/L		94	50 - 150	0.9	50
Perfluorononanoic acid (PFNA)	4.00	3.60		ng/L		90	50 - 150	7	50
Perfluorodecanoic acid (PFDA)	4.00	3.60		ng/L		90	50 - 150	7	50
Perfluoroundecanoic acid (PFUnA)	4.00	3.71		ng/L		93	50 - 150	4	50
Perfluorododecanoic acid (PFDoA)	4.00	3.37		ng/L		84	50 - 150	7	50

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: LLCSD 320-410412/3-A
Matrix: Water
Analysis Batch: 410658

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 410412

Analyte			Spike Added	LLCSD Result	LLCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorotridecanoic acid (PFTriA)			4.00	3.63		ng/L		91	50 - 150	5	50
Perfluorotetradecanoic acid (PFTeA)			4.00	3.96		ng/L		99	50 - 150	4	50
Perfluorobutanesulfonic acid (PFBS)			3.54	3.16		ng/L		89	50 - 150	3	50
Perfluorohexanesulfonic acid (PFHxS)			3.64	3.25		ng/L		89	50 - 150	6	50
Perfluorooctanesulfonic acid (PFOS)			3.71	3.25		ng/L		87	50 - 150	9	50
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			4.00	3.44		ng/L		86	50 - 150	2	50
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			4.00	3.41		ng/L		85	50 - 150	6	50
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O			3.73	3.28		ng/L		88	50 - 150	0.3	50
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF			3.77	3.12		ng/L		83	50 - 150	10	50
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			4.00	3.42		ng/L		86	50 - 150	0.06	50
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			3.77	3.60		ng/L		96	50 - 150	0.7	50

Surrogate	*LLCSD %Recovery*	*LLCSD Qualifier*	*Limits*
13C2 PFHxA	*85*		*70 - 130*
13C2 PFDA	*90*		*70 - 130*
d5-NEtFOSAA	*86*		*70 - 130*
13C3 HFPO-DA	*83*		*70 - 130*

LCMS

Prep Batch: 410395

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-64367-1	PW-219	Total/NA	Water	537.1 DW	
320-64367-2	PW-211	Total/NA	Water	537.1 DW	
320-64367-3	PW-438	Total/NA	Water	537.1 DW	
320-64367-4	PW-212	Total/NA	Water	537.1 DW	
320-64367-5	PW-203	Total/NA	Water	537.1 DW	
320-64367-6	PW-303	Total/NA	Water	537.1 DW	
320-64367-7	PW-061	Total/NA	Water	537.1 DW	
320-64367-8	PW-037	Total/NA	Water	537.1 DW	
320-64367-9	PW-240	Total/NA	Water	537.1 DW	
320-64367-10	PW-039	Total/NA	Water	537.1 DW	
320-64367-11	PW-040	Total/NA	Water	537.1 DW	
320-64367-12	PW-230	Total/NA	Water	537.1 DW	
320-64367-13	PW-059	Total/NA	Water	537.1 DW	
320-64367-14	PW-032	Total/NA	Water	537.1 DW	
320-64367-15	PW-038	Total/NA	Water	537.1 DW	
320-64367-16	PW-401	Total/NA	Water	537.1 DW	
320-64367-17	PW-414	Total/NA	Water	537.1 DW	
320-64367-18	PW-501	Total/NA	Water	537.1 DW	
320-64367-19	PW-221	Total/NA	Water	537.1 DW	
MB 320-410395/1-A	Method Blank	Total/NA	Water	537.1 DW	
LCS 320-410395/2-A	Lab Control Sample	Total/NA	Water	537.1 DW	
LCSD 320-410395/3-A	Lab Control Sample Dup	Total/NA	Water	537.1 DW	

Prep Batch: 410412

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-64367-20	PW-1001	Total/NA	Water	537.1 DW	
320-64367-21	PW-419	Total/NA	Water	537.1 DW	
320-64367-22	PW-213	Total/NA	Water	537.1 DW	
320-64367-23	PW-010	Total/NA	Water	537.1 DW	
320-64367-24	PW-462	Total/NA	Water	537.1 DW	
320-64367-25	PW-2001	Total/NA	Water	537.1 DW	
320-64367-26	PW-204	Total/NA	Water	537.1 DW	
320-64367-27	PW-112	Total/NA	Water	537.1 DW	
320-64367-28	PW-012	Total/NA	Water	537.1 DW	
MB 320-410412/1-A	Method Blank	Total/NA	Water	537.1 DW	
LLCS 320-410412/2-A	Lab Control Sample	Total/NA	Water	537.1 DW	
LLCSD 320-410412/3-A	Lab Control Sample Dup	Total/NA	Water	537.1 DW	

Analysis Batch: 410554

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-64367-1	PW-219	Total/NA	Water	537.1 DW	410395
320-64367-2	PW-211	Total/NA	Water	537.1 DW	410395
320-64367-3	PW-438	Total/NA	Water	537.1 DW	410395
320-64367-4	PW-212	Total/NA	Water	537.1 DW	410395
320-64367-5	PW-203	Total/NA	Water	537.1 DW	410395
320-64367-6	PW-303	Total/NA	Water	537.1 DW	410395
320-64367-7	PW-061	Total/NA	Water	537.1 DW	410395
320-64367-8	PW-037	Total/NA	Water	537.1 DW	410395
MB 320-410395/1-A	Method Blank	Total/NA	Water	537.1 DW	410395

LCMS

Analysis Batch: 410606

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-64367-9	PW-240	Total/NA	Water	537.1 DW	410395
320-64367-10	PW-039	Total/NA	Water	537.1 DW	410395
320-64367-11	PW-040	Total/NA	Water	537.1 DW	410395
320-64367-12	PW-230	Total/NA	Water	537.1 DW	410395
320-64367-13	PW-059	Total/NA	Water	537.1 DW	410395
320-64367-14	PW-032	Total/NA	Water	537.1 DW	410395
320-64367-15	PW-038	Total/NA	Water	537.1 DW	410395
320-64367-16	PW-401	Total/NA	Water	537.1 DW	410395
320-64367-17	PW-414	Total/NA	Water	537.1 DW	410395

Analysis Batch: 410607

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-64367-18	PW-501	Total/NA	Water	537.1 DW	410395
320-64367-19	PW-221	Total/NA	Water	537.1 DW	410395
LCS 320-410395/2-A	Lab Control Sample	Total/NA	Water	537.1 DW	410395
LCSD 320-410395/3-A	Lab Control Sample Dup	Total/NA	Water	537.1 DW	410395

Analysis Batch: 410657

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-64367-20	PW-1001	Total/NA	Water	537.1 DW	410412
320-64367-21	PW-419	Total/NA	Water	537.1 DW	410412
320-64367-22	PW-213	Total/NA	Water	537.1 DW	410412
320-64367-23	PW-010	Total/NA	Water	537.1 DW	410412
320-64367-24	PW-462	Total/NA	Water	537.1 DW	410412
320-64367-25	PW-2001	Total/NA	Water	537.1 DW	410412
320-64367-26	PW-204	Total/NA	Water	537.1 DW	410412
320-64367-27	PW-112	Total/NA	Water	537.1 DW	410412
320-64367-28	PW-012	Total/NA	Water	537.1 DW	410412
MB 320-410412/1-A	Method Blank	Total/NA	Water	537.1 DW	410412

Analysis Batch: 410658

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LLCS 320-410412/2-A	Lab Control Sample	Total/NA	Water	537.1 DW	410412
LLCSD 320-410412/3-A	Lab Control Sample Dup	Total/NA	Water	537.1 DW	410412

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: Gus. Annual

Job ID: 320-64367-1

Client Sample ID: PW-219
Date Collected: 08/31/20 17:06
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-1
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	537.1 DW			270.2 mL	1.00 mL	410395	09/08/20 13:10	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			410554	09/09/20 10:19	SK	TAL SAC

Client Sample ID: PW-211
Date Collected: 08/31/20 16:09
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-2
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	537.1 DW			260.5 mL	1.00 mL	410395	09/08/20 13:10	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			410554	09/09/20 10:27	SK	TAL SAC

Client Sample ID: PW-438
Date Collected: 08/31/20 14:42
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-3
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	537.1 DW			262.9 mL	1.00 mL	410395	09/08/20 13:10	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			410554	09/09/20 10:35	SK	TAL SAC

Client Sample ID: PW-212
Date Collected: 08/31/20 15:35
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-4
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	537.1 DW			265.7 mL	1.00 mL	410395	09/08/20 13:10	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			410554	09/09/20 10:42	SK	TAL SAC

Client Sample ID: PW-203
Date Collected: 09/01/20 16:55
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-5
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	537.1 DW			269.2 mL	1.00 mL	410395	09/08/20 13:10	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			410554	09/09/20 10:50	SK	TAL SAC

Client Sample ID: PW-303
Date Collected: 09/01/20 16:45
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-6
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	537.1 DW			259.5 mL	1.00 mL	410395	09/08/20 13:10	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			410554	09/09/20 10:58	SK	TAL SAC

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: Gus. Annual

Job ID: 320-64367-1

Client Sample ID: PW-061
Date Collected: 09/01/20 15:54
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-7
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	537.1 DW			262 mL	1.00 mL	410395	09/08/20 13:10	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			410554	09/09/20 11:06	SK	TAL SAC

Client Sample ID: PW-037
Date Collected: 09/01/20 13:39
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-8
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	537.1 DW			258 mL	1.00 mL	410395	09/08/20 13:10	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			410554	09/09/20 11:13	SK	TAL SAC

Client Sample ID: PW-240
Date Collected: 09/01/20 08:06
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-9
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	537.1 DW			263.5 mL	1.00 mL	410395	09/08/20 13:10	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			410606	09/09/20 11:44	SK	TAL SAC

Client Sample ID: PW-039
Date Collected: 09/01/20 14:22
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-10
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	537.1 DW			257.1 mL	1.00 mL	410395	09/08/20 13:10	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			410606	09/09/20 11:52	SK	TAL SAC

Client Sample ID: PW-040
Date Collected: 09/01/20 14:45
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-11
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	537.1 DW			267.5 mL	1.00 mL	410395	09/08/20 13:10	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			410606	09/09/20 11:59	SK	TAL SAC

Client Sample ID: PW-230
Date Collected: 09/01/20 12:26
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-12
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	537.1 DW			270.8 mL	1.00 mL	410395	09/08/20 13:10	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			410606	09/09/20 12:07	SK	TAL SAC

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: Gus. Annual

Job ID: 320-64367-1

Client Sample ID: PW-059
Date Collected: 09/01/20 11:28
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-13
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	537.1 DW			263.5 mL	1.00 mL	410395	09/08/20 13:10	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			410606	09/09/20 12:15	SK	TAL SAC

Client Sample ID: PW-032
Date Collected: 09/01/20 09:37
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-14
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	537.1 DW			261.2 mL	1.00 mL	410395	09/08/20 13:10	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			410606	09/09/20 12:23	SK	TAL SAC

Client Sample ID: PW-038
Date Collected: 09/01/20 13:13
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-15
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	537.1 DW			262.6 mL	1.00 mL	410395	09/08/20 13:10	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			410606	09/09/20 12:30	SK	TAL SAC

Client Sample ID: PW-401
Date Collected: 09/01/20 10:29
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-16
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	537.1 DW			264.8 mL	1.00 mL	410395	09/08/20 13:10	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			410606	09/09/20 12:38	SK	TAL SAC

Client Sample ID: PW-414
Date Collected: 09/01/20 08:59
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-17
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	537.1 DW			261.5 mL	1.00 mL	410395	09/08/20 13:10	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			410606	09/09/20 12:46	SK	TAL SAC

Client Sample ID: PW-501
Date Collected: 09/01/20 10:19
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-18
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	537.1 DW			262.4 mL	1.00 mL	410395	09/08/20 13:10	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			410607	09/09/20 13:17	SK	TAL SAC

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: Gus. Annual

Job ID: 320-64367-1

Client Sample ID: PW-221
Date Collected: 09/02/20 08:56
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-19
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	537.1 DW			256.2 mL	1.00 mL	410395	09/08/20 13:11	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			410607	09/09/20 13:24	SK	TAL SAC

Client Sample ID: PW-1001
Date Collected: 09/02/20 10:16
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-20
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	537.1 DW			270.7 mL	1.00 mL	410412	09/08/20 13:48	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			410657	09/09/20 14:41	K1S	TAL SAC

Client Sample ID: PW-419
Date Collected: 09/02/20 12:03
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-21
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	537.1 DW			262.9 mL	1.00 mL	410412	09/08/20 13:48	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			410657	09/09/20 14:49	K1S	TAL SAC

Client Sample ID: PW-213
Date Collected: 09/02/20 11:33
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-22
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	537.1 DW			258.6 mL	1.00 mL	410412	09/08/20 13:48	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			410657	09/09/20 14:57	K1S	TAL SAC

Client Sample ID: PW-010
Date Collected: 09/02/20 12:56
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-23
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	537.1 DW			257.7 mL	1.00 mL	410412	09/08/20 13:48	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			410657	09/09/20 15:04	K1S	TAL SAC

Client Sample ID: PW-462
Date Collected: 09/02/20 09:09
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-24
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	537.1 DW			271.9 mL	1.00 mL	410412	09/08/20 13:48	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			410657	09/09/20 15:12	K1S	TAL SAC

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: Gus. Annual

Job ID: 320-64367-1

Client Sample ID: PW-2001
Date Collected: 09/02/20 10:06
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-25
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	537.1 DW			262.1 mL	1.00 mL	410412	09/08/20 13:48	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			410657	09/09/20 15:20	K1S	TAL SAC

Client Sample ID: PW-204
Date Collected: 09/02/20 08:05
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-26
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	537.1 DW			264.1 mL	1.00 mL	410412	09/08/20 13:48	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			410657	09/09/20 15:28	K1S	TAL SAC

Client Sample ID: PW-112
Date Collected: 09/03/20 14:01
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-27
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	537.1 DW			261.3 mL	1.00 mL	410412	09/08/20 13:48	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			410657	09/09/20 15:35	K1S	TAL SAC

Client Sample ID: PW-012
Date Collected: 09/03/20 14:11
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64367-28
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	537.1 DW			267.6 mL	1.00 mL	410412	09/08/20 13:48	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			410657	09/09/20 15:43	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: Gus. Annual

Job ID: 320-64367-1

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: Gus. Annual

Job ID: 320-64367-1

Method	Method Description	Protocol	Laboratory
537.1 DW	Perfluorinated Alkyl Acids (LC/MS)	EPA	TAL SAC
537.1 DW	Extraction of Perfluorinated Alkyl Acids	EPA	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

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: Gus. Annual

Job ID: 320-64367-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-64367-1	PW-219	Water	08/31/20 17:06	09/05/20 14:55	
320-64367-2	PW-211	Water	08/31/20 16:09	09/05/20 14:55	
320-64367-3	PW-438	Water	08/31/20 14:42	09/05/20 14:55	
320-64367-4	PW-212	Water	08/31/20 15:35	09/05/20 14:55	
320-64367-5	PW-203	Water	09/01/20 16:55	09/05/20 14:55	
320-64367-6	PW-303	Water	09/01/20 16:45	09/05/20 14:55	
320-64367-7	PW-061	Water	09/01/20 15:54	09/05/20 14:55	
320-64367-8	PW-037	Water	09/01/20 13:39	09/05/20 14:55	
320-64367-9	PW-240	Water	09/01/20 08:06	09/05/20 14:55	
320-64367-10	PW-039	Water	09/01/20 14:22	09/05/20 14:55	
320-64367-11	PW-040	Water	09/01/20 14:45	09/05/20 14:55	
320-64367-12	PW-230	Water	09/01/20 12:26	09/05/20 14:55	
320-64367-13	PW-059	Water	09/01/20 11:28	09/05/20 14:55	
320-64367-14	PW-032	Water	09/01/20 09:37	09/05/20 14:55	
320-64367-15	PW-038	Water	09/01/20 13:13	09/05/20 14:55	
320-64367-16	PW-401	Water	09/01/20 10:29	09/05/20 14:55	
320-64367-17	PW-414	Water	09/01/20 08:59	09/05/20 14:55	
320-64367-18	PW-501	Water	09/01/20 10:19	09/05/20 14:55	
320-64367-19	PW-221	Water	09/02/20 08:56	09/05/20 14:55	
320-64367-20	PW-1001	Water	09/02/20 10:16	09/05/20 14:55	
320-64367-21	PW-419	Water	09/02/20 12:03	09/05/20 14:55	
320-64367-22	PW-213	Water	09/02/20 11:33	09/05/20 14:55	
320-64367-23	PW-010	Water	09/02/20 12:56	09/05/20 14:55	
320-64367-24	PW-462	Water	09/02/20 09:09	09/05/20 14:55	
320-64367-25	PW-2001	Water	09/02/20 10:06	09/05/20 14:55	
320-64367-26	PW-204	Water	09/02/20 08:05	09/05/20 14:55	
320-64367-27	PW-112	Water	09/03/20 14:01	09/05/20 14:55	
320-64367-28	PW-012	Water	09/03/20 14:11	09/05/20 14:55	

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

CHAIN-OF-CUSTODY RECORD

Laboratory Test America
Attn: D. Alltucker

400 N. 34th Street, Suite 100
Seattle, WA 98103
(206) 632-8020

2043 Westport Center Drive
St. Louis, MO 63146-3564
(314) 699-9660

303 Wellsian Way
Richland, WA 99352
(509) 946-6309

2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600

5430 Fairbanks Street, Suite 3
Anchorage, AK 99518
(907) 561-2120

2255 S.W. Canyon Road
Portland, OR 97201-2498
(503) 223-6147

1200 17th Street, Suite 1024
Denver, Co 80202
(303) 825-3800

Analysis Parameters/Sample Container Description
(include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	PFAS x 16	Total Number of Containers	Remarks/Matrix
PW-219		1706	8/31/20			X	2	groundwater
PW-211		1609	8/31/20			X	2	
PW-438		1442	8/31/20			X	2	
PW-212		1535	8/31/20			X	2	
PW-203		1655	9/1/20			X	2	
PW-303		1645	9/1/20			X	2	
PW-061		1554	9/1/20			X	2	
PW-037		1339	9/1/20			X	2	
PW-240		0806	9/1/20			X	2	
PW-039		1422	9/1/20			X	2	

320-64367 Chain of Custody

Project Information	Sample Receipt
Project Number: 102599-001	Total Number of Containers
Project Name: GUS. Annual	COC Seals/Intact? Y/N/NA
Contact: KRF	Received Good Cond./Cold
Ongoing Project? Yes ☒ No ☐	Delivery Method:
Sampler: ARM	(attach shipping bill, if any)

Instructions
Requested Turnaround Time:
Special Instructions:

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Time: 900	Signature: Time:	Signature: Time:
Printed Name: A. Masters Date: 9/4/20	Printed Name: Date:	Printed Name: Date:
Company: Shannon + Wilson	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time: 1455	Signature: Time:	Signature: Time:
Printed Name: Salvador Orozco Date: 9/5/20	Printed Name: Date:	Printed Name: Date:
Company: Eurofins	Company:	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

F-19-91/UR

5.5 cw 6.0

No. 30640

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) 699-9660

303 Wellsian Way
Richland, WA 99352
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2355 Hill Road
Fairbanks, AK 99709
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2255 S.W. Canyon Road
Portland, OR 97201-2498
(503) 223-6147

1200 17th Street, Suite 1024
Denver, Co 80202
(303) 825-3800

CHAIN-OF-CUSTODY RECORD

Laboratory
Attn:

Analysis Parameters/Sample Container Description
(include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	PFAS+18						Total Number of Containers	Remarks/Matrix
PW-040		1445	9/1/20			X						2	groundwater
PW-230		1226	9/1/20			X						2	
PW-059		1128	9/1/20			X						2	
PW-032		0937	9/1/20			X						2	
PW-038		1313	9/1/20			X						2	
PW-401		1029	9/1/20			X						2	
PW-414		0859	9/1/20			X						2	
PW-501		1019	9/1/20			X						2	
PW-221		0856	9/2/20			X						2	
PW-1001		1016	9/2/20			X						2	

Project Information	Sample Receipt
Project Number:	Total Number of Containers
Project Name:	COC Seals/Intact? Y/N/NA
Contact:	Received Good Cond./Cold
Ongoing Project? Yes ☐ No ☐	Delivery Method:
Sampler:	(attach shipping bill, if any)

Instructions

Requested Turnaround Time:

Special Instructions:

See Page 1

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Company:	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time: 1455	Signature: Time:	Signature: Time:
Printed Name: Date: 9/15/20	Printed Name: Date:	Printed Name: Date:
Company: Ecology	Company:	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

F-19-91/UR

8.8 Cw 6.0

No. 30641

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

CHAIN-OF-CUSTODY RECORD

Laboratory
Attn:

400 N. 34th Street, Suite 100
Seattle, WA 98103
(206) 632-8020

2043 Westport Center Drive
St. Louis, MO 63146-3564
(314) 699-9660

303 Wellsian Way
Richland, WA 99352
(509) 946-6309

2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600

5430 Fairbanks Street, Suite 3
Anchorage, AK 99518
(907) 561-2120

2255 S.W. Canyon Road
Portland, OR 97201-2498
(503) 223-6147

1200 17th Street, Suite 1024
Denver, Co 80202
(303) 825-3800

Analysis Parameters/Sample Container Description
(include preservative if used)

	Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	PFAS+16						Total Number of Containers	Remarks/Matrix
1.	PW-419		1203	9/2/20			X						2	groundwater
2.	PW-213		1133	9/2/20			X						2	
3.	PW-010		1256	9/2/20			X						2	
4.	PW-462		0909	9/2/20			X						2	
5.	PW-2001		1006	9/2/20			X						2	
6.	PW-204		0805	9/2/20			X						2	
7.	PW-112		1401	9/3/20			X						2	
8.	PW-012		1411	9/3/20			X						2	

Project Information	Sample Receipt
Project Number:	Total Number of Containers
Project Name:	COC Seals/Intact? Y/N/NA
Contact:	Received Good Cond./Cold
Ongoing Project? Yes ☐ No ☐	Delivery Method:
Sampler:	(attach shipping bill, if any)

Instructions
Requested Turnaround Time:
Special Instructions:

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Company:	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time: 1455	Signature: Time:	Signature: Time:
Printed Name: Date: 9/5/20	Printed Name: Date:	Printed Name: Date:
Company: ETOSA	Company:	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

F-19-91/UR

No. 30642

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-64367-1

Login Number: 64367
List Number: 1
Creator: Thompson, Sarah W

List Source: Eurofins TestAmerica, Sacramento

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	1094972
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.	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 <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:

September 10, 2020

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins / TestAmerica Laboratories, Inc. (TestAmerica)

Laboratory Report Number:

320-64367-1

Laboratory Report Date:

September 10, 2020

CS Site Name:

DOT&PF Gustavus Airport Statewide PFAS

ADEC File Number:

2569.38.033

Hazard Identification Number:

26981

320-64367-1

Laboratory Report Date:

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 DEC certified TestAmerica of West Sacramento, CA for the analysis of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) on February 6, 2018 by method 537. These compounds were included in the DEC'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:

   The requested analyses were conducted by TestAmerica of West Sacramento, CA.

2. Chain of Custody (CoC)

   a. CoC information completed, signed, and dated (including released/received by)?

   Yes☒ No☐ N/A☐ Comments:

   The laboratory notes the COC was not relinquished. The first page was signed and pages 2 and 3 reference the first. The sample results are not affected by this discrepancy.

   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:

   Samples were preserved with Trizma.

   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.

Laboratory Report Date:

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 2.a. above.

e. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

4. Case Narrative

a. Present and understandable?

Yes☒ No☐ N/A☐ Comments:

Laboratory Report Date:

b. Discrepancies, errors, or QC failures identified by the lab?

Yes☒ No☐ N/A☐ Comments:

The case narrative indicates the following:
The following samples had a slight discoloration in both containers: *PW-219 , PW-438, PW-303, PW-061, PW-037, PW-039, PW-230, PW-032, PW-401, PW-501, PW-1001, PW-462, PW-2001, PW-204, PW-112 ,* and *PW-012*

The following samples were observed to be a light yellow in color prior to extraction: *PW-203 PW-303, PW-039 , PW-059, PW-032, PW-401, PW-501* and *PW-221* in preparation batch 320-410395 and 320-410395*; PW-419, PW-204,* and *PW-112* in preparation batch 320-410412.

The following samples *PW-219, PW-438, PW-061, PW-037* and *PW-230* in preparation batch 320-410395 and *PW-1001, PW-010 PW-2001* and *PW-012* in preparation batch 320-410412 were observed to be yellow in color prior to extraction.

The following samples were observed to have contain a thin layer of sediment at the bottom of the bottles: *PW-219, PW-438, PW-061, PW-230* and *PW-501* in preparation batch 320-410395 and *PW-1001, PW-010, PW-2001,* and *PW-012* in preparation batch 320-64367-27 were observed to contain a thin layer of sediment at the bottom of the bottles.

The Chain-of-Custody (COC) was incomplete as received and/or improperly completed. The second two pages of the COC was not relinquished.

The samples arrived in good condition and properly preserved. The temperature of the sample cooler received with this shipment was 6.0 º C upon arrival at the laboratory.

There was insufficient sample volume available to perform a matrix spike (MS) and MS duplicate (MSD) in conjunction with preparation batches 320-410395, 320-410395 and 320-410412..

c. Were all corrective actions documented?

Yes☐ No☐ N/A☒ Comments:

Corrective actions were not required.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The case narrative does not identify an effect on the data quality and/or usability.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes☒ No☐ N/A☐ Comments:

Laboratory Report Date:

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 (RL) is less than the applicable DEC regulatory limit for the project.

e. Data quality or usability affected?

The 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:

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 blanks.

iv. 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 required. See above.

v. Data quality or usability affected?

Comments:

Results are not affected. See above.

Laboratory Report Date:

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:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

NA; 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:

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 was not affected; see above.

Laboratory Report Date:

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 batches. However, the laboratory analyzed an LCS and LCSD to assess laboratory accuracy and precision.

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:

MS and MSD samples were not analyzed for this work order.

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:

MS and MSD samples were not analyzed for this work order.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

NA; MS and MSD samples were not analyzed for this work order.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes☐ No☐ N/A☒ Comments:

MS and MSD samples were not analyzed for this work order.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The 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 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; 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. A trip blank is not required for the requested analysis.

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 for the requested analysis.

iii. All results less than LOQ and project specified objectives?

Yes☐ No☐ N/A☒ Comments:

A trip blank is not required for the requested analysis.

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

NA; a trip blank is not required for the requested analysis.

v. Data quality or usability affected?

Comments:

The 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:

The field duplicate *pairs PW-203/PW-303, PW-401/PW-501, PW-012/PW-112,* and *PW-1001/PW-2001* were submitted with this work order

iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water, 50% soil)

RPD (%) = 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 for PFHxA results of field duplicate pairs *PW-203/PW-303* is 33.0%.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

No; results of PFHxA in the field duplicate pair PW-*203/PW-303* are already estimated values reported below the reporting limit and are not considered affected.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes☐ No☐ N/A☒ Comments:

Decontamination or equipment blank were not required for this project.

i. All results less than LOQ and project specified objectives?

Yes☐ No☐ N/A☒ Comments:

Decontamination or equipment blank were not required for this project.

Laboratory Report Date:

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

Decontamination or equipment blank were not required for this project.

iii. Data quality or usability affected?

Comments:

The 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:

Sample *PW-462* was collected from a hand pump; purging stabilization criteria was not met. Detected results are considered estimated and flagged 'J', non-detected results are flagged 'UJ' in the analytical database.

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-64368-1
Client Project/Site: GUSMW

For:
Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

Attn: Kristen Freiburger

Authorized for release by:
9/16/2020 12:46:34 PM

David Alltucker, Project Manager I
(916)374-4383
David.Alltucker@Eurofinset.com

Table of Contents

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: GUSMW

Job ID: 320-64368-1

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
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

Job ID: 320-64368-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative
320-64368-1

Receipt
The samples were received on 9/5/2020 2:55 PM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 6.0º C.

Receipt Exceptions
2 of 3 pages of COC were not relinquished by shipper.

LCMS
Method 537 (modified): The continuing calibration verification (CCV) associated with batch 320-412177 recovered above the upper control limit for Perfluorotridecanoic acid (PFTriA). The samples associated with this CCV were non-detects for the affected analyte; therefore, the 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: The following samples contain a thin layer of sediments at the bottom of the container prior to extraction: MW-1-140 (320-64368-1), MW-2-20 (320-64368-2), MW-1-40 (320-64368-5), MW-10-20 (320-64368-7), MW-9-30 (320-64368-9), MW-3-40 (320-64368-10), MW-12-10 (320-64368-15) and MW-4-20 (320-64368-17).

Method 3535: The following samples contain floating particulates in the container prior to extraction: MW-3-15 (320-64368-6), MW-8-120 (320-64368-8), MW-8-20 (320-64368-11), MW-5-20 (320-64368-12), MW-7-20 (320-64368-13), MW-6-20 (320-64368-14), MW-6-120 (320-64368-16) and MW-4-20 (320-64368-17).

Method 3535: The following samples were light yellow after extraction/final volume: MW-1-40 (320-64368-5), MW-3-15 (320-64368-6), MW-10-20 (320-64368-7), MW-8-120 (320-64368-8), MW-9-30 (320-64368-9), MW-3-40 (320-64368-10), MW-12-10 (320-64368-15) and MW-4-20 (320-64368-17).

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-412145.

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: GUSMW

Job ID: 320-64368-1

Client Sample ID: MW-1-140 — Lab Sample ID: 320-64368-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorotetradecanoic acid (PFTeA)	0.43	J	1.7	0.25	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.32	J B	1.7	0.14	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-2-20 — Lab Sample ID: 320-64368-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	84		1.7	0.50	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	37		1.7	0.21	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	36		1.7	0.73	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	4.0		1.7	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	3.0		1.7	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	32	B	1.7	0.15	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	260		1.7	0.46	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-1-15 — Lab Sample ID: 320-64368-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.33	J	1.7	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.69	J B	1.7	0.15	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-2-30 — Lab Sample ID: 320-64368-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorotetradecanoic acid (PFTeA)	0.39	J	1.7	0.25	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.3	J	1.7	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.38	J B	1.7	0.15	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-1-40 — Lab Sample ID: 320-64368-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.32	J B	1.7	0.15	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-3-15 — Lab Sample ID: 320-64368-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.0	J	1.7	0.50	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.44	J	1.7	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.57	J	1.7	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	4.5	B	1.7	0.15	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	6.7		1.7	0.47	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-10-20 — Lab Sample ID: 320-64368-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	11		1.7	0.49	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	4.5		1.7	0.21	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	2.6		1.7	0.72	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.42	J	1.7	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.64	J	1.7	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	13	B	1.7	0.14	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	140		1.7	0.46	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: GUSMW

Job ID: 320-64368-1

Client Sample ID: MW-8-120 — Lab Sample ID: 320-64368-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorotetradecanoic acid (PFTeA)	0.50	J	1.7	0.25	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.32	J B	1.7	0.14	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-9-30 — Lab Sample ID: 320-64368-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	16		1.7	0.50	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	6.0		1.7	0.21	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	2.3		1.7	0.73	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.6	J	1.7	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	23	B	1.7	0.15	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	88		1.7	0.46	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-3-40 — Lab Sample ID: 320-64368-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	2.9		1.7	0.49	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.63	J	1.7	0.21	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	2.2		1.7	0.72	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.9		1.7	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	19	B	1.7	0.14	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	12		1.7	0.46	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-8-20 — Lab Sample ID: 320-64368-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.33	J B	1.7	0.14	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-5-20 — Lab Sample ID: 320-64368-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.76	J	1.7	0.49	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.22	J	1.7	0.21	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.41	J	1.7	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.29	J	1.7	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.6	J B	1.7	0.14	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.0		1.7	0.45	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-7-20 — Lab Sample ID: 320-64368-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.2	J	1.7	0.51	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.84	J	1.7	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	2.7		1.7	0.74	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.45	J	1.7	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.76	J B	1.7	0.15	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.9		1.7	0.47	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-6-20 — Lab Sample ID: 320-64368-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorotetradecanoic acid (PFTeA)	0.34	J	1.7	0.25	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.30	J	1.7	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.8	B	1.7	0.15	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: GUSMW

Job ID: 320-64368-1

Client Sample ID: MW-12-10 — Lab Sample ID: 320-64368-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	17		1.7	0.51	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	15		1.7	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	9.8		1.7	0.74	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.97	J	1.7	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.8		1.7	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	52	B	1.7	0.15	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	210		1.7	0.47	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-6-120 — Lab Sample ID: 320-64368-16

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.28	J	1.7	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.8	B	1.7	0.14	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.91	J	1.7	0.46	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-4-20 — Lab Sample ID: 320-64368-17

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.28	J	1.7	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.40	J	1.7	0.25	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.32	J	1.7	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.71	J B	1.7	0.15	ng/L	1		537 (modified)	Total/NA

Client Sample ID: EB-11-15 — Lab Sample ID: 320-64368-18

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.28	J B	1.7	0.15	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.48	J	1.7	0.47	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-11-15 — Lab Sample ID: 320-64368-19

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	27		1.7	0.49	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	7.0		1.7	0.21	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	2.4		1.7	0.72	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	1.4	J	1.7	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	1.1	J	1.7	0.26	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.2		1.7	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	15	B	1.7	0.14	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	76		1.7	0.46	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client: Shannon & Wilson, Inc
Project/Site: GUSMW

Job ID: 320-64368-1

Client Sample ID: MW-1-140
Date Collected: 08/31/20 16:49
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64368-1
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	0.49	ng/L		09/14/20 18:44	09/15/20 12:08	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.21	ng/L		09/14/20 18:44	09/15/20 12:08	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.72	ng/L		09/14/20 18:44	09/15/20 12:08	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		09/14/20 18:44	09/15/20 12:08	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		09/14/20 18:44	09/15/20 12:08	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.94	ng/L		09/14/20 18:44	09/15/20 12:08	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47	ng/L		09/14/20 18:44	09/15/20 12:08	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		09/14/20 18:44	09/15/20 12:08	1
Perfluorotetradecanoic acid (PFTeA)	**0.43**	**J**	1.7	0.25	ng/L		09/14/20 18:44	09/15/20 12:08	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		09/14/20 18:44	09/15/20 12:08	1
Perfluorohexanesulfonic acid (PFHxS)	**0.32**	**J B**	1.7	0.14	ng/L		09/14/20 18:44	09/15/20 12:08	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.46	ng/L		09/14/20 18:44	09/15/20 12:08	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		17	2.6	ng/L		09/14/20 18:44	09/15/20 12:08	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		17	1.6	ng/L		09/14/20 18:44	09/15/20 12:08	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		09/14/20 18:44	09/15/20 12:08	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		09/14/20 18:44	09/15/20 12:08	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		09/14/20 18:44	09/15/20 12:08	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.15	ng/L		09/14/20 18:44	09/15/20 12:08	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*74*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:08*	*1*
13C4 PFHpA	*74*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:08*	*1*
13C4 PFOA	*71*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:08*	*1*
13C5 PFNA	*69*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:08*	*1*
13C2 PFDA	*73*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:08*	*1*
13C2 PFUnA	*71*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:08*	*1*
13C2 PFDoA	*71*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:08*	*1*
13C2 PFTeDA	*76*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:08*	*1*
13C3 PFBS	*68*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:08*	*1*
18O2 PFHxS	*72*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:08*	*1*
13C4 PFOS	*71*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:08*	*1*
d3-NMeFOSAA	*53*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:08*	*1*
d5-NEtFOSAA	*57*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:08*	*1*
13C3 HFPO-DA	*63*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:08*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUSMW

Job ID: 320-64368-1

Client Sample ID: MW-2-20

Date Collected: 09/01/20 16:20
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64368-2

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**84**		1.7	0.50	ng/L		09/14/20 18:44	09/15/20 12:17	1
Perfluoroheptanoic acid (PFHpA)	**37**		1.7	0.21	ng/L		09/14/20 18:44	09/15/20 12:17	1
Perfluorooctanoic acid (PFOA)	**36**		1.7	0.73	ng/L		09/14/20 18:44	09/15/20 12:17	1
Perfluorononanoic acid (PFNA)	**4.0**		1.7	0.23	ng/L		09/14/20 18:44	09/15/20 12:17	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		09/14/20 18:44	09/15/20 12:17	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.94	ng/L		09/14/20 18:44	09/15/20 12:17	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47	ng/L		09/14/20 18:44	09/15/20 12:17	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		09/14/20 18:44	09/15/20 12:17	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.25	ng/L		09/14/20 18:44	09/15/20 12:17	1
Perfluorobutanesulfonic acid (PFBS)	**3.0**		1.7	0.17	ng/L		09/14/20 18:44	09/15/20 12:17	1
Perfluorohexanesulfonic acid (PFHxS)	**32**	**B**	1.7	0.15	ng/L		09/14/20 18:44	09/15/20 12:17	1
Perfluorooctanesulfonic acid (PFOS)	**260**		1.7	0.46	ng/L		09/14/20 18:44	09/15/20 12:17	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		17	2.7	ng/L		09/14/20 18:44	09/15/20 12:17	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		17	1.6	ng/L		09/14/20 18:44	09/15/20 12:17	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		09/14/20 18:44	09/15/20 12:17	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		09/14/20 18:44	09/15/20 12:17	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		09/14/20 18:44	09/15/20 12:17	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.15	ng/L		09/14/20 18:44	09/15/20 12:17	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*81*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:17*	*1*
13C4 PFHpA	*81*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:17*	*1*
13C4 PFOA	*75*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:17*	*1*
13C5 PFNA	*80*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:17*	*1*
13C2 PFDA	*96*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:17*	*1*
13C2 PFUnA	*79*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:17*	*1*
13C2 PFDoA	*97*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:17*	*1*
13C2 PFTeDA	*92*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:17*	*1*
13C3 PFBS	*83*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:17*	*1*
18O2 PFHxS	*87*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:17*	*1*
13C4 PFOS	*80*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:17*	*1*
d3-NMeFOSAA	*67*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:17*	*1*
d5-NEtFOSAA	*70*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:17*	*1*
13C3 HFPO-DA	*71*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:17*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUSMW

Job ID: 320-64368-1

Client Sample ID: MW-1-15
Date Collected: 08/31/20 18:12
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64368-3
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	0.50	ng/L		09/14/20 18:44	09/15/20 12:26	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.22	ng/L		09/14/20 18:44	09/15/20 12:26	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.73	ng/L		09/14/20 18:44	09/15/20 12:26	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		09/14/20 18:44	09/15/20 12:26	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		09/14/20 18:44	09/15/20 12:26	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.95	ng/L		09/14/20 18:44	09/15/20 12:26	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47	ng/L		09/14/20 18:44	09/15/20 12:26	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		09/14/20 18:44	09/15/20 12:26	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.25	ng/L		09/14/20 18:44	09/15/20 12:26	1
Perfluorobutanesulfonic acid (PFBS)	**0.33**	**J**	1.7	0.17	ng/L		09/14/20 18:44	09/15/20 12:26	1
Perfluorohexanesulfonic acid (PFHxS)	**0.69**	**J B**	1.7	0.15	ng/L		09/14/20 18:44	09/15/20 12:26	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.47	ng/L		09/14/20 18:44	09/15/20 12:26	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		17	2.7	ng/L		09/14/20 18:44	09/15/20 12:26	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		17	1.6	ng/L		09/14/20 18:44	09/15/20 12:26	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		09/14/20 18:44	09/15/20 12:26	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		09/14/20 18:44	09/15/20 12:26	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		09/14/20 18:44	09/15/20 12:26	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.16	ng/L		09/14/20 18:44	09/15/20 12:26	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*76*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:26*	*1*
13C4 PFHpA	*79*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:26*	*1*
13C4 PFOA	*76*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:26*	*1*
13C5 PFNA	*77*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:26*	*1*
13C2 PFDA	*91*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:26*	*1*
13C2 PFUnA	*71*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:26*	*1*
13C2 PFDoA	*79*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:26*	*1*
13C2 PFTeDA	*85*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:26*	*1*
13C3 PFBS	*75*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:26*	*1*
18O2 PFHxS	*81*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:26*	*1*
13C4 PFOS	*75*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:26*	*1*
d3-NMeFOSAA	*59*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:26*	*1*
d5-NEtFOSAA	*64*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:26*	*1*
13C3 HFPO-DA	*68*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:26*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUSMW

Job ID: 320-64368-1

Client Sample ID: MW-2-30

Date Collected: 09/01/20 15:49
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64368-4

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	0.50	ng/L		09/14/20 18:44	09/15/20 12:35	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.22	ng/L		09/14/20 18:44	09/15/20 12:35	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.73	ng/L		09/14/20 18:44	09/15/20 12:35	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		09/14/20 18:44	09/15/20 12:35	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		09/14/20 18:44	09/15/20 12:35	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.95	ng/L		09/14/20 18:44	09/15/20 12:35	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47	ng/L		09/14/20 18:44	09/15/20 12:35	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		09/14/20 18:44	09/15/20 12:35	1
Perfluorotetradecanoic acid (PFTeA)	**0.39**	**J**	1.7	0.25	ng/L		09/14/20 18:44	09/15/20 12:35	1
Perfluorobutanesulfonic acid (PFBS)	**1.3**	**J**	1.7	0.17	ng/L		09/14/20 18:44	09/15/20 12:35	1
Perfluorohexanesulfonic acid (PFHxS)	**0.38**	**J B**	1.7	0.15	ng/L		09/14/20 18:44	09/15/20 12:35	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.46	ng/L		09/14/20 18:44	09/15/20 12:35	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		17	2.7	ng/L		09/14/20 18:44	09/15/20 12:35	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		17	1.6	ng/L		09/14/20 18:44	09/15/20 12:35	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		09/14/20 18:44	09/15/20 12:35	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		09/14/20 18:44	09/15/20 12:35	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		09/14/20 18:44	09/15/20 12:35	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.15	ng/L		09/14/20 18:44	09/15/20 12:35	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*75*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:35*	*1*
13C4 PFHpA	*79*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:35*	*1*
13C4 PFOA	*76*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:35*	*1*
13C5 PFNA	*81*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:35*	*1*
13C2 PFDA	*78*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:35*	*1*
13C2 PFUnA	*75*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:35*	*1*
13C2 PFDoA	*89*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:35*	*1*
13C2 PFTeDA	*81*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:35*	*1*
13C3 PFBS	*78*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:35*	*1*
18O2 PFHxS	*79*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:35*	*1*
13C4 PFOS	*76*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:35*	*1*
d3-NMeFOSAA	*56*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:35*	*1*
d5-NEtFOSAA	*60*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:35*	*1*
13C3 HFPO-DA	*68*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:35*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUSMW

Job ID: 320-64368-1

Client Sample ID: MW-1-40
Date Collected: 08/31/20 16:59
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64368-5
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	0.50	ng/L		09/14/20 18:44	09/15/20 12:44	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.22	ng/L		09/14/20 18:44	09/15/20 12:44	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.73	ng/L		09/14/20 18:44	09/15/20 12:44	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		09/14/20 18:44	09/15/20 12:44	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		09/14/20 18:44	09/15/20 12:44	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.95	ng/L		09/14/20 18:44	09/15/20 12:44	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47	ng/L		09/14/20 18:44	09/15/20 12:44	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		09/14/20 18:44	09/15/20 12:44	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.25	ng/L		09/14/20 18:44	09/15/20 12:44	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		09/14/20 18:44	09/15/20 12:44	1
Perfluorohexanesulfonic acid (PFHxS)	**0.32**	**J B**	1.7	0.15	ng/L		09/14/20 18:44	09/15/20 12:44	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.46	ng/L		09/14/20 18:44	09/15/20 12:44	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		17	2.7	ng/L		09/14/20 18:44	09/15/20 12:44	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		17	1.6	ng/L		09/14/20 18:44	09/15/20 12:44	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		09/14/20 18:44	09/15/20 12:44	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		09/14/20 18:44	09/15/20 12:44	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		09/14/20 18:44	09/15/20 12:44	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.15	ng/L		09/14/20 18:44	09/15/20 12:44	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*83*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:44*	*1*
13C4 PFHpA	*85*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:44*	*1*
13C4 PFOA	*84*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:44*	*1*
13C5 PFNA	*91*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:44*	*1*
13C2 PFDA	*76*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:44*	*1*
13C2 PFUnA	*77*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:44*	*1*
13C2 PFDoA	*75*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:44*	*1*
13C2 PFTeDA	*88*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:44*	*1*
13C3 PFBS	*85*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:44*	*1*
18O2 PFHxS	*90*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:44*	*1*
13C4 PFOS	*83*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:44*	*1*
d3-NMeFOSAA	*62*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:44*	*1*
d5-NEtFOSAA	*67*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:44*	*1*
13C3 HFPO-DA	*73*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:44*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUSMW

Job ID: 320-64368-1

Client Sample ID: MW-3-15

Date Collected: 09/01/20 19:11
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64368-6

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**1.0**	**J**	1.7	0.50	ng/L		09/14/20 18:44	09/15/20 12:53	1
Perfluoroheptanoic acid (PFHpA)	**0.44**	**J**	1.7	0.22	ng/L		09/14/20 18:44	09/15/20 12:53	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.74	ng/L		09/14/20 18:44	09/15/20 12:53	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		09/14/20 18:44	09/15/20 12:53	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		09/14/20 18:44	09/15/20 12:53	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.95	ng/L		09/14/20 18:44	09/15/20 12:53	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		09/14/20 18:44	09/15/20 12:53	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		09/14/20 18:44	09/15/20 12:53	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.25	ng/L		09/14/20 18:44	09/15/20 12:53	1
Perfluorobutanesulfonic acid (PFBS)	**0.57**	**J**	1.7	0.17	ng/L		09/14/20 18:44	09/15/20 12:53	1
Perfluorohexanesulfonic acid (PFHxS)	**4.5**	**B**	1.7	0.15	ng/L		09/14/20 18:44	09/15/20 12:53	1
Perfluorooctanesulfonic acid (PFOS)	**6.7**		1.7	0.47	ng/L		09/14/20 18:44	09/15/20 12:53	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		17	2.7	ng/L		09/14/20 18:44	09/15/20 12:53	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		17	1.6	ng/L		09/14/20 18:44	09/15/20 12:53	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		09/14/20 18:44	09/15/20 12:53	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		09/14/20 18:44	09/15/20 12:53	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		09/14/20 18:44	09/15/20 12:53	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.16	ng/L		09/14/20 18:44	09/15/20 12:53	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*82*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:53*	*1*
13C4 PFHpA	*82*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:53*	*1*
13C4 PFOA	*76*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:53*	*1*
13C5 PFNA	*83*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:53*	*1*
13C2 PFDA	*83*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:53*	*1*
13C2 PFUnA	*78*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:53*	*1*
13C2 PFDoA	*68*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:53*	*1*
13C2 PFTeDA	*85*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:53*	*1*
13C3 PFBS	*82*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:53*	*1*
18O2 PFHxS	*84*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:53*	*1*
13C4 PFOS	*79*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:53*	*1*
d3-NMeFOSAA	*60*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:53*	*1*
d5-NEtFOSAA	*65*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:53*	*1*
13C3 HFPO-DA	*76*		*25 - 150*	*09/14/20 18:44*	*09/15/20 12:53*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUSMW

Job ID: 320-64368-1

Client Sample ID: MW-10-20

Date Collected: 09/01/20 11:54
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64368-7

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**11**		1.7	0.49	ng/L		09/14/20 18:44	09/15/20 13:02	1
Perfluoroheptanoic acid (PFHpA)	**4.5**		1.7	0.21	ng/L		09/14/20 18:44	09/15/20 13:02	1
Perfluorooctanoic acid (PFOA)	**2.6**		1.7	0.72	ng/L		09/14/20 18:44	09/15/20 13:02	1
Perfluorononanoic acid (PFNA)	**0.42**	**J**	1.7	0.23	ng/L		09/14/20 18:44	09/15/20 13:02	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		09/14/20 18:44	09/15/20 13:02	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.94	ng/L		09/14/20 18:44	09/15/20 13:02	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47	ng/L		09/14/20 18:44	09/15/20 13:02	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		09/14/20 18:44	09/15/20 13:02	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.25	ng/L		09/14/20 18:44	09/15/20 13:02	1
Perfluorobutanesulfonic acid (PFBS)	**0.64**	**J**	1.7	0.17	ng/L		09/14/20 18:44	09/15/20 13:02	1
Perfluorohexanesulfonic acid (PFHxS)	**13**	**B**	1.7	0.14	ng/L		09/14/20 18:44	09/15/20 13:02	1
Perfluorooctanesulfonic acid (PFOS)	**140**		1.7	0.46	ng/L		09/14/20 18:44	09/15/20 13:02	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		17	2.6	ng/L		09/14/20 18:44	09/15/20 13:02	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		17	1.6	ng/L		09/14/20 18:44	09/15/20 13:02	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		09/14/20 18:44	09/15/20 13:02	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		09/14/20 18:44	09/15/20 13:02	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		09/14/20 18:44	09/15/20 13:02	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.15	ng/L		09/14/20 18:44	09/15/20 13:02	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*81*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:02*	*1*
13C4 PFHpA	*78*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:02*	*1*
13C4 PFOA	*76*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:02*	*1*
13C5 PFNA	*83*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:02*	*1*
13C2 PFDA	*89*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:02*	*1*
13C2 PFUnA	*70*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:02*	*1*
13C2 PFDoA	*88*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:02*	*1*
13C2 PFTeDA	*89*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:02*	*1*
13C3 PFBS	*80*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:02*	*1*
18O2 PFHxS	*84*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:02*	*1*
13C4 PFOS	*77*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:02*	*1*
d3-NMeFOSAA	*63*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:02*	*1*
d5-NEtFOSAA	*66*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:02*	*1*
13C3 HFPO-DA	*70*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:02*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUSMW

Job ID: 320-64368-1

Client Sample ID: MW-8-120
Date Collected: 09/01/20 09:33
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64368-8
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	0.49	ng/L		09/14/20 18:44	09/15/20 13:30	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.21	ng/L		09/14/20 18:44	09/15/20 13:30	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.72	ng/L		09/14/20 18:44	09/15/20 13:30	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		09/14/20 18:44	09/15/20 13:30	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		09/14/20 18:44	09/15/20 13:30	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.93	ng/L		09/14/20 18:44	09/15/20 13:30	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47	ng/L		09/14/20 18:44	09/15/20 13:30	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		09/14/20 18:44	09/15/20 13:30	1
Perfluorotetradecanoic acid (PFTeA)	**0.50**	**J**	1.7	0.25	ng/L		09/14/20 18:44	09/15/20 13:30	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		09/14/20 18:44	09/15/20 13:30	1
Perfluorohexanesulfonic acid (PFHxS)	**0.32**	**J B**	1.7	0.14	ng/L		09/14/20 18:44	09/15/20 13:30	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.46	ng/L		09/14/20 18:44	09/15/20 13:30	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		17	2.6	ng/L		09/14/20 18:44	09/15/20 13:30	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		17	1.6	ng/L		09/14/20 18:44	09/15/20 13:30	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		09/14/20 18:44	09/15/20 13:30	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		09/14/20 18:44	09/15/20 13:30	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		09/14/20 18:44	09/15/20 13:30	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.15	ng/L		09/14/20 18:44	09/15/20 13:30	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*95*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:30*	*1*
13C4 PFHpA	*101*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:30*	*1*
13C4 PFOA	*92*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:30*	*1*
13C5 PFNA	*103*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:30*	*1*
13C2 PFDA	*89*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:30*	*1*
13C2 PFUnA	*96*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:30*	*1*
13C2 PFDoA	*102*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:30*	*1*
13C2 PFTeDA	*99*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:30*	*1*
13C3 PFBS	*91*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:30*	*1*
18O2 PFHxS	*96*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:30*	*1*
13C4 PFOS	*88*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:30*	*1*
d3-NMeFOSAA	*69*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:30*	*1*
d5-NEtFOSAA	*72*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:30*	*1*
13C3 HFPO-DA	*86*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:30*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUSMW

Job ID: 320-64368-1

Client Sample ID: MW-9-30

Date Collected: 09/01/20 14:25
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64368-9

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**16**		1.7	0.50	ng/L		09/14/20 18:44	09/15/20 13:39	1
Perfluoroheptanoic acid (PFHpA)	**6.0**		1.7	0.21	ng/L		09/14/20 18:44	09/15/20 13:39	1
Perfluorooctanoic acid (PFOA)	**2.3**		1.7	0.73	ng/L		09/14/20 18:44	09/15/20 13:39	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		09/14/20 18:44	09/15/20 13:39	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		09/14/20 18:44	09/15/20 13:39	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.94	ng/L		09/14/20 18:44	09/15/20 13:39	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47	ng/L		09/14/20 18:44	09/15/20 13:39	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		09/14/20 18:44	09/15/20 13:39	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.25	ng/L		09/14/20 18:44	09/15/20 13:39	1
Perfluorobutanesulfonic acid (PFBS)	**1.6**	**J**	1.7	0.17	ng/L		09/14/20 18:44	09/15/20 13:39	1
Perfluorohexanesulfonic acid (PFHxS)	**23**	**B**	1.7	0.15	ng/L		09/14/20 18:44	09/15/20 13:39	1
Perfluorooctanesulfonic acid (PFOS)	**88**		1.7	0.46	ng/L		09/14/20 18:44	09/15/20 13:39	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		17	2.7	ng/L		09/14/20 18:44	09/15/20 13:39	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		17	1.6	ng/L		09/14/20 18:44	09/15/20 13:39	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		09/14/20 18:44	09/15/20 13:39	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		09/14/20 18:44	09/15/20 13:39	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		09/14/20 18:44	09/15/20 13:39	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.15	ng/L		09/14/20 18:44	09/15/20 13:39	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*83*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:39*	*1*
13C4 PFHpA	*86*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:39*	*1*
13C4 PFOA	*81*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:39*	*1*
13C5 PFNA	*92*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:39*	*1*
13C2 PFDA	*85*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:39*	*1*
13C2 PFUnA	*82*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:39*	*1*
13C2 PFDoA	*73*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:39*	*1*
13C2 PFTeDA	*72*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:39*	*1*
13C3 PFBS	*86*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:39*	*1*
18O2 PFHxS	*90*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:39*	*1*
13C4 PFOS	*83*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:39*	*1*
d3-NMeFOSAA	*64*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:39*	*1*
d5-NEtFOSAA	*65*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:39*	*1*
13C3 HFPO-DA	*80*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:39*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUSMW

Job ID: 320-64368-1

Client Sample ID: MW-3-40

Date Collected: 09/01/20 18:42
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64368-10

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**2.9**		1.7	0.49	ng/L		09/14/20 18:44	09/15/20 13:48	1
Perfluoroheptanoic acid (PFHpA)	**0.63**	**J**	1.7	0.21	ng/L		09/14/20 18:44	09/15/20 13:48	1
Perfluorooctanoic acid (PFOA)	**2.2**		1.7	0.72	ng/L		09/14/20 18:44	09/15/20 13:48	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		09/14/20 18:44	09/15/20 13:48	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		09/14/20 18:44	09/15/20 13:48	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.93	ng/L		09/14/20 18:44	09/15/20 13:48	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.46	ng/L		09/14/20 18:44	09/15/20 13:48	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		09/14/20 18:44	09/15/20 13:48	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.25	ng/L		09/14/20 18:44	09/15/20 13:48	1
Perfluorobutanesulfonic acid (PFBS)	**1.9**		1.7	0.17	ng/L		09/14/20 18:44	09/15/20 13:48	1
Perfluorohexanesulfonic acid (PFHxS)	**19**	**B**	1.7	0.14	ng/L		09/14/20 18:44	09/15/20 13:48	1
Perfluorooctanesulfonic acid (PFOS)	**12**		1.7	0.46	ng/L		09/14/20 18:44	09/15/20 13:48	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		17	2.6	ng/L		09/14/20 18:44	09/15/20 13:48	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		17	1.6	ng/L		09/14/20 18:44	09/15/20 13:48	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		09/14/20 18:44	09/15/20 13:48	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		09/14/20 18:44	09/15/20 13:48	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		09/14/20 18:44	09/15/20 13:48	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.15	ng/L		09/14/20 18:44	09/15/20 13:48	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*82*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:48*	*1*
13C4 PFHpA	*87*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:48*	*1*
13C4 PFOA	*81*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:48*	*1*
13C5 PFNA	*81*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:48*	*1*
13C2 PFDA	*83*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:48*	*1*
13C2 PFUnA	*79*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:48*	*1*
13C2 PFDoA	*87*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:48*	*1*
13C2 PFTeDA	*86*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:48*	*1*
13C3 PFBS	*81*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:48*	*1*
18O2 PFHxS	*86*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:48*	*1*
13C4 PFOS	*82*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:48*	*1*
d3-NMeFOSAA	*63*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:48*	*1*
d5-NEtFOSAA	*65*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:48*	*1*
13C3 HFPO-DA	*76*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:48*	*1*

Client Sample ID: MW-8-20
Date Collected: 09/01/20 09:43
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64368-11
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	0.49	ng/L		09/14/20 18:44	09/15/20 13:57	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.21	ng/L		09/14/20 18:44	09/15/20 13:57	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.72	ng/L		09/14/20 18:44	09/15/20 13:57	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		09/14/20 18:44	09/15/20 13:57	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		09/14/20 18:44	09/15/20 13:57	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.93	ng/L		09/14/20 18:44	09/15/20 13:57	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.46	ng/L		09/14/20 18:44	09/15/20 13:57	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		09/14/20 18:44	09/15/20 13:57	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.24	ng/L		09/14/20 18:44	09/15/20 13:57	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		09/14/20 18:44	09/15/20 13:57	1
Perfluorohexanesulfonic acid (PFHxS)	**0.33**	**J B**	1.7	0.14	ng/L		09/14/20 18:44	09/15/20 13:57	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.46	ng/L		09/14/20 18:44	09/15/20 13:57	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		17	2.6	ng/L		09/14/20 18:44	09/15/20 13:57	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		17	1.6	ng/L		09/14/20 18:44	09/15/20 13:57	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		09/14/20 18:44	09/15/20 13:57	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		09/14/20 18:44	09/15/20 13:57	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		09/14/20 18:44	09/15/20 13:57	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.15	ng/L		09/14/20 18:44	09/15/20 13:57	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*69*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:57*	*1*
13C4 PFHpA	*76*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:57*	*1*
13C4 PFOA	*69*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:57*	*1*
13C5 PFNA	*70*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:57*	*1*
13C2 PFDA	*71*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:57*	*1*
13C2 PFUnA	*72*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:57*	*1*
13C2 PFDoA	*66*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:57*	*1*
13C2 PFTeDA	*80*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:57*	*1*
13C3 PFBS	*72*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:57*	*1*
18O2 PFHxS	*75*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:57*	*1*
13C4 PFOS	*71*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:57*	*1*
d3-NMeFOSAA	*54*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:57*	*1*
d5-NEtFOSAA	*56*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:57*	*1*
13C3 HFPO-DA	*67*		*25 - 150*	*09/14/20 18:44*	*09/15/20 13:57*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUSMW

Job ID: 320-64368-1

Client Sample ID: MW-5-20

Date Collected: 09/02/20 09:03
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64368-12

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**0.76**	**J**	1.7	0.49	ng/L		09/14/20 18:44	09/15/20 14:06	1
Perfluoroheptanoic acid (PFHpA)	**0.22**	**J**	1.7	0.21	ng/L		09/14/20 18:44	09/15/20 14:06	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.71	ng/L		09/14/20 18:44	09/15/20 14:06	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		09/14/20 18:44	09/15/20 14:06	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		09/14/20 18:44	09/15/20 14:06	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.92	ng/L		09/14/20 18:44	09/15/20 14:06	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.46	ng/L		09/14/20 18:44	09/15/20 14:06	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		09/14/20 18:44	09/15/20 14:06	1
Perfluorotetradecanoic acid (PFTeA)	**0.41**	**J**	1.7	0.24	ng/L		09/14/20 18:44	09/15/20 14:06	1
Perfluorobutanesulfonic acid (PFBS)	**0.29**	**J**	1.7	0.17	ng/L		09/14/20 18:44	09/15/20 14:06	1
Perfluorohexanesulfonic acid (PFHxS)	**1.6**	**J B**	1.7	0.14	ng/L		09/14/20 18:44	09/15/20 14:06	1
Perfluorooctanesulfonic acid (PFOS)	**2.0**		1.7	0.45	ng/L		09/14/20 18:44	09/15/20 14:06	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		17	2.6	ng/L		09/14/20 18:44	09/15/20 14:06	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		17	1.6	ng/L		09/14/20 18:44	09/15/20 14:06	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		09/14/20 18:44	09/15/20 14:06	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		09/14/20 18:44	09/15/20 14:06	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		09/14/20 18:44	09/15/20 14:06	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.15	ng/L		09/14/20 18:44	09/15/20 14:06	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*94*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:06*	*1*
13C4 PFHpA	*103*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:06*	*1*
13C4 PFOA	*89*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:06*	*1*
13C5 PFNA	*92*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:06*	*1*
13C2 PFDA	*107*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:06*	*1*
13C2 PFUnA	*93*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:06*	*1*
13C2 PFDoA	*87*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:06*	*1*
13C2 PFTeDA	*88*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:06*	*1*
13C3 PFBS	*93*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:06*	*1*
18O2 PFHxS	*97*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:06*	*1*
13C4 PFOS	*90*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:06*	*1*
d3-NMeFOSAA	*70*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:06*	*1*
d5-NEtFOSAA	*73*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:06*	*1*
13C3 HFPO-DA	*84*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:06*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUSMW

Job ID: 320-64368-1

Client Sample ID: MW-7-20

Date Collected: 09/02/20 10:43
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64368-13

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**1.2**	**J**	1.7	0.51	ng/L		09/14/20 18:44	09/15/20 14:15	1
Perfluoroheptanoic acid (PFHpA)	**0.84**	**J**	1.7	0.22	ng/L		09/14/20 18:44	09/15/20 14:15	1
Perfluorooctanoic acid (PFOA)	**2.7**		1.7	0.74	ng/L		09/14/20 18:44	09/15/20 14:15	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.24	ng/L		09/14/20 18:44	09/15/20 14:15	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		09/14/20 18:44	09/15/20 14:15	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.96	ng/L		09/14/20 18:44	09/15/20 14:15	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		09/14/20 18:44	09/15/20 14:15	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		09/14/20 18:44	09/15/20 14:15	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.25	ng/L		09/14/20 18:44	09/15/20 14:15	1
Perfluorobutanesulfonic acid (PFBS)	**0.45**	**J**	1.7	0.17	ng/L		09/14/20 18:44	09/15/20 14:15	1
Perfluorohexanesulfonic acid (PFHxS)	**0.76**	**J B**	1.7	0.15	ng/L		09/14/20 18:44	09/15/20 14:15	1
Perfluorooctanesulfonic acid (PFOS)	**3.9**		1.7	0.47	ng/L		09/14/20 18:44	09/15/20 14:15	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		17	2.7	ng/L		09/14/20 18:44	09/15/20 14:15	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		17	1.7	ng/L		09/14/20 18:44	09/15/20 14:15	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		09/14/20 18:44	09/15/20 14:15	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		09/14/20 18:44	09/15/20 14:15	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		09/14/20 18:44	09/15/20 14:15	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.16	ng/L		09/14/20 18:44	09/15/20 14:15	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*76*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:15*	*1*
13C4 PFHpA	*77*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:15*	*1*
13C4 PFOA	*75*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:15*	*1*
13C5 PFNA	*73*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:15*	*1*
13C2 PFDA	*75*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:15*	*1*
13C2 PFUnA	*76*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:15*	*1*
13C2 PFDoA	*61*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:15*	*1*
13C2 PFTeDA	*67*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:15*	*1*
13C3 PFBS	*76*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:15*	*1*
18O2 PFHxS	*79*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:15*	*1*
13C4 PFOS	*75*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:15*	*1*
d3-NMeFOSAA	*56*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:15*	*1*
d5-NEtFOSAA	*58*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:15*	*1*
13C3 HFPO-DA	*69*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:15*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUSMW

Job ID: 320-64368-1

Client Sample ID: MW-6-20
Date Collected: 09/02/20 16:12
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64368-14
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	0.50	ng/L		09/14/20 18:44	09/15/20 14:24	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.21	ng/L		09/14/20 18:44	09/15/20 14:24	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.73	ng/L		09/14/20 18:44	09/15/20 14:24	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		09/14/20 18:44	09/15/20 14:24	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		09/14/20 18:44	09/15/20 14:24	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.95	ng/L		09/14/20 18:44	09/15/20 14:24	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47	ng/L		09/14/20 18:44	09/15/20 14:24	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		09/14/20 18:44	09/15/20 14:24	1
Perfluorotetradecanoic acid (PFTeA)	**0.34**	**J**	1.7	0.25	ng/L		09/14/20 18:44	09/15/20 14:24	1
Perfluorobutanesulfonic acid (PFBS)	**0.30**	**J**	1.7	0.17	ng/L		09/14/20 18:44	09/15/20 14:24	1
Perfluorohexanesulfonic acid (PFHxS)	**1.8**	**B**	1.7	0.15	ng/L		09/14/20 18:44	09/15/20 14:24	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.46	ng/L		09/14/20 18:44	09/15/20 14:24	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		17	2.7	ng/L		09/14/20 18:44	09/15/20 14:24	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		17	1.6	ng/L		09/14/20 18:44	09/15/20 14:24	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		09/14/20 18:44	09/15/20 14:24	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		09/14/20 18:44	09/15/20 14:24	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		09/14/20 18:44	09/15/20 14:24	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.15	ng/L		09/14/20 18:44	09/15/20 14:24	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*87*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:24*	*1*
13C4 PFHpA	*88*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:24*	*1*
13C4 PFOA	*85*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:24*	*1*
13C5 PFNA	*90*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:24*	*1*
13C2 PFDA	*93*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:24*	*1*
13C2 PFUnA	*79*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:24*	*1*
13C2 PFDoA	*91*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:24*	*1*
13C2 PFTeDA	*90*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:24*	*1*
13C3 PFBS	*84*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:24*	*1*
18O2 PFHxS	*91*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:24*	*1*
13C4 PFOS	*82*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:24*	*1*
d3-NMeFOSAA	*65*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:24*	*1*
d5-NEtFOSAA	*68*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:24*	*1*
13C3 HFPO-DA	*78*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:24*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUSMW

Job ID: 320-64368-1

Client Sample ID: MW-12-10

Date Collected: 09/02/20 14:09
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64368-15

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**17**		1.7	0.51	ng/L		09/14/20 18:44	09/15/20 14:33	1
Perfluoroheptanoic acid (PFHpA)	**15**		1.7	0.22	ng/L		09/14/20 18:44	09/15/20 14:33	1
Perfluorooctanoic acid (PFOA)	**9.8**		1.7	0.74	ng/L		09/14/20 18:44	09/15/20 14:33	1
Perfluorononanoic acid (PFNA)	**0.97**	**J**	1.7	0.24	ng/L		09/14/20 18:44	09/15/20 14:33	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		09/14/20 18:44	09/15/20 14:33	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.96	ng/L		09/14/20 18:44	09/15/20 14:33	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		09/14/20 18:44	09/15/20 14:33	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		09/14/20 18:44	09/15/20 14:33	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.25	ng/L		09/14/20 18:44	09/15/20 14:33	1
Perfluorobutanesulfonic acid (PFBS)	**1.8**		1.7	0.17	ng/L		09/14/20 18:44	09/15/20 14:33	1
Perfluorohexanesulfonic acid (PFHxS)	**52**	**B**	1.7	0.15	ng/L		09/14/20 18:44	09/15/20 14:33	1
Perfluorooctanesulfonic acid (PFOS)	**210**		1.7	0.47	ng/L		09/14/20 18:44	09/15/20 14:33	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		17	2.7	ng/L		09/14/20 18:44	09/15/20 14:33	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		17	1.7	ng/L		09/14/20 18:44	09/15/20 14:33	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		09/14/20 18:44	09/15/20 14:33	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		09/14/20 18:44	09/15/20 14:33	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		09/14/20 18:44	09/15/20 14:33	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.16	ng/L		09/14/20 18:44	09/15/20 14:33	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*90*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:33*	*1*
13C4 PFHpA	*91*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:33*	*1*
13C4 PFOA	*86*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:33*	*1*
13C5 PFNA	*95*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:33*	*1*
13C2 PFDA	*96*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:33*	*1*
13C2 PFUnA	*82*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:33*	*1*
13C2 PFDoA	*87*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:33*	*1*
13C2 PFTeDA	*89*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:33*	*1*
13C3 PFBS	*88*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:33*	*1*
18O2 PFHxS	*94*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:33*	*1*
13C4 PFOS	*86*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:33*	*1*
d3-NMeFOSAA	*70*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:33*	*1*
d5-NEtFOSAA	*74*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:33*	*1*
13C3 HFPO-DA	*82*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:33*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUSMW

Job ID: 320-64368-1

Client Sample ID: MW-6-120
Date Collected: 09/02/20 16:02
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64368-16
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	0.49	ng/L		09/14/20 18:44	09/15/20 14:42	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.21	ng/L		09/14/20 18:44	09/15/20 14:42	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.72	ng/L		09/14/20 18:44	09/15/20 14:42	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		09/14/20 18:44	09/15/20 14:42	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		09/14/20 18:44	09/15/20 14:42	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.93	ng/L		09/14/20 18:44	09/15/20 14:42	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47	ng/L		09/14/20 18:44	09/15/20 14:42	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		09/14/20 18:44	09/15/20 14:42	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.25	ng/L		09/14/20 18:44	09/15/20 14:42	1
Perfluorobutanesulfonic acid (PFBS)	**0.28**	**J**	1.7	0.17	ng/L		09/14/20 18:44	09/15/20 14:42	1
Perfluorohexanesulfonic acid (PFHxS)	**1.8**	**B**	1.7	0.14	ng/L		09/14/20 18:44	09/15/20 14:42	1
Perfluorooctanesulfonic acid (PFOS)	**0.91**	**J**	1.7	0.46	ng/L		09/14/20 18:44	09/15/20 14:42	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		17	2.6	ng/L		09/14/20 18:44	09/15/20 14:42	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		17	1.6	ng/L		09/14/20 18:44	09/15/20 14:42	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		09/14/20 18:44	09/15/20 14:42	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		09/14/20 18:44	09/15/20 14:42	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		09/14/20 18:44	09/15/20 14:42	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.15	ng/L		09/14/20 18:44	09/15/20 14:42	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*76*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:42*	*1*
13C4 PFHpA	*79*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:42*	*1*
13C4 PFOA	*83*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:42*	*1*
13C5 PFNA	*90*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:42*	*1*
13C2 PFDA	*86*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:42*	*1*
13C2 PFUnA	*80*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:42*	*1*
13C2 PFDoA	*83*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:42*	*1*
13C2 PFTeDA	*80*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:42*	*1*
13C3 PFBS	*81*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:42*	*1*
18O2 PFHxS	*86*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:42*	*1*
13C4 PFOS	*80*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:42*	*1*
d3-NMeFOSAA	*65*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:42*	*1*
d5-NEtFOSAA	*66*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:42*	*1*
13C3 HFPO-DA	*74*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:42*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUSMW

Job ID: 320-64368-1

Client Sample ID: MW-4-20

Date Collected: 09/02/20 17:48
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64368-17

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	0.50	ng/L		09/14/20 18:44	09/15/20 14:51	1
Perfluoroheptanoic acid (PFHpA)	**0.28**	**J**	1.7	0.22	ng/L		09/14/20 18:44	09/15/20 14:51	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.74	ng/L		09/14/20 18:44	09/15/20 14:51	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		09/14/20 18:44	09/15/20 14:51	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		09/14/20 18:44	09/15/20 14:51	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.95	ng/L		09/14/20 18:44	09/15/20 14:51	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		09/14/20 18:44	09/15/20 14:51	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		09/14/20 18:44	09/15/20 14:51	1
Perfluorotetradecanoic acid (PFTeA)	**0.40**	**J**	1.7	0.25	ng/L		09/14/20 18:44	09/15/20 14:51	1
Perfluorobutanesulfonic acid (PFBS)	**0.32**	**J**	1.7	0.17	ng/L		09/14/20 18:44	09/15/20 14:51	1
Perfluorohexanesulfonic acid (PFHxS)	**0.71**	**J B**	1.7	0.15	ng/L		09/14/20 18:44	09/15/20 14:51	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.47	ng/L		09/14/20 18:44	09/15/20 14:51	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		17	2.7	ng/L		09/14/20 18:44	09/15/20 14:51	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		17	1.6	ng/L		09/14/20 18:44	09/15/20 14:51	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		09/14/20 18:44	09/15/20 14:51	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		09/14/20 18:44	09/15/20 14:51	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		09/14/20 18:44	09/15/20 14:51	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.16	ng/L		09/14/20 18:44	09/15/20 14:51	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*79*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:51*	*1*
13C4 PFHpA	*84*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:51*	*1*
13C4 PFOA	*86*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:51*	*1*
13C5 PFNA	*89*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:51*	*1*
13C2 PFDA	*96*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:51*	*1*
13C2 PFUnA	*94*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:51*	*1*
13C2 PFDoA	*82*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:51*	*1*
13C2 PFTeDA	*83*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:51*	*1*
13C3 PFBS	*81*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:51*	*1*
18O2 PFHxS	*88*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:51*	*1*
13C4 PFOS	*86*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:51*	*1*
d3-NMeFOSAA	*66*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:51*	*1*
d5-NEtFOSAA	*72*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:51*	*1*
13C3 HFPO-DA	*73*		*25 - 150*	*09/14/20 18:44*	*09/15/20 14:51*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUSMW

Job ID: 320-64368-1

Client Sample ID: EB-11-15
Date Collected: 09/02/20 12:40
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64368-18
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		09/14/20 18:44	09/15/20 15:19	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.22	ng/L		09/14/20 18:44	09/15/20 15:19	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.74	ng/L		09/14/20 18:44	09/15/20 15:19	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.24	ng/L		09/14/20 18:44	09/15/20 15:19	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		09/14/20 18:44	09/15/20 15:19	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.96	ng/L		09/14/20 18:44	09/15/20 15:19	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		09/14/20 18:44	09/15/20 15:19	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		09/14/20 18:44	09/15/20 15:19	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.25	ng/L		09/14/20 18:44	09/15/20 15:19	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		09/14/20 18:44	09/15/20 15:19	1
Perfluorohexanesulfonic acid (PFHxS)	**0.28**	**J B**	1.7	0.15	ng/L		09/14/20 18:44	09/15/20 15:19	1
Perfluorooctanesulfonic acid (PFOS)	**0.48**	**J**	1.7	0.47	ng/L		09/14/20 18:44	09/15/20 15:19	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		17	2.7	ng/L		09/14/20 18:44	09/15/20 15:19	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		17	1.7	ng/L		09/14/20 18:44	09/15/20 15:19	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		09/14/20 18:44	09/15/20 15:19	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		09/14/20 18:44	09/15/20 15:19	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		09/14/20 18:44	09/15/20 15:19	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.16	ng/L		09/14/20 18:44	09/15/20 15:19	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*86*		*25 - 150*	*09/14/20 18:44*	*09/15/20 15:19*	*1*
13C4 PFHpA	*88*		*25 - 150*	*09/14/20 18:44*	*09/15/20 15:19*	*1*
13C4 PFOA	*91*		*25 - 150*	*09/14/20 18:44*	*09/15/20 15:19*	*1*
13C5 PFNA	*97*		*25 - 150*	*09/14/20 18:44*	*09/15/20 15:19*	*1*
13C2 PFDA	*91*		*25 - 150*	*09/14/20 18:44*	*09/15/20 15:19*	*1*
13C2 PFUnA	*87*		*25 - 150*	*09/14/20 18:44*	*09/15/20 15:19*	*1*
13C2 PFDoA	*76*		*25 - 150*	*09/14/20 18:44*	*09/15/20 15:19*	*1*
13C2 PFTeDA	*86*		*25 - 150*	*09/14/20 18:44*	*09/15/20 15:19*	*1*
13C3 PFBS	*84*		*25 - 150*	*09/14/20 18:44*	*09/15/20 15:19*	*1*
18O2 PFHxS	*87*		*25 - 150*	*09/14/20 18:44*	*09/15/20 15:19*	*1*
13C4 PFOS	*86*		*25 - 150*	*09/14/20 18:44*	*09/15/20 15:19*	*1*
d3-NMeFOSAA	*64*		*25 - 150*	*09/14/20 18:44*	*09/15/20 15:19*	*1*
d5-NEtFOSAA	*77*		*25 - 150*	*09/14/20 18:44*	*09/15/20 15:19*	*1*
13C3 HFPO-DA	*76*		*25 - 150*	*09/14/20 18:44*	*09/15/20 15:19*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUSMW

Job ID: 320-64368-1

Client Sample ID: MW-11-15
Date Collected: 09/02/20 12:04
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64368-19
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**27**		1.7	0.49	ng/L		09/14/20 18:44	09/15/20 15:28	1
Perfluoroheptanoic acid (PFHpA)	**7.0**		1.7	0.21	ng/L		09/14/20 18:44	09/15/20 15:28	1
Perfluorooctanoic acid (PFOA)	**2.4**		1.7	0.72	ng/L		09/14/20 18:44	09/15/20 15:28	1
Perfluorononanoic acid (PFNA)	**1.4**	**J**	1.7	0.23	ng/L		09/14/20 18:44	09/15/20 15:28	1
Perfluorodecanoic acid (PFDA)	**1.1**	**J**	1.7	0.26	ng/L		09/14/20 18:44	09/15/20 15:28	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.94	ng/L		09/14/20 18:44	09/15/20 15:28	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47	ng/L		09/14/20 18:44	09/15/20 15:28	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		09/14/20 18:44	09/15/20 15:28	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.25	ng/L		09/14/20 18:44	09/15/20 15:28	1
Perfluorobutanesulfonic acid (PFBS)	**2.2**		1.7	0.17	ng/L		09/14/20 18:44	09/15/20 15:28	1
Perfluorohexanesulfonic acid (PFHxS)	**15**	**B**	1.7	0.14	ng/L		09/14/20 18:44	09/15/20 15:28	1
Perfluorooctanesulfonic acid (PFOS)	**76**		1.7	0.46	ng/L		09/14/20 18:44	09/15/20 15:28	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		17	2.6	ng/L		09/14/20 18:44	09/15/20 15:28	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		17	1.6	ng/L		09/14/20 18:44	09/15/20 15:28	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		09/14/20 18:44	09/15/20 15:28	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		09/14/20 18:44	09/15/20 15:28	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		09/14/20 18:44	09/15/20 15:28	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.15	ng/L		09/14/20 18:44	09/15/20 15:28	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*65*		*25 - 150*	*09/14/20 18:44*	*09/15/20 15:28*	*1*
13C4 PFHpA	*72*		*25 - 150*	*09/14/20 18:44*	*09/15/20 15:28*	*1*
13C4 PFOA	*72*		*25 - 150*	*09/14/20 18:44*	*09/15/20 15:28*	*1*
13C5 PFNA	*72*		*25 - 150*	*09/14/20 18:44*	*09/15/20 15:28*	*1*
13C2 PFDA	*74*		*25 - 150*	*09/14/20 18:44*	*09/15/20 15:28*	*1*
13C2 PFUnA	*71*		*25 - 150*	*09/14/20 18:44*	*09/15/20 15:28*	*1*
13C2 PFDoA	*66*		*25 - 150*	*09/14/20 18:44*	*09/15/20 15:28*	*1*
13C2 PFTeDA	*65*		*25 - 150*	*09/14/20 18:44*	*09/15/20 15:28*	*1*
13C3 PFBS	*68*		*25 - 150*	*09/14/20 18:44*	*09/15/20 15:28*	*1*
18O2 PFHxS	*73*		*25 - 150*	*09/14/20 18:44*	*09/15/20 15:28*	*1*
13C4 PFOS	*69*		*25 - 150*	*09/14/20 18:44*	*09/15/20 15:28*	*1*
d3-NMeFOSAA	*56*		*25 - 150*	*09/14/20 18:44*	*09/15/20 15:28*	*1*
d5-NEtFOSAA	*57*		*25 - 150*	*09/14/20 18:44*	*09/15/20 15:28*	*1*
13C3 HFPO-DA	*60*		*25 - 150*	*09/14/20 18:44*	*09/15/20 15:28*	*1*

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: GUSMW

Job ID: 320-64368-1

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)
320-64368-1	MW-1-140	74	74	71	69	73	71	71	76
320-64368-2	MW-2-20	81	81	75	80	96	79	97	92
320-64368-3	MW-1-15	76	79	76	77	91	71	79	85
320-64368-4	MW-2-30	75	79	76	81	78	75	89	81
320-64368-5	MW-1-40	83	85	84	91	76	77	75	88
320-64368-6	MW-3-15	82	82	76	83	83	78	68	85
320-64368-7	MW-10-20	81	78	76	83	89	70	88	89
320-64368-8	MW-8-120	95	101	92	103	89	96	102	99
320-64368-9	MW-9-30	83	86	81	92	85	82	73	72
320-64368-10	MW-3-40	82	87	81	81	83	79	87	86
320-64368-11	MW-8-20	69	76	69	70	71	72	66	80
320-64368-12	MW-5-20	94	103	89	92	107	93	87	88
320-64368-13	MW-7-20	76	77	75	73	75	76	61	67
320-64368-14	MW-6-20	87	88	85	90	93	79	91	90
320-64368-15	MW-12-10	90	91	86	95	96	82	87	89
320-64368-16	MW-6-120	76	79	83	90	86	80	83	80
320-64368-17	MW-4-20	79	84	86	89	96	94	82	83
320-64368-18	EB-11-15	86	88	91	97	91	87	76	86
320-64368-19	MW-11-15	65	72	72	72	74	71	66	65
LCS 320-412145/2-A	Lab Control Sample	75	82	78	78	81	82	85	71
LCSD 320-412145/3-A	Lab Control Sample Dup	82	84	80	87	88	83	106	84
MB 320-412145/1-A	Method Blank	69	70	66	67	73	77	84	79

		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)		
320-64368-1	MW-1-140	68	72	71	53	57	63		
320-64368-2	MW-2-20	83	87	80	67	70	71		
320-64368-3	MW-1-15	75	81	75	59	64	68		
320-64368-4	MW-2-30	78	79	76	56	60	68		
320-64368-5	MW-1-40	85	90	83	62	67	73		
320-64368-6	MW-3-15	82	84	79	60	65	76		
320-64368-7	MW-10-20	80	84	77	63	66	70		
320-64368-8	MW-8-120	91	96	88	69	72	86		
320-64368-9	MW-9-30	86	90	83	64	65	80		
320-64368-10	MW-3-40	81	86	82	63	65	76		
320-64368-11	MW-8-20	72	75	71	54	56	67		
320-64368-12	MW-5-20	93	97	90	70	73	84		
320-64368-13	MW-7-20	76	79	75	56	58	69		
320-64368-14	MW-6-20	84	91	82	65	68	78		
320-64368-15	MW-12-10	88	94	86	70	74	82		
320-64368-16	MW-6-120	81	86	80	65	66	74		
320-64368-17	MW-4-20	81	88	86	66	72	73		
320-64368-18	EB-11-15	84	87	86	64	77	76		
320-64368-19	MW-11-15	68	73	69	56	57	60		
LCS 320-412145/2-A	Lab Control Sample	76	79	77	63	64	69		
LCSD 320-412145/3-A	Lab Control Sample Dup	83	84	80	69	70	71		
MB 320-412145/1-A	Method Blank	71	73	71	58	60	62		

Surrogate Legend

PFHxA = 13C2 PFHxA

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: GUSMW

Job ID: 320-64368-1

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

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-412145/1-A
Matrix: Water
Analysis Batch: 412177

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 412145

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		09/14/20 18:44	09/15/20 11:40	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		09/14/20 18:44	09/15/20 11:40	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		09/14/20 18:44	09/15/20 11:40	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		09/14/20 18:44	09/15/20 11:40	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		09/14/20 18:44	09/15/20 11:40	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		09/14/20 18:44	09/15/20 11:40	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		09/14/20 18:44	09/15/20 11:40	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		09/14/20 18:44	09/15/20 11:40	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.29	ng/L		09/14/20 18:44	09/15/20 11:40	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		09/14/20 18:44	09/15/20 11:40	1
Perfluorohexanesulfonic acid (PFHxS)	0.295	J	2.0	0.17	ng/L		09/14/20 18:44	09/15/20 11:40	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		09/14/20 18:44	09/15/20 11:40	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		20	3.1	ng/L		09/14/20 18:44	09/15/20 11:40	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		20	1.9	ng/L		09/14/20 18:44	09/15/20 11:40	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		09/14/20 18:44	09/15/20 11:40	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		09/14/20 18:44	09/15/20 11:40	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		09/14/20 18:44	09/15/20 11:40	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.18	ng/L		09/14/20 18:44	09/15/20 11:40	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*69*		*25 - 150*	*09/14/20 18:44*	*09/15/20 11:40*	*1*
13C4 PFHpA	*70*		*25 - 150*	*09/14/20 18:44*	*09/15/20 11:40*	*1*
13C4 PFOA	*66*		*25 - 150*	*09/14/20 18:44*	*09/15/20 11:40*	*1*
13C5 PFNA	*67*		*25 - 150*	*09/14/20 18:44*	*09/15/20 11:40*	*1*
13C2 PFDA	*73*		*25 - 150*	*09/14/20 18:44*	*09/15/20 11:40*	*1*
13C2 PFUnA	*77*		*25 - 150*	*09/14/20 18:44*	*09/15/20 11:40*	*1*
13C2 PFDoA	*84*		*25 - 150*	*09/14/20 18:44*	*09/15/20 11:40*	*1*
13C2 PFTeDA	*79*		*25 - 150*	*09/14/20 18:44*	*09/15/20 11:40*	*1*
13C3 PFBS	*71*		*25 - 150*	*09/14/20 18:44*	*09/15/20 11:40*	*1*
18O2 PFHxS	*73*		*25 - 150*	*09/14/20 18:44*	*09/15/20 11:40*	*1*
13C4 PFOS	*71*		*25 - 150*	*09/14/20 18:44*	*09/15/20 11:40*	*1*
d3-NMeFOSAA	*58*		*25 - 150*	*09/14/20 18:44*	*09/15/20 11:40*	*1*
d5-NEtFOSAA	*60*		*25 - 150*	*09/14/20 18:44*	*09/15/20 11:40*	*1*
13C3 HFPO-DA	*62*		*25 - 150*	*09/14/20 18:44*	*09/15/20 11:40*	*1*

Lab Sample ID: LCS 320-412145/2-A
Matrix: Water
Analysis Batch: 412177

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 412145

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid (PFHxA)	40.0	41.0		ng/L		102	73 - 133
Perfluoroheptanoic acid (PFHpA)	40.0	37.0		ng/L		92	72 - 132
Perfluorooctanoic acid (PFOA)	40.0	36.7		ng/L		92	70 - 130
Perfluorononanoic acid (PFNA)	40.0	43.9		ng/L		110	75 - 135

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-412145/2-A
Matrix: Water
Analysis Batch: 412177

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 412145

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorodecanoic acid (PFDA)	40.0	38.4		ng/L		96	76 - 136
Perfluoroundecanoic acid (PFUnA)	40.0	39.1		ng/L		98	68 - 128
Perfluorododecanoic acid (PFDoA)	40.0	35.0		ng/L		87	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	37.4		ng/L		94	71 - 131
Perfluorotetradecanoic acid (PFTeA)	40.0	47.6		ng/L		119	70 - 130
Perfluorobutanesulfonic acid (PFBS)	35.4	34.4		ng/L		97	67 - 127
Perfluorohexanesulfonic acid (PFHxS)	36.4	33.8		ng/L		93	59 - 119
Perfluorooctanesulfonic acid (PFOS)	37.1	39.2		ng/L		106	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	36.6		ng/L		98	75 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	39.5		ng/L		99	51 - 173
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	32.9		ng/L		87	54 - 114
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	36.5		ng/L		97	79 - 139

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*75*		*25 - 150*
13C4 PFHpA	*82*		*25 - 150*
13C4 PFOA	*78*		*25 - 150*
13C5 PFNA	*78*		*25 - 150*
13C2 PFDA	*81*		*25 - 150*
13C2 PFUnA	*82*		*25 - 150*
13C2 PFDoA	*85*		*25 - 150*
13C2 PFTeDA	*71*		*25 - 150*
13C3 PFBS	*76*		*25 - 150*
18O2 PFHxS	*79*		*25 - 150*
13C4 PFOS	*77*		*25 - 150*
d3-NMeFOSAA	*63*		*25 - 150*
d5-NEtFOSAA	*64*		*25 - 150*
13C3 HFPO-DA	*69*		*25 - 150*

Lab Sample ID: LCSD 320-412145/3-A
Matrix: Water
Analysis Batch: 412177

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 412145

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	39.1		ng/L		98	73 - 133	5	30
Perfluoroheptanoic acid (PFHpA)	40.0	41.6		ng/L		104	72 - 132	12	30
Perfluorooctanoic acid (PFOA)	40.0	43.2		ng/L		108	70 - 130	16	30
Perfluorononanoic acid (PFNA)	40.0	41.4		ng/L		104	75 - 135	6	30
Perfluorodecanoic acid (PFDA)	40.0	33.1		ng/L		83	76 - 136	15	30
Perfluoroundecanoic acid (PFUnA)	40.0	40.2		ng/L		101	68 - 128	3	30

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-412145/3-A
Matrix: Water
Analysis Batch: 412177

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 412145

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorododecanoic acid (PFDoA)			40.0	32.0		ng/L		80	71 - 131	9	30
Perfluorotridecanoic acid (PFTriA)			40.0	32.4		ng/L		81	71 - 131	14	30
Perfluorotetradecanoic acid (PFTeA)			40.0	47.0		ng/L		118	70 - 130	1	30
Perfluorobutanesulfonic acid (PFBS)			35.4	34.6		ng/L		98	67 - 127	1	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	34.6		ng/L		95	59 - 119	2	30
Perfluorooctanesulfonic acid (PFOS)			37.1	39.7		ng/L		107	70 - 130	1	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid			37.3	38.3		ng/L		103	75 - 135	4	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			40.0	41.6		ng/L		104	51 - 173	5	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid			37.7	34.6		ng/L		92	54 - 114	5	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.7	38.5		ng/L		102	79 - 139	5	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*82*		*25 - 150*
13C4 PFHpA	*84*		*25 - 150*
13C4 PFOA	*80*		*25 - 150*
13C5 PFNA	*87*		*25 - 150*
13C2 PFDA	*88*		*25 - 150*
13C2 PFUnA	*83*		*25 - 150*
13C2 PFDoA	*106*		*25 - 150*
13C2 PFTeDA	*84*		*25 - 150*
13C3 PFBS	*83*		*25 - 150*
18O2 PFHxS	*84*		*25 - 150*
13C4 PFOS	*80*		*25 - 150*
d3-NMeFOSAA	*69*		*25 - 150*
d5-NEtFOSAA	*70*		*25 - 150*
13C3 HFPO-DA	*71*		*25 - 150*

LCMS

Prep Batch: 412145

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-64368-1	MW-1-140	Total/NA	Water	3535	
320-64368-2	MW-2-20	Total/NA	Water	3535	
320-64368-3	MW-1-15	Total/NA	Water	3535	
320-64368-4	MW-2-30	Total/NA	Water	3535	
320-64368-5	MW-1-40	Total/NA	Water	3535	
320-64368-6	MW-3-15	Total/NA	Water	3535	
320-64368-7	MW-10-20	Total/NA	Water	3535	
320-64368-8	MW-8-120	Total/NA	Water	3535	
320-64368-9	MW-9-30	Total/NA	Water	3535	
320-64368-10	MW-3-40	Total/NA	Water	3535	
320-64368-11	MW-8-20	Total/NA	Water	3535	
320-64368-12	MW-5-20	Total/NA	Water	3535	
320-64368-13	MW-7-20	Total/NA	Water	3535	
320-64368-14	MW-6-20	Total/NA	Water	3535	
320-64368-15	MW-12-10	Total/NA	Water	3535	
320-64368-16	MW-6-120	Total/NA	Water	3535	
320-64368-17	MW-4-20	Total/NA	Water	3535	
320-64368-18	EB-11-15	Total/NA	Water	3535	
320-64368-19	MW-11-15	Total/NA	Water	3535	
MB 320-412145/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-412145/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-412145/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 412177

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-64368-1	MW-1-140	Total/NA	Water	537 (modified)	412145
320-64368-2	MW-2-20	Total/NA	Water	537 (modified)	412145
320-64368-3	MW-1-15	Total/NA	Water	537 (modified)	412145
320-64368-4	MW-2-30	Total/NA	Water	537 (modified)	412145
320-64368-5	MW-1-40	Total/NA	Water	537 (modified)	412145
320-64368-6	MW-3-15	Total/NA	Water	537 (modified)	412145
320-64368-7	MW-10-20	Total/NA	Water	537 (modified)	412145
320-64368-8	MW-8-120	Total/NA	Water	537 (modified)	412145
320-64368-9	MW-9-30	Total/NA	Water	537 (modified)	412145
320-64368-10	MW-3-40	Total/NA	Water	537 (modified)	412145
320-64368-11	MW-8-20	Total/NA	Water	537 (modified)	412145
320-64368-12	MW-5-20	Total/NA	Water	537 (modified)	412145
320-64368-13	MW-7-20	Total/NA	Water	537 (modified)	412145
320-64368-14	MW-6-20	Total/NA	Water	537 (modified)	412145
320-64368-15	MW-12-10	Total/NA	Water	537 (modified)	412145
320-64368-16	MW-6-120	Total/NA	Water	537 (modified)	412145
320-64368-17	MW-4-20	Total/NA	Water	537 (modified)	412145
320-64368-18	EB-11-15	Total/NA	Water	537 (modified)	412145
320-64368-19	MW-11-15	Total/NA	Water	537 (modified)	412145
MB 320-412145/1-A	Method Blank	Total/NA	Water	537 (modified)	412145
LCS 320-412145/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	412145
LCSD 320-412145/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	412145

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: GUSMW

Job ID: 320-64368-1

Client Sample ID: MW-1-140
Date Collected: 08/31/20 16:49
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64368-1
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			293.5 mL	10.00 mL	412145	09/14/20 18:44	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			412177	09/15/20 12:08	KJP	TAL SAC

Client Sample ID: MW-2-20
Date Collected: 09/01/20 16:20
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64368-2
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			291.7 mL	10.00 mL	412145	09/14/20 18:44	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			412177	09/15/20 12:17	KJP	TAL SAC

Client Sample ID: MW-1-15
Date Collected: 08/31/20 18:12
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64368-3
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			290.1 mL	10.00 mL	412145	09/14/20 18:44	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			412177	09/15/20 12:26	KJP	TAL SAC

Client Sample ID: MW-2-30
Date Collected: 09/01/20 15:49
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64368-4
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			290.6 mL	10.00 mL	412145	09/14/20 18:44	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			412177	09/15/20 12:35	KJP	TAL SAC

Client Sample ID: MW-1-40
Date Collected: 08/31/20 16:59
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64368-5
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			290.6 mL	10.00 mL	412145	09/14/20 18:44	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			412177	09/15/20 12:44	KJP	TAL SAC

Client Sample ID: MW-3-15
Date Collected: 09/01/20 19:11
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64368-6
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			288.7 mL	10.00 mL	412145	09/14/20 18:44	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			412177	09/15/20 12:53	KJP	TAL SAC

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: GUSMW

Job ID: 320-64368-1

Client Sample ID: MW-10-20
Lab Sample ID: 320-64368-7
Date Collected: 09/01/20 11:54
Matrix: Water
Date Received: 09/05/20 14:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			293.3 mL	10.00 mL	412145	09/14/20 18:44	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			412177	09/15/20 13:02	KJP	TAL SAC

Client Sample ID: MW-8-120
Lab Sample ID: 320-64368-8
Date Collected: 09/01/20 09:33
Matrix: Water
Date Received: 09/05/20 14:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			294.6 mL	10.00 mL	412145	09/14/20 18:44	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			412177	09/15/20 13:30	KJP	TAL SAC

Client Sample ID: MW-9-30
Lab Sample ID: 320-64368-9
Date Collected: 09/01/20 14:25
Matrix: Water
Date Received: 09/05/20 14:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			291.1 mL	10.00 mL	412145	09/14/20 18:44	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			412177	09/15/20 13:39	KJP	TAL SAC

Client Sample ID: MW-3-40
Lab Sample ID: 320-64368-10
Date Collected: 09/01/20 18:42
Matrix: Water
Date Received: 09/05/20 14:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			295.7 mL	10.00 mL	412145	09/14/20 18:44	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			412177	09/15/20 13:48	KJP	TAL SAC

Client Sample ID: MW-8-20
Lab Sample ID: 320-64368-11
Date Collected: 09/01/20 09:43
Matrix: Water
Date Received: 09/05/20 14:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			296.2 mL	10.00 mL	412145	09/14/20 18:44	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			412177	09/15/20 13:57	KJP	TAL SAC

Client Sample ID: MW-5-20
Lab Sample ID: 320-64368-12
Date Collected: 09/02/20 09:03
Matrix: Water
Date Received: 09/05/20 14:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			298.3 mL	10.00 mL	412145	09/14/20 18:44	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			412177	09/15/20 14:06	KJP	TAL SAC

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: GUSMW

Job ID: 320-64368-1

Client Sample ID: MW-7-20
Date Collected: 09/02/20 10:43
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64368-13
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			287.1 mL	10.00 mL	412145	09/14/20 18:44	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			412177	09/15/20 14:15	KJP	TAL SAC

Client Sample ID: MW-6-20
Date Collected: 09/02/20 16:12
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64368-14
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			290.9 mL	10.00 mL	412145	09/14/20 18:44	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			412177	09/15/20 14:24	KJP	TAL SAC

Client Sample ID: MW-12-10
Date Collected: 09/02/20 14:09
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64368-15
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			287.1 mL	10.00 mL	412145	09/14/20 18:44	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			412177	09/15/20 14:33	KJP	TAL SAC

Client Sample ID: MW-6-120
Date Collected: 09/02/20 16:02
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64368-16
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			295.1 mL	10.00 mL	412145	09/14/20 18:44	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			412177	09/15/20 14:42	KJP	TAL SAC

Client Sample ID: MW-4-20
Date Collected: 09/02/20 17:48
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64368-17
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			288 mL	10.00 mL	412145	09/14/20 18:44	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			412177	09/15/20 14:51	KJP	TAL SAC

Client Sample ID: EB-11-15
Date Collected: 09/02/20 12:40
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64368-18
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			285.9 mL	10.00 mL	412145	09/14/20 18:44	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			412177	09/15/20 15:19	KJP	TAL SAC

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: GUSMW

Job ID: 320-64368-1

Client Sample ID: MW-11-15

Date Collected: 09/02/20 12:04
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64368-19

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			293.5 mL	10.00 mL	412145	09/14/20 18:44	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			412177	09/15/20 15:28	KJP	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: GUSMW

Job ID: 320-64368-1

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: GUSMW

Job ID: 320-64368-1

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: GUSMW

Job ID: 320-64368-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-64368-1	MW-1-140	Water	08/31/20 16:49	09/05/20 14:55	
320-64368-2	MW-2-20	Water	09/01/20 16:20	09/05/20 14:55	
320-64368-3	MW-1-15	Water	08/31/20 18:12	09/05/20 14:55	
320-64368-4	MW-2-30	Water	09/01/20 15:49	09/05/20 14:55	
320-64368-5	MW-1-40	Water	08/31/20 16:59	09/05/20 14:55	
320-64368-6	MW-3-15	Water	09/01/20 19:11	09/05/20 14:55	
320-64368-7	MW-10-20	Water	09/01/20 11:54	09/05/20 14:55	
320-64368-8	MW-8-120	Water	09/01/20 09:33	09/05/20 14:55	
320-64368-9	MW-9-30	Water	09/01/20 14:25	09/05/20 14:55	
320-64368-10	MW-3-40	Water	09/01/20 18:42	09/05/20 14:55	
320-64368-11	MW-8-20	Water	09/01/20 09:43	09/05/20 14:55	
320-64368-12	MW-5-20	Water	09/02/20 09:03	09/05/20 14:55	
320-64368-13	MW-7-20	Water	09/02/20 10:43	09/05/20 14:55	
320-64368-14	MW-6-20	Water	09/02/20 16:12	09/05/20 14:55	
320-64368-15	MW-12-10	Water	09/02/20 14:09	09/05/20 14:55	
320-64368-16	MW-6-120	Water	09/02/20 16:02	09/05/20 14:55	
320-64368-17	MW-4-20	Water	09/02/20 17:48	09/05/20 14:55	
320-64368-18	EB-11-15	Water	09/02/20 12:40	09/05/20 14:55	
320-64368-19	MW-11-15	Water	09/02/20 12:04	09/05/20 14:55	

SHANNON & WILSON, INC.
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(509) 946-6309

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Fairbanks, AK 99709
(907) 479-0600

5430 Fairbanks Street, Suite 3
Anchorage, AK 99518
(907) 561-2120

2255 S.W. Canyon Road
Portland, OR 97201-2498
(503) 223-6147

1200 17th Street, Suite 1024
Denver, Co 80202
(303) 825-3800

CHAIN-OF-CUSTODY RECORD

Laboratory Test America
Attn: D. Alltucker

Analysis Parameters/Sample Container Description
(include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	PFAS x16	Total Number of Containers	Remarks/Matrix
MW-1-140		1649	8/31/20			X	2	groundwater
MW-2-20		1620	9/1/20			X	2	
MW-1-15		1812	8/31/20			X	2	
MW-2-30		1549	9/1/20			X	2	
MW-1-40		1659	8/31/20			X	2	
MW-3-15		1911	9/1/20			X	2	
MW-10-20		1154	9/1/20			X	2	
MW-8-120		0933	9/1/20			X	2	
MW-9-30		1425	9/1/20			X	2	
MW-3-40		1842	9/1/20			X	2	

320-64368 Chain of Custody

Project Information	Sample Receipt
Project Number: 102599-001	Total Number of Containers
Project Name: GUS MW	COC Seals/Intact? Y/N/NA
Contact: KRF	Received Good Cond./Cold
Ongoing Project? Yes ☒ No ☐	Delivery Method:
Sampler: VTY	(attach shipping bill, if any)

Instructions
Requested Turnaround Time:
Special Instructions:

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Time: 0900	Signature: Time:	Signature: Time:
Printed Name: A. Mastos Date: 9/4/20	Printed Name: Date:	Printed Name: Date:
Company: Shannon & Wilson	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time: 1455	Signature: Time:	Signature: Time:
Printed Name: Salvador Lopez Date: 9/5/20	Printed Name: Date:	Printed Name: Date:
Company: Eurofins	Company:	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

F-19-91/UR

No. 30643

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

CHAIN-OF-CUSTODY RECORD

Laboratory Test America
Attn: D. Altvater

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(907) 561-2120

2255 S.W. Canyon Road
Portland, OR 97201-2498
(503) 223-6147

1200 17th Street, Suite 1024
Denver, Co 80202
(303) 825-3800

Analysis Parameters/Sample Container Description
(include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	PFAS + 18					Total Number of Containers	Remarks/Matrix
~~MW-9-30~~		~~1425~~	~~9/1/20~~			X					2	groundwater
MW-8-20		0943	9/1/20			X						
~~MW-10-20~~		~~1154~~	~~9/1/20~~									
MW-5-20		0903	9/2/20			X						
MW-7-20		1043	9/2/20			X						
MW-6-20		1612	9/2/20			X						
MW-12-10		1409	9/2/20			X						
MW-6-120		1602	9/2/20			X						
MW-4-20		1748	9/2/20			X						
~~MW-12-10~~												

Project Information	Sample Receipt
Project Number:	Total Number of Containers
Project Name:	COC Seals/Intact? Y/N/NA
Contact:	Received Good Cond./Cold
Ongoing Project? Yes ☐ No ☐	Delivery Method:
Sampler:	(attach shipping bill, if any)

Instructions
Requested Turnaround Time: See Page
Special Instructions:

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Company:	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time: 1455	Signature: Time:	Signature: Time:
Printed Name: Date: 9/3/20	Printed Name: Date:	Printed Name: Date:
Company: EnDSee	Company:	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

F-19-91/UR

No. 30644

CHAIN-OF-CUSTODY RECORD

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Geotechnical and Environmental Consultants

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Page 3 of 3

Laboratory
Attn:

Analysis Parameters/Sample Container Description
(include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	PFAS						Total Number of Containers	Remarks/Matrix
EB-11-15		1240	9/2/20			X						2	Groundwater
MW-11-15		1204	9/2/20			X						2	

Project Information	Sample Receipt
Project Number:	Total Number of Containers
Project Name:	COC Seals/Intact? Y/N/NA
Contact:	Received Good Cond./Cold
Ongoing Project? Yes ☐ No ☐	Delivery Method:
Sampler:	(attach shipping bill, if any)

Instructions

Requested Turnaround Time: Std

Special Instructions:

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature:	Signature: Time:	Signature: Time:
Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Company:	Company:	Company:
Received By: 1.	**Received By: 2.**	**Received By: 3.**
Signature: Time: 1455	Signature: Time:	Signature: Time:
Printed Name: Date: 9/5/20	Printed Name: Date:	Printed Name: Date:
Company: Ensolum	Company:	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

F-19-91/UR

No. 31911

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-64368-1

Login Number: 64368
List Number: 1
Creator: Thompson, Sarah W

List Source: Eurofins TestAmerica, Sacramento

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	1094973
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.	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 <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:

September 22, 2020

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins / TestAmerica Laboratories, Inc. (TestAmerica)

Laboratory Report Number:

320-64368-1

Laboratory Report Date:

September 16, 2020

CS Site Name:

DOT&PF Gustavus Airport Statewide PFAS

ADEC File Number:

2569.38.033

Hazard Identification Number:

26981

320-64368-1

Laboratory Report Date:

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 DEC certified TestAmerica of West Sacramento, CA for the analysis of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) on February 6, 2018 by method 537. These compounds were included in the DEC'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:

   The requested analyses were conducted by TestAmerica of West Sacramento, CA.

2. Chain of Custody (CoC)

   a. CoC information completed, signed, and dated (including released/received by)?

   Yes☒ No☐ N/A☐ Comments:

   The laboratory notes the COC was not relinquished. The first page was signed and pages 2 and 3 reference the first. The sample results are not affected by this discrepancy.

   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:

   Samples do not require preservation other than temperature.

   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.

Laboratory Report Date:

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 2.a. above.

e. Data quality or usability affected?

Comments:

The 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 case narrative indicates the following:

The continuing calibration verification (CCV) associated with batch 320-412177 recovered above the upper control limit for Perfluorotridecanoic acid (PFTriA or PFTrDA). The samples associated with this CCV were non-detects for the affected analyte; therefore, the data have been reported.

The following samples were light yellow after extraction/final volume: *MW-1-40, MW-3-15, MW-10-20, MW-8-120, MW-9-3, MW-3-40, MW-12-10* and *MW-4-20.*

The following samples were observed to have contain a thin layer of sediment at the bottom of the bottles: *MW-1-140, MW-2-20, MW-1-40, MW-10-20, MW-9-30, MW-3-40, MW-12-10,* and *MW-4-20.*

The following samples contain floating particulates in the bottles prior to extraction: *MW-3-15, MW-8-120, MW-8-20, MW-5-20, MW-7-20, MW-6-20, MW-6-120,* and *MW-4-20.*

The Chain-of-Custody (COC) was incomplete as received and/or improperly completed. The second two pages of the COC was not relinquished.

The samples arrived in good condition and properly preserved. The temperature of the sample cooler received with this shipment was 6.0 º C upon arrival at the laboratory.

There was insufficient sample volume available to perform a matrix spike (MS) and MS duplicate (MSD) in conjunction with preparation batches 320-412145.

Laboratory Report Date:

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 indicates data quality and/or usability are 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:

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 (RL) is less than the applicable DEC regulatory limit for the project.

e. Data quality or usability affected?

The 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:

Laboratory Report Date:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes☒ No☐ N/A☐ Comments:

There were no detections above LOQ in the method blank; however, PFHxS was detected below the LOQ in the method blank associated with preparation batch 412145.

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

The PFHxS result for the following samples are affected: *MW-1-140, MW-1-15, MW-2-30, MW-1-40, MW-4-20, MW-8-20, MW-8-120, MW-5-20,MW-6-120, MW-6-20,* and *MW-7-20.*

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes☒ No☐ N/A☐ Comments:

PFHxS in the following samples are considered not detected due to sample contamination identified in a blank and have been flagged 'UB' at the LOQ or detected concentration (whichever is greater) in the analytical tables: *EB-11-15, MW-1-140, MW-1-15, MW-2-30, MW-1-40, MW-4-20, MW-8-20, MW-8-120, MW-5-20,MW-6-120, MW-6-20,* and *MW-7-20.*

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:

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:

Laboratory Report Date:

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:

NA; 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:

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 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:

Insufficient sample volume was available to perform a MS/MSD with the associated preparatory batches. However, the laboratory analyzed an LCS and LCSD to assess laboratory accuracy and precision.

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:

MS and MSD samples were not analyzed for this work order.

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:

MS and MSD samples were not analyzed for this work order.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

NA; MS and MSD samples were not analyzed for this work order.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes☐ No☐ N/A☒ Comments:

MS and MSD samples were not analyzed for this work order.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The 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 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; see above.

Laboratory Report Date:

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. A trip blank is not required for the requested analysis.

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 for the requested analysis.

iii. All results less than LOQ and project specified objectives?

Yes☐ No☐ N/A☒ Comments:

A trip blank is not required for the requested analysis.

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

NA; a trip blank is not required for the requested analysis.

v. Data quality or usability affected?

Comments:

The 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 *MW-1-40/MW-1-140, MW-8-20/MW-8-120,* and *MW-6-20/MW-6-120* were submitted with this work order.

Laboratory Report Date:

iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water, 50% soil)

RPD (%) = 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:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The 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:

i. All results less than LOQ and project specified objectives?

Yes☒ No☐ N/A☐ Comments:

Results are less than the LOQ, however, PFHxS and PFOS were detected in the equipment blank below the reporting limit. The equipment blank is associated with samples *MW-11-15* and *MW-12-10.*

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

The PFHxS result for the equipment blank is considered not detected due to method blank detection. See item 6.a. above.

PFOS results in the associated project samples were greater than 10 times the equipment blank detections. The results are not affected.

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:

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ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-64370-1
Client Project/Site: Gust. PFAS POE

For:
Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

Attn: Kristen Freiburger

Authorized for release by:
9/14/2020 10:51:46 AM

David Alltucker, Project Manager I
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Table of Contents

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: Gust. PFAS POE

Job ID: 320-64370-1

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.
¤	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

Job ID: 320-64370-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative
320-64370-1

Receipt
The samples were received on 9/5/2020 2:55 PM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.5º C.

LCMS
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep
Method 537.1 DW: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-410696.

Method 537.1 DW: The following sample contains floating particulates in the bottle prior to extraction: PW-200 (320-64370-3).

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: Gust. PFAS POE

Job ID: 320-64370-1

Client Sample ID: PW-200-Sink — Lab Sample ID: 320-64370-1

No Detections.

Client Sample ID: PW-200-C Port Composite — Lab Sample ID: 320-64370-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.60	J	1.8	0.46	ng/L	1		537.1 DW	Total/NA

Client Sample ID: PW-200 — Lab Sample ID: 320-64370-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	12		1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluoroheptanoic acid (PFHpA)	5.2		1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorooctanoic acid (PFOA)	2.0		1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.6	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	25		1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	98		1.9	0.48	ng/L	1		537.1 DW	Total/NA

This Detection Summary does not include radiochemical test results.

Client: Shannon & Wilson, Inc
Project/Site: Gust. PFAS POE

Job ID: 320-64370-1

Client Sample ID: PW-200-Sink
Date Collected: 08/31/20 10:35
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64370-1
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.48	ng/L		09/09/20 11:42	09/10/20 14:08	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.48	ng/L		09/09/20 11:42	09/10/20 14:08	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.48	ng/L		09/09/20 11:42	09/10/20 14:08	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.48	ng/L		09/09/20 11:42	09/10/20 14:08	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.48	ng/L		09/09/20 11:42	09/10/20 14:08	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.48	ng/L		09/09/20 11:42	09/10/20 14:08	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.48	ng/L		09/09/20 11:42	09/10/20 14:08	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.48	ng/L		09/09/20 11:42	09/10/20 14:08	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.48	ng/L		09/09/20 11:42	09/10/20 14:08	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.48	ng/L		09/09/20 11:42	09/10/20 14:08	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.48	ng/L		09/09/20 11:42	09/10/20 14:08	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.48	ng/L		09/09/20 11:42	09/10/20 14:08	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.48	ng/L		09/09/20 11:42	09/10/20 14:08	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.48	ng/L		09/09/20 11:42	09/10/20 14:08	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.48	ng/L		09/09/20 11:42	09/10/20 14:08	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.48	ng/L		09/09/20 11:42	09/10/20 14:08	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.48	ng/L		09/09/20 11:42	09/10/20 14:08	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.48	ng/L		09/09/20 11:42	09/10/20 14:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*83*		*70 - 130*	*09/09/20 11:42*	*09/10/20 14:08*	*1*
13C2 PFDA	*83*		*70 - 130*	*09/09/20 11:42*	*09/10/20 14:08*	*1*
d5-NEtFOSAA	*86*		*70 - 130*	*09/09/20 11:42*	*09/10/20 14:08*	*1*
13C3 HFPO-DA	*77*		*70 - 130*	*09/09/20 11:42*	*09/10/20 14:08*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Gust. PFAS POE

Job ID: 320-64370-1

Client Sample ID: PW-200-C Port Composite

Date Collected: 08/31/20 11:00
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64370-2

Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.46	ng/L		09/09/20 11:42	09/10/20 14:16	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.46	ng/L		09/09/20 11:42	09/10/20 14:16	1
Perfluorooctanoic acid (PFOA)	**0.60**	**J**	1.8	0.46	ng/L		09/09/20 11:42	09/10/20 14:16	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.46	ng/L		09/09/20 11:42	09/10/20 14:16	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.46	ng/L		09/09/20 11:42	09/10/20 14:16	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.46	ng/L		09/09/20 11:42	09/10/20 14:16	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.46	ng/L		09/09/20 11:42	09/10/20 14:16	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	0.46	ng/L		09/09/20 11:42	09/10/20 14:16	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.46	ng/L		09/09/20 11:42	09/10/20 14:16	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.46	ng/L		09/09/20 11:42	09/10/20 14:16	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.46	ng/L		09/09/20 11:42	09/10/20 14:16	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.46	ng/L		09/09/20 11:42	09/10/20 14:16	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.8	0.46	ng/L		09/09/20 11:42	09/10/20 14:16	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.8	0.46	ng/L		09/09/20 11:42	09/10/20 14:16	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.8	0.46	ng/L		09/09/20 11:42	09/10/20 14:16	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.8	0.46	ng/L		09/09/20 11:42	09/10/20 14:16	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.8	0.46	ng/L		09/09/20 11:42	09/10/20 14:16	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.46	ng/L		09/09/20 11:42	09/10/20 14:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*88*		*70 - 130*	*09/09/20 11:42*	*09/10/20 14:16*	*1*
13C2 PFDA	*87*		*70 - 130*	*09/09/20 11:42*	*09/10/20 14:16*	*1*
d5-NEtFOSAA	*91*		*70 - 130*	*09/09/20 11:42*	*09/10/20 14:16*	*1*
13C3 HFPO-DA	*80*		*70 - 130*	*09/09/20 11:42*	*09/10/20 14:16*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Gust. PFAS POE

Job ID: 320-64370-1

Client Sample ID: PW-200
Date Collected: 08/31/20 11:06
Date Received: 09/05/20 14:55

Lab Sample ID: 320-64370-3
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**12**		1.9	0.48	ng/L		09/09/20 11:42	09/10/20 14:24	1
Perfluoroheptanoic acid (PFHpA)	**5.2**		1.9	0.48	ng/L		09/09/20 11:42	09/10/20 14:24	1
Perfluorooctanoic acid (PFOA)	**2.0**		1.9	0.48	ng/L		09/09/20 11:42	09/10/20 14:24	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.48	ng/L		09/09/20 11:42	09/10/20 14:24	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.48	ng/L		09/09/20 11:42	09/10/20 14:24	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.48	ng/L		09/09/20 11:42	09/10/20 14:24	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.48	ng/L		09/09/20 11:42	09/10/20 14:24	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.48	ng/L		09/09/20 11:42	09/10/20 14:24	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.48	ng/L		09/09/20 11:42	09/10/20 14:24	1
Perfluorobutanesulfonic acid (PFBS)	**1.6**	**J**	1.9	0.48	ng/L		09/09/20 11:42	09/10/20 14:24	1
Perfluorohexanesulfonic acid (PFHxS)	**25**		1.9	0.48	ng/L		09/09/20 11:42	09/10/20 14:24	1
Perfluorooctanesulfonic acid (PFOS)	**98**		1.9	0.48	ng/L		09/09/20 11:42	09/10/20 14:24	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.48	ng/L		09/09/20 11:42	09/10/20 14:24	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.48	ng/L		09/09/20 11:42	09/10/20 14:24	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.48	ng/L		09/09/20 11:42	09/10/20 14:24	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.48	ng/L		09/09/20 11:42	09/10/20 14:24	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.48	ng/L		09/09/20 11:42	09/10/20 14:24	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.48	ng/L		09/09/20 11:42	09/10/20 14:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*106*		*70 - 130*	*09/09/20 11:42*	*09/10/20 14:24*	*1*
13C2 PFDA	*102*		*70 - 130*	*09/09/20 11:42*	*09/10/20 14:24*	*1*
d5-NEtFOSAA	*105*		*70 - 130*	*09/09/20 11:42*	*09/10/20 14:24*	*1*
13C3 HFPO-DA	*95*		*70 - 130*	*09/09/20 11:42*	*09/10/20 14:24*	*1*

Surrogate Summary

Client: Shannon & Wilson, Inc
Project/Site: Gust. PFAS POE

Job ID: 320-64370-1

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 (70-130)	PFDA (70-130)	d5NEFOS (70-130)	HFPODA (70-130)
320-64370-1	PW-200-Sink	83	83	86	77
320-64370-2	PW-200-C Port Composite	88	87	91	80
320-64370-3	PW-200	106	102	105	95
LCS 320-410696/2-A	Lab Control Sample	99	98	98	91
LCSD 320-410696/3-A	Lab Control Sample Dup	92	94	91	83
MB 320-410696/1-A	Method Blank	99	102	100	92

Surrogate Legend

PFHxA = 13C2 PFHxA
PFDA = 13C2 PFDA
d5NEFOS = d5-NEtFOSAA
HFPODA = 13C3 HFPO-DA

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Lab Sample ID: MB 320-410696/1-A
Matrix: Water
Analysis Batch: 411159

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 410696

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.50	ng/L		09/09/20 11:42	09/10/20 13:53	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.50	ng/L		09/09/20 11:42	09/10/20 13:53	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.50	ng/L		09/09/20 11:42	09/10/20 13:53	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.50	ng/L		09/09/20 11:42	09/10/20 13:53	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.50	ng/L		09/09/20 11:42	09/10/20 13:53	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.50	ng/L		09/09/20 11:42	09/10/20 13:53	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.50	ng/L		09/09/20 11:42	09/10/20 13:53	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	0.50	ng/L		09/09/20 11:42	09/10/20 13:53	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.50	ng/L		09/09/20 11:42	09/10/20 13:53	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.50	ng/L		09/09/20 11:42	09/10/20 13:53	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.50	ng/L		09/09/20 11:42	09/10/20 13:53	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.50	ng/L		09/09/20 11:42	09/10/20 13:53	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.0	0.50	ng/L		09/09/20 11:42	09/10/20 13:53	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.0	0.50	ng/L		09/09/20 11:42	09/10/20 13:53	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		2.0	0.50	ng/L		09/09/20 11:42	09/10/20 13:53	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		2.0	0.50	ng/L		09/09/20 11:42	09/10/20 13:53	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		2.0	0.50	ng/L		09/09/20 11:42	09/10/20 13:53	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.50	ng/L		09/09/20 11:42	09/10/20 13:53	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*99*		*70 - 130*	*09/09/20 11:42*	*09/10/20 13:53*	*1*
13C2 PFDA	*102*		*70 - 130*	*09/09/20 11:42*	*09/10/20 13:53*	*1*
d5-NEtFOSAA	*100*		*70 - 130*	*09/09/20 11:42*	*09/10/20 13:53*	*1*
13C3 HFPO-DA	*92*		*70 - 130*	*09/09/20 11:42*	*09/10/20 13:53*	*1*

Lab Sample ID: LCS 320-410696/2-A
Matrix: Water
Analysis Batch: 411159

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 410696

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid (PFHxA)	80.0	73.7		ng/L		92	70 - 130
Perfluoroheptanoic acid (PFHpA)	80.0	82.6		ng/L		103	70 - 130
Perfluorooctanoic acid (PFOA)	80.0	78.7		ng/L		98	70 - 130
Perfluorononanoic acid (PFNA)	80.0	83.2		ng/L		104	70 - 130
Perfluorodecanoic acid (PFDA)	80.0	81.9		ng/L		102	70 - 130
Perfluoroundecanoic acid (PFUnA)	80.0	80.5		ng/L		101	70 - 130
Perfluorododecanoic acid (PFDoA)	80.0	77.7		ng/L		97	70 - 130
Perfluorotridecanoic acid (PFTriA)	80.0	81.9		ng/L		102	70 - 130
Perfluorotetradecanoic acid (PFTeA)	80.0	80.6		ng/L		101	70 - 130
Perfluorobutanesulfonic acid (PFBS)	70.7	75.7		ng/L		107	70 - 130

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: LCS 320-410696/2-A
Matrix: Water
Analysis Batch: 411159

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 410696

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanesulfonic acid (PFHxS)	72.8	78.0		ng/L		107	70 - 130
Perfluorooctanesulfonic acid (PFOS)	74.2	78.2		ng/L		105	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	80.0	75.3		ng/L		94	70 - 130
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	80.0	74.3		ng/L		93	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	74.6	79.1		ng/L		106	70 - 130
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	75.4	76.5		ng/L		102	70 - 130
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	80.0	71.9		ng/L		90	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	75.4	76.3		ng/L		101	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*99*		*70 - 130*
13C2 PFDA	*98*		*70 - 130*
d5-NEtFOSAA	*98*		*70 - 130*
13C3 HFPO-DA	*91*		*70 - 130*

Lab Sample ID: LCSD 320-410696/3-A
Matrix: Water
Analysis Batch: 411159

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 410696

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	80.0	71.1		ng/L		89	70 - 130	4	30
Perfluoroheptanoic acid (PFHpA)	80.0	77.0		ng/L		96	70 - 130	7	30
Perfluorooctanoic acid (PFOA)	80.0	73.7		ng/L		92	70 - 130	7	30
Perfluorononanoic acid (PFNA)	80.0	76.6		ng/L		96	70 - 130	8	30
Perfluorodecanoic acid (PFDA)	80.0	76.9		ng/L		96	70 - 130	6	30
Perfluoroundecanoic acid (PFUnA)	80.0	75.5		ng/L		94	70 - 130	6	30
Perfluorododecanoic acid (PFDoA)	80.0	73.6		ng/L		92	70 - 130	5	30
Perfluorotridecanoic acid (PFTriA)	80.0	73.7		ng/L		92	70 - 130	11	30
Perfluorotetradecanoic acid (PFTeA)	80.0	75.5		ng/L		94	70 - 130	6	30
Perfluorobutanesulfonic acid (PFBS)	70.7	75.0		ng/L		106	70 - 130	1	30
Perfluorohexanesulfonic acid (PFHxS)	72.8	74.5		ng/L		102	70 - 130	5	30
Perfluorooctanesulfonic acid (PFOS)	74.2	75.1		ng/L		101	70 - 130	4	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	80.0	72.2		ng/L		90	70 - 130	4	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	80.0	70.6		ng/L		88	70 - 130	5	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	74.6	75.9		ng/L		102	70 - 130	4	30

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: LCSD 320-410696/3-A
Matrix: Water
Analysis Batch: 411159

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 410696

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF			75.4	75.9		ng/L		101	70 - 130	1	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			80.0	66.3		ng/L		83	70 - 130	8	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			75.4	71.9		ng/L		95	70 - 130	6	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*92*		*70 - 130*
13C2 PFDA	*94*		*70 - 130*
d5-NEtFOSAA	*91*		*70 - 130*
13C3 HFPO-DA	*83*		*70 - 130*

LCMS

Prep Batch: 410696

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-64370-1	PW-200-Sink	Total/NA	Water	537.1 DW	
320-64370-2	PW-200-C Port Composite	Total/NA	Water	537.1 DW	
320-64370-3	PW-200	Total/NA	Water	537.1 DW	
MB 320-410696/1-A	Method Blank	Total/NA	Water	537.1 DW	
LCS 320-410696/2-A	Lab Control Sample	Total/NA	Water	537.1 DW	
LCSD 320-410696/3-A	Lab Control Sample Dup	Total/NA	Water	537.1 DW	

Analysis Batch: 411159

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-64370-1	PW-200-Sink	Total/NA	Water	537.1 DW	410696
320-64370-2	PW-200-C Port Composite	Total/NA	Water	537.1 DW	410696
320-64370-3	PW-200	Total/NA	Water	537.1 DW	410696
MB 320-410696/1-A	Method Blank	Total/NA	Water	537.1 DW	410696
LCS 320-410696/2-A	Lab Control Sample	Total/NA	Water	537.1 DW	410696
LCSD 320-410696/3-A	Lab Control Sample Dup	Total/NA	Water	537.1 DW	410696

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: Gust. PFAS POE

Job ID: 320-64370-1

Client Sample ID: PW-200-Sink

Lab Sample ID: 320-64370-1

Date Collected: 08/31/20 10:35

Matrix: Water

Date Received: 09/05/20 14:55

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			258 mL	1.00 mL	410696	09/09/20 11:42	LA	TAL SAC
Total/NA	Analysis	537.1 DW		1			411159	09/10/20 14:08	SK	TAL SAC

Client Sample ID: PW-200-C Port Composite

Lab Sample ID: 320-64370-2

Date Collected: 08/31/20 11:00

Matrix: Water

Date Received: 09/05/20 14:55

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			271 mL	1.00 mL	410696	09/09/20 11:42	LA	TAL SAC
Total/NA	Analysis	537.1 DW		1			411159	09/10/20 14:16	SK	TAL SAC

Client Sample ID: PW-200

Lab Sample ID: 320-64370-3

Date Collected: 08/31/20 11:06

Matrix: Water

Date Received: 09/05/20 14:55

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			263.1 mL	1.00 mL	410696	09/09/20 11:42	LA	TAL SAC
Total/NA	Analysis	537.1 DW		1			411159	09/10/20 14:24	SK	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: Gust. PFAS POE

Job ID: 320-64370-1

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: Gust. PFAS POE

Job ID: 320-64370-1

Method	Method Description	Protocol	Laboratory
537.1 DW	Perfluorinated Alkyl Acids (LC/MS)	EPA	TAL SAC
537.1 DW	Extraction of Perfluorinated Alkyl Acids	EPA	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

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: Gust. PFAS POE

Job ID: 320-64370-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-64370-1	PW-200-Sink	Water	08/31/20 10:35	09/05/20 14:55	
320-64370-2	PW-200-C Port Composite	Water	08/31/20 11:00	09/05/20 14:55	
320-64370-3	PW-200	Water	08/31/20 11:06	09/05/20 14:55	

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600
www.shannonwilson.com

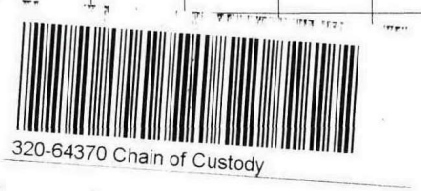
CHAIN-OF-CUSTODY RECORD

Laboratory Test America
Attn: D. Alltucker

Turn Around Time:	Quote No:
[X] Normal [ ] Rush	J-Flags: [ ] Yes [ ] No
Please Specify	

Analytical Methods (include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	PFAS x18	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
PW-200-Sink		1035	8/31/20	X	2	Groundwater
PW-200-C Port Composite		1100	8/31/20	X	2	
PW-200		1106	8/31/20	X	2	
*PW-200-Unit1 Cport *HOLD*		1048	8/31/20	X	2	*Hold*
*PW-200-Unit2 Cport *HOLD*		1052	8/31/20	X	2	*Hold*
*PW-200-Unit3 Cport *HOLD*		1055	8/31/20	X	2	*Hold*
*PW-200-Unit4 Cport *Hold*		1058	8/31/20	X	2	*Hold*
*PW-200-F Port *HOLD*		1043	8/31/20	X	2	*HOLD*
*PW-300	*HOLD*	1103	8/31/20	X	2	*HOLD*



Project Information	
Number:	10143-001
Name:	Gust. PFAS POE
Contact:	KRF
Ongoing Project?	Yes [X] No [ ]
Sampler:	ARM

Sample Receipt	
Total No. of Containers:	
COC Seals/Intact? Y/N/NA	
Received Good Cond./Cold	
Temp:	
Delivery Method:	

Notes:

Reliquished By: 1.	Reliquished By: 2.	Reliquished By: 3.
Signature: Time: 9/4/20	Signature: Time:	Signature: Time:
Printed Name: A. Masters Date: 900	Printed Name: Date:	Printed Name: Date:
Company: Shannon + Wilson	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time: 1455	Signature: Time:	Signature: Time:
Printed Name: Salvador Ortega Date: 9/5/20	Printed Name: Date:	Printed Name: Date:
Company: ESS	Company:	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

No. 36050

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-64370-1

Login Number: 64370
List Number: 1
Creator: Thompson, Sarah W

List Source: Eurofins TestAmerica, Sacramento

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	1094973
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.	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:

September 16, 2020

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins / TestAmerica Laboratories, Inc. (TestAmerica)

Laboratory Report Number:

320-643670-1

Laboratory Report Date:

September 15, 2020

CS Site Name:

DOT&PF Gustavus Airport Statewide PFAS

ADEC File Number:

2569.38.033

Hazard Identification Number:

26981

320-643670-1

Laboratory Report Date:

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 DEC certified TestAmerica of West Sacramento, CA for the analysis of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) on February 6, 2018 by method 537. These compounds were included in the DEC'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:

   The requested analyses were conducted by TestAmerica of 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:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

   Yes☒ No☐ N/A☐ Comments:

   Samples were preserved with Trizma.

   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.

Laboratory Report Date:

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:

e. Data quality or usability affected?

Comments:

The 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 case narrative indicates the following:
Sample *PW-200* contained floating particulates prior to extraction.

The samples arrived in good condition and properly preserved. The temperature of the sample cooler received with this shipment was 4.5º C upon arrival at the laboratory.

There was insufficient sample volume available to perform a matrix spike (MS) and MS duplicate (MSD) in conjunction with preparation batch 320-410696.

c. Were all corrective actions documented?

Yes☐ No☐ N/A☒ Comments:

Corrective actions were not required.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The case narrative does not identify an effect on the data quality and/or usability.

320-643670-1

Laboratory Report Date:

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 (RL) is less than the applicable DEC regulatory limit for the project.

e. Data quality or usability affected?

The 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:

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 blanks.

iv. 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 required. See above.

v. Data quality or usability affected?

Comments:

Results are 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:

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:

NA; 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:

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 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:

Insufficient sample volume was available to perform a MS/MSD with the associated preparatory batch. However, the laboratory analyzed an LCS and LCSD to assess laboratory accuracy and precision.

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:

MS and MSD samples were not analyzed for this work order.

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:

MS and MSD samples were not analyzed for this work order.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

NA; MS and MSD samples were not analyzed for this work order.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes☐ No☐ N/A☒ Comments:

MS and MSD samples were not analyzed for this work order.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The 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 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; 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. A trip blank is not required for the requested analysis.

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 for the requested analysis.

iii. All results less than LOQ and project specified objectives?

Yes☐ No☐ N/A☒ Comments:

A trip blank is not required for the requested analysis.

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

NA; a trip blank is not required for the requested analysis.

v. Data quality or usability affected?

Comments:

The 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:

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:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

NA; a field duplicate is not required for this work order.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes☐ No☐ N/A☒ Comments:

Decontamination or equipment blank were not required for this project.

i. All results less than LOQ and project specified objectives?

Yes☐ No☐ N/A☒ Comments:

Decontamination or equipment blank were not required for this project.

Laboratory Report Date:

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

Decontamination or equipment blank were not required for this project.

iii. Data quality or usability affected?

Comments:

The 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:

KRF

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-68519-1
Client Project/Site: ADOT+PF GUSTAVUS

For:
Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

Attn: Kristen Freiburger

Authorized for release by:
1/8/2021 2:08:33 PM

David Alltucker, Project Manager I
(916)374-4383
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Table of Contents

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: ADOT+PF GUSTAVUS

Job ID: 320-68519-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
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
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

Job ID: 320-68519-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative
320-68519-1

Receipt
The samples were received on 1/5/2021 5:20 PM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.7º C.

Receipt Exceptions
The container label for the following sample did not match the information listed on the Chain-of-Custody (COC): MW-9-20 (320-68519-14). Sample #14- Client label IDs is listed as MW-9-30 for 2 of 2 while the COC is listed as MW-9-20. Logged in according to the COC.

LCMS
Method 537 (modified): The transition mass ratio for the indicated analytes were outside of the established ratio limits. The qualitative identification of the analytes have some degree of uncertainty. However, analyst judgment was used to positively identify the analytes: MW-1-40 (320-68519-2), MW-3-40 (320-68519-6), MW-4-20 (320-68519-7), MW-6-20 (320-68519-9) and MW-106-20 (320-68519-10).

Method 537 (modified): The laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 320-448909 and analytical batch 320-449115 recovered outside control limits for the following analyte: 11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid. This analyte was biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Method 537 (modified): Results for sample MW-11-15 (320-68519-16) 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 320-448909 and 320-448909.

Method 3535: The following samples contain floating particulates in the sample bottle prior to extraction: MW-1-40 (320-68519-2), MW-3-15 (320-68519-5), MW-3-40 (320-68519-6), MW-4-20 (320-68519-7), MW-5-20 (320-68519-8), MW-6-20 (320-68519-9), MW-106-20 (320-68519-10), MW-7-20 (320-68519-11), MW-107-20 (320-68519-12), MW-8-20 (320-68519-13), MW-9-20 (320-68519-14), MW-10-20 (320-68519-15), MW-12-10 (320-68519-17) and MW-112-10 (320-68519-18).

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: ADOT+PF GUSTAVUS

Job ID: 320-68519-1

Client Sample ID: MW-1-15 — Lab Sample ID: 320-68519-1

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

Client Sample ID: MW-1-40 — Lab Sample ID: 320-68519-2

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		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.56	J I	1.8	0.50	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-2-20 — Lab Sample ID: 320-68519-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	63		1.8	0.51	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	54		1.8	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	67		1.8	0.75	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	4.0		1.8	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	0.34	J	1.8	0.27	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	9.5		1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	64		1.8	0.50	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	250		1.8	0.48	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-2-30 — Lab Sample ID: 320-68519-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.70	J	1.8	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	1.4	J	1.8	0.76	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.48	J	1.8	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.4	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-3-15 — Lab Sample ID: 320-68519-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	5.1		1.8	0.53	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.7		1.8	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.94	J	1.8	0.77	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.2	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	3.6		1.8	0.52	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	5.1		1.8	0.49	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-3-40 — Lab Sample ID: 320-68519-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.6	J	1.8	0.53	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.43	J	1.8	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	1.3	J	1.8	0.77	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.2	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	14		1.8	0.52	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	13	I	1.8	0.49	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-4-20 — Lab Sample ID: 320-68519-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.46	J I	1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.65	J	1.8	0.51	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: ADOT+PF GUSTAVUS

Job ID: 320-68519-1

Client Sample ID: MW-5-20 — Lab Sample ID: 320-68519-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	1.0	J	1.8	0.77	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.44	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.3	J	1.8	0.51	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.7	J	1.8	0.49	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-6-20 — Lab Sample ID: 320-68519-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.32	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.8		1.8	0.51	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.2	J I	1.8	0.49	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-106-20 — Lab Sample ID: 320-68519-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.29	J I	1.7	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.37	J	1.7	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.6		1.7	0.49	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.3	J I	1.7	0.47	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-7-20 — Lab Sample ID: 320-68519-11

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
Perfluoroheptanoic acid (PFHpA)	0.91	J	1.8	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	1.1	J	1.8	0.76	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.43	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.0	J	1.8	0.51	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	4.8		1.8	0.48	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-107-20 — Lab Sample ID: 320-68519-12

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
Perfluoroheptanoic acid (PFHpA)	0.89	J	1.9	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	1.3	J	1.9	0.82	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.1	J	1.9	0.55	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	4.5		1.9	0.52	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-8-20 — Lab Sample ID: 320-68519-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.62	J	1.7	0.50	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-9-20 — Lab Sample ID: 320-68519-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	4.6		1.8	0.52	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.0		1.8	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	1.0	J	1.8	0.76	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.66	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	11		1.8	0.51	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	92		1.8	0.49	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: ADOT+PF GUSTAVUS

Job ID: 320-68519-1

Client Sample ID: MW-10-20 — Lab Sample ID: 320-68519-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	5.3		1.8	0.53	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.8		1.8	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.42	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.4		1.8	0.52	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	39		1.8	0.49	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-11-15 — Lab Sample ID: 320-68519-16

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	180		1.7	0.50	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	19		1.7	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	92		1.7	0.74	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	2.2		1.7	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	1.3	J	1.7	0.27	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	35		1.7	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	830		35	9.9	ng/L	20		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	6100		35	9.4	ng/L	20		537 (modified)	Total/NA

Client Sample ID: MW-12-10 — Lab Sample ID: 320-68519-17

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	13		1.8	0.51	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	15		1.8	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	9.5		1.8	0.75	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	2.6		1.8	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	0.51	J	1.8	0.27	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.68	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	31		1.8	0.50	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	100		1.8	0.47	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-112-10 — Lab Sample ID: 320-68519-18

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	13		1.8	0.54	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	15		1.8	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	8.8		1.8	0.79	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	2.5		1.8	0.25	ng/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	0.65	J	1.8	0.29	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.71	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	29		1.8	0.53	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	100		1.8	0.50	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client: Shannon & Wilson, Inc
Project/Site: ADOT+PF GUSTAVUS

Job ID: 320-68519-1

Client Sample ID: MW-1-15
Date Collected: 12/30/20 12:19
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68519-1
Matrix: Water

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		01/06/21 11:16	01/07/21 02:54	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		01/06/21 11:16	01/07/21 02:54	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		01/06/21 11:16	01/07/21 02:54	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		01/06/21 11:16	01/07/21 02:54	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		01/06/21 11:16	01/07/21 02:54	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		01/06/21 11:16	01/07/21 02:54	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		01/06/21 11:16	01/07/21 02:54	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		01/06/21 11:16	01/07/21 02:54	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		01/06/21 11:16	01/07/21 02:54	1
Perfluorobutanesulfonic acid (PFBS)	**0.20**	**J**	1.8	0.18	ng/L		01/06/21 11:16	01/07/21 02:54	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		01/06/21 11:16	01/07/21 02:54	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		01/06/21 11:16	01/07/21 02:54	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		01/06/21 11:16	01/07/21 02:54	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		01/06/21 11:16	01/07/21 02:54	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		01/06/21 11:16	01/07/21 02:54	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		01/06/21 11:16	01/07/21 02:54	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	*+	1.8	0.29	ng/L		01/06/21 11:16	01/07/21 02:54	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		01/06/21 11:16	01/07/21 02:54	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*109*		*25 - 150*	*01/06/21 11:16*	*01/07/21 02:54*	*1*
13C4 PFHpA	*116*		*25 - 150*	*01/06/21 11:16*	*01/07/21 02:54*	*1*
13C4 PFOA	*116*		*25 - 150*	*01/06/21 11:16*	*01/07/21 02:54*	*1*
13C5 PFNA	*118*		*25 - 150*	*01/06/21 11:16*	*01/07/21 02:54*	*1*
13C2 PFDA	*113*		*25 - 150*	*01/06/21 11:16*	*01/07/21 02:54*	*1*
13C2 PFUnA	*115*		*25 - 150*	*01/06/21 11:16*	*01/07/21 02:54*	*1*
13C2 PFDoA	*106*		*25 - 150*	*01/06/21 11:16*	*01/07/21 02:54*	*1*
13C2 PFTeDA	*127*		*25 - 150*	*01/06/21 11:16*	*01/07/21 02:54*	*1*
13C3 PFBS	*106*		*25 - 150*	*01/06/21 11:16*	*01/07/21 02:54*	*1*
18O2 PFHxS	*113*		*25 - 150*	*01/06/21 11:16*	*01/07/21 02:54*	*1*
13C4 PFOS	*108*		*25 - 150*	*01/06/21 11:16*	*01/07/21 02:54*	*1*
d3-NMeFOSAA	*94*		*25 - 150*	*01/06/21 11:16*	*01/07/21 02:54*	*1*
d5-NEtFOSAA	*106*		*25 - 150*	*01/06/21 11:16*	*01/07/21 02:54*	*1*
13C3 HFPO-DA	*114*		*25 - 150*	*01/06/21 11:16*	*01/07/21 02:54*	*1*

Client: Shannon & Wilson, Inc
Project/Site: ADOT+PF GUSTAVUS

Job ID: 320-68519-1

Client Sample ID: MW-1-40

Date Collected: 12/30/20 11:44
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68519-2

Matrix: Water

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		01/06/21 11:16	01/07/21 03:03	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		01/06/21 11:16	01/07/21 03:03	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		01/06/21 11:16	01/07/21 03:03	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		01/06/21 11:16	01/07/21 03:03	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.29	ng/L		01/06/21 11:16	01/07/21 03:03	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		01/06/21 11:16	01/07/21 03:03	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		01/06/21 11:16	01/07/21 03:03	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		01/06/21 11:16	01/07/21 03:03	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		01/06/21 11:16	01/07/21 03:03	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		01/06/21 11:16	01/07/21 03:03	1
Perfluorohexanesulfonic acid (PFHxS)	**1.1**	**J**	1.8	0.52	ng/L		01/06/21 11:16	01/07/21 03:03	1
Perfluorooctanesulfonic acid (PFOS)	**0.56**	**J I**	1.8	0.50	ng/L		01/06/21 11:16	01/07/21 03:03	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		01/06/21 11:16	01/07/21 03:03	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		01/06/21 11:16	01/07/21 03:03	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		01/06/21 11:16	01/07/21 03:03	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		01/06/21 11:16	01/07/21 03:03	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	*+	1.8	0.29	ng/L		01/06/21 11:16	01/07/21 03:03	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		01/06/21 11:16	01/07/21 03:03	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*96*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:03*	*1*
13C4 PFHpA	*101*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:03*	*1*
13C4 PFOA	*103*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:03*	*1*
13C5 PFNA	*106*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:03*	*1*
13C2 PFDA	*94*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:03*	*1*
13C2 PFUnA	*107*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:03*	*1*
13C2 PFDoA	*97*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:03*	*1*
13C2 PFTeDA	*108*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:03*	*1*
13C3 PFBS	*95*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:03*	*1*
18O2 PFHxS	*102*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:03*	*1*
13C4 PFOS	*98*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:03*	*1*
d3-NMeFOSAA	*87*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:03*	*1*
d5-NEtFOSAA	*92*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:03*	*1*
13C3 HFPO-DA	*102*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:03*	*1*

Client: Shannon & Wilson, Inc
Project/Site: ADOT+PF GUSTAVUS

Job ID: 320-68519-1

Client Sample ID: MW-2-20

Date Collected: 12/31/20 15:16
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68519-3

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**63**		1.8	0.51	ng/L		01/06/21 11:16	01/07/21 03:13	1
Perfluoroheptanoic acid (PFHpA)	**54**		1.8	0.22	ng/L		01/06/21 11:16	01/07/21 03:13	1
Perfluorooctanoic acid (PFOA)	**67**		1.8	0.75	ng/L		01/06/21 11:16	01/07/21 03:13	1
Perfluorononanoic acid (PFNA)	**4.0**		1.8	0.24	ng/L		01/06/21 11:16	01/07/21 03:13	1
Perfluorodecanoic acid (PFDA)	**0.34**	**J**	1.8	0.27	ng/L		01/06/21 11:16	01/07/21 03:13	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.97	ng/L		01/06/21 11:16	01/07/21 03:13	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		01/06/21 11:16	01/07/21 03:13	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		01/06/21 11:16	01/07/21 03:13	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		01/06/21 11:16	01/07/21 03:13	1
Perfluorobutanesulfonic acid (PFBS)	**9.5**		1.8	0.18	ng/L		01/06/21 11:16	01/07/21 03:13	1
Perfluorohexanesulfonic acid (PFHxS)	**64**		1.8	0.50	ng/L		01/06/21 11:16	01/07/21 03:13	1
Perfluorooctanesulfonic acid (PFOS)	**250**		1.8	0.48	ng/L		01/06/21 11:16	01/07/21 03:13	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		01/06/21 11:16	01/07/21 03:13	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.2	ng/L		01/06/21 11:16	01/07/21 03:13	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		01/06/21 11:16	01/07/21 03:13	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		01/06/21 11:16	01/07/21 03:13	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	*+	1.8	0.28	ng/L		01/06/21 11:16	01/07/21 03:13	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		01/06/21 11:16	01/07/21 03:13	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*112*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:13*	*1*
13C4 PFHpA	*115*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:13*	*1*
13C4 PFOA	*116*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:13*	*1*
13C5 PFNA	*116*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:13*	*1*
13C2 PFDA	*115*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:13*	*1*
13C2 PFUnA	*122*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:13*	*1*
13C2 PFDoA	*82*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:13*	*1*
13C2 PFTeDA	*132*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:13*	*1*
13C3 PFBS	*102*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:13*	*1*
18O2 PFHxS	*114*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:13*	*1*
13C4 PFOS	*111*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:13*	*1*
d3-NMeFOSAA	*107*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:13*	*1*
d5-NEtFOSAA	*114*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:13*	*1*
13C3 HFPO-DA	*110*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:13*	*1*

Client: Shannon & Wilson, Inc
Project/Site: ADOT+PF GUSTAVUS

Job ID: 320-68519-1

Client Sample ID: MW-2-30
Date Collected: 12/31/20 15:53
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68519-4
Matrix: Water

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		01/06/21 11:16	01/07/21 03:22	1
Perfluoroheptanoic acid (PFHpA)	**0.70**	**J**	1.8	0.22	ng/L		01/06/21 11:16	01/07/21 03:22	1
Perfluorooctanoic acid (PFOA)	**1.4**	**J**	1.8	0.76	ng/L		01/06/21 11:16	01/07/21 03:22	1
Perfluorononanoic acid (PFNA)	**0.48**	**J**	1.8	0.24	ng/L		01/06/21 11:16	01/07/21 03:22	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		01/06/21 11:16	01/07/21 03:22	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		01/06/21 11:16	01/07/21 03:22	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		01/06/21 11:16	01/07/21 03:22	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		01/06/21 11:16	01/07/21 03:22	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		01/06/21 11:16	01/07/21 03:22	1
Perfluorobutanesulfonic acid (PFBS)	**1.4**	**J**	1.8	0.18	ng/L		01/06/21 11:16	01/07/21 03:22	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.51	ng/L		01/06/21 11:16	01/07/21 03:22	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.48	ng/L		01/06/21 11:16	01/07/21 03:22	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		01/06/21 11:16	01/07/21 03:22	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		01/06/21 11:16	01/07/21 03:22	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		01/06/21 11:16	01/07/21 03:22	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		01/06/21 11:16	01/07/21 03:22	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	*+	1.8	0.29	ng/L		01/06/21 11:16	01/07/21 03:22	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		01/06/21 11:16	01/07/21 03:22	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*96*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:22*	*1*
13C4 PFHpA	*100*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:22*	*1*
13C4 PFOA	*100*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:22*	*1*
13C5 PFNA	*99*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:22*	*1*
13C2 PFDA	*99*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:22*	*1*
13C2 PFUnA	*101*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:22*	*1*
13C2 PFDoA	*98*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:22*	*1*
13C2 PFTeDA	*112*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:22*	*1*
13C3 PFBS	*92*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:22*	*1*
18O2 PFHxS	*96*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:22*	*1*
13C4 PFOS	*100*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:22*	*1*
d3-NMeFOSAA	*88*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:22*	*1*
d5-NEtFOSAA	*94*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:22*	*1*
13C3 HFPO-DA	*96*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:22*	*1*

Client: Shannon & Wilson, Inc
Project/Site: ADOT+PF GUSTAVUS

Job ID: 320-68519-1

Client Sample ID: MW-3-15
Date Collected: 12/30/20 15:16
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68519-5
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**5.1**		1.8	0.53	ng/L		01/06/21 11:16	01/07/21 03:32	1
Perfluoroheptanoic acid (PFHpA)	**2.7**		1.8	0.23	ng/L		01/06/21 11:16	01/07/21 03:32	1
Perfluorooctanoic acid (PFOA)	**0.94**	**J**	1.8	0.77	ng/L		01/06/21 11:16	01/07/21 03:32	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		01/06/21 11:16	01/07/21 03:32	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		01/06/21 11:16	01/07/21 03:32	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		01/06/21 11:16	01/07/21 03:32	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		01/06/21 11:16	01/07/21 03:32	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		01/06/21 11:16	01/07/21 03:32	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		01/06/21 11:16	01/07/21 03:32	1
Perfluorobutanesulfonic acid (PFBS)	**1.2**	**J**	1.8	0.18	ng/L		01/06/21 11:16	01/07/21 03:32	1
Perfluorohexanesulfonic acid (PFHxS)	**3.6**		1.8	0.52	ng/L		01/06/21 11:16	01/07/21 03:32	1
Perfluorooctanesulfonic acid (PFOS)	**5.1**		1.8	0.49	ng/L		01/06/21 11:16	01/07/21 03:32	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		01/06/21 11:16	01/07/21 03:32	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		01/06/21 11:16	01/07/21 03:32	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		01/06/21 11:16	01/07/21 03:32	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		01/06/21 11:16	01/07/21 03:32	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	*+	1.8	0.29	ng/L		01/06/21 11:16	01/07/21 03:32	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		01/06/21 11:16	01/07/21 03:32	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*102*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:32*	*1*
13C4 PFHpA	*102*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:32*	*1*
13C4 PFOA	*112*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:32*	*1*
13C5 PFNA	*113*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:32*	*1*
13C2 PFDA	*108*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:32*	*1*
13C2 PFUnA	*112*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:32*	*1*
13C2 PFDoA	*108*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:32*	*1*
13C2 PFTeDA	*119*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:32*	*1*
13C3 PFBS	*99*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:32*	*1*
18O2 PFHxS	*104*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:32*	*1*
13C4 PFOS	*102*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:32*	*1*
d3-NMeFOSAA	*91*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:32*	*1*
d5-NEtFOSAA	*101*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:32*	*1*
13C3 HFPO-DA	*102*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:32*	*1*

Client: Shannon & Wilson, Inc
Project/Site: ADOT+PF GUSTAVUS

Job ID: 320-68519-1

Client Sample ID: MW-3-40
Date Collected: 12/30/20 14:37
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68519-6
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**1.6**	**J**	1.8	0.53	ng/L		01/06/21 11:16	01/07/21 03:41	1
Perfluoroheptanoic acid (PFHpA)	**0.43**	**J**	1.8	0.23	ng/L		01/06/21 11:16	01/07/21 03:41	1
Perfluorooctanoic acid (PFOA)	**1.3**	**J**	1.8	0.77	ng/L		01/06/21 11:16	01/07/21 03:41	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		01/06/21 11:16	01/07/21 03:41	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		01/06/21 11:16	01/07/21 03:41	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		01/06/21 11:16	01/07/21 03:41	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		01/06/21 11:16	01/07/21 03:41	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		01/06/21 11:16	01/07/21 03:41	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		01/06/21 11:16	01/07/21 03:41	1
Perfluorobutanesulfonic acid (PFBS)	**1.2**	**J**	1.8	0.18	ng/L		01/06/21 11:16	01/07/21 03:41	1
Perfluorohexanesulfonic acid (PFHxS)	**14**		1.8	0.52	ng/L		01/06/21 11:16	01/07/21 03:41	1
Perfluorooctanesulfonic acid (PFOS)	**13**	**I**	1.8	0.49	ng/L		01/06/21 11:16	01/07/21 03:41	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		01/06/21 11:16	01/07/21 03:41	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		01/06/21 11:16	01/07/21 03:41	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		01/06/21 11:16	01/07/21 03:41	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		01/06/21 11:16	01/07/21 03:41	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	*+	1.8	0.29	ng/L		01/06/21 11:16	01/07/21 03:41	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		01/06/21 11:16	01/07/21 03:41	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*104*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:41*	*1*
13C4 PFHpA	*109*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:41*	*1*
13C4 PFOA	*110*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:41*	*1*
13C5 PFNA	*112*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:41*	*1*
13C2 PFDA	*106*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:41*	*1*
13C2 PFUnA	*105*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:41*	*1*
13C2 PFDoA	*103*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:41*	*1*
13C2 PFTeDA	*123*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:41*	*1*
13C3 PFBS	*102*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:41*	*1*
18O2 PFHxS	*102*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:41*	*1*
13C4 PFOS	*104*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:41*	*1*
d3-NMeFOSAA	*91*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:41*	*1*
d5-NEtFOSAA	*99*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:41*	*1*
13C3 HFPO-DA	*103*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:41*	*1*

Client: Shannon & Wilson, Inc
Project/Site: ADOT+PF GUSTAVUS

Job ID: 320-68519-1

Client Sample ID: MW-4-20

Date Collected: 12/31/20 13:08
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68519-7

Matrix: Water

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		01/06/21 11:16	01/07/21 03:50	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		01/06/21 11:16	01/07/21 03:50	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.76	ng/L		01/06/21 11:16	01/07/21 03:50	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		01/06/21 11:16	01/07/21 03:50	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		01/06/21 11:16	01/07/21 03:50	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		01/06/21 11:16	01/07/21 03:50	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		01/06/21 11:16	01/07/21 03:50	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		01/06/21 11:16	01/07/21 03:50	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		01/06/21 11:16	01/07/21 03:50	1
Perfluorobutanesulfonic acid (PFBS)	**0.46**	**J I**	1.8	0.18	ng/L		01/06/21 11:16	01/07/21 03:50	1
Perfluorohexanesulfonic acid (PFHxS)	**0.65**	**J**	1.8	0.51	ng/L		01/06/21 11:16	01/07/21 03:50	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.48	ng/L		01/06/21 11:16	01/07/21 03:50	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		01/06/21 11:16	01/07/21 03:50	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		01/06/21 11:16	01/07/21 03:50	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		01/06/21 11:16	01/07/21 03:50	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		01/06/21 11:16	01/07/21 03:50	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	*+	1.8	0.29	ng/L		01/06/21 11:16	01/07/21 03:50	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		01/06/21 11:16	01/07/21 03:50	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*106*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:50*	*1*
13C4 PFHpA	*110*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:50*	*1*
13C4 PFOA	*116*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:50*	*1*
13C5 PFNA	*122*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:50*	*1*
13C2 PFDA	*118*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:50*	*1*
13C2 PFUnA	*114*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:50*	*1*
13C2 PFDoA	*104*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:50*	*1*
13C2 PFTeDA	*119*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:50*	*1*
13C3 PFBS	*101*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:50*	*1*
18O2 PFHxS	*111*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:50*	*1*
13C4 PFOS	*110*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:50*	*1*
d3-NMeFOSAA	*100*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:50*	*1*
d5-NEtFOSAA	*99*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:50*	*1*
13C3 HFPO-DA	*110*		*25 - 150*	*01/06/21 11:16*	*01/07/21 03:50*	*1*

Client: Shannon & Wilson, Inc
Project/Site: ADOT+PF GUSTAVUS

Job ID: 320-68519-1

Client Sample ID: MW-5-20
Date Collected: 01/01/21 15:25
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68519-8
Matrix: Water

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		01/06/21 11:16	01/07/21 04:18	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		01/06/21 11:16	01/07/21 04:18	1
Perfluorooctanoic acid (PFOA)	**1.0**	**J**	1.8	0.77	ng/L		01/06/21 11:16	01/07/21 04:18	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		01/06/21 11:16	01/07/21 04:18	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		01/06/21 11:16	01/07/21 04:18	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		01/06/21 11:16	01/07/21 04:18	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		01/06/21 11:16	01/07/21 04:18	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		01/06/21 11:16	01/07/21 04:18	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		01/06/21 11:16	01/07/21 04:18	1
Perfluorobutanesulfonic acid (PFBS)	**0.44**	**J**	1.8	0.18	ng/L		01/06/21 11:16	01/07/21 04:18	1
Perfluorohexanesulfonic acid (PFHxS)	**1.3**	**J**	1.8	0.51	ng/L		01/06/21 11:16	01/07/21 04:18	1
Perfluorooctanesulfonic acid (PFOS)	**1.7**	**J**	1.8	0.49	ng/L		01/06/21 11:16	01/07/21 04:18	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		01/06/21 11:16	01/07/21 04:18	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		01/06/21 11:16	01/07/21 04:18	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		01/06/21 11:16	01/07/21 04:18	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		01/06/21 11:16	01/07/21 04:18	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	*+	1.8	0.29	ng/L		01/06/21 11:16	01/07/21 04:18	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		01/06/21 11:16	01/07/21 04:18	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*96*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:18*	*1*
13C4 PFHpA	*109*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:18*	*1*
13C4 PFOA	*112*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:18*	*1*
13C5 PFNA	*111*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:18*	*1*
13C2 PFDA	*110*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:18*	*1*
13C2 PFUnA	*109*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:18*	*1*
13C2 PFDoA	*97*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:18*	*1*
13C2 PFTeDA	*114*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:18*	*1*
13C3 PFBS	*100*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:18*	*1*
18O2 PFHxS	*105*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:18*	*1*
13C4 PFOS	*104*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:18*	*1*
d3-NMeFOSAA	*93*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:18*	*1*
d5-NEtFOSAA	*99*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:18*	*1*
13C3 HFPO-DA	*106*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:18*	*1*

Client: Shannon & Wilson, Inc
Project/Site: ADOT+PF GUSTAVUS

Job ID: 320-68519-1

Client Sample ID: MW-6-20

Date Collected: 01/01/21 11:32
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68519-9

Matrix: Water

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		01/06/21 11:16	01/07/21 04:28	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		01/06/21 11:16	01/07/21 04:28	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.76	ng/L		01/06/21 11:16	01/07/21 04:28	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		01/06/21 11:16	01/07/21 04:28	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		01/06/21 11:16	01/07/21 04:28	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		01/06/21 11:16	01/07/21 04:28	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		01/06/21 11:16	01/07/21 04:28	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		01/06/21 11:16	01/07/21 04:28	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		01/06/21 11:16	01/07/21 04:28	1
Perfluorobutanesulfonic acid (PFBS)	**0.32**	**J**	1.8	0.18	ng/L		01/06/21 11:16	01/07/21 04:28	1
Perfluorohexanesulfonic acid (PFHxS)	**2.8**		1.8	0.51	ng/L		01/06/21 11:16	01/07/21 04:28	1
Perfluorooctanesulfonic acid (PFOS)	**1.2**	**J I**	1.8	0.49	ng/L		01/06/21 11:16	01/07/21 04:28	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		01/06/21 11:16	01/07/21 04:28	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		01/06/21 11:16	01/07/21 04:28	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		01/06/21 11:16	01/07/21 04:28	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		01/06/21 11:16	01/07/21 04:28	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	*+	1.8	0.29	ng/L		01/06/21 11:16	01/07/21 04:28	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		01/06/21 11:16	01/07/21 04:28	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*109*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:28*	*1*
13C4 PFHpA	*114*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:28*	*1*
13C4 PFOA	*118*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:28*	*1*
13C5 PFNA	*119*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:28*	*1*
13C2 PFDA	*107*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:28*	*1*
13C2 PFUnA	*119*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:28*	*1*
13C2 PFDoA	*115*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:28*	*1*
13C2 PFTeDA	*133*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:28*	*1*
13C3 PFBS	*107*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:28*	*1*
18O2 PFHxS	*112*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:28*	*1*
13C4 PFOS	*111*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:28*	*1*
d3-NMeFOSAA	*96*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:28*	*1*
d5-NEtFOSAA	*111*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:28*	*1*
13C3 HFPO-DA	*109*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:28*	*1*

Client: Shannon & Wilson, Inc
Project/Site: ADOT+PF GUSTAVUS

Job ID: 320-68519-1

Client Sample ID: MW-106-20
Date Collected: 01/01/21 11:22
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68519-10
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	0.50	ng/L		01/06/21 11:16	01/07/21 04:37	1
Perfluoroheptanoic acid (PFHpA)	**0.29**	**J I**	1.7	0.22	ng/L		01/06/21 11:16	01/07/21 04:37	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.73	ng/L		01/06/21 11:16	01/07/21 04:37	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		01/06/21 11:16	01/07/21 04:37	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		01/06/21 11:16	01/07/21 04:37	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.95	ng/L		01/06/21 11:16	01/07/21 04:37	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47	ng/L		01/06/21 11:16	01/07/21 04:37	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		01/06/21 11:16	01/07/21 04:37	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.63	ng/L		01/06/21 11:16	01/07/21 04:37	1
Perfluorobutanesulfonic acid (PFBS)	**0.37**	**J**	1.7	0.17	ng/L		01/06/21 11:16	01/07/21 04:37	1
Perfluorohexanesulfonic acid (PFHxS)	**2.6**		1.7	0.49	ng/L		01/06/21 11:16	01/07/21 04:37	1
Perfluorooctanesulfonic acid (PFOS)	**1.3**	**J I**	1.7	0.47	ng/L		01/06/21 11:16	01/07/21 04:37	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.3	1.0	ng/L		01/06/21 11:16	01/07/21 04:37	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.3	1.1	ng/L		01/06/21 11:16	01/07/21 04:37	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		01/06/21 11:16	01/07/21 04:37	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		01/06/21 11:16	01/07/21 04:37	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	*+	1.7	0.28	ng/L		01/06/21 11:16	01/07/21 04:37	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.35	ng/L		01/06/21 11:16	01/07/21 04:37	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*101*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:37*	*1*
13C4 PFHpA	*106*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:37*	*1*
13C4 PFOA	*109*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:37*	*1*
13C5 PFNA	*110*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:37*	*1*
13C2 PFDA	*108*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:37*	*1*
13C2 PFUnA	*102*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:37*	*1*
13C2 PFDoA	*95*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:37*	*1*
13C2 PFTeDA	*121*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:37*	*1*
13C3 PFBS	*99*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:37*	*1*
18O2 PFHxS	*104*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:37*	*1*
13C4 PFOS	*102*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:37*	*1*
d3-NMeFOSAA	*90*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:37*	*1*
d5-NEtFOSAA	*97*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:37*	*1*
13C3 HFPO-DA	*100*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:37*	*1*

Client: Shannon & Wilson, Inc
Project/Site: ADOT+PF GUSTAVUS

Job ID: 320-68519-1

Client Sample ID: MW-7-20
Date Collected: 12/30/20 10:11
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68519-11
Matrix: Water

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		01/06/21 11:16	01/07/21 04:46	1
Perfluoroheptanoic acid (PFHpA)	**0.91**	**J**	1.8	0.22	ng/L		01/06/21 11:16	01/07/21 04:46	1
Perfluorooctanoic acid (PFOA)	**1.1**	**J**	1.8	0.76	ng/L		01/06/21 11:16	01/07/21 04:46	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		01/06/21 11:16	01/07/21 04:46	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		01/06/21 11:16	01/07/21 04:46	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.98	ng/L		01/06/21 11:16	01/07/21 04:46	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		01/06/21 11:16	01/07/21 04:46	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		01/06/21 11:16	01/07/21 04:46	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		01/06/21 11:16	01/07/21 04:46	1
Perfluorobutanesulfonic acid (PFBS)	**0.43**	**J**	1.8	0.18	ng/L		01/06/21 11:16	01/07/21 04:46	1
Perfluorohexanesulfonic acid (PFHxS)	**1.0**	**J**	1.8	0.51	ng/L		01/06/21 11:16	01/07/21 04:46	1
Perfluorooctanesulfonic acid (PFOS)	**4.8**		1.8	0.48	ng/L		01/06/21 11:16	01/07/21 04:46	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		01/06/21 11:16	01/07/21 04:46	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		01/06/21 11:16	01/07/21 04:46	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		01/06/21 11:16	01/07/21 04:46	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		01/06/21 11:16	01/07/21 04:46	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	*+	1.8	0.29	ng/L		01/06/21 11:16	01/07/21 04:46	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		01/06/21 11:16	01/07/21 04:46	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*102*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:46*	*1*
13C4 PFHpA	*112*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:46*	*1*
13C4 PFOA	*113*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:46*	*1*
13C5 PFNA	*113*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:46*	*1*
13C2 PFDA	*113*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:46*	*1*
13C2 PFUnA	*113*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:46*	*1*
13C2 PFDoA	*103*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:46*	*1*
13C2 PFTeDA	*120*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:46*	*1*
13C3 PFBS	*99*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:46*	*1*
18O2 PFHxS	*107*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:46*	*1*
13C4 PFOS	*104*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:46*	*1*
d3-NMeFOSAA	*93*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:46*	*1*
d5-NEtFOSAA	*100*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:46*	*1*
13C3 HFPO-DA	*107*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:46*	*1*

Client: Shannon & Wilson, Inc
Project/Site: ADOT+PF GUSTAVUS

Job ID: 320-68519-1

Client Sample ID: MW-107-20
Date Collected: 12/30/20 10:01
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68519-12
Matrix: Water

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		01/06/21 11:16	01/07/21 04:56	1
Perfluoroheptanoic acid (PFHpA)	**0.89**	**J**	1.9	0.24	ng/L		01/06/21 11:16	01/07/21 04:56	1
Perfluorooctanoic acid (PFOA)	**1.3**	**J**	1.9	0.82	ng/L		01/06/21 11:16	01/07/21 04:56	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		01/06/21 11:16	01/07/21 04:56	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		01/06/21 11:16	01/07/21 04:56	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		01/06/21 11:16	01/07/21 04:56	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		01/06/21 11:16	01/07/21 04:56	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		01/06/21 11:16	01/07/21 04:56	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		01/06/21 11:16	01/07/21 04:56	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		01/06/21 11:16	01/07/21 04:56	1
Perfluorohexanesulfonic acid (PFHxS)	**1.1**	**J**	1.9	0.55	ng/L		01/06/21 11:16	01/07/21 04:56	1
Perfluorooctanesulfonic acid (PFOS)	**4.5**		1.9	0.52	ng/L		01/06/21 11:16	01/07/21 04:56	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.2	ng/L		01/06/21 11:16	01/07/21 04:56	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		01/06/21 11:16	01/07/21 04:56	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		01/06/21 11:16	01/07/21 04:56	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		01/06/21 11:16	01/07/21 04:56	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	*+	1.9	0.31	ng/L		01/06/21 11:16	01/07/21 04:56	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		01/06/21 11:16	01/07/21 04:56	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*99*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:56*	*1*
13C4 PFHpA	*106*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:56*	*1*
13C4 PFOA	*104*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:56*	*1*
13C5 PFNA	*110*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:56*	*1*
13C2 PFDA	*101*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:56*	*1*
13C2 PFUnA	*106*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:56*	*1*
13C2 PFDoA	*103*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:56*	*1*
13C2 PFTeDA	*119*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:56*	*1*
13C3 PFBS	*94*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:56*	*1*
18O2 PFHxS	*102*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:56*	*1*
13C4 PFOS	*99*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:56*	*1*
d3-NMeFOSAA	*93*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:56*	*1*
d5-NEtFOSAA	*95*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:56*	*1*
13C3 HFPO-DA	*99*		*25 - 150*	*01/06/21 11:16*	*01/07/21 04:56*	*1*

Client Sample ID: MW-8-20

Date Collected: 01/01/21 13:53
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68519-13

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		01/06/21 11:16	01/07/21 05:05	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.22	ng/L		01/06/21 11:16	01/07/21 05:05	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.74	ng/L		01/06/21 11:16	01/07/21 05:05	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.24	ng/L		01/06/21 11:16	01/07/21 05:05	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		01/06/21 11:16	01/07/21 05:05	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.96	ng/L		01/06/21 11:16	01/07/21 05:05	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		01/06/21 11:16	01/07/21 05:05	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		01/06/21 11:16	01/07/21 05:05	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.64	ng/L		01/06/21 11:16	01/07/21 05:05	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		01/06/21 11:16	01/07/21 05:05	1
Perfluorohexanesulfonic acid (PFHxS)	**0.62**	**J**	1.7	0.50	ng/L		01/06/21 11:16	01/07/21 05:05	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.47	ng/L		01/06/21 11:16	01/07/21 05:05	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.0	ng/L		01/06/21 11:16	01/07/21 05:05	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		01/06/21 11:16	01/07/21 05:05	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		01/06/21 11:16	01/07/21 05:05	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		01/06/21 11:16	01/07/21 05:05	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	*+	1.7	0.28	ng/L		01/06/21 11:16	01/07/21 05:05	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.35	ng/L		01/06/21 11:16	01/07/21 05:05	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*106*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:05*	*1*
13C4 PFHpA	*111*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:05*	*1*
13C4 PFOA	*111*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:05*	*1*
13C5 PFNA	*117*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:05*	*1*
13C2 PFDA	*113*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:05*	*1*
13C2 PFUnA	*119*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:05*	*1*
13C2 PFDoA	*110*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:05*	*1*
13C2 PFTeDA	*132*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:05*	*1*
13C3 PFBS	*103*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:05*	*1*
18O2 PFHxS	*104*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:05*	*1*
13C4 PFOS	*108*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:05*	*1*
d3-NMeFOSAA	*98*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:05*	*1*
d5-NEtFOSAA	*106*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:05*	*1*
13C3 HFPO-DA	*110*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:05*	*1*

Client: Shannon & Wilson, Inc
Project/Site: ADOT+PF GUSTAVUS

Job ID: 320-68519-1

Client Sample ID: MW-9-20
Date Collected: 12/30/20 17:34
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68519-14
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**4.6**		1.8	0.52	ng/L		01/06/21 11:16	01/07/21 05:14	1
Perfluoroheptanoic acid (PFHpA)	**2.0**		1.8	0.22	ng/L		01/06/21 11:16	01/07/21 05:14	1
Perfluorooctanoic acid (PFOA)	**1.0**	**J**	1.8	0.76	ng/L		01/06/21 11:16	01/07/21 05:14	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		01/06/21 11:16	01/07/21 05:14	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		01/06/21 11:16	01/07/21 05:14	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		01/06/21 11:16	01/07/21 05:14	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		01/06/21 11:16	01/07/21 05:14	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		01/06/21 11:16	01/07/21 05:14	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		01/06/21 11:16	01/07/21 05:14	1
Perfluorobutanesulfonic acid (PFBS)	**0.66**	**J**	1.8	0.18	ng/L		01/06/21 11:16	01/07/21 05:14	1
Perfluorohexanesulfonic acid (PFHxS)	**11**		1.8	0.51	ng/L		01/06/21 11:16	01/07/21 05:14	1
Perfluorooctanesulfonic acid (PFOS)	**92**		1.8	0.49	ng/L		01/06/21 11:16	01/07/21 05:14	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		01/06/21 11:16	01/07/21 05:14	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		01/06/21 11:16	01/07/21 05:14	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		01/06/21 11:16	01/07/21 05:14	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		01/06/21 11:16	01/07/21 05:14	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	*+	1.8	0.29	ng/L		01/06/21 11:16	01/07/21 05:14	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		01/06/21 11:16	01/07/21 05:14	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*109*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:14*	*1*
13C4 PFHpA	*113*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:14*	*1*
13C4 PFOA	*120*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:14*	*1*
13C5 PFNA	*122*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:14*	*1*
13C2 PFDA	*123*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:14*	*1*
13C2 PFUnA	*120*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:14*	*1*
13C2 PFDoA	*114*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:14*	*1*
13C2 PFTeDA	*119*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:14*	*1*
13C3 PFBS	*105*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:14*	*1*
18O2 PFHxS	*109*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:14*	*1*
13C4 PFOS	*108*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:14*	*1*
d3-NMeFOSAA	*103*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:14*	*1*
d5-NEtFOSAA	*106*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:14*	*1*
13C3 HFPO-DA	*111*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:14*	*1*

Client: Shannon & Wilson, Inc
Project/Site: ADOT+PF GUSTAVUS

Job ID: 320-68519-1

Client Sample ID: MW-10-20
Date Collected: 01/01/21 12:51
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68519-15
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**5.3**		1.8	0.53	ng/L		01/06/21 11:16	01/07/21 05:24	1
Perfluoroheptanoic acid (PFHpA)	**1.8**		1.8	0.23	ng/L		01/06/21 11:16	01/07/21 05:24	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		01/06/21 11:16	01/07/21 05:24	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		01/06/21 11:16	01/07/21 05:24	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		01/06/21 11:16	01/07/21 05:24	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		01/06/21 11:16	01/07/21 05:24	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		01/06/21 11:16	01/07/21 05:24	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		01/06/21 11:16	01/07/21 05:24	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		01/06/21 11:16	01/07/21 05:24	1
Perfluorobutanesulfonic acid (PFBS)	**0.42**	**J**	1.8	0.18	ng/L		01/06/21 11:16	01/07/21 05:24	1
Perfluorohexanesulfonic acid (PFHxS)	**5.4**		1.8	0.52	ng/L		01/06/21 11:16	01/07/21 05:24	1
Perfluorooctanesulfonic acid (PFOS)	**39**		1.8	0.49	ng/L		01/06/21 11:16	01/07/21 05:24	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		01/06/21 11:16	01/07/21 05:24	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		01/06/21 11:16	01/07/21 05:24	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		01/06/21 11:16	01/07/21 05:24	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		01/06/21 11:16	01/07/21 05:24	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	*+	1.8	0.29	ng/L		01/06/21 11:16	01/07/21 05:24	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		01/06/21 11:16	01/07/21 05:24	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*105*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:24*	*1*
13C4 PFHpA	*110*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:24*	*1*
13C4 PFOA	*119*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:24*	*1*
13C5 PFNA	*117*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:24*	*1*
13C2 PFDA	*106*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:24*	*1*
13C2 PFUnA	*115*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:24*	*1*
13C2 PFDoA	*101*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:24*	*1*
13C2 PFTeDA	*120*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:24*	*1*
13C3 PFBS	*101*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:24*	*1*
18O2 PFHxS	*110*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:24*	*1*
13C4 PFOS	*107*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:24*	*1*
d3-NMeFOSAA	*97*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:24*	*1*
d5-NEtFOSAA	*105*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:24*	*1*
13C3 HFPO-DA	*109*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:24*	*1*

Client Sample ID: MW-11-15

Date Collected: 12/31/20 11:06
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68519-16

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**180**		1.7	0.50	ng/L		01/06/21 11:16	01/07/21 05:33	1
Perfluoroheptanoic acid (PFHpA)	**19**		1.7	0.22	ng/L		01/06/21 11:16	01/07/21 05:33	1
Perfluorooctanoic acid (PFOA)	**92**		1.7	0.74	ng/L		01/06/21 11:16	01/07/21 05:33	1
Perfluorononanoic acid (PFNA)	**2.2**		1.7	0.23	ng/L		01/06/21 11:16	01/07/21 05:33	1
Perfluorodecanoic acid (PFDA)	**1.3**	**J**	1.7	0.27	ng/L		01/06/21 11:16	01/07/21 05:33	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.96	ng/L		01/06/21 11:16	01/07/21 05:33	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		01/06/21 11:16	01/07/21 05:33	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		01/06/21 11:16	01/07/21 05:33	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.63	ng/L		01/06/21 11:16	01/07/21 05:33	1
Perfluorobutanesulfonic acid (PFBS)	**35**		1.7	0.17	ng/L		01/06/21 11:16	01/07/21 05:33	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.3	1.0	ng/L		01/06/21 11:16	01/07/21 05:33	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.3	1.1	ng/L		01/06/21 11:16	01/07/21 05:33	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		01/06/21 11:16	01/07/21 05:33	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		01/06/21 11:16	01/07/21 05:33	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	*+	1.7	0.28	ng/L		01/06/21 11:16	01/07/21 05:33	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.35	ng/L		01/06/21 11:16	01/07/21 05:33	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*103*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:33*	*1*
13C4 PFHpA	*104*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:33*	*1*
13C4 PFOA	*110*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:33*	*1*
13C5 PFNA	*81*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:33*	*1*
13C2 PFDA	*106*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:33*	*1*
13C2 PFUnA	*112*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:33*	*1*
13C2 PFDoA	*109*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:33*	*1*
13C2 PFTeDA	*122*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:33*	*1*
13C3 PFBS	*105*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:33*	*1*
13C4 PFOS	*71*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:33*	*1*
d3-NMeFOSAA	*100*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:33*	*1*
d5-NEtFOSAA	*103*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:33*	*1*
13C3 HFPO-DA	*112*		*25 - 150*	*01/06/21 11:16*	*01/07/21 05:33*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanesulfonic acid (PFHxS)	**830**		35	9.9	ng/L		01/06/21 11:16	01/07/21 19:53	20
Perfluorooctanesulfonic acid (PFOS)	**6100**		35	9.4	ng/L		01/06/21 11:16	01/07/21 19:53	20

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*103*		*25 - 150*	*01/06/21 11:16*	*01/07/21 19:53*	*20*
13C4 PFOS	*97*		*25 - 150*	*01/06/21 11:16*	*01/07/21 19:53*	*20*

Client: Shannon & Wilson, Inc
Project/Site: ADOT+PF GUSTAVUS

Job ID: 320-68519-1

Client Sample ID: MW-12-10
Date Collected: 12/31/20 09:33
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68519-17
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**13**		1.8	0.51	ng/L		01/06/21 11:16	01/07/21 19:44	1
Perfluoroheptanoic acid (PFHpA)	**15**		1.8	0.22	ng/L		01/06/21 11:16	01/07/21 19:44	1
Perfluorooctanoic acid (PFOA)	**9.5**		1.8	0.75	ng/L		01/06/21 11:16	01/07/21 19:44	1
Perfluorononanoic acid (PFNA)	**2.6**		1.8	0.24	ng/L		01/06/21 11:16	01/07/21 19:44	1
Perfluorodecanoic acid (PFDA)	**0.51**	**J**	1.8	0.27	ng/L		01/06/21 11:16	01/07/21 19:44	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.97	ng/L		01/06/21 11:16	01/07/21 19:44	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.48	ng/L		01/06/21 11:16	01/07/21 19:44	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.1	ng/L		01/06/21 11:16	01/07/21 19:44	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.64	ng/L		01/06/21 11:16	01/07/21 19:44	1
Perfluorobutanesulfonic acid (PFBS)	**0.68**	**J**	1.8	0.18	ng/L		01/06/21 11:16	01/07/21 19:44	1
Perfluorohexanesulfonic acid (PFHxS)	**31**		1.8	0.50	ng/L		01/06/21 11:16	01/07/21 19:44	1
Perfluorooctanesulfonic acid (PFOS)	**100**		1.8	0.47	ng/L		01/06/21 11:16	01/07/21 19:44	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		01/06/21 11:16	01/07/21 19:44	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		01/06/21 11:16	01/07/21 19:44	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		01/06/21 11:16	01/07/21 19:44	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		01/06/21 11:16	01/07/21 19:44	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	*+	1.8	0.28	ng/L		01/06/21 11:16	01/07/21 19:44	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		01/06/21 11:16	01/07/21 19:44	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*101*		*25 - 150*	*01/06/21 11:16*	*01/07/21 19:44*	*1*
13C4 PFHpA	*106*		*25 - 150*	*01/06/21 11:16*	*01/07/21 19:44*	*1*
13C4 PFOA	*107*		*25 - 150*	*01/06/21 11:16*	*01/07/21 19:44*	*1*
13C5 PFNA	*109*		*25 - 150*	*01/06/21 11:16*	*01/07/21 19:44*	*1*
13C2 PFDA	*110*		*25 - 150*	*01/06/21 11:16*	*01/07/21 19:44*	*1*
13C2 PFUnA	*99*		*25 - 150*	*01/06/21 11:16*	*01/07/21 19:44*	*1*
13C2 PFDoA	*89*		*25 - 150*	*01/06/21 11:16*	*01/07/21 19:44*	*1*
13C2 PFTeDA	*106*		*25 - 150*	*01/06/21 11:16*	*01/07/21 19:44*	*1*
13C3 PFBS	*99*		*25 - 150*	*01/06/21 11:16*	*01/07/21 19:44*	*1*
18O2 PFHxS	*102*		*25 - 150*	*01/06/21 11:16*	*01/07/21 19:44*	*1*
13C4 PFOS	*101*		*25 - 150*	*01/06/21 11:16*	*01/07/21 19:44*	*1*
d3-NMeFOSAA	*92*		*25 - 150*	*01/06/21 11:16*	*01/07/21 19:44*	*1*
d5-NEtFOSAA	*92*		*25 - 150*	*01/06/21 11:16*	*01/07/21 19:44*	*1*
13C3 HFPO-DA	*101*		*25 - 150*	*01/06/21 11:16*	*01/07/21 19:44*	*1*

Client: Shannon & Wilson, Inc
Project/Site: ADOT+PF GUSTAVUS

Job ID: 320-68519-1

Client Sample ID: MW-112-10
Date Collected: 12/31/20 09:23
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68519-18
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**13**		1.8	0.54	ng/L		01/06/21 11:34	01/07/21 06:10	1
Perfluoroheptanoic acid (PFHpA)	**15**		1.8	0.23	ng/L		01/06/21 11:34	01/07/21 06:10	1
Perfluorooctanoic acid (PFOA)	**8.8**		1.8	0.79	ng/L		01/06/21 11:34	01/07/21 06:10	1
Perfluorononanoic acid (PFNA)	**2.5**		1.8	0.25	ng/L		01/06/21 11:34	01/07/21 06:10	1
Perfluorodecanoic acid (PFDA)	**0.65**	**J**	1.8	0.29	ng/L		01/06/21 11:34	01/07/21 06:10	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		01/06/21 11:34	01/07/21 06:10	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		01/06/21 11:34	01/07/21 06:10	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		01/06/21 11:34	01/07/21 06:10	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		01/06/21 11:34	01/07/21 06:10	1
Perfluorobutanesulfonic acid (PFBS)	**0.71**	**J**	1.8	0.18	ng/L		01/06/21 11:34	01/07/21 06:10	1
Perfluorohexanesulfonic acid (PFHxS)	**29**		1.8	0.53	ng/L		01/06/21 11:34	01/07/21 06:10	1
Perfluorooctanesulfonic acid (PFOS)	**100**		1.8	0.50	ng/L		01/06/21 11:34	01/07/21 06:10	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		01/06/21 11:34	01/07/21 06:10	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		01/06/21 11:34	01/07/21 06:10	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		01/06/21 11:34	01/07/21 06:10	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		01/06/21 11:34	01/07/21 06:10	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	*+	1.8	0.30	ng/L		01/06/21 11:34	01/07/21 06:10	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		01/06/21 11:34	01/07/21 06:10	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*98*		*25 - 150*	*01/06/21 11:34*	*01/07/21 06:10*	*1*
13C4 PFHpA	*103*		*25 - 150*	*01/06/21 11:34*	*01/07/21 06:10*	*1*
13C4 PFOA	*102*		*25 - 150*	*01/06/21 11:34*	*01/07/21 06:10*	*1*
13C5 PFNA	*101*		*25 - 150*	*01/06/21 11:34*	*01/07/21 06:10*	*1*
13C2 PFDA	*101*		*25 - 150*	*01/06/21 11:34*	*01/07/21 06:10*	*1*
13C2 PFUnA	*101*		*25 - 150*	*01/06/21 11:34*	*01/07/21 06:10*	*1*
13C2 PFDoA	*98*		*25 - 150*	*01/06/21 11:34*	*01/07/21 06:10*	*1*
13C2 PFTeDA	*112*		*25 - 150*	*01/06/21 11:34*	*01/07/21 06:10*	*1*
13C3 PFBS	*93*		*25 - 150*	*01/06/21 11:34*	*01/07/21 06:10*	*1*
18O2 PFHxS	*99*		*25 - 150*	*01/06/21 11:34*	*01/07/21 06:10*	*1*
13C4 PFOS	*94*		*25 - 150*	*01/06/21 11:34*	*01/07/21 06:10*	*1*
d3-NMeFOSAA	*93*		*25 - 150*	*01/06/21 11:34*	*01/07/21 06:10*	*1*
d5-NEtFOSAA	*103*		*25 - 150*	*01/06/21 11:34*	*01/07/21 06:10*	*1*
13C3 HFPO-DA	*94*		*25 - 150*	*01/06/21 11:34*	*01/07/21 06:10*	*1*

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: ADOT+PF GUSTAVUS

Job ID: 320-68519-1

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)
320-68519-1	MW-1-15	109	116	116	118	113	115	106	127
320-68519-2	MW-1-40	96	101	103	106	94	107	97	108
320-68519-3	MW-2-20	112	115	116	116	115	122	82	132
320-68519-4	MW-2-30	96	100	100	99	99	101	98	112
320-68519-5	MW-3-15	102	102	112	113	108	112	108	119
320-68519-6	MW-3-40	104	109	110	112	106	105	103	123
320-68519-7	MW-4-20	106	110	116	122	118	114	104	119
320-68519-8	MW-5-20	96	109	112	111	110	109	97	114
320-68519-9	MW-6-20	109	114	118	119	107	119	115	133
320-68519-10	MW-106-20	101	106	109	110	108	102	95	121
320-68519-11	MW-7-20	102	112	113	113	113	113	103	120
320-68519-12	MW-107-20	99	106	104	110	101	106	103	119
320-68519-13	MW-8-20	106	111	111	117	113	119	110	132
320-68519-14	MW-9-20	109	113	120	122	123	120	114	119
320-68519-15	MW-10-20	105	110	119	117	106	115	101	120
320-68519-16	MW-11-15	103	104	110	81	106	112	109	122
320-68519-16 - DL	MW-11-15								
320-68519-17	MW-12-10	101	106	107	109	110	99	89	106
320-68519-18	MW-112-10	98	103	102	101	101	101	98	112
LCS 320-448909/2-A	Lab Control Sample	96	105	102	102	106	107	106	112
LCSD 320-448909/3-A	Lab Control Sample Dup	95	103	109	107	102	105	103	119
MB 320-448909/1-A	Method Blank	101	110	111	112	107	107	104	119

		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)		
320-68519-1	MW-1-15	106	113	108	94	106	114		
320-68519-2	MW-1-40	95	102	98	87	92	102		
320-68519-3	MW-2-20	102	114	111	107	114	110		
320-68519-4	MW-2-30	92	96	100	88	94	96		
320-68519-5	MW-3-15	99	104	102	91	101	102		
320-68519-6	MW-3-40	102	102	104	91	99	103		
320-68519-7	MW-4-20	101	111	110	100	99	110		
320-68519-8	MW-5-20	100	105	104	93	99	106		
320-68519-9	MW-6-20	107	112	111	96	111	109		
320-68519-10	MW-106-20	99	104	102	90	97	100		
320-68519-11	MW-7-20	99	107	104	93	100	107		
320-68519-12	MW-107-20	94	102	99	93	95	99		
320-68519-13	MW-8-20	103	104	108	98	106	110		
320-68519-14	MW-9-20	105	109	108	103	106	111		
320-68519-15	MW-10-20	101	110	107	97	105	109		
320-68519-16	MW-11-15	105		71	100	103	112		
320-68519-16 - DL	MW-11-15		103	97					
320-68519-17	MW-12-10	99	102	101	92	92	101		
320-68519-18	MW-112-10	93	99	94	93	103	94		
LCS 320-448909/2-A	Lab Control Sample	98	99	99	91	94	107		
LCSD 320-448909/3-A	Lab Control Sample Dup	99	104	98	88	90	115		
MB 320-448909/1-A	Method Blank	106	106	102	92	95	113		

Surrogate Legend

PFHxA = 13C2 PFHxA

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: ADOT+PF GUSTAVUS

Job ID: 320-68519-1

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

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-448909/1-A
Matrix: Water
Analysis Batch: 449115

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 448909

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		01/06/21 11:16	01/07/21 02:26	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		01/06/21 11:16	01/07/21 02:26	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		01/06/21 11:16	01/07/21 02:26	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		01/06/21 11:16	01/07/21 02:26	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		01/06/21 11:16	01/07/21 02:26	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		01/06/21 11:16	01/07/21 02:26	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		01/06/21 11:16	01/07/21 02:26	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		01/06/21 11:16	01/07/21 02:26	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		01/06/21 11:16	01/07/21 02:26	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		01/06/21 11:16	01/07/21 02:26	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		01/06/21 11:16	01/07/21 02:26	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		01/06/21 11:16	01/07/21 02:26	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		01/06/21 11:16	01/07/21 02:26	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		01/06/21 11:16	01/07/21 02:26	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		01/06/21 11:16	01/07/21 02:26	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		01/06/21 11:16	01/07/21 02:26	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		01/06/21 11:16	01/07/21 02:26	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		01/06/21 11:16	01/07/21 02:26	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*101*		*25 - 150*	*01/06/21 11:16*	*01/07/21 02:26*	*1*
13C4 PFHpA	*110*		*25 - 150*	*01/06/21 11:16*	*01/07/21 02:26*	*1*
13C4 PFOA	*111*		*25 - 150*	*01/06/21 11:16*	*01/07/21 02:26*	*1*
13C5 PFNA	*112*		*25 - 150*	*01/06/21 11:16*	*01/07/21 02:26*	*1*
13C2 PFDA	*107*		*25 - 150*	*01/06/21 11:16*	*01/07/21 02:26*	*1*
13C2 PFUnA	*107*		*25 - 150*	*01/06/21 11:16*	*01/07/21 02:26*	*1*
13C2 PFDoA	*104*		*25 - 150*	*01/06/21 11:16*	*01/07/21 02:26*	*1*
13C2 PFTeDA	*119*		*25 - 150*	*01/06/21 11:16*	*01/07/21 02:26*	*1*
13C3 PFBS	*106*		*25 - 150*	*01/06/21 11:16*	*01/07/21 02:26*	*1*
18O2 PFHxS	*106*		*25 - 150*	*01/06/21 11:16*	*01/07/21 02:26*	*1*
13C4 PFOS	*102*		*25 - 150*	*01/06/21 11:16*	*01/07/21 02:26*	*1*
d3-NMeFOSAA	*92*		*25 - 150*	*01/06/21 11:16*	*01/07/21 02:26*	*1*
d5-NEtFOSAA	*95*		*25 - 150*	*01/06/21 11:16*	*01/07/21 02:26*	*1*
13C3 HFPO-DA	*113*		*25 - 150*	*01/06/21 11:16*	*01/07/21 02:26*	*1*

Lab Sample ID: LCS 320-448909/2-A
Matrix: Water
Analysis Batch: 449115

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 448909

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid (PFHxA)	40.0	43.1		ng/L		108	73 - 133
Perfluoroheptanoic acid (PFHpA)	40.0	40.5		ng/L		101	72 - 132
Perfluorooctanoic acid (PFOA)	40.0	41.7		ng/L		104	70 - 130
Perfluorononanoic acid (PFNA)	40.0	40.0		ng/L		100	75 - 135

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-448909/2-A
Matrix: Water
Analysis Batch: 449115

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 448909

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorodecanoic acid (PFDA)	40.0	41.9		ng/L		105	76 - 136
Perfluoroundecanoic acid (PFUnA)	40.0	43.7		ng/L		109	68 - 128
Perfluorododecanoic acid (PFDoA)	40.0	43.9		ng/L		110	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	43.0		ng/L		108	71 - 131
Perfluorotetradecanoic acid (PFTeA)	40.0	42.7		ng/L		107	70 - 130
Perfluorobutanesulfonic acid (PFBS)	35.4	37.7		ng/L		107	67 - 127
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.1		ng/L		94	59 - 119
Perfluorooctanesulfonic acid (PFOS)	37.1	37.2		ng/L		100	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	42.3		ng/L		113	75 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	38.5		ng/L		96	51 - 173
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	45.7	*+	ng/L		121	54 - 114
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	42.2		ng/L		112	79 - 139

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*96*		*25 - 150*
13C4 PFHpA	*105*		*25 - 150*
13C4 PFOA	*102*		*25 - 150*
13C5 PFNA	*102*		*25 - 150*
13C2 PFDA	*106*		*25 - 150*
13C2 PFUnA	*107*		*25 - 150*
13C2 PFDoA	*106*		*25 - 150*
13C2 PFTeDA	*112*		*25 - 150*
13C3 PFBS	*98*		*25 - 150*
18O2 PFHxS	*99*		*25 - 150*
13C4 PFOS	*99*		*25 - 150*
d3-NMeFOSAA	*91*		*25 - 150*
d5-NEtFOSAA	*94*		*25 - 150*
13C3 HFPO-DA	*107*		*25 - 150*

Lab Sample ID: LCSD 320-448909/3-A
Matrix: Water
Analysis Batch: 449115

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 448909

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	44.0		ng/L		110	73 - 133	2	30
Perfluoroheptanoic acid (PFHpA)	40.0	43.2		ng/L		108	72 - 132	6	30
Perfluorooctanoic acid (PFOA)	40.0	39.2		ng/L		98	70 - 130	6	30
Perfluorononanoic acid (PFNA)	40.0	37.6		ng/L		94	75 - 135	6	30
Perfluorodecanoic acid (PFDA)	40.0	45.1		ng/L		113	76 - 136	7	30
Perfluoroundecanoic acid (PFUnA)	40.0	41.0		ng/L		103	68 - 128	6	30

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-448909/3-A
Matrix: Water
Analysis Batch: 449115

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 448909

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorododecanoic acid (PFDoA)			40.0	42.9		ng/L		107	71 - 131	2	30
Perfluorotridecanoic acid (PFTriA)			40.0	49.9		ng/L		125	71 - 131	15	30
Perfluorotetradecanoic acid (PFTeA)			40.0	44.2		ng/L		110	70 - 130	3	30
Perfluorobutanesulfonic acid (PFBS)			35.4	38.0		ng/L		108	67 - 127	1	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	33.4		ng/L		92	59 - 119	2	30
Perfluorooctanesulfonic acid (PFOS)			37.1	37.1		ng/L		100	70 - 130	0	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid			37.3	39.8		ng/L		107	75 - 135	6	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			40.0	37.1		ng/L		93	51 - 173	4	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid			37.7	47.8	*+	ng/L		127	54 - 114	4	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.7	40.8		ng/L		108	79 - 139	3	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*95*		*25 - 150*
13C4 PFHpA	*103*		*25 - 150*
13C4 PFOA	*109*		*25 - 150*
13C5 PFNA	*107*		*25 - 150*
13C2 PFDA	*102*		*25 - 150*
13C2 PFUnA	*105*		*25 - 150*
13C2 PFDoA	*103*		*25 - 150*
13C2 PFTeDA	*119*		*25 - 150*
13C3 PFBS	*99*		*25 - 150*
18O2 PFHxS	*104*		*25 - 150*
13C4 PFOS	*98*		*25 - 150*
d3-NMeFOSAA	*88*		*25 - 150*
d5-NEtFOSAA	*90*		*25 - 150*
13C3 HFPO-DA	*115*		*25 - 150*

LCMS

Prep Batch: 448909

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-68519-1	MW-1-15	Total/NA	Water	3535	
320-68519-2	MW-1-40	Total/NA	Water	3535	
320-68519-3	MW-2-20	Total/NA	Water	3535	
320-68519-4	MW-2-30	Total/NA	Water	3535	
320-68519-5	MW-3-15	Total/NA	Water	3535	
320-68519-6	MW-3-40	Total/NA	Water	3535	
320-68519-7	MW-4-20	Total/NA	Water	3535	
320-68519-8	MW-5-20	Total/NA	Water	3535	
320-68519-9	MW-6-20	Total/NA	Water	3535	
320-68519-10	MW-106-20	Total/NA	Water	3535	
320-68519-11	MW-7-20	Total/NA	Water	3535	
320-68519-12	MW-107-20	Total/NA	Water	3535	
320-68519-13	MW-8-20	Total/NA	Water	3535	
320-68519-14	MW-9-20	Total/NA	Water	3535	
320-68519-15	MW-10-20	Total/NA	Water	3535	
320-68519-16	MW-11-15	Total/NA	Water	3535	
320-68519-16 - DL	MW-11-15	Total/NA	Water	3535	
320-68519-17	MW-12-10	Total/NA	Water	3535	
320-68519-18	MW-112-10	Total/NA	Water	3535	
MB 320-448909/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-448909/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-448909/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 449115

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-68519-1	MW-1-15	Total/NA	Water	537 (modified)	448909
320-68519-2	MW-1-40	Total/NA	Water	537 (modified)	448909
320-68519-3	MW-2-20	Total/NA	Water	537 (modified)	448909
320-68519-4	MW-2-30	Total/NA	Water	537 (modified)	448909
320-68519-5	MW-3-15	Total/NA	Water	537 (modified)	448909
320-68519-6	MW-3-40	Total/NA	Water	537 (modified)	448909
320-68519-7	MW-4-20	Total/NA	Water	537 (modified)	448909
320-68519-8	MW-5-20	Total/NA	Water	537 (modified)	448909
320-68519-9	MW-6-20	Total/NA	Water	537 (modified)	448909
320-68519-10	MW-106-20	Total/NA	Water	537 (modified)	448909
320-68519-11	MW-7-20	Total/NA	Water	537 (modified)	448909
320-68519-12	MW-107-20	Total/NA	Water	537 (modified)	448909
320-68519-13	MW-8-20	Total/NA	Water	537 (modified)	448909
320-68519-14	MW-9-20	Total/NA	Water	537 (modified)	448909
320-68519-15	MW-10-20	Total/NA	Water	537 (modified)	448909
320-68519-16	MW-11-15	Total/NA	Water	537 (modified)	448909
320-68519-18	MW-112-10	Total/NA	Water	537 (modified)	448909
MB 320-448909/1-A	Method Blank	Total/NA	Water	537 (modified)	448909
LCS 320-448909/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	448909
LCSD 320-448909/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	448909

Analysis Batch: 449380

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-68519-16 - DL	MW-11-15	Total/NA	Water	537 (modified)	448909
320-68519-17	MW-12-10	Total/NA	Water	537 (modified)	448909

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: ADOT+PF GUSTAVUS

Job ID: 320-68519-1

Client Sample ID: MW-1-15
Lab Sample ID: 320-68519-1
Date Collected: 12/30/20 12:19
Matrix: Water
Date Received: 01/05/21 17:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			275.2 mL	10.0 mL	448909	01/06/21 11:16	CG	TAL SAC
Total/NA	Analysis	537 (modified)		1			449115	01/07/21 02:54	JY1	TAL SAC

Client Sample ID: MW-1-40
Lab Sample ID: 320-68519-2
Date Collected: 12/30/20 11:44
Matrix: Water
Date Received: 01/05/21 17:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			271.5 mL	10.0 mL	448909	01/06/21 11:16	CG	TAL SAC
Total/NA	Analysis	537 (modified)		1			449115	01/07/21 03:03	JY1	TAL SAC

Client Sample ID: MW-2-20
Lab Sample ID: 320-68519-3
Date Collected: 12/31/20 15:16
Matrix: Water
Date Received: 01/05/21 17:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			282.5 mL	10.0 mL	448909	01/06/21 11:16	CG	TAL SAC
Total/NA	Analysis	537 (modified)		1			449115	01/07/21 03:13	JY1	TAL SAC

Client Sample ID: MW-2-30
Lab Sample ID: 320-68519-4
Date Collected: 12/31/20 15:53
Matrix: Water
Date Received: 01/05/21 17:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			279.1 mL	10.0 mL	448909	01/06/21 11:16	CG	TAL SAC
Total/NA	Analysis	537 (modified)		1			449115	01/07/21 03:22	JY1	TAL SAC

Client Sample ID: MW-3-15
Lab Sample ID: 320-68519-5
Date Collected: 12/30/20 15:16
Matrix: Water
Date Received: 01/05/21 17:20

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 mL	10.0 mL	448909	01/06/21 11:16	CG	TAL SAC
Total/NA	Analysis	537 (modified)		1			449115	01/07/21 03:32	JY1	TAL SAC

Client Sample ID: MW-3-40
Lab Sample ID: 320-68519-6
Date Collected: 12/30/20 14:37
Matrix: Water
Date Received: 01/05/21 17:20

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	10.0 mL	448909	01/06/21 11:16	CG	TAL SAC
Total/NA	Analysis	537 (modified)		1			449115	01/07/21 03:41	JY1	TAL SAC

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: ADOT+PF GUSTAVUS

Job ID: 320-68519-1

Client Sample ID: MW-4-20
Lab Sample ID: 320-68519-7
Date Collected: 12/31/20 13:08
Matrix: Water
Date Received: 01/05/21 17:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			278.9 mL	10.0 mL	448909	01/06/21 11:16	CG	TAL SAC
Total/NA	Analysis	537 (modified)		1			449115	01/07/21 03:50	JY1	TAL SAC

Client Sample ID: MW-5-20
Lab Sample ID: 320-68519-8
Date Collected: 01/01/21 15:25
Matrix: Water
Date Received: 01/05/21 17:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			276.8 mL	10.0 mL	448909	01/06/21 11:16	CG	TAL SAC
Total/NA	Analysis	537 (modified)		1			449115	01/07/21 04:18	JY1	TAL SAC

Client Sample ID: MW-6-20
Lab Sample ID: 320-68519-9
Date Collected: 01/01/21 11:32
Matrix: Water
Date Received: 01/05/21 17:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			278.3 mL	10.0 mL	448909	01/06/21 11:16	CG	TAL SAC
Total/NA	Analysis	537 (modified)		1			449115	01/07/21 04:28	JY1	TAL SAC

Client Sample ID: MW-106-20
Lab Sample ID: 320-68519-10
Date Collected: 01/01/21 11:22
Matrix: Water
Date Received: 01/05/21 17:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			289.6 mL	10.0 mL	448909	01/06/21 11:16	CG	TAL SAC
Total/NA	Analysis	537 (modified)		1			449115	01/07/21 04:37	JY1	TAL SAC

Client Sample ID: MW-7-20
Lab Sample ID: 320-68519-11
Date Collected: 12/30/20 10:11
Matrix: Water
Date Received: 01/05/21 17:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			280.7 mL	10.0 mL	448909	01/06/21 11:16	CG	TAL SAC
Total/NA	Analysis	537 (modified)		1			449115	01/07/21 04:46	JY1	TAL SAC

Client Sample ID: MW-107-20
Lab Sample ID: 320-68519-12
Date Collected: 12/30/20 10:01
Matrix: Water
Date Received: 01/05/21 17:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			260.7 mL	10.0 mL	448909	01/06/21 11:16	CG	TAL SAC
Total/NA	Analysis	537 (modified)		1			449115	01/07/21 04:56	JY1	TAL SAC

Client Sample ID: MW-8-20
Date Collected: 01/01/21 13:53
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68519-13
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			286.5 mL	10.0 mL	448909	01/06/21 11:16	CG	TAL SAC
Total/NA	Analysis	537 (modified)		1			449115	01/07/21 05:05	JY1	TAL SAC

Client Sample ID: MW-9-20
Date Collected: 12/30/20 17:34
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68519-14
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			277.9 mL	10.0 mL	448909	01/06/21 11:16	CG	TAL SAC
Total/NA	Analysis	537 (modified)		1			449115	01/07/21 05:14	JY1	TAL SAC

Client Sample ID: MW-10-20
Date Collected: 01/01/21 12:51
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68519-15
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	10.0 mL	448909	01/06/21 11:16	CG	TAL SAC
Total/NA	Analysis	537 (modified)		1			449115	01/07/21 05:24	JY1	TAL SAC

Client Sample ID: MW-11-15
Date Collected: 12/31/20 11:06
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68519-16
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			287.5 mL	10.0 mL	448909	01/06/21 11:16	CG	TAL SAC
Total/NA	Analysis	537 (modified)		1			449115	01/07/21 05:33	JY1	TAL SAC
Total/NA	Prep	3535	DL		287.5 mL	10.0 mL	448909	01/06/21 11:16	CG	TAL SAC
Total/NA	Analysis	537 (modified)	DL	20			449380	01/07/21 19:53	S1M	TAL SAC

Client Sample ID: MW-12-10
Date Collected: 12/31/20 09:33
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68519-17
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			284.8 mL	10.0 mL	448909	01/06/21 11:16	CG	TAL SAC
Total/NA	Analysis	537 (modified)		1			449380	01/07/21 19:44	S1M	TAL SAC

Client Sample ID: MW-112-10
Date Collected: 12/31/20 09:23
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68519-18
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	10.0 mL	448909	01/06/21 11:34	CG	TAL SAC
Total/NA	Analysis	537 (modified)		1			449115	01/07/21 06:10	JY1	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: ADOT+PF GUSTAVUS

Job ID: 320-68519-1

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	02-01-21
Louisiana	NELAP	01944	06-30-21
Maine	State	CA00004	04-14-22
Michigan	State	9947	08-03-23
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
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: ADOT+PF GUSTAVUS

Job ID: 320-68519-1

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: ADOT+PF GUSTAVUS

Job ID: 320-68519-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-68519-1	MW-1-15	Water	12/30/20 12:19	01/05/21 17:20	
320-68519-2	MW-1-40	Water	12/30/20 11:44	01/05/21 17:20	
320-68519-3	MW-2-20	Water	12/31/20 15:16	01/05/21 17:20	
320-68519-4	MW-2-30	Water	12/31/20 15:53	01/05/21 17:20	
320-68519-5	MW-3-15	Water	12/30/20 15:16	01/05/21 17:20	
320-68519-6	MW-3-40	Water	12/30/20 14:37	01/05/21 17:20	
320-68519-7	MW-4-20	Water	12/31/20 13:08	01/05/21 17:20	
320-68519-8	MW-5-20	Water	01/01/21 15:25	01/05/21 17:20	
320-68519-9	MW-6-20	Water	01/01/21 11:32	01/05/21 17:20	
320-68519-10	MW-106-20	Water	01/01/21 11:22	01/05/21 17:20	
320-68519-11	MW-7-20	Water	12/30/20 10:11	01/05/21 17:20	
320-68519-12	MW-107-20	Water	12/30/20 10:01	01/05/21 17:20	
320-68519-13	MW-8-20	Water	01/01/21 13:53	01/05/21 17:20	
320-68519-14	MW-9-20	Water	12/30/20 17:34	01/05/21 17:20	
320-68519-15	MW-10-20	Water	01/01/21 12:51	01/05/21 17:20	
320-68519-16	MW-11-15	Water	12/31/20 11:06	01/05/21 17:20	
320-68519-17	MW-12-10	Water	12/31/20 09:33	01/05/21 17:20	
320-68519-18	MW-112-10	Water	12/31/20 09:23	01/05/21 17:20	

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600
www.shannonwilson.com

CHAIN-OF-CUSTODY RECORD

Laboratory TEST AMERICA
Attn: _____

Turn Around Time: [X] Normal [ ] Rush — Please Specify

Quote No:

J-Flags: [X] Yes [ ] No

Analytical Methods (include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	EPA 537 PFAS x18	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
MW-1-15		1219	12/30/20	X	2	Groundwater
MW-1-40		1144	12/30/20			
MW-2-20		1516	12/31/20			
MW-2-30		1553	12/31/20			
MW-3-15		1516	12/30/20			
MW-3-40		1437	12/30/20			
MW-4-20		1308	12/31/20			
MW-5-20		1525	1/1/21			
MW-6-20		1132	1/1/21			
MW-106-20		1122	1/1/21			

320-68519 Chain of Custody

Project Information	
Number:	102599-011
Name:	ADOT+PF GUSTAVUS
Contact:	KRF
Ongoing Project?	Yes [X] No [ ]
Sampler:	RLW

Sample Receipt	
Total No. of Containers:	2
COC Seals/Intact? Y/N/NA	Y
Received Good Cond./Cold	Y
Temp	3.7°C
Delivery Method:	

Notes:

Reliquished By: 1.	Reliquished By: 2.	Reliquished By: 3.
Signature: Time: 0900	Signature: Time:	Signature: Time:
Printed Name: Rachel Willis Date: 1/4/21	Printed Name: Date:	Printed Name: Date:
Company: Shannon + Wilson	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time: 1720	Signature: Time:	Signature: Time:
Printed Name: Jennifer Darlington Date: 1/5/21	Printed Name: Date:	Printed Name: Date:
Company: ETA WSA	Company:	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

No. 36339

1/8/2021

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
2355 Hill Road
Fairbanks, AK 99709
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CHAIN-OF-CUSTODY RECORD

Laboratory TEST AMERICA
Attn: _____

Turn Around Time: [X] Normal [ ] Rush — Please Specify

Quote No:

J-Flags: [X] Yes [ ] No

Analytical Methods (include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	EPA 537 PFAS x18	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
MW-7-20		1011	12/30/20	X	2	Groundwater
MW-107-20		1001	12/30/20			
MW-8-20		1353	1/1/21			
MW-9-20		1734	12/30/20			
MW-10-20		1251	1/1/21			
MW-11-15		1106	12/31/20			
MW-12-10		933	12/31/20			
MW-112-10		923	12/31/20			

Project Information	
Number:	102599-011
Name:	ADOT+PF GUSTAVUS
Contact:	KRF
Ongoing Project?	Yes [X] No [ ]
Sampler:	RLW

Sample Receipt	
Total No. of Containers:	2
COC Seals/Intact? Y/N/NA	Y
Received Good Cond./Cold	Y
Temp:	3.7 °C
Delivery Method:	

Notes:

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Rachel Willis Time: 1/4/21 900	Signature: Time:	Signature: Time:
Printed Name: Rachel Willis Date: 1/4/21	Printed Name: Date:	Printed Name: Date:
Company: Shannon + Wilson	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Jennifer Darlington Time: 1720	Signature: Time:	Signature: Time:
Printed Name: Jennifer Darlington Date: 1/5/21	Printed Name: Date:	Printed Name: Date:
Company: EIA WSDC	Company:	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

• ID MW-9-30 for 2 of 2 JG 1/5/21

No. 36201

1/8/2021

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-68519-1

Login Number: 68519
List Number: 1
Creator: Her, David A

List Source: Eurofins TestAmerica, Sacramento

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	1469155/1469154
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.	False	Refer to Job Narrative for details.
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:

January 8, 2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins / TestAmerica Laboratories, Inc. (TestAmerica)

Laboratory Report Number:

320-68519-1

Laboratory Report Date:

January 8, 2021

CS Site Name:

DOT&PF Gustavus Airport Statewide PFAS

ADEC File Number:

2569.38.033

Hazard Identification Number:

26981

320-68519-1

Laboratory Report Date:

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 DEC certified TestAmerica of West Sacramento, CA for the analysis of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) on February 6, 2018 by method 537. These compounds were included in the DEC'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:

   The requested analyses were conducted by TestAmerica of 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:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

   Yes☐ No☐ N/A☒ Comments:

   Samples do not require preservation other than temperature.

   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.

Laboratory Report Date:

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 form indicates a discrepancy between the COC and a container label. This is detailed in the case narrative; see section 4.b.

e. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

4. Case Narrative

a. Present and understandable?

Yes☒ No☐ N/A☐ Comments:

Laboratory Report Date:

b. Discrepancies, errors, or QC failures identified by the lab?

Yes☒ No☐ N/A☐ Comments:

The case narrative indicates the following:

The samples arrived in good condition and properly preserved. The temperature of the sample cooler received with this shipment was 3.7 º C upon arrival at the laboratory.

The container label for well MW-9-30 did not match the COC entry. The laboratory logged the sample in as *MW-9-20*, per the COC. (note: this is incorrect, however, the sample has been properly matched in our database as *MW-9-30*)

The transition mass ratio for the indicated analytes were outside of the established ratio limits. The qualitative identification of the analytes has some degree of uncertainty. However, analyst judgment was used to positively identify the analytes: *MW-1-40, MW-3-40, MW-4-20, MW-6-20 and MW-106-20.* The laboratory flagged these samples. We have applied a "J" flag to denote the estimated results.

The laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 320-448909 recovered outside control limits for the following analyte:11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid. This analyte was biased high in the LCS, but was not detected in the associated samples. The results are unaffected.

Results for sample *MW-11-15* 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 contain floating particulates in the bottles prior to extraction: *MW-1-40, MW-3-15 MW-3-40, MW-4-20, MW-5-20, MW-6-20, MW-106-20, MW-107-20, MW-7-20, MW-8-20, MW-MW-9-20*(*MW-9-30)MW-10-20, MW-12-10,* and *MW-112-10.*

There was insufficient sample volume available to perform a matrix spike (MS) and MS duplicate (MSD) in conjunction with preparation batch 320-448909.

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:

PFOS results for project samples *MW-1-40, MW-3-40, MW-6-20,* and *MW-106-20;* the PFBS result for project sample *MW-4-20;* and the PFHpA result for field duplicate sample *MW-106-20* are considered estimated, with no direction of bias, and are flagged 'J' in analytical database unless already flagged.

320-68519-1

Laboratory Report Date:

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 (RL) is less than the applicable DEC regulatory limit for the project.

e. Data quality or usability affected?

The 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:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes☒ No☐ N/A☐ Comments:

There were no detections in the method blank sample associated with these project samples.

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above.

Laboratory Report Date:

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes☐ No☐ N/A☒ Comments:

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/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:

LCS and LCSD recovery for 11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid is above laboratory 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:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid was not detected in the project samples in the associated preparatory batch.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes☐ No☒ N/A☐ Comments:

LCS and LCSD recoveries were biased high; 11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid was not detected in the assocaited project samples, therefore the data is not affected. Qualification of the data was not required.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The 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:

Insufficient sample volume was available to perform a MS/MSD with the associated preparatory batches. However, the laboratory analyzed LCS and LCSD samples to assess laboratory accuracy and precision.

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:

MS and MSD samples were not analyzed for this work order.

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:

MS and MSD samples were not analyzed for this work order.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

NA; MS and MSD samples were not analyzed for this work order.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes☐ No☐ N/A☒ Comments:

MS and MSD samples were not analyzed for this work order.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The 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 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; 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. A trip blank is not required for the requested analysis.

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 for the requested analysis.

iii. All results less than LOQ and project specified objectives?

Yes☐ No☐ N/A☒ Comments:

A trip blank is not required for the requested analysis.

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

NA; a trip blank is not required for the requested analysis.

v. Data quality or usability affected?

Comments:

The 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 *MW-6-20/MW-106-20, MW-7-20/MW-107-20,* and *MW-12-10/MW-112-10* were submitted with this work order.

iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water, 50% soil)

RPD (%) = 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 DQO (30%), 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 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:

Reusable equipment was not used for sample collection. Therefore, decontamination or equipment blank samples were not required. A peri-pump was used to collect the requested analytes.

i. All results less than LOQ and project specified objectives?

Yes☐ No☐ N/A☒ Comments:

See above.

Laboratory Report Date:

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above.

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:

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ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-68521-1
Client Project/Site: DOT-DF GUS PFAS

For:
Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

Attn: Kristen Freiburger

Authorized for release by:
1/13/2021 3:12:22 PM

David Alltucker, Project Manager I
(916)374-4383
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Table of Contents

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: DOT-DF GUS PFAS

Job ID: 320-68521-1

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.
¤	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

Job ID: 320-68521-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative
320-68521-1

Receipt
The samples were received on 1/5/2021 5:20 PM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.4º C.

LCMS
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep
Method 537.1 DW: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-449087.

Method 537.1 DW: The following samples are yellow and contain a thin layer of sediment at the bottom of the bottle prior to extraction: PW-321 (320-68521-2), PW-466 (320-68521-3), PW-012 (320-68521-4), PW-039 (320-68521-6), PW-037 (320-68521-7), PW-221 (320-68521-8), PW-203 (320-68521-10), PW-016 (320-68521-11), PW-010 (320-68521-12), PW-059 (320-68521-13), PW-501 (320-68521-16), PW-218 (320-68521-17) and PW-401 (320-68521-18).

Method 537.1 DW: The following samples were observed to be light yellow prior to extraction: PW-321 (320-68521-2), PW-466 (320-68521-3), PW-012 (320-68521-4), PW-039 (320-68521-6), PW-037 (320-68521-7), PW-221 (320-68521-8), PW-203 (320-68521-10), PW-016 (320-68521-11), PW-010 (320-68521-12), PW-059 (320-68521-13), PW-501 (320-68521-16), PW-218 (320-68521-17) and PW-401 (320-68521-18).

Method 537.1 DW: The following samples are yellow after final voluming: PW-321 (320-68521-2), PW-466 (320-68521-3), PW-012 (320-68521-4), PW-039 (320-68521-6), PW-037 (320-68521-7), PW-221 (320-68521-8), PW-203 (320-68521-10), PW-016 (320-68521-11), PW-010 (320-68521-12), PW-059 (320-68521-13), PW-501 (320-68521-16), PW-218 (320-68521-17) and PW-401 (320-68521-18).

Method 537.1 DW: The following samples were observed to have floating particulates in the sample bottle prior to extraction: PW-211 (320-68521-15).

Method 537.1 DW: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-449972.

Method 537.1 DW: The following samples were light yellow after extraction and final voluming: PW-466 (320-68521-3), PW-012 (320-68521-4), PW-037 (320-68521-7), PW-016 (320-68521-11), PW-010 (320-68521-12) and PW-218 (320-68521-17).

Method 537.1 DW: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-450305.

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: DOT-DF GUS PFAS

Job ID: 320-68521-1

Client Sample ID: PW-038 — Lab Sample ID: 320-68521-1

No Detections.

Client Sample ID: PW-321 — Lab Sample ID: 320-68521-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	1.3	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.7	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA

Client Sample ID: PW-466 — Lab Sample ID: 320-68521-3

No Detections.

Client Sample ID: PW-012 — Lab Sample ID: 320-68521-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	3.3		1.8	0.45	ng/L	1		537.1 DW	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.1	J	1.8	0.45	ng/L	1		537.1 DW	Total/NA
Perfluorooctanoic acid (PFOA)	0.47	J	1.8	0.45	ng/L	1		537.1 DW	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.59	J	1.8	0.45	ng/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	8.5		1.8	0.45	ng/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	12		1.8	0.45	ng/L	1		537.1 DW	Total/NA

Client Sample ID: PW-138 — Lab Sample ID: 320-68521-5

No Detections.

Client Sample ID: PW-039 — Lab Sample ID: 320-68521-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.54	J	1.8	0.46	ng/L	1		537.1 DW	Total/NA

Client Sample ID: PW-037 — Lab Sample ID: 320-68521-7

No Detections.

Client Sample ID: PW-221 — Lab Sample ID: 320-68521-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	1.2	J	2.0	0.49	ng/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.6	J	2.0	0.49	ng/L	1		537.1 DW	Total/NA

Client Sample ID: PW-040 — Lab Sample ID: 320-68521-9

No Detections.

Client Sample ID: PW-203 — Lab Sample ID: 320-68521-10

No Detections.

Client Sample ID: PW-016 — Lab Sample ID: 320-68521-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	7.3		1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.4		1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorooctanoic acid (PFOA)	8.6		1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.2	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.3	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.69	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: DOT-DF GUS PFAS

Job ID: 320-68521-1

Client Sample ID: PW-010 — Lab Sample ID: 320-68521-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	0.46	J	1.8	0.46	ng/L	1		537.1 DW	Total/NA

Client Sample ID: PW-059 — Lab Sample ID: 320-68521-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.55	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorooctanoic acid (PFOA)	0.70	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.72	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.6	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.0	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA

Client Sample ID: PW-235 — Lab Sample ID: 320-68521-14

No Detections.

Client Sample ID: PW-211 — Lab Sample ID: 320-68521-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	0.60	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1.9		1.9	0.48	ng/L	1		537.1 DW	Total/NA

Client Sample ID: PW-501 — Lab Sample ID: 320-68521-16

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	2.8		2.0	0.49	ng/L	1		537.1 DW	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.1	J	2.0	0.49	ng/L	1		537.1 DW	Total/NA
Perfluorooctanoic acid (PFOA)	0.51	J	2.0	0.49	ng/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	6.9		2.0	0.49	ng/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	30		2.0	0.49	ng/L	1		537.1 DW	Total/NA

Client Sample ID: PW-218 — Lab Sample ID: 320-68521-17

No Detections.

Client Sample ID: PW-401 — Lab Sample ID: 320-68521-18

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	2.6		2.0	0.50	ng/L	1		537.1 DW	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.0	J	2.0	0.50	ng/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	6.6		2.0	0.50	ng/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	28		2.0	0.50	ng/L	1		537.1 DW	Total/NA

This Detection Summary does not include radiochemical test results.

Client: Shannon & Wilson, Inc
Project/Site: DOT-DF GUS PFAS

Job ID: 320-68521-1

Client Sample ID: PW-038
Date Collected: 12/31/20 13:29
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68521-1
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.48	ng/L		01/11/21 04:54	01/11/21 14:30	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.48	ng/L		01/11/21 04:54	01/11/21 14:30	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.48	ng/L		01/11/21 04:54	01/11/21 14:30	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.48	ng/L		01/11/21 04:54	01/11/21 14:30	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.48	ng/L		01/11/21 04:54	01/11/21 14:30	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.48	ng/L		01/11/21 04:54	01/11/21 14:30	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.48	ng/L		01/11/21 04:54	01/11/21 14:30	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.48	ng/L		01/11/21 04:54	01/11/21 14:30	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.48	ng/L		01/11/21 04:54	01/11/21 14:30	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.48	ng/L		01/11/21 04:54	01/11/21 14:30	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.48	ng/L		01/11/21 04:54	01/11/21 14:30	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.48	ng/L		01/11/21 04:54	01/11/21 14:30	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.48	ng/L		01/11/21 04:54	01/11/21 14:30	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.48	ng/L		01/11/21 04:54	01/11/21 14:30	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.48	ng/L		01/11/21 04:54	01/11/21 14:30	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.48	ng/L		01/11/21 04:54	01/11/21 14:30	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.48	ng/L		01/11/21 04:54	01/11/21 14:30	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.48	ng/L		01/11/21 04:54	01/11/21 14:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*90*		*70 - 130*	*01/11/21 04:54*	*01/11/21 14:30*	*1*
13C2 PFDA	*86*		*70 - 130*	*01/11/21 04:54*	*01/11/21 14:30*	*1*
d5-NEtFOSAA	*84*		*70 - 130*	*01/11/21 04:54*	*01/11/21 14:30*	*1*
13C3 HFPO-DA	*83*		*70 - 130*	*01/11/21 04:54*	*01/11/21 14:30*	*1*

Client: Shannon & Wilson, Inc
Project/Site: DOT-DF GUS PFAS

Job ID: 320-68521-1

Client Sample ID: PW-321
Date Collected: 12/30/20 09:40
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68521-2
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 14:25	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 14:25	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 14:25	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 14:25	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 14:25	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 14:25	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 14:25	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 14:25	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 14:25	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 14:25	1
Perfluorohexanesulfonic acid (PFHxS)	**1.3**	**J**	1.9	0.48	ng/L		01/09/21 05:11	01/09/21 14:25	1
Perfluorooctanesulfonic acid (PFOS)	**1.7**	**J**	1.9	0.48	ng/L		01/09/21 05:11	01/09/21 14:25	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 14:25	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 14:25	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 14:25	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 14:25	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 14:25	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 14:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*86*		*70 - 130*	*01/09/21 05:11*	*01/09/21 14:25*	*1*
13C2 PFDA	*83*		*70 - 130*	*01/09/21 05:11*	*01/09/21 14:25*	*1*
d5-NEtFOSAA	*77*		*70 - 130*	*01/09/21 05:11*	*01/09/21 14:25*	*1*
13C3 HFPO-DA	*76*		*70 - 130*	*01/09/21 05:11*	*01/09/21 14:25*	*1*

Client: Shannon & Wilson, Inc
Project/Site: DOT-DF GUS PFAS

Job ID: 320-68521-1

Client Sample ID: PW-466
Date Collected: 01/01/21 11:29
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68521-3
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 14:32	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 14:32	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 14:32	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 14:32	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 14:32	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 14:32	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 14:32	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 14:32	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 14:32	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 14:32	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 14:32	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 14:32	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 14:32	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 14:32	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 14:32	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 14:32	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 14:32	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 14:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*84*		*70 - 130*	*01/09/21 05:11*	*01/09/21 14:32*	*1*
13C2 PFDA	*80*		*70 - 130*	*01/09/21 05:11*	*01/09/21 14:32*	*1*
d5-NEtFOSAA	*77*		*70 - 130*	*01/09/21 05:11*	*01/09/21 14:32*	*1*
13C3 HFPO-DA	*77*		*70 - 130*	*01/09/21 05:11*	*01/09/21 14:32*	*1*

Client: Shannon & Wilson, Inc
Project/Site: DOT-DF GUS PFAS

Job ID: 320-68521-1

Client Sample ID: PW-012
Date Collected: 01/02/21 13:11
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68521-4
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**3.3**		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 14:40	1
Perfluoroheptanoic acid (PFHpA)	**1.1**	**J**	1.8	0.45	ng/L		01/09/21 05:11	01/09/21 14:40	1
Perfluorooctanoic acid (PFOA)	**0.47**	**J**	1.8	0.45	ng/L		01/09/21 05:11	01/09/21 14:40	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 14:40	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 14:40	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 14:40	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 14:40	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 14:40	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 14:40	1
Perfluorobutanesulfonic acid (PFBS)	**0.59**	**J**	1.8	0.45	ng/L		01/09/21 05:11	01/09/21 14:40	1
Perfluorohexanesulfonic acid (PFHxS)	**8.5**		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 14:40	1
Perfluorooctanesulfonic acid (PFOS)	**12**		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 14:40	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 14:40	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 14:40	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 14:40	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 14:40	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 14:40	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 14:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*88*		*70 - 130*	*01/09/21 05:11*	*01/09/21 14:40*	*1*
13C2 PFDA	*83*		*70 - 130*	*01/09/21 05:11*	*01/09/21 14:40*	*1*
d5-NEtFOSAA	*79*		*70 - 130*	*01/09/21 05:11*	*01/09/21 14:40*	*1*
13C3 HFPO-DA	*78*		*70 - 130*	*01/09/21 05:11*	*01/09/21 14:40*	*1*

Client Sample ID: PW-138

Date Collected: 12/31/20 13:19
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68521-5

Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 14:48	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 14:48	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 14:48	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 14:48	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 14:48	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 14:48	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 14:48	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 14:48	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 14:48	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 14:48	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 14:48	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 14:48	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 14:48	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 14:48	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 14:48	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 14:48	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 14:48	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 14:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*83*		*70 - 130*	*01/09/21 05:11*	*01/09/21 14:48*	*1*
13C2 PFDA	*84*		*70 - 130*	*01/09/21 05:11*	*01/09/21 14:48*	*1*
d5-NEtFOSAA	*81*		*70 - 130*	*01/09/21 05:11*	*01/09/21 14:48*	*1*
13C3 HFPO-DA	*74*		*70 - 130*	*01/09/21 05:11*	*01/09/21 14:48*	*1*

Client: Shannon & Wilson, Inc
Project/Site: DOT-DF GUS PFAS

Job ID: 320-68521-1

Client Sample ID: PW-039
Date Collected: 12/31/20 14:28
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68521-6
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**0.54**	**J**	1.8	0.46	ng/L		01/09/21 05:11	01/09/21 14:55	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 14:55	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 14:55	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 14:55	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 14:55	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 14:55	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 14:55	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 14:55	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 14:55	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 14:55	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 14:55	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 14:55	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 14:55	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 14:55	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 14:55	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 14:55	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 14:55	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 14:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*91*		*70 - 130*	*01/09/21 05:11*	*01/09/21 14:55*	*1*
13C2 PFDA	*85*		*70 - 130*	*01/09/21 05:11*	*01/09/21 14:55*	*1*
d5-NEtFOSAA	*78*		*70 - 130*	*01/09/21 05:11*	*01/09/21 14:55*	*1*
13C3 HFPO-DA	*79*		*70 - 130*	*01/09/21 05:11*	*01/09/21 14:55*	*1*

Client: Shannon & Wilson, Inc
Project/Site: DOT-DF GUS PFAS

Job ID: 320-68521-1

Client Sample ID: PW-037
Date Collected: 12/31/20 14:00
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68521-7
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 15:03	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 15:03	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 15:03	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 15:03	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 15:03	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 15:03	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 15:03	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 15:03	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 15:03	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 15:03	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 15:03	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 15:03	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 15:03	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 15:03	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 15:03	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 15:03	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 15:03	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 15:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*89*		*70 - 130*	*01/09/21 05:11*	*01/09/21 15:03*	*1*
13C2 PFDA	*86*		*70 - 130*	*01/09/21 05:11*	*01/09/21 15:03*	*1*
d5-NEtFOSAA	*79*		*70 - 130*	*01/09/21 05:11*	*01/09/21 15:03*	*1*
13C3 HFPO-DA	*79*		*70 - 130*	*01/09/21 05:11*	*01/09/21 15:03*	*1*

Client: Shannon & Wilson, Inc
Project/Site: DOT-DF GUS PFAS

Job ID: 320-68521-1

Client Sample ID: PW-221
Date Collected: 12/30/20 09:50
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68521-8
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.49	ng/L		01/09/21 05:11	01/09/21 15:49	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.49	ng/L		01/09/21 05:11	01/09/21 15:49	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.49	ng/L		01/09/21 05:11	01/09/21 15:49	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.49	ng/L		01/09/21 05:11	01/09/21 15:49	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.49	ng/L		01/09/21 05:11	01/09/21 15:49	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.49	ng/L		01/09/21 05:11	01/09/21 15:49	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.49	ng/L		01/09/21 05:11	01/09/21 15:49	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	0.49	ng/L		01/09/21 05:11	01/09/21 15:49	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.49	ng/L		01/09/21 05:11	01/09/21 15:49	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.49	ng/L		01/09/21 05:11	01/09/21 15:49	1
Perfluorohexanesulfonic acid (PFHxS)	**1.2**	**J**	2.0	0.49	ng/L		01/09/21 05:11	01/09/21 15:49	1
Perfluorooctanesulfonic acid (PFOS)	**1.6**	**J**	2.0	0.49	ng/L		01/09/21 05:11	01/09/21 15:49	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.0	0.49	ng/L		01/09/21 05:11	01/09/21 15:49	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.0	0.49	ng/L		01/09/21 05:11	01/09/21 15:49	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		2.0	0.49	ng/L		01/09/21 05:11	01/09/21 15:49	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		2.0	0.49	ng/L		01/09/21 05:11	01/09/21 15:49	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		2.0	0.49	ng/L		01/09/21 05:11	01/09/21 15:49	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.49	ng/L		01/09/21 05:11	01/09/21 15:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*83*		*70 - 130*	*01/09/21 05:11*	*01/09/21 15:49*	*1*
13C2 PFDA	*79*		*70 - 130*	*01/09/21 05:11*	*01/09/21 15:49*	*1*
d5-NEtFOSAA	*75*		*70 - 130*	*01/09/21 05:11*	*01/09/21 15:49*	*1*
13C3 HFPO-DA	*75*		*70 - 130*	*01/09/21 05:11*	*01/09/21 15:49*	*1*

Client: Shannon & Wilson, Inc
Project/Site: DOT-DF GUS PFAS

Job ID: 320-68521-1

Client Sample ID: PW-040
Date Collected: 12/31/20 14:55
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68521-9
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 15:57	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 15:57	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 15:57	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 15:57	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 15:57	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 15:57	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 15:57	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 15:57	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 15:57	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 15:57	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 15:57	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 15:57	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 15:57	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 15:57	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 15:57	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 15:57	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 15:57	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.45	ng/L		01/09/21 05:11	01/09/21 15:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*86*		*70 - 130*	*01/09/21 05:11*	*01/09/21 15:57*	*1*
13C2 PFDA	*83*		*70 - 130*	*01/09/21 05:11*	*01/09/21 15:57*	*1*
d5-NEtFOSAA	*77*		*70 - 130*	*01/09/21 05:11*	*01/09/21 15:57*	*1*
13C3 HFPO-DA	*77*		*70 - 130*	*01/09/21 05:11*	*01/09/21 15:57*	*1*

Client: Shannon & Wilson, Inc
Project/Site: DOT-DF GUS PFAS

Job ID: 320-68521-1

Client Sample ID: PW-203
Date Collected: 12/31/20 09:29
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68521-10
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:05	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:05	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:05	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:05	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:05	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:05	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:05	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:05	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:05	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:05	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:05	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:05	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:05	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:05	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:05	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:05	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:05	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*84*		*70 - 130*	*01/09/21 05:11*	*01/09/21 16:05*	*1*
13C2 PFDA	*80*		*70 - 130*	*01/09/21 05:11*	*01/09/21 16:05*	*1*
d5-NEtFOSAA	*75*		*70 - 130*	*01/09/21 05:11*	*01/09/21 16:05*	*1*
13C3 HFPO-DA	*76*		*70 - 130*	*01/09/21 05:11*	*01/09/21 16:05*	*1*

Client Sample ID: PW-016

Date Collected: 12/29/20 14:26
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68521-11

Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**7.3**		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:13	1
Perfluoroheptanoic acid (PFHpA)	**3.4**		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:13	1
Perfluorooctanoic acid (PFOA)	**8.6**		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:13	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:13	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:13	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:13	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:13	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:13	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:13	1
Perfluorobutanesulfonic acid (PFBS)	**1.2**	**J**	1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:13	1
Perfluorohexanesulfonic acid (PFHxS)	**1.3**	**J**	1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:13	1
Perfluorooctanesulfonic acid (PFOS)	**0.69**	**J**	1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:13	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:13	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:13	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:13	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:13	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:13	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*89*		*70 - 130*	*01/09/21 05:11*	*01/09/21 16:13*	*1*
13C2 PFDA	*82*		*70 - 130*	*01/09/21 05:11*	*01/09/21 16:13*	*1*
d5-NEtFOSAA	*78*		*70 - 130*	*01/09/21 05:11*	*01/09/21 16:13*	*1*
13C3 HFPO-DA	*80*		*70 - 130*	*01/09/21 05:11*	*01/09/21 16:13*	*1*

Client: Shannon & Wilson, Inc
Project/Site: DOT-DF GUS PFAS

Job ID: 320-68521-1

Client Sample ID: PW-010
Date Collected: 12/30/20 10:29
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68521-12
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 16:20	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 16:20	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 16:20	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 16:20	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 16:20	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 16:20	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 16:20	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 16:20	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 16:20	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 16:20	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 16:20	1
Perfluorooctanesulfonic acid (PFOS)	**0.46**	**J**	1.8	0.46	ng/L		01/09/21 05:11	01/09/21 16:20	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 16:20	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 16:20	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 16:20	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 16:20	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 16:20	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.46	ng/L		01/09/21 05:11	01/09/21 16:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*86*		*70 - 130*	*01/09/21 05:11*	*01/09/21 16:20*	*1*
13C2 PFDA	*79*		*70 - 130*	*01/09/21 05:11*	*01/09/21 16:20*	*1*
d5-NEtFOSAA	*76*		*70 - 130*	*01/09/21 05:11*	*01/09/21 16:20*	*1*
13C3 HFPO-DA	*76*		*70 - 130*	*01/09/21 05:11*	*01/09/21 16:20*	*1*

Client Sample ID: PW-059

Date Collected: 12/30/20 14:38
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68521-13

Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**0.55**	**J**	1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:28	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:28	1
Perfluorooctanoic acid (PFOA)	**0.70**	**J**	1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:28	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:28	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:28	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:28	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:28	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:28	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:28	1
Perfluorobutanesulfonic acid (PFBS)	**0.72**	**J**	1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:28	1
Perfluorohexanesulfonic acid (PFHxS)	**1.6**	**J**	1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:28	1
Perfluorooctanesulfonic acid (PFOS)	**1.0**	**J**	1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:28	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:28	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:28	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:28	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:28	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:28	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*89*		*70 - 130*	*01/09/21 05:11*	*01/09/21 16:28*	*1*
13C2 PFDA	*84*		*70 - 130*	*01/09/21 05:11*	*01/09/21 16:28*	*1*
d5-NEtFOSAA	*79*		*70 - 130*	*01/09/21 05:11*	*01/09/21 16:28*	*1*
13C3 HFPO-DA	*79*		*70 - 130*	*01/09/21 05:11*	*01/09/21 16:28*	*1*

Client: Shannon & Wilson, Inc
Project/Site: DOT-DF GUS PFAS

Job ID: 320-68521-1

Client Sample ID: PW-235
Date Collected: 12/29/20 15:30
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68521-14
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:36	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:36	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:36	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:36	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:36	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:36	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:36	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:36	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:36	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:36	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:36	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:36	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:36	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:36	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:36	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:36	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:36	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*78*		*70 - 130*	*01/09/21 05:11*	*01/09/21 16:36*	*1*
13C2 PFDA	*76*		*70 - 130*	*01/09/21 05:11*	*01/09/21 16:36*	*1*
d5-NEtFOSAA	*77*		*70 - 130*	*01/09/21 05:11*	*01/09/21 16:36*	*1*
13C3 HFPO-DA	*70*		*70 - 130*	*01/09/21 05:11*	*01/09/21 16:36*	*1*

Client: Shannon & Wilson, Inc
Project/Site: DOT-DF GUS PFAS

Job ID: 320-68521-1

Client Sample ID: PW-211
Date Collected: 12/30/20 13:49
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68521-15
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:43	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:43	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:43	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:43	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:43	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:43	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:43	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:43	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:43	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:43	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:43	1
Perfluorooctanesulfonic acid (PFOS)	**0.60**	**J**	1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:43	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	**1.9**		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:43	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:43	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:43	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:43	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:43	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.48	ng/L		01/09/21 05:11	01/09/21 16:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*86*		*70 - 130*	*01/09/21 05:11*	*01/09/21 16:43*	*1*
13C2 PFDA	*80*		*70 - 130*	*01/09/21 05:11*	*01/09/21 16:43*	*1*
d5-NEtFOSAA	*72*		*70 - 130*	*01/09/21 05:11*	*01/09/21 16:43*	*1*
13C3 HFPO-DA	*76*		*70 - 130*	*01/09/21 05:11*	*01/09/21 16:43*	*1*

Client: Shannon & Wilson, Inc
Project/Site: DOT-DF GUS PFAS

Job ID: 320-68521-1

Client Sample ID: PW-501
Date Collected: 12/29/20 16:13
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68521-16
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**2.8**		2.0	0.49	ng/L		01/09/21 05:11	01/09/21 16:51	1
Perfluoroheptanoic acid (PFHpA)	**1.1**	**J**	2.0	0.49	ng/L		01/09/21 05:11	01/09/21 16:51	1
Perfluorooctanoic acid (PFOA)	**0.51**	**J**	2.0	0.49	ng/L		01/09/21 05:11	01/09/21 16:51	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.49	ng/L		01/09/21 05:11	01/09/21 16:51	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.49	ng/L		01/09/21 05:11	01/09/21 16:51	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.49	ng/L		01/09/21 05:11	01/09/21 16:51	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.49	ng/L		01/09/21 05:11	01/09/21 16:51	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	0.49	ng/L		01/09/21 05:11	01/09/21 16:51	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.49	ng/L		01/09/21 05:11	01/09/21 16:51	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.49	ng/L		01/09/21 05:11	01/09/21 16:51	1
Perfluorohexanesulfonic acid (PFHxS)	**6.9**		2.0	0.49	ng/L		01/09/21 05:11	01/09/21 16:51	1
Perfluorooctanesulfonic acid (PFOS)	**30**		2.0	0.49	ng/L		01/09/21 05:11	01/09/21 16:51	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.0	0.49	ng/L		01/09/21 05:11	01/09/21 16:51	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.0	0.49	ng/L		01/09/21 05:11	01/09/21 16:51	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		2.0	0.49	ng/L		01/09/21 05:11	01/09/21 16:51	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		2.0	0.49	ng/L		01/09/21 05:11	01/09/21 16:51	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		2.0	0.49	ng/L		01/09/21 05:11	01/09/21 16:51	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.49	ng/L		01/09/21 05:11	01/09/21 16:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*83*		*70 - 130*	*01/09/21 05:11*	*01/09/21 16:51*	*1*
13C2 PFDA	*82*		*70 - 130*	*01/09/21 05:11*	*01/09/21 16:51*	*1*
d5-NEtFOSAA	*78*		*70 - 130*	*01/09/21 05:11*	*01/09/21 16:51*	*1*
13C3 HFPO-DA	*74*		*70 - 130*	*01/09/21 05:11*	*01/09/21 16:51*	*1*

Client: Shannon & Wilson, Inc
Project/Site: DOT-DF GUS PFAS

Job ID: 320-68521-1

Client Sample ID: PW-218
Date Collected: 12/30/20 15:51
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68521-17
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.47	ng/L		01/09/21 05:11	01/09/21 16:59	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.47	ng/L		01/09/21 05:11	01/09/21 16:59	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.47	ng/L		01/09/21 05:11	01/09/21 16:59	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.47	ng/L		01/09/21 05:11	01/09/21 16:59	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.47	ng/L		01/09/21 05:11	01/09/21 16:59	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.47	ng/L		01/09/21 05:11	01/09/21 16:59	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.47	ng/L		01/09/21 05:11	01/09/21 16:59	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.47	ng/L		01/09/21 05:11	01/09/21 16:59	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.47	ng/L		01/09/21 05:11	01/09/21 16:59	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.47	ng/L		01/09/21 05:11	01/09/21 16:59	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.47	ng/L		01/09/21 05:11	01/09/21 16:59	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.47	ng/L		01/09/21 05:11	01/09/21 16:59	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.47	ng/L		01/09/21 05:11	01/09/21 16:59	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.47	ng/L		01/09/21 05:11	01/09/21 16:59	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.47	ng/L		01/09/21 05:11	01/09/21 16:59	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.47	ng/L		01/09/21 05:11	01/09/21 16:59	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.47	ng/L		01/09/21 05:11	01/09/21 16:59	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.47	ng/L		01/09/21 05:11	01/09/21 16:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*89*		*70 - 130*	*01/09/21 05:11*	*01/09/21 16:59*	*1*
13C2 PFDA	*84*		*70 - 130*	*01/09/21 05:11*	*01/09/21 16:59*	*1*
d5-NEtFOSAA	*77*		*70 - 130*	*01/09/21 05:11*	*01/09/21 16:59*	*1*
13C3 HFPO-DA	*82*		*70 - 130*	*01/09/21 05:11*	*01/09/21 16:59*	*1*

Client: Shannon & Wilson, Inc
Project/Site: DOT-DF GUS PFAS

Job ID: 320-68521-1

Client Sample ID: PW-401
Date Collected: 12/29/20 16:23
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68521-18
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**2.6**		2.0	0.50	ng/L		01/09/21 05:11	01/09/21 17:30	1
Perfluoroheptanoic acid (PFHpA)	**1.0**	**J**	2.0	0.50	ng/L		01/09/21 05:11	01/09/21 17:30	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.50	ng/L		01/09/21 05:11	01/09/21 17:30	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.50	ng/L		01/09/21 05:11	01/09/21 17:30	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.50	ng/L		01/09/21 05:11	01/09/21 17:30	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.50	ng/L		01/09/21 05:11	01/09/21 17:30	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.50	ng/L		01/09/21 05:11	01/09/21 17:30	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	0.50	ng/L		01/09/21 05:11	01/09/21 17:30	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.50	ng/L		01/09/21 05:11	01/09/21 17:30	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.50	ng/L		01/09/21 05:11	01/09/21 17:30	1
Perfluorohexanesulfonic acid (PFHxS)	**6.6**		2.0	0.50	ng/L		01/09/21 05:11	01/09/21 17:30	1
Perfluorooctanesulfonic acid (PFOS)	**28**		2.0	0.50	ng/L		01/09/21 05:11	01/09/21 17:30	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.0	0.50	ng/L		01/09/21 05:11	01/09/21 17:30	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.0	0.50	ng/L		01/09/21 05:11	01/09/21 17:30	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		2.0	0.50	ng/L		01/09/21 05:11	01/09/21 17:30	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		2.0	0.50	ng/L		01/09/21 05:11	01/09/21 17:30	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		2.0	0.50	ng/L		01/09/21 05:11	01/09/21 17:30	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.50	ng/L		01/09/21 05:11	01/09/21 17:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*86*		*70 - 130*	*01/09/21 05:11*	*01/09/21 17:30*	*1*
13C2 PFDA	*83*		*70 - 130*	*01/09/21 05:11*	*01/09/21 17:30*	*1*
d5-NEtFOSAA	*79*		*70 - 130*	*01/09/21 05:11*	*01/09/21 17:30*	*1*
13C3 HFPO-DA	*79*		*70 - 130*	*01/09/21 05:11*	*01/09/21 17:30*	*1*

Surrogate Summary

Client: Shannon & Wilson, Inc
Project/Site: DOT-DF GUS PFAS

Job ID: 320-68521-1

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 (70-130)	PFDA (70-130)	d5NEFOS (70-130)	HFPODA (70-130)
320-68521-1	PW-038	90	86	84	83
320-68521-2	PW-321	86	83	77	76
320-68521-3	PW-466	84	80	77	77
320-68521-4	PW-012	88	83	79	78
320-68521-5	PW-138	83	84	81	74
320-68521-6	PW-039	91	85	78	79
320-68521-7	PW-037	89	86	79	79
320-68521-8	PW-221	83	79	75	75
320-68521-9	PW-040	86	83	77	77
320-68521-10	PW-203	84	80	75	76
320-68521-11	PW-016	89	82	78	80
320-68521-12	PW-010	86	79	76	76
320-68521-13	PW-059	89	84	79	79
320-68521-14	PW-235	78	76	77	70
320-68521-15	PW-211	86	80	72	76
320-68521-16	PW-501	83	82	78	74
320-68521-17	PW-218	89	84	77	82
320-68521-18	PW-401	86	83	79	79
LCS 320-450305/2-A	Lab Control Sample	88	84	84	83
LCSD 320-450305/3-A	Lab Control Sample Dup	86	84	81	81
LLCS 320-449972/2-A	Lab Control Sample	83	79	80	76
LLCSD 320-449972/3-A	Lab Control Sample Dup	92	85	85	85
MB 320-449972/1-A	Method Blank	89	80	82	82
MB 320-450305/1-A	Method Blank	88	84	83	79

Surrogate Legend

PFHxA = 13C2 PFHxA
PFDA = 13C2 PFDA
d5NEFOS = d5-NEtFOSAA
HFPODA = 13C3 HFPO-DA

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Lab Sample ID: MB 320-449972/1-A
Matrix: Water
Analysis Batch: 450253

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 449972

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.50	ng/L		01/09/21 05:10	01/10/21 21:32	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.50	ng/L		01/09/21 05:10	01/10/21 21:32	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.50	ng/L		01/09/21 05:10	01/10/21 21:32	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.50	ng/L		01/09/21 05:10	01/10/21 21:32	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.50	ng/L		01/09/21 05:10	01/10/21 21:32	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.50	ng/L		01/09/21 05:10	01/10/21 21:32	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.50	ng/L		01/09/21 05:10	01/10/21 21:32	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	0.50	ng/L		01/09/21 05:10	01/10/21 21:32	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.50	ng/L		01/09/21 05:10	01/10/21 21:32	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.50	ng/L		01/09/21 05:10	01/10/21 21:32	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.50	ng/L		01/09/21 05:10	01/10/21 21:32	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.50	ng/L		01/09/21 05:10	01/10/21 21:32	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.0	0.50	ng/L		01/09/21 05:10	01/10/21 21:32	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.0	0.50	ng/L		01/09/21 05:10	01/10/21 21:32	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		2.0	0.50	ng/L		01/09/21 05:10	01/10/21 21:32	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		2.0	0.50	ng/L		01/09/21 05:10	01/10/21 21:32	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		2.0	0.50	ng/L		01/09/21 05:10	01/10/21 21:32	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.50	ng/L		01/09/21 05:10	01/10/21 21:32	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*89*		*70 - 130*	*01/09/21 05:10*	*01/10/21 21:32*	*1*
13C2 PFDA	*80*		*70 - 130*	*01/09/21 05:10*	*01/10/21 21:32*	*1*
d5-NEt FOSAA	*82*		*70 - 130*	*01/09/21 05:10*	*01/10/21 21:32*	*1*
13C3 HFPO-DA	*82*		*70 - 130*	*01/09/21 05:10*	*01/10/21 21:32*	*1*

Lab Sample ID: LLCS 320-449972/2-A
Matrix: Water
Analysis Batch: 450253

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 449972

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid (PFHxA)	4.00	3.44		ng/L		86	50 - 150
Perfluoroheptanoic acid (PFHpA)	4.00	3.62		ng/L		90	50 - 150
Perfluorooctanoic acid (PFOA)	4.00	3.60		ng/L		90	50 - 150
Perfluorononanoic acid (PFNA)	4.00	3.47		ng/L		87	50 - 150
Perfluorodecanoic acid (PFDA)	4.00	3.41		ng/L		85	50 - 150
Perfluoroundecanoic acid (PFUnA)	4.00	3.34		ng/L		84	50 - 150
Perfluorododecanoic acid (PFDoA)	4.00	3.24		ng/L		81	50 - 150
Perfluorotridecanoic acid (PFTriA)	4.00	3.50		ng/L		88	50 - 150
Perfluorotetradecanoic acid (PFTeA)	4.00	3.28		ng/L		82	50 - 150
Perfluorobutanesulfonic acid (PFBS)	3.54	3.49		ng/L		99	50 - 150

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: LLCS 320-449972/2-A
Matrix: Water
Analysis Batch: 450253

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 449972

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Perfluorohexanesulfonic acid (PFHxS)			3.64	3.62		ng/L		99	50 - 150		
Perfluorooctanesulfonic acid (PFOS)			3.71	3.47		ng/L		94	50 - 150		
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			4.00	3.02		ng/L		76	50 - 150		
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			4.00	3.29		ng/L		82	50 - 150		
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O			3.73	3.46		ng/L		93	50 - 150		
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF			3.77	3.69		ng/L		98	50 - 150		
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			4.00	3.63		ng/L		91	50 - 150		
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			3.77	3.48		ng/L		92	50 - 150		

Surrogate	*LLCS %Recovery*	*LLCS Qualifier*	*Limits*
13C2 PFHxA	*83*		*70 - 130*
13C2 PFDA	*79*		*70 - 130*
d5-NEt FOSAA	*80*		*70 - 130*
13C3 HFPO-DA	*76*		*70 - 130*

Lab Sample ID: LLCSD 320-449972/3-A
Matrix: Water
Analysis Batch: 450253

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 449972

Analyte			Spike Added	LLCSD Result	LLCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)			4.00	3.71		ng/L		93	50 - 150	8	50
Perfluoroheptanoic acid (PFHpA)			4.00	3.76		ng/L		94	50 - 150	4	50
Perfluorooctanoic acid (PFOA)			4.00	3.91		ng/L		98	50 - 150	8	50
Perfluorononanoic acid (PFNA)			4.00	3.86		ng/L		96	50 - 150	11	50
Perfluorodecanoic acid (PFDA)			4.00	3.53		ng/L		88	50 - 150	4	50
Perfluoroundecanoic acid (PFUnA)			4.00	3.61		ng/L		90	50 - 150	8	50
Perfluorododecanoic acid (PFDoA)			4.00	3.15		ng/L		79	50 - 150	3	50
Perfluorotridecanoic acid (PFTriA)			4.00	3.63		ng/L		91	50 - 150	4	50
Perfluorotetradecanoic acid (PFTeA)			4.00	3.39		ng/L		85	50 - 150	3	50
Perfluorobutanesulfonic acid (PFBS)			3.54	3.74		ng/L		106	50 - 150	7	50
Perfluorohexanesulfonic acid (PFHxS)			3.64	3.85		ng/L		106	50 - 150	6	50
Perfluorooctanesulfonic acid (PFOS)			3.71	3.76		ng/L		101	50 - 150	8	50
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			4.00	3.31		ng/L		83	50 - 150	9	50
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			4.00	3.63		ng/L		91	50 - 150	10	50
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O			3.73	3.62		ng/L		97	50 - 150	4	50

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: LLCSD 320-449972/3-A
Matrix: Water
Analysis Batch: 450253

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 449972

Analyte			Spike Added	LLCSD Result	LLCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF			3.77	3.50		ng/L		93	50 - 150	5	50
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			4.00	3.68		ng/L		92	50 - 150	2	50
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			3.77	3.84		ng/L		102	50 - 150	10	50

Surrogate	*LLCSD %Recovery*	*LLCSD Qualifier*	*Limits*
13C2 PFHxA	*92*		*70 - 130*
13C2 PFDA	*85*		*70 - 130*
d5-NEt FOSAA	*85*		*70 - 130*
13C3 HFPO-DA	*85*		*70 - 130*

Lab Sample ID: MB 320-450305/1-A
Matrix: Water
Analysis Batch: 450504

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 450305

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.50	ng/L		01/11/21 04:54	01/11/21 14:22	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.50	ng/L		01/11/21 04:54	01/11/21 14:22	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.50	ng/L		01/11/21 04:54	01/11/21 14:22	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.50	ng/L		01/11/21 04:54	01/11/21 14:22	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.50	ng/L		01/11/21 04:54	01/11/21 14:22	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.50	ng/L		01/11/21 04:54	01/11/21 14:22	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.50	ng/L		01/11/21 04:54	01/11/21 14:22	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	0.50	ng/L		01/11/21 04:54	01/11/21 14:22	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.50	ng/L		01/11/21 04:54	01/11/21 14:22	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.50	ng/L		01/11/21 04:54	01/11/21 14:22	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.50	ng/L		01/11/21 04:54	01/11/21 14:22	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.50	ng/L		01/11/21 04:54	01/11/21 14:22	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.0	0.50	ng/L		01/11/21 04:54	01/11/21 14:22	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.0	0.50	ng/L		01/11/21 04:54	01/11/21 14:22	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		2.0	0.50	ng/L		01/11/21 04:54	01/11/21 14:22	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		2.0	0.50	ng/L		01/11/21 04:54	01/11/21 14:22	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		2.0	0.50	ng/L		01/11/21 04:54	01/11/21 14:22	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.50	ng/L		01/11/21 04:54	01/11/21 14:22	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*88*		*70 - 130*	*01/11/21 04:54*	*01/11/21 14:22*	*1*
13C2 PFDA	*84*		*70 - 130*	*01/11/21 04:54*	*01/11/21 14:22*	*1*
d5-NEt FOSAA	*83*		*70 - 130*	*01/11/21 04:54*	*01/11/21 14:22*	*1*
13C3 HFPO-DA	*79*		*70 - 130*	*01/11/21 04:54*	*01/11/21 14:22*	*1*

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: LCS 320-450305/2-A
Matrix: Water
Analysis Batch: 450504

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 450305

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid (PFHxA)	160	149		ng/L		93	70 - 130
Perfluoroheptanoic acid (PFHpA)	160	155		ng/L		97	70 - 130
Perfluorooctanoic acid (PFOA)	160	148		ng/L		93	70 - 130
Perfluorononanoic acid (PFNA)	160	150		ng/L		94	70 - 130
Perfluorodecanoic acid (PFDA)	160	147		ng/L		92	70 - 130
Perfluoroundecanoic acid (PFUnA)	160	143		ng/L		89	70 - 130
Perfluorododecanoic acid (PFDoA)	160	149		ng/L		93	70 - 130
Perfluorotridecanoic acid (PFTriA)	160	155		ng/L		97	70 - 130
Perfluorotetradecanoic acid (PFTeA)	160	150		ng/L		94	70 - 130
Perfluorobutanesulfonic acid (PFBS)	141	143		ng/L		101	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	146	152		ng/L		105	70 - 130
Perfluorooctanesulfonic acid (PFOS)	148	143		ng/L		96	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	160	137		ng/L		86	70 - 130
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	160	145		ng/L		90	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	149	147		ng/L		99	70 - 130
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	151	149		ng/L		99	70 - 130
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	160	151		ng/L		94	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	151	147		ng/L		98	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*88*		*70 - 130*
13C2 PFDA	*84*		*70 - 130*
d5-NEt FOSAA	*84*		*70 - 130*
13C3 HFPO-DA	*83*		*70 - 130*

Lab Sample ID: LCSD 320-450305/3-A
Matrix: Water
Analysis Batch: 450504

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 450305

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	160	149		ng/L		93	70 - 130	1	30
Perfluoroheptanoic acid (PFHpA)	160	151		ng/L		94	70 - 130	2	30
Perfluorooctanoic acid (PFOA)	160	145		ng/L		90	70 - 130	3	30
Perfluorononanoic acid (PFNA)	160	152		ng/L		95	70 - 130	1	30
Perfluorodecanoic acid (PFDA)	160	147		ng/L		92	70 - 130	0	30
Perfluoroundecanoic acid (PFUnA)	160	146		ng/L		91	70 - 130	2	30
Perfluorododecanoic acid (PFDoA)	160	144		ng/L		90	70 - 130	3	30

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: LCSD 320-450305/3-A
Matrix: Water
Analysis Batch: 450504

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 450305

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorotridecanoic acid (PFTriA)			160	147		ng/L		92	70 - 130	5	30
Perfluorotetradecanoic acid (PFTeA)			160	148		ng/L		92	70 - 130	1	30
Perfluorobutanesulfonic acid (PFBS)			141	147		ng/L		104	70 - 130	3	30
Perfluorohexanesulfonic acid (PFHxS)			146	153		ng/L		105	70 - 130	0	30
Perfluorooctanesulfonic acid (PFOS)			148	150		ng/L		101	70 - 130	5	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			160	139		ng/L		87	70 - 130	1	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			160	142		ng/L		89	70 - 130	2	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O			149	154		ng/L		103	70 - 130	4	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF			151	154		ng/L		102	70 - 130	3	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			160	146		ng/L		92	70 - 130	3	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			151	147		ng/L		97	70 - 130	0	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*86*		*70 - 130*
13C2 PFDA	*84*		*70 - 130*
d5-NEt FOSAA	*81*		*70 - 130*
13C3 HFPO-DA	*81*		*70 - 130*

LCMS

Prep Batch: 449972

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-68521-2	PW-321	Total/NA	Water	537.1 DW	
320-68521-3	PW-466	Total/NA	Water	537.1 DW	
320-68521-4	PW-012	Total/NA	Water	537.1 DW	
320-68521-5	PW-138	Total/NA	Water	537.1 DW	
320-68521-6	PW-039	Total/NA	Water	537.1 DW	
320-68521-7	PW-037	Total/NA	Water	537.1 DW	
320-68521-8	PW-221	Total/NA	Water	537.1 DW	
320-68521-9	PW-040	Total/NA	Water	537.1 DW	
320-68521-10	PW-203	Total/NA	Water	537.1 DW	
320-68521-11	PW-016	Total/NA	Water	537.1 DW	
320-68521-12	PW-010	Total/NA	Water	537.1 DW	
320-68521-13	PW-059	Total/NA	Water	537.1 DW	
320-68521-14	PW-235	Total/NA	Water	537.1 DW	
320-68521-15	PW-211	Total/NA	Water	537.1 DW	
320-68521-16	PW-501	Total/NA	Water	537.1 DW	
320-68521-17	PW-218	Total/NA	Water	537.1 DW	
320-68521-18	PW-401	Total/NA	Water	537.1 DW	
MB 320-449972/1-A	Method Blank	Total/NA	Water	537.1 DW	
LLCS 320-449972/2-A	Lab Control Sample	Total/NA	Water	537.1 DW	
LLCSD 320-449972/3-A	Lab Control Sample Dup	Total/NA	Water	537.1 DW	

Analysis Batch: 450149

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-68521-2	PW-321	Total/NA	Water	537.1 DW	449972
320-68521-3	PW-466	Total/NA	Water	537.1 DW	449972
320-68521-4	PW-012	Total/NA	Water	537.1 DW	449972
320-68521-5	PW-138	Total/NA	Water	537.1 DW	449972
320-68521-6	PW-039	Total/NA	Water	537.1 DW	449972
320-68521-7	PW-037	Total/NA	Water	537.1 DW	449972

Analysis Batch: 450151

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-68521-8	PW-221	Total/NA	Water	537.1 DW	449972
320-68521-9	PW-040	Total/NA	Water	537.1 DW	449972
320-68521-10	PW-203	Total/NA	Water	537.1 DW	449972
320-68521-11	PW-016	Total/NA	Water	537.1 DW	449972
320-68521-12	PW-010	Total/NA	Water	537.1 DW	449972
320-68521-13	PW-059	Total/NA	Water	537.1 DW	449972
320-68521-14	PW-235	Total/NA	Water	537.1 DW	449972
320-68521-15	PW-211	Total/NA	Water	537.1 DW	449972
320-68521-16	PW-501	Total/NA	Water	537.1 DW	449972
320-68521-17	PW-218	Total/NA	Water	537.1 DW	449972

Analysis Batch: 450153

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-68521-18	PW-401	Total/NA	Water	537.1 DW	449972

Analysis Batch: 450253

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-449972/1-A	Method Blank	Total/NA	Water	537.1 DW	449972
LLCS 320-449972/2-A	Lab Control Sample	Total/NA	Water	537.1 DW	449972

LCMS (Continued)

Analysis Batch: 450253 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LLCSD 320-449972/3-A	Lab Control Sample Dup	Total/NA	Water	537.1 DW	449972

Prep Batch: 450305

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-68521-1	PW-038	Total/NA	Water	537.1 DW	
MB 320-450305/1-A	Method Blank	Total/NA	Water	537.1 DW	
LCS 320-450305/2-A	Lab Control Sample	Total/NA	Water	537.1 DW	
LCSD 320-450305/3-A	Lab Control Sample Dup	Total/NA	Water	537.1 DW	

Analysis Batch: 450504

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-68521-1	PW-038	Total/NA	Water	537.1 DW	450305
MB 320-450305/1-A	Method Blank	Total/NA	Water	537.1 DW	450305
LCS 320-450305/2-A	Lab Control Sample	Total/NA	Water	537.1 DW	450305
LCSD 320-450305/3-A	Lab Control Sample Dup	Total/NA	Water	537.1 DW	450305

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: DOT-DF GUS PFAS

Job ID: 320-68521-1

Client Sample ID: PW-038
Date Collected: 12/31/20 13:29
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68521-1
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	537.1 DW			262.3 mL	1.0 mL	450305	01/11/21 04:54	HK	TAL SAC
Total/NA	Analysis	537.1 DW		1			450504	01/11/21 14:30	SK	TAL SAC

Client Sample ID: PW-321
Date Collected: 12/30/20 09:40
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68521-2
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	537.1 DW			259.2 mL	1.00 mL	449972	01/09/21 05:11	NSS	TAL SAC
Total/NA	Analysis	537.1 DW		1			450149	01/09/21 14:25	D1R	TAL SAC

Client Sample ID: PW-466
Date Collected: 01/01/21 11:29
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68521-3
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	537.1 DW			276.7 mL	1.00 mL	449972	01/09/21 05:11	NSS	TAL SAC
Total/NA	Analysis	537.1 DW		1			450149	01/09/21 14:32	D1R	TAL SAC

Client Sample ID: PW-012
Date Collected: 01/02/21 13:11
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68521-4
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	537.1 DW			278.2 mL	1.00 mL	449972	01/09/21 05:11	NSS	TAL SAC
Total/NA	Analysis	537.1 DW		1			450149	01/09/21 14:40	D1R	TAL SAC

Client Sample ID: PW-138
Date Collected: 12/31/20 13:19
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68521-5
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	537.1 DW			274.2 mL	1.00 mL	449972	01/09/21 05:11	NSS	TAL SAC
Total/NA	Analysis	537.1 DW		1			450149	01/09/21 14:48	D1R	TAL SAC

Client Sample ID: PW-039
Date Collected: 12/31/20 14:28
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68521-6
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	537.1 DW			272.7 mL	1.00 mL	449972	01/09/21 05:11	NSS	TAL SAC
Total/NA	Analysis	537.1 DW		1			450149	01/09/21 14:55	D1R	TAL SAC

Client Sample ID: PW-037
Date Collected: 12/31/20 14:00
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68521-7
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	537.1 DW			274.2 mL	1.00 mL	449972	01/09/21 05:11	NSS	TAL SAC
Total/NA	Analysis	537.1 DW		1			450149	01/09/21 15:03	D1R	TAL SAC

Client Sample ID: PW-221
Date Collected: 12/30/20 09:50
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68521-8
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	537.1 DW			255 mL	1.00 mL	449972	01/09/21 05:11	NSS	TAL SAC
Total/NA	Analysis	537.1 DW		1			450151	01/09/21 15:49	D1R	TAL SAC

Client Sample ID: PW-040
Date Collected: 12/31/20 14:55
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68521-9
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	537.1 DW			276.3 mL	1.00 mL	449972	01/09/21 05:11	NSS	TAL SAC
Total/NA	Analysis	537.1 DW		1			450151	01/09/21 15:57	D1R	TAL SAC

Client Sample ID: PW-203
Date Collected: 12/31/20 09:29
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68521-10
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	537.1 DW			258 mL	1.00 mL	449972	01/09/21 05:11	NSS	TAL SAC
Total/NA	Analysis	537.1 DW		1			450151	01/09/21 16:05	D1R	TAL SAC

Client Sample ID: PW-016
Date Collected: 12/29/20 14:26
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68521-11
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	537.1 DW			261.5 mL	1.00 mL	449972	01/09/21 05:11	NSS	TAL SAC
Total/NA	Analysis	537.1 DW		1			450151	01/09/21 16:13	D1R	TAL SAC

Client Sample ID: PW-010
Date Collected: 12/30/20 10:29
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68521-12
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	537.1 DW			270.3 mL	1.00 mL	449972	01/09/21 05:11	NSS	TAL SAC
Total/NA	Analysis	537.1 DW		1			450151	01/09/21 16:20	D1R	TAL SAC

Client Sample ID: PW-059
Date Collected: 12/30/20 14:38
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68521-13
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	537.1 DW			261.2 mL	1.00 mL	449972	01/09/21 05:11	NSS	TAL SAC
Total/NA	Analysis	537.1 DW		1			450151	01/09/21 16:28	D1R	TAL SAC

Client Sample ID: PW-235
Date Collected: 12/29/20 15:30
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68521-14
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	537.1 DW			260.5 mL	1.00 mL	449972	01/09/21 05:11	NSS	TAL SAC
Total/NA	Analysis	537.1 DW		1			450151	01/09/21 16:36	D1R	TAL SAC

Client Sample ID: PW-211
Date Collected: 12/30/20 13:49
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68521-15
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	537.1 DW			262.2 mL	1.00 mL	449972	01/09/21 05:11	NSS	TAL SAC
Total/NA	Analysis	537.1 DW		1			450151	01/09/21 16:43	D1R	TAL SAC

Client Sample ID: PW-501
Date Collected: 12/29/20 16:13
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68521-16
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	537.1 DW			252.8 mL	1.00 mL	449972	01/09/21 05:11	NSS	TAL SAC
Total/NA	Analysis	537.1 DW		1			450151	01/09/21 16:51	D1R	TAL SAC

Client Sample ID: PW-218
Date Collected: 12/30/20 15:51
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68521-17
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	537.1 DW			267.6 mL	1.00 mL	449972	01/09/21 05:11	NSS	TAL SAC
Total/NA	Analysis	537.1 DW		1			450151	01/09/21 16:59	D1R	TAL SAC

Client Sample ID: PW-401
Date Collected: 12/29/20 16:23
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68521-18
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	537.1 DW			251.4 mL	1.00 mL	449972	01/09/21 05:11	NSS	TAL SAC
Total/NA	Analysis	537.1 DW		1			450153	01/09/21 17:30	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: DOT-DF GUS PFAS

Job ID: 320-68521-1

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	02-01-21
Louisiana	NELAP	01944	06-30-21
Maine	State	CA00004	04-14-22
Michigan	State	9947	08-03-23
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
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: DOT-DF GUS PFAS

Job ID: 320-68521-1

Method	Method Description	Protocol	Laboratory
537.1 DW	Perfluorinated Alkyl Acids (LC/MS)	EPA	TAL SAC
537.1 DW	Extraction of Perfluorinated Alkyl Acids	EPA	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

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: DOT-DF GUS PFAS

Job ID: 320-68521-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-68521-1	PW-038	Water	12/31/20 13:29	01/05/21 17:20	
320-68521-2	PW-321	Water	12/30/20 09:40	01/05/21 17:20	
320-68521-3	PW-466	Water	01/01/21 11:29	01/05/21 17:20	
320-68521-4	PW-012	Water	01/02/21 13:11	01/05/21 17:20	
320-68521-5	PW-138	Water	12/31/20 13:19	01/05/21 17:20	
320-68521-6	PW-039	Water	12/31/20 14:28	01/05/21 17:20	
320-68521-7	PW-037	Water	12/31/20 14:00	01/05/21 17:20	
320-68521-8	PW-221	Water	12/30/20 09:50	01/05/21 17:20	
320-68521-9	PW-040	Water	12/31/20 14:55	01/05/21 17:20	
320-68521-10	PW-203	Water	12/31/20 09:29	01/05/21 17:20	
320-68521-11	PW-016	Water	12/29/20 14:26	01/05/21 17:20	
320-68521-12	PW-010	Water	12/30/20 10:29	01/05/21 17:20	
320-68521-13	PW-059	Water	12/30/20 14:38	01/05/21 17:20	
320-68521-14	PW-235	Water	12/29/20 15:30	01/05/21 17:20	
320-68521-15	PW-211	Water	12/30/20 13:49	01/05/21 17:20	
320-68521-16	PW-501	Water	12/29/20 16:13	01/05/21 17:20	
320-68521-17	PW-218	Water	12/30/20 15:51	01/05/21 17:20	
320-68521-18	PW-401	Water	12/29/20 16:23	01/05/21 17:20	

CHAIN-OF-CUSTODY RECORD

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600
www.shannonwilson.com

Page 1 of 2

Laboratory Test America
Attn: D. Alltucker

Turn Around Time: ☐ Normal ☐ Rush — Please Specify

Quote No:

J-Flags: ☐ Yes ☐ No

Analytical Methods (include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	PFAS x 18	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
PW-038		1329	12/31/20	X	2	groundwater w/ Trizma
PW-321		0940	12/30/20	X		
PW-466		1129	1/1/21	X		
PW-012		1311	1/2/21	X		
~~PW-201~~		~~0839~~	~~12/30/20~~	X		
PW-138		1319	12/31/20	X		
PW-039		1428	12/31/20	X		
PW-037		1400	12/31/20	X		
PW-221		0950	12/30/20	X		
PW-040		1455	12/31/20	X		

320-68521 Chain of Custody

Project Information	
Number:	102599-013
Name:	DOT-DF GUS PFAS
Contact:	ICRF
Ongoing Project?	Yes ☒ No ☐
Sampler:	ARM

Sample Receipt	
Total No. of Containers:	2
COC Seals/Intact? Y/N/NA	Y
Received Good Cond./Cold	4.4°C
Temp:	↑ Yes
Delivery Method:	

Reliquished By: 1.	Reliquished By: 2.	Reliquished By: 3.
Signature:	Signature:	Signature:
Time: 0800	Time:	Time:
Printed Name: A. Masters	Printed Name:	Printed Name:
Date: 1/4/21	Date:	Date:
Company: Shannon + Wilson, Inc	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature:	Signature:	Signature:
Time: 1720	Time:	Time:
Printed Name: Jennifer Darlington	Printed Name:	Printed Name:
Date: 1/3/21	Date:	Date:
Company: ETAWSac	Company:	Company:

Notes:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

No. 36196

1/13/2021

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600
www.shannonwilson.com

CHAIN-OF-CUSTODY RECORD

Laboratory TestAmerica
Attn: D. Altwerker

Turn Around Time: [X] Normal [ ] Rush — Please Specify

Quote No:

J-Flags: [X] Yes [ ] No

Analytical Methods (include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	PFAS x 18	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
PW-203		0929	12/31/20	X	2	groundwater w/ Trizma
PW-016		1426	12/29/20	X		
PW-010		1029	12/30/20	X		
PW-059		1438	12/30/20	X		
PW-235		1530	12/29/20	X		
PW-211		1349	12/30/20	X		
PW-501		1613	12/29/20	X		
PW-218		1551	12/30/20	X		
PW-401		1623	12/29/20	X		

Project Information	
Number:	102599-013
Name:	DOT GUS PFAS
Contact:	KRF
Ongoing Project?	Yes [X] No [ ]
Sampler:	APM

Sample Receipt	
Total No of Containers:	2
COC Seals/Intact? Y/N/NA	Y
Received Good Cond./Cold	Y
Temp:	4.4
Delivery Method:	

Notes:

Reliquished By: 1.	Reliquished By: 2.	Reliquished By: 3.
Signature: Time: 1200	Signature: Time:	Signature: Time:
Printed Name: A. Masters Date: 1/4/21	Printed Name: Date:	Printed Name: Date:
Company: Shannon + Wilson, Inc	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time: 1226	Signature: Time:	Signature: Time:
Printed Name: Jennifer Darlington Date: 1/5/21	Printed Name: Date:	Printed Name: Date:
Company: ETA WSRC	Company:	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

No. 36197

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-68521-1

Login Number: 68521
List Number: 1
Creator: Her, David A

List Source: Eurofins TestAmerica, Sacramento

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	1469157/1469156
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:

January 13, 2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins / TestAmerica Laboratories, Inc. (TestAmerica)

Laboratory Report Number:

320-68521-1

Laboratory Report Date:

January 13, 2021

CS Site Name:

DOT&PF Gustavus Airport Statewide PFAS

ADEC File Number:

2569.38.033

Hazard Identification Number:

26981

320-68521-1

Laboratory Report Date:

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 DEC certified TestAmerica of West Sacramento, CA for the analysis of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) on February 6, 2018 by method 537. These compounds were included in the DEC'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:

   The requested analyses were conducted by TestAmerica of 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:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

   Yes☒ No☐ N/A☐ Comments:

   Samples were preserved with Trizma.

   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.

Laboratory Report Date:

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 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 case narrative indicates the following:
The following sample had floating particulates prior to extraction: *PW-211.*

The following samples were observed to be a light yellow in color prior to extraction: *PW-321, PW-466, PW-012, PW-039, PW-037, PW-221, PW-203, PW-016, PW-010, PW-059, PW-501, PW-218,* and *PW-401.*

The following samples are yellow contain a thin layer of sediment at the bottom of the bottles prior to extraction: *PW-321, PW-466, PW-012, PW-039, PW-037, PW-221, PW-203, PW-016, PW-010, PW-059, PW-501, PW-218,* and *PW-401* .

The following samples were yellow after final voluming: *PW-321, PW-012, PW-039, PW-037, PW-221, PW-203, PW-016, PW-010, PW-059, PW-501* and *PW-401.*

The following samples were light yellow after extraction and final voluming: *PW-466, PW-012,PW-037, PW-016, PW-010,* and *PW-218.*

The samples arrived in good condition and properly preserved. The temperature of the sample cooler received with this shipment was 4.4 º C upon arrival at the laboratory.

There was insufficient sample volume available to perform a matrix spike (MS) and MS duplicate (MSD) in conjunction with preparation batches 320-450305, 320-449972, and 320-449087.

Laboratory Report Date:

c. Were all corrective actions documented?

Yes☐ No☐ N/A☒ Comments:

Corrective actions were not required.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The case narrative does not identify an effect on the data quality and/or 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:

The reporting limits (RL) are less than the applicable DEC regulatory limit for the project.

e. Data quality or usability affected?

The 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:

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 blanks.

iv. 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 required. See above.

v. Data quality or usability affected?

Comments:

Results are 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:

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:

NA; 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:

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 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:

Insufficient sample volume was available to perform a MS/MSD with the associated preparatory batches. However, the laboratory analyzed an LCS and LCSD to assess laboratory accuracy and precision.

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:

MS and MSD samples were not analyzed for this work order.

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:

MS and MSD samples were not analyzed for this work order.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

NA; MS and MSD samples were not analyzed for this work order.

Laboratory Report Date:

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes☐ No☐ N/A☒ Comments:

MS and MSD samples were not analyzed for this work order.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The 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 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; 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. A trip blank is not required for the requested analysis.

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 for the requested analysis.

Laboratory Report Date:

iii. All results less than LOQ and project specified objectives?

Yes☐ No☐ N/A☒ Comments:

A trip blank is not required for the requested analysis.

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

NA; a trip blank is not required for the requested analysis.

v. Data quality or usability affected?

Comments:

The 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:

The field duplicate *pairs PW-221/PW-321, PW-038/PW-138,* and *PW-401/PW-501* were submitted with this work order; one for each day of sampling.

iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water, 50% soil)

RPD (%) = 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:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The 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:

Decontamination or equipment blank were not required for this project.

Laboratory Report Date:

i. All results less than LOQ and project specified objectives?

Yes☐ No☐ N/A☒ Comments:

Decontamination or equipment blank were not required for this project.

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

Decontamination or equipment blank were not required for this project.

iii. Data quality or usability affected?

Comments:

The 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:

No additional data flags are required.

KRF

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-68522-1
Client Project/Site: POE Gustavus

For:
Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

Attn: Kristen Freiburger

Authorized for release by:
1/19/2021 12:06:08 PM

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Table of Contents

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: POE Gustavus

Job ID: 320-68522-1

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.
¤	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

Job ID: 320-68522-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative
320-68522-1

Receipt
The samples were received on 1/5/2021 5:20 PM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.4º C.

LCMS
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep
Method 537.1 DW: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-448945.

Method 537.1 DW: The following samples PW-200 (320-68522-1) in preparation batch 320-448945 were light yellow prior to extraction.

Method 537.1 DW: The following samples PW-200 (320-68522-1) in preparation batch 320-448945 were yellow after extraction and final voluming.

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: POE Gustavus

Job ID: 320-68522-1

Client Sample ID: PW-200 — Lab Sample ID: 320-68522-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	3.3		1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.7	J	1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluorooctanoic acid (PFOA)	1.1	J	1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluorononanoic acid (PFNA)	0.78	J	1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluorodecanoic acid (PFDA)	0.88	J	1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluoroundecanoic acid (PFUnA)	0.84	J	1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluorododecanoic acid (PFDoA)	0.83	J	1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluorotridecanoic acid (PFTriA)	0.87	J	1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.79	J	1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.84	J	1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	7.6		1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	50		1.9	0.47	ng/L	1		537.1 DW	Total/NA
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.89	J	1.9	0.47	ng/L	1		537.1 DW	Total/NA
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.96	J	1.9	0.47	ng/L	1		537.1 DW	Total/NA
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	0.79	J	1.9	0.47	ng/L	1		537.1 DW	Total/NA
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	0.84	J	1.9	0.47	ng/L	1		537.1 DW	Total/NA

Client Sample ID: PW-200-C Port Composite — Lab Sample ID: 320-68522-2

No Detections.

Client Sample ID: PW-200-Sink — Lab Sample ID: 320-68522-8

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: PW-200

Date Collected: 12/30/20 11:39
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68522-1

Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	3.3		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 22:47	1
Perfluoroheptanoic acid (PFHpA)	1.7	J	1.9	0.47	ng/L		01/06/21 12:26	01/06/21 22:47	1
Perfluorooctanoic acid (PFOA)	1.1	J	1.9	0.47	ng/L		01/06/21 12:26	01/06/21 22:47	1
Perfluorononanoic acid (PFNA)	0.78	J	1.9	0.47	ng/L		01/06/21 12:26	01/06/21 22:47	1
Perfluorodecanoic acid (PFDA)	0.88	J	1.9	0.47	ng/L		01/06/21 12:26	01/06/21 22:47	1
Perfluoroundecanoic acid (PFUnA)	0.84	J	1.9	0.47	ng/L		01/06/21 12:26	01/06/21 22:47	1
Perfluorododecanoic acid (PFDoA)	0.83	J	1.9	0.47	ng/L		01/06/21 12:26	01/06/21 22:47	1
Perfluorotridecanoic acid (PFTriA)	0.87	J	1.9	0.47	ng/L		01/06/21 12:26	01/06/21 22:47	1
Perfluorotetradecanoic acid (PFTeA)	0.79	J	1.9	0.47	ng/L		01/06/21 12:26	01/06/21 22:47	1
Perfluorobutanesulfonic acid (PFBS)	0.84	J	1.9	0.47	ng/L		01/06/21 12:26	01/06/21 22:47	1
Perfluorohexanesulfonic acid (PFHxS)	7.6		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 22:47	1
Perfluorooctanesulfonic acid (PFOS)	50		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 22:47	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.89	J	1.9	0.47	ng/L		01/06/21 12:26	01/06/21 22:47	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.96	J	1.9	0.47	ng/L		01/06/21 12:26	01/06/21 22:47	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	0.79	J	1.9	0.47	ng/L		01/06/21 12:26	01/06/21 22:47	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	0.84	J	1.9	0.47	ng/L		01/06/21 12:26	01/06/21 22:47	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 22:47	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 22:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*94*		*70 - 130*	*01/06/21 12:26*	*01/06/21 22:47*	*1*
13C2 PFDA	*90*		*70 - 130*	*01/06/21 12:26*	*01/06/21 22:47*	*1*
d5-NEt FOSAA	*91*		*70 - 130*	*01/06/21 12:26*	*01/06/21 22:47*	*1*
13C3 HFPODA	*88*		*70 - 130*	*01/06/21 12:26*	*01/06/21 22:47*	*1*

Client Sample ID: PW-200-C Port Composite
Date Collected: 12/30/20 11:35
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68522-2
Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 22:54	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 22:54	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 22:54	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 22:54	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 22:54	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 22:54	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 22:54	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 22:54	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 22:54	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 22:54	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 22:54	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 22:54	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 22:54	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 22:54	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 22:54	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 22:54	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 22:54	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 22:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*92*		*70 - 130*	*01/06/21 12:26*	*01/06/21 22:54*	*1*
13C2 PFDA	*89*		*70 - 130*	*01/06/21 12:26*	*01/06/21 22:54*	*1*
d5-NEt FOSAA	*87*		*70 - 130*	*01/06/21 12:26*	*01/06/21 22:54*	*1*
13C3 HFPO-DA	*84*		*70 - 130*	*01/06/21 12:26*	*01/06/21 22:54*	*1*

Client Sample ID: PW-200-Sink

Date Collected: 12/30/20 11:09
Date Received: 01/05/21 17:20

Lab Sample ID: 320-68522-8

Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 23:02	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 23:02	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 23:02	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 23:02	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 23:02	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 23:02	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 23:02	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 23:02	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 23:02	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 23:02	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 23:02	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 23:02	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 23:02	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 23:02	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 23:02	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 23:02	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 23:02	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.47	ng/L		01/06/21 12:26	01/06/21 23:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*95*		*70 - 130*	*01/06/21 12:26*	*01/06/21 23:02*	*1*
13C2 PFDA	*86*		*70 - 130*	*01/06/21 12:26*	*01/06/21 23:02*	*1*
d5-NEt FOSAA	*90*		*70 - 130*	*01/06/21 12:26*	*01/06/21 23:02*	*1*
13C3 HFPO-DA	*83*		*70 - 130*	*01/06/21 12:26*	*01/06/21 23:02*	*1*

Surrogate Summary

Client: Shannon & Wilson, Inc
Project/Site: POE Gustavus

Job ID: 320-68522-1

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		PFHxA	PFDA	d5NEFOS	HFPODA
Lab Sample ID	Client Sample ID	(70-130)	(70-130)	(70-130)	(70-130)
320-68522-1	PW-200	94	90	91	88
320-68522-2	PW-200-C Port Composite	92	89	87	84
320-68522-8	PW-200-Sink	95	86	90	83
LCS 320-448945/2-A	Lab Control Sample	92	89	87	81
LCSD 320-448945/3-A	Lab Control Sample Dup	90	90	88	83
MB 320-448945/1-A	Method Blank	89	87	84	78

Surrogate Legend

PFHxA = 13C2 PFHxA
PFDA = 13C2 PFDA
d5NEFOS = d5-NEtFOSAA
HFPODA = 13C3 HFPO-DA

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Lab Sample ID: MB 320-448945/1-A
Matrix: Water
Analysis Batch: 449091

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 448945

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.50	ng/L		01/06/21 12:26	01/06/21 22:31	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.50	ng/L		01/06/21 12:26	01/06/21 22:31	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.50	ng/L		01/06/21 12:26	01/06/21 22:31	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.50	ng/L		01/06/21 12:26	01/06/21 22:31	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.50	ng/L		01/06/21 12:26	01/06/21 22:31	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.50	ng/L		01/06/21 12:26	01/06/21 22:31	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.50	ng/L		01/06/21 12:26	01/06/21 22:31	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	0.50	ng/L		01/06/21 12:26	01/06/21 22:31	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.50	ng/L		01/06/21 12:26	01/06/21 22:31	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.50	ng/L		01/06/21 12:26	01/06/21 22:31	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.50	ng/L		01/06/21 12:26	01/06/21 22:31	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.50	ng/L		01/06/21 12:26	01/06/21 22:31	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.0	0.50	ng/L		01/06/21 12:26	01/06/21 22:31	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.0	0.50	ng/L		01/06/21 12:26	01/06/21 22:31	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		2.0	0.50	ng/L		01/06/21 12:26	01/06/21 22:31	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		2.0	0.50	ng/L		01/06/21 12:26	01/06/21 22:31	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		2.0	0.50	ng/L		01/06/21 12:26	01/06/21 22:31	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.50	ng/L		01/06/21 12:26	01/06/21 22:31	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*89*		*70 - 130*	*01/06/21 12:26*	*01/06/21 22:31*	*1*
13C2 PFDA	*87*		*70 - 130*	*01/06/21 12:26*	*01/06/21 22:31*	*1*
d5-NEtFOSAA	*84*		*70 - 130*	*01/06/21 12:26*	*01/06/21 22:31*	*1*
13C3 HFPO-DA	*78*		*70 - 130*	*01/06/21 12:26*	*01/06/21 22:31*	*1*

Lab Sample ID: LCS 320-448945/2-A
Matrix: Water
Analysis Batch: 449091

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 448945

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid (PFHxA)	80.0	67.7		ng/L		85	70 - 130
Perfluoroheptanoic acid (PFHpA)	80.0	67.9		ng/L		85	70 - 130
Perfluorooctanoic acid (PFOA)	80.0	65.0		ng/L		81	70 - 130
Perfluorononanoic acid (PFNA)	80.0	68.3		ng/L		85	70 - 130
Perfluorodecanoic acid (PFDA)	80.0	67.3		ng/L		84	70 - 130
Perfluoroundecanoic acid (PFUnA)	80.0	66.2		ng/L		83	70 - 130
Perfluorododecanoic acid (PFDoA)	80.0	62.6		ng/L		78	70 - 130
Perfluorotridecanoic acid (PFTriA)	80.0	64.0		ng/L		80	70 - 130
Perfluorotetradecanoic acid (PFTeA)	80.0	63.6		ng/L		80	70 - 130
Perfluorobutanesulfonic acid (PFBS)	70.7	66.8		ng/L		94	70 - 130

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: LCS 320-448945/2-A
Matrix: Water
Analysis Batch: 449091

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 448945

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Perfluorohexanesulfonic acid (PFHxS)			72.8	68.4		ng/L		94	70 - 130		
Perfluorooctanesulfonic acid (PFOS)			74.2	64.9		ng/L		87	70 - 130		
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			80.0	66.0		ng/L		83	70 - 130		
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			80.0	66.2		ng/L		83	70 - 130		
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O			74.6	66.3		ng/L		89	70 - 130		
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF			75.4	67.3		ng/L		89	70 - 130		
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			80.0	63.4		ng/L		79	70 - 130		
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			75.4	66.1		ng/L		88	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*92*		*70 - 130*
13C2 PFDA	*89*		*70 - 130*
d5-NEtFOSAA	*87*		*70 - 130*
13C3 HFPO-DA	*81*		*70 - 130*

Lab Sample ID: LCSD 320-448945/3-A
Matrix: Water
Analysis Batch: 449091

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 448945

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)			80.0	69.0		ng/L		86	70 - 130	2	30
Perfluoroheptanoic acid (PFHpA)			80.0	72.4		ng/L		91	70 - 130	6	30
Perfluorooctanoic acid (PFOA)			80.0	68.2		ng/L		85	70 - 130	5	30
Perfluorononanoic acid (PFNA)			80.0	69.6		ng/L		87	70 - 130	2	30
Perfluorodecanoic acid (PFDA)			80.0	70.3		ng/L		88	70 - 130	4	30
Perfluoroundecanoic acid (PFUnA)			80.0	69.1		ng/L		86	70 - 130	4	30
Perfluorododecanoic acid (PFDoA)			80.0	66.3		ng/L		83	70 - 130	6	30
Perfluorotridecanoic acid (PFTriA)			80.0	66.1		ng/L		83	70 - 130	3	30
Perfluorotetradecanoic acid (PFTeA)			80.0	65.4		ng/L		82	70 - 130	3	30
Perfluorobutanesulfonic acid (PFBS)			70.7	65.8		ng/L		93	70 - 130	2	30
Perfluorohexanesulfonic acid (PFHxS)			72.8	67.5		ng/L		93	70 - 130	1	30
Perfluorooctanesulfonic acid (PFOS)			74.2	65.6		ng/L		88	70 - 130	1	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			80.0	67.6		ng/L		84	70 - 130	2	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			80.0	68.4		ng/L		85	70 - 130	3	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O			74.6	67.9		ng/L		91	70 - 130	2	30

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: LCSD 320-448945/3-A
Matrix: Water
Analysis Batch: 449091

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 448945

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF			75.4	67.5		ng/L		90	70 - 130	0	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			80.0	65.3		ng/L		82	70 - 130	3	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			75.4	69.0		ng/L		92	70 - 130	4	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*90*		*70 - 130*
13C2 PFDA	*90*		*70 - 130*
d5-NEtFOSAA	*88*		*70 - 130*
13C3 HFPO-DA	*83*		*70 - 130*

QC Association Summary

Client: Shannon & Wilson, Inc
Project/Site: POE Gustavus

Job ID: 320-68522-1

LCMS

Prep Batch: 448945

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-68522-1	PW-200	Total/NA	Water	537.1 DW	
320-68522-2	PW-200-C Port Composite	Total/NA	Water	537.1 DW	
320-68522-8	PW-200-Sink	Total/NA	Water	537.1 DW	
MB 320-448945/1-A	Method Blank	Total/NA	Water	537.1 DW	
LCS 320-448945/2-A	Lab Control Sample	Total/NA	Water	537.1 DW	
LCSD 320-448945/3-A	Lab Control Sample Dup	Total/NA	Water	537.1 DW	

Analysis Batch: 449091

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-68522-1	PW-200	Total/NA	Water	537.1 DW	448945
320-68522-2	PW-200-C Port Composite	Total/NA	Water	537.1 DW	448945
320-68522-8	PW-200-Sink	Total/NA	Water	537.1 DW	448945
MB 320-448945/1-A	Method Blank	Total/NA	Water	537.1 DW	448945
LCS 320-448945/2-A	Lab Control Sample	Total/NA	Water	537.1 DW	448945
LCSD 320-448945/3-A	Lab Control Sample Dup	Total/NA	Water	537.1 DW	448945

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: POE Gustavus

Job ID: 320-68522-1

Client Sample ID: PW-200

Lab Sample ID: 320-68522-1

Date Collected: 12/30/20 11:39

Matrix: Water

Date Received: 01/05/21 17:20

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			267.3 mL	1.00 mL	448945	01/06/21 12:26	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			449091	01/06/21 22:47	D1R	TAL SAC

Client Sample ID: PW-200-C Port Composite

Lab Sample ID: 320-68522-2

Date Collected: 12/30/20 11:35

Matrix: Water

Date Received: 01/05/21 17:20

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			268.2 mL	1.00 mL	448945	01/06/21 12:26	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			449091	01/06/21 22:54	D1R	TAL SAC

Client Sample ID: PW-200-Sink

Lab Sample ID: 320-68522-8

Date Collected: 12/30/20 11:09

Matrix: Water

Date Received: 01/05/21 17:20

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			267.8 mL	1.00 mL	448945	01/06/21 12:26	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			449091	01/06/21 23:02	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: POE Gustavus

Job ID: 320-68522-1

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	02-01-21
Louisiana	NELAP	01944	06-30-21
Maine	State	CA00004	04-14-22
Michigan	State	9947	08-03-23
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
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: POE Gustavus

Job ID: 320-68522-1

Method	Method Description	Protocol	Laboratory
537.1 DW	Perfluorinated Alkyl Acids (LC/MS)	EPA	TAL SAC
537.1 DW	Extraction of Perfluorinated Alkyl Acids	EPA	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

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: POE Gustavus

Job ID: 320-68522-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-68522-1	PW-200	Water	12/30/20 11:39	01/05/21 17:20	
320-68522-2	PW-200-C Port Composite	Water	12/30/20 11:35	01/05/21 17:20	
320-68522-8	PW-200-Sink	Water	12/30/20 11:09	01/05/21 17:20	

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600
www.shannonwilson.com

CHAIN-OF-CUSTODY RECORD

Laboratory TestAmerica
Attn: D. Allucker

Turn Around Time: [X] Normal [ ] Rush — Please Specify

Quote No:

J-Flags: [X] Yes [ ] No

Analytical Methods (include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	PFAS x18	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
PW-200	1139 ~~1135~~	~~1135~~	12/30/20	X	2	groundwater w/ Trizma
PW-200-CPort Composite	~~1135~~	1135	12/30/20	X		
*PW-200-Unit4 CPort		1131	12/30/20	X		*HOLD*
*PW-200-Unit3C Port		1128	12/30/20	X		*HOLD*
*PW-200-Unit1CPort		1120	12/30/20	X		*HOLD*
*PW-200-Unit2CPort		1124	12/30/20	X		*Hold*
PW-200-FPort		1111	12/30/20	X		
PW-200-Sink		1109	12/30/20	X		

320-68522 Chain of Custody

Project Information	
Number:	101543-001
Name:	POE Gustavus
Contact:	KLF
Ongoing Project?	Yes [X] No [ ]
Sampler:	ARM

Sample Receipt	
Total No. of Containers:	2
COC Seals/Intact? Y/N/NA	Y
Received Good Cond./Cold	Y
Temp:	4.4 °C
Delivery Method:	

Notes:

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Time: 0800	Signature: Time:	Signature: Time:
Printed Name: A Masters Date: 1/4/21	Printed Name: Date:	Printed Name: Date:
Company: Shannon+Wilson, Inc.	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time: 1720	Signature: Time:	Signature: Time:
Printed Name: Jennifer Darlington Date: 1/5/21	Printed Name: Date:	Printed Name: Date:
Company: ETAWSue	Company:	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

No. 36198

1/19/2021

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-68522-1

Login Number: 68522
List Number: 1
Creator: Her, David A

List Source: Eurofins TestAmerica, Sacramento

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	1469157/1469156
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:

January 20, 2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins / TestAmerica Laboratories, Inc. (TestAmerica)

Laboratory Report Number:

320-68522-1

Laboratory Report Date:

January 19, 2021

CS Site Name:

[redacted] POET

ADEC File Number:

1507.38.017

Hazard Identification Number:

26904

320-68522-1

Laboratory Report Date:

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 DEC certified TestAmerica of West Sacramento, CA for the analysis of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) on February 6, 2018 by method 537. These compounds were included in the DEC'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:

   The requested analyses were conducted by TestAmerica of 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:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

   Yes☒ No☐ N/A☐ Comments:

   Samples were preserved with Trizma™.

   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.

Laboratory Report Date:

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 receipt documentation does not note any discrepancies.

e. Data quality or usability affected?

Comments:

The 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 case narrative indicates the following:

The samples arrived in good condition and properly preserved. The temperature of the sample cooler received with this shipment was 4.4º C upon arrival at the laboratory.

The following sample was light yellow prior to extraction: *PW-200.*

The following sample was yellow after extraction and final voluming: *PW-200.*

There was insufficient sample volume available to perform a matrix spike (MS) and MS duplicate (MSD) in conjunction with preparation batch 320-448945.

c. Were all corrective actions documented?

Yes☐ No☐ N/A☒ Comments:

Corrective actions were not required.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

N/A; data quality/usability is not affected.

320-68522-1

Laboratory Report Date:

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 (RL) is less than the applicable DEC regulatory limit for the project.

e. Data quality or usability affected?

The 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:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes☒ No☐ N/A☐ Comments:

There were no detections in the method blank sample associated with these project samples.

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above.

Laboratory Report Date:

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes☐ No☐ N/A☒ Comments:

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/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:

N/A; see above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes☐ No☐ N/A☒ Comments:

Data is not affected; see above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The 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:

Insufficient sample volume was available to perform a MS/MSD with the associated preparatory batches. However, the laboratory analyzed LCS and LCSD samples to assess laboratory accuracy and precision.

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:

MS and MSD samples were not analyzed for this work order.

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:

MS and MSD samples were not analyzed for this work order.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

NA; MS and MSD samples were not analyzed for this work order.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes☐ No☐ N/A☒ Comments:

MS and MSD samples were not analyzed for this work order.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The 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 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; 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. A trip blank is not required for the requested analysis.

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 for the requested analysis.

iii. All results less than LOQ and project specified objectives?

Yes☐ No☐ N/A☒ Comments:

A trip blank is not required for the requested analysis.

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

NA; a trip blank is not required for the requested analysis.

v. Data quality or usability affected?

Comments:

The 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:

A field duplicate was not submitted with this work order.

ii. Submitted blind to lab?

Yes☐ No☐ N/A☒ Comments:

N/A; see above.

iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water, 50% soil)

RPD (%) = 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:

N/A; see above.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The 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:

Reusable equipment was not used for sample collection. Therefore, decontamination or equipment blank samples were not required. A peri-pump was used to collect the requested analytes.

i. All results less than LOQ and project specified objectives?

Yes☐ No☐ N/A☒ Comments:

See above.

Laboratory Report Date:

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above.

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:

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-71796-1
Client Project/Site: GUS PFAS PW
Revision: 1

For:
Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

Attn: Kristen Freiburger

Authorized for release by:
4/7/2021 1:53:29 PM

David Alltucker, Project Manager I
(916)374-4383
David.Alltucker@Eurofinset.com

Table of Contents

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS PW

Job ID: 320-71796-1

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
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

Job ID: 320-71796-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative
320-71796-1

Receipt
The samples were received on 3/29/2021 11:55 AM. 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 2.5º C.

Receipt Exceptions

The CoC lists sample ID as PW-011. Per client request on 3-29-2021 the sample ID has been changed to PW-10. PW-010 (320-71796-9)

LCMS
Method EPA 537(Mod): The "I" qualifier means the transition mass ratio for the indicated analyte was outside of the established ratio limit. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte. PW-208 (320-71796-3)

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 contained a small amount of sediment: NPS Well (320-71796-1), PW-501 (320-71796-2), PW-208 (320-71796-3), PW-221 (320-71796-4), PW-401 (320-71796-5), PW-112 (320-71796-6), PW-012 (320-71796-7), PW-010 (320-71796-9), PW-203 (320-71796-11), PW-037 (320-71796-12) and PW-039 (320-71796-16)

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-475229.

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: GUS PFAS PW

Job ID: 320-71796-1

Client Sample ID: NPS Well — Lab Sample ID: 320-71796-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	5.1		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)	2.7		1.9	0.79	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.0	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	10		1.9	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	7.1		1.9	0.50	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PW-501 — Lab Sample ID: 320-71796-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	3.5		1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.4	J	1.9	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.45	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	6.5		1.9	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	29		1.9	0.51	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PW-208 — Lab Sample ID: 320-71796-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	2.3		1.8	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.33	J I	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.52	J	1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.6	J	1.8	0.49	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PW-221 — Lab Sample ID: 320-71796-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.52	J	1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.90	J	1.8	0.51	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.1		1.8	0.49	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PW-401 — Lab Sample ID: 320-71796-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	4.4		1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.5	J	1.8	0.22	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1.0	J	1.8	0.76	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.74	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	7.7		1.8	0.51	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	30		1.8	0.48	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PW-112 — Lab Sample ID: 320-71796-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.62	J	1.8	0.51	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.3	J	1.8	0.50	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	6.1		1.8	0.48	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PW-012 — Lab Sample ID: 320-71796-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	1.5	J	1.8	0.51	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	7.7		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: GUS PFAS PW

Job ID: 320-71796-1

Client Sample ID: PW-211 — Lab Sample ID: 320-71796-8

No Detections.

Client Sample ID: PW-010 — Lab Sample ID: 320-71796-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	0.79	J	1.8	0.48	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PW-059 — Lab Sample ID: 320-71796-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.1	J	1.7	0.49	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.26	J	1.7	0.21	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	0.96	J	1.7	0.72	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.3	J	1.7	0.17	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.7		1.7	0.49	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.6	J	1.7	0.46	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PW-203 — Lab Sample ID: 320-71796-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorononanoic acid (PFNA)	0.50	J	1.7	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.90	J	1.7	0.49	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.8		1.7	0.46	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PW-037 — Lab Sample ID: 320-71796-12

No Detections.

Client Sample ID: PW-038 — Lab Sample ID: 320-71796-13

No Detections.

Client Sample ID: PW-141 — Lab Sample ID: 320-71796-14

No Detections.

Client Sample ID: PW-040 — Lab Sample ID: 320-71796-15

No Detections.

Client Sample ID: PW-039 — Lab Sample ID: 320-71796-16

No Detections.

This Detection Summary does not include radiochemical test results.

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS PW

Job ID: 320-71796-1

Client Sample ID: NPS Well

Date Collected: 03/25/21 09:16
Date Received: 03/29/21 17:16

Lab Sample ID: 320-71796-1

Matrix: Water

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)	**5.1**		1.9	0.54	ng/L		03/31/21 04:16	04/04/21 14:55	1
Perfluoroheptanoic acid (PFHpA)	**2.2**		1.9	0.23	ng/L		03/31/21 04:16	04/04/21 14:55	1
Perfluorooctanoic acid (PFOA)	**2.7**		1.9	0.79	ng/L		03/31/21 04:16	04/04/21 14:55	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		03/31/21 04:16	04/04/21 14:55	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		03/31/21 04:16	04/04/21 14:55	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		03/31/21 04:16	04/04/21 14:55	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		03/31/21 04:16	04/04/21 14:55	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		03/31/21 04:16	04/04/21 14:55	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		03/31/21 04:16	04/04/21 14:55	1
Perfluorobutanesulfonic acid (PFBS)	**1.0**	**J**	1.9	0.19	ng/L		03/31/21 04:16	04/04/21 14:55	1
Perfluorohexanesulfonic acid (PFHxS)	**10**		1.9	0.53	ng/L		03/31/21 04:16	04/04/21 14:55	1
Perfluorooctanesulfonic acid (PFOS)	**7.1**		1.9	0.50	ng/L		03/31/21 04:16	04/04/21 14:55	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		03/31/21 04:16	04/04/21 14:55	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		03/31/21 04:16	04/04/21 14:55	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		03/31/21 04:16	04/04/21 14:55	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		03/31/21 04:16	04/04/21 14:55	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		03/31/21 04:16	04/04/21 14:55	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		03/31/21 04:16	04/04/21 14:55	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*97*		*50 - 150*	*03/31/21 04:16*	*04/04/21 14:55*	*1*
13C4 PFHpA	*101*		*50 - 150*	*03/31/21 04:16*	*04/04/21 14:55*	*1*
13C4 PFOA	*100*		*50 - 150*	*03/31/21 04:16*	*04/04/21 14:55*	*1*
13C5 PFNA	*94*		*50 - 150*	*03/31/21 04:16*	*04/04/21 14:55*	*1*
13C2 PFDA	*98*		*50 - 150*	*03/31/21 04:16*	*04/04/21 14:55*	*1*
13C2 PFUnA	*85*		*50 - 150*	*03/31/21 04:16*	*04/04/21 14:55*	*1*
13C2 PFDoA	*84*		*50 - 150*	*03/31/21 04:16*	*04/04/21 14:55*	*1*
13C2 PFTeDA	*101*		*50 - 150*	*03/31/21 04:16*	*04/04/21 14:55*	*1*
13C3 PFBS	*90*		*50 - 150*	*03/31/21 04:16*	*04/04/21 14:55*	*1*
18O2 PFHxS	*89*		*50 - 150*	*03/31/21 04:16*	*04/04/21 14:55*	*1*
13C4 PFOS	*89*		*50 - 150*	*03/31/21 04:16*	*04/04/21 14:55*	*1*
d3-NMeFOSAA	*90*		*50 - 150*	*03/31/21 04:16*	*04/04/21 14:55*	*1*
d5-NEtFOSAA	*82*		*50 - 150*	*03/31/21 04:16*	*04/04/21 14:55*	*1*
13C3 HFPO-DA	*106*		*50 - 150*	*03/31/21 04:16*	*04/04/21 14:55*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS PW

Job ID: 320-71796-1

Client Sample ID: PW-501
Date Collected: 03/23/21 12:27
Date Received: 03/29/21 17:16

Lab Sample ID: 320-71796-2
Matrix: Water

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)	**3.5**		1.9	0.54	ng/L		03/31/21 04:16	04/04/21 15:04	1
Perfluoroheptanoic acid (PFHpA)	**1.4**	**J**	1.9	0.23	ng/L		03/31/21 04:16	04/04/21 15:04	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.80	ng/L		03/31/21 04:16	04/04/21 15:04	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		03/31/21 04:16	04/04/21 15:04	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		03/31/21 04:16	04/04/21 15:04	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		03/31/21 04:16	04/04/21 15:04	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		03/31/21 04:16	04/04/21 15:04	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		03/31/21 04:16	04/04/21 15:04	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		03/31/21 04:16	04/04/21 15:04	1
Perfluorobutanesulfonic acid (PFBS)	**0.45**	**J**	1.9	0.19	ng/L		03/31/21 04:16	04/04/21 15:04	1
Perfluorohexanesulfonic acid (PFHxS)	**6.5**		1.9	0.53	ng/L		03/31/21 04:16	04/04/21 15:04	1
Perfluorooctanesulfonic acid (PFOS)	**29**		1.9	0.51	ng/L		03/31/21 04:16	04/04/21 15:04	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		03/31/21 04:16	04/04/21 15:04	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		03/31/21 04:16	04/04/21 15:04	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		03/31/21 04:16	04/04/21 15:04	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		03/31/21 04:16	04/04/21 15:04	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		03/31/21 04:16	04/04/21 15:04	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		03/31/21 04:16	04/04/21 15:04	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*89*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:04*	*1*
13C4 PFHpA	*95*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:04*	*1*
13C4 PFOA	*101*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:04*	*1*
13C5 PFNA	*96*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:04*	*1*
13C2 PFDA	*91*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:04*	*1*
13C2 PFUnA	*89*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:04*	*1*
13C2 PFDoA	*98*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:04*	*1*
13C2 PFTeDA	*104*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:04*	*1*
13C3 PFBS	*77*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:04*	*1*
18O2 PFHxS	*94*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:04*	*1*
13C4 PFOS	*88*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:04*	*1*
d3-NMeFOSAA	*88*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:04*	*1*
d5-NEtFOSAA	*87*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:04*	*1*
13C3 HFPO-DA	*88*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:04*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS PW

Job ID: 320-71796-1

Client Sample ID: PW-208

Date Collected: 03/23/21 13:54
Date Received: 03/29/21 17:16

Lab Sample ID: 320-71796-3

Matrix: Water

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)	**2.3**		1.8	0.53	ng/L		03/31/21 04:16	04/04/21 15:14	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		03/31/21 04:16	04/04/21 15:14	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		03/31/21 04:16	04/04/21 15:14	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		03/31/21 04:16	04/04/21 15:14	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		03/31/21 04:16	04/04/21 15:14	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		03/31/21 04:16	04/04/21 15:14	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		03/31/21 04:16	04/04/21 15:14	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		03/31/21 04:16	04/04/21 15:14	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		03/31/21 04:16	04/04/21 15:14	1
Perfluorobutanesulfonic acid (PFBS)	**0.33**	**J I**	1.8	0.18	ng/L		03/31/21 04:16	04/04/21 15:14	1
Perfluorohexanesulfonic acid (PFHxS)	**0.52**	**J**	1.8	0.52	ng/L		03/31/21 04:16	04/04/21 15:14	1
Perfluorooctanesulfonic acid (PFOS)	**1.6**	**J**	1.8	0.49	ng/L		03/31/21 04:16	04/04/21 15:14	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		03/31/21 04:16	04/04/21 15:14	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		03/31/21 04:16	04/04/21 15:14	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		03/31/21 04:16	04/04/21 15:14	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		03/31/21 04:16	04/04/21 15:14	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		03/31/21 04:16	04/04/21 15:14	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		03/31/21 04:16	04/04/21 15:14	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*102*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:14*	*1*
13C4 PFHpA	*104*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:14*	*1*
13C4 PFOA	*103*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:14*	*1*
13C5 PFNA	*108*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:14*	*1*
13C2 PFDA	*103*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:14*	*1*
13C2 PFUnA	*102*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:14*	*1*
13C2 PFDoA	*102*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:14*	*1*
13C2 PFTeDA	*119*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:14*	*1*
13C3 PFBS	*87*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:14*	*1*
18O2 PFHxS	*106*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:14*	*1*
13C4 PFOS	*96*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:14*	*1*
d3-NMeFOSAA	*87*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:14*	*1*
d5-NEtFOSAA	*101*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:14*	*1*
13C3 HFPO-DA	*106*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:14*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS PW

Job ID: 320-71796-1

Client Sample ID: PW-221
Date Collected: 03/24/21 10:02
Date Received: 03/29/21 17:16

Lab Sample ID: 320-71796-4
Matrix: Water

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)	**0.52**	**J**	1.8	0.52	ng/L		03/31/21 04:16	04/04/21 15:23	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		03/31/21 04:16	04/04/21 15:23	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.76	ng/L		03/31/21 04:16	04/04/21 15:23	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		03/31/21 04:16	04/04/21 15:23	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		03/31/21 04:16	04/04/21 15:23	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		03/31/21 04:16	04/04/21 15:23	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		03/31/21 04:16	04/04/21 15:23	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		03/31/21 04:16	04/04/21 15:23	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		03/31/21 04:16	04/04/21 15:23	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		03/31/21 04:16	04/04/21 15:23	1
Perfluorohexanesulfonic acid (PFHxS)	**0.90**	**J**	1.8	0.51	ng/L		03/31/21 04:16	04/04/21 15:23	1
Perfluorooctanesulfonic acid (PFOS)	**2.1**		1.8	0.49	ng/L		03/31/21 04:16	04/04/21 15:23	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		03/31/21 04:16	04/04/21 15:23	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		03/31/21 04:16	04/04/21 15:23	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		03/31/21 04:16	04/04/21 15:23	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		03/31/21 04:16	04/04/21 15:23	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		03/31/21 04:16	04/04/21 15:23	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		03/31/21 04:16	04/04/21 15:23	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*104*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:23*	*1*
13C4 PFHpA	*100*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:23*	*1*
13C4 PFOA	*96*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:23*	*1*
13C5 PFNA	*101*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:23*	*1*
13C2 PFDA	*96*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:23*	*1*
13C2 PFUnA	*95*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:23*	*1*
13C2 PFDoA	*93*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:23*	*1*
13C2 PFTeDA	*99*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:23*	*1*
13C3 PFBS	*80*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:23*	*1*
18O2 PFHxS	*95*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:23*	*1*
13C4 PFOS	*89*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:23*	*1*
d3-NMeFOSAA	*80*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:23*	*1*
d5-NEtFOSAA	*84*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:23*	*1*
13C3 HFPO-DA	*96*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:23*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS PW

Job ID: 320-71796-1

Client Sample ID: PW-401

Date Collected: 03/23/21 12:37
Date Received: 03/29/21 17:16

Lab Sample ID: 320-71796-5

Matrix: Water

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)	**4.4**		1.8	0.52	ng/L		03/31/21 04:16	04/04/21 15:32	1
Perfluoroheptanoic acid (PFHpA)	**1.5**	**J**	1.8	0.22	ng/L		03/31/21 04:16	04/04/21 15:32	1
Perfluorooctanoic acid (PFOA)	**1.0**	**J**	1.8	0.76	ng/L		03/31/21 04:16	04/04/21 15:32	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		03/31/21 04:16	04/04/21 15:32	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		03/31/21 04:16	04/04/21 15:32	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.98	ng/L		03/31/21 04:16	04/04/21 15:32	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		03/31/21 04:16	04/04/21 15:32	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		03/31/21 04:16	04/04/21 15:32	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		03/31/21 04:16	04/04/21 15:32	1
Perfluorobutanesulfonic acid (PFBS)	**0.74**	**J**	1.8	0.18	ng/L		03/31/21 04:16	04/04/21 15:32	1
Perfluorohexanesulfonic acid (PFHxS)	**7.7**		1.8	0.51	ng/L		03/31/21 04:16	04/04/21 15:32	1
Perfluorooctanesulfonic acid (PFOS)	**30**		1.8	0.48	ng/L		03/31/21 04:16	04/04/21 15:32	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		03/31/21 04:16	04/04/21 15:32	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		03/31/21 04:16	04/04/21 15:32	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		03/31/21 04:16	04/04/21 15:32	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		03/31/21 04:16	04/04/21 15:32	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		03/31/21 04:16	04/04/21 15:32	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		03/31/21 04:16	04/04/21 15:32	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*80*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:32*	*1*
13C4 PFHpA	*94*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:32*	*1*
13C4 PFOA	*84*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:32*	*1*
13C5 PFNA	*86*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:32*	*1*
13C2 PFDA	*83*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:32*	*1*
13C2 PFUnA	*84*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:32*	*1*
13C2 PFDoA	*88*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:32*	*1*
13C2 PFTeDA	*101*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:32*	*1*
13C3 PFBS	*65*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:32*	*1*
18O2 PFHxS	*85*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:32*	*1*
13C4 PFOS	*80*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:32*	*1*
d3-NMeFOSAA	*77*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:32*	*1*
d5-NEtFOSAA	*75*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:32*	*1*
13C3 HFPO-DA	*89*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:32*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS PW

Job ID: 320-71796-1

Client Sample ID: PW-112
Date Collected: 03/24/21 14:55
Date Received: 03/29/21 17:16

Lab Sample ID: 320-71796-6
Matrix: Water

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)	**0.62**	**J**	1.8	0.51	ng/L		03/31/21 04:16	04/04/21 15:42	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		03/31/21 04:16	04/04/21 15:42	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.75	ng/L		03/31/21 04:16	04/04/21 15:42	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		03/31/21 04:16	04/04/21 15:42	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		03/31/21 04:16	04/04/21 15:42	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.97	ng/L		03/31/21 04:16	04/04/21 15:42	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		03/31/21 04:16	04/04/21 15:42	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.1	ng/L		03/31/21 04:16	04/04/21 15:42	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.64	ng/L		03/31/21 04:16	04/04/21 15:42	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		03/31/21 04:16	04/04/21 15:42	1
Perfluorohexanesulfonic acid (PFHxS)	**1.3**	**J**	1.8	0.50	ng/L		03/31/21 04:16	04/04/21 15:42	1
Perfluorooctanesulfonic acid (PFOS)	**6.1**		1.8	0.48	ng/L		03/31/21 04:16	04/04/21 15:42	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		03/31/21 04:16	04/04/21 15:42	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		03/31/21 04:16	04/04/21 15:42	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		03/31/21 04:16	04/04/21 15:42	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		03/31/21 04:16	04/04/21 15:42	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		03/31/21 04:16	04/04/21 15:42	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		03/31/21 04:16	04/04/21 15:42	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*102*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:42*	*1*
13C4 PFHpA	*105*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:42*	*1*
13C4 PFOA	*106*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:42*	*1*
13C5 PFNA	*106*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:42*	*1*
13C2 PFDA	*105*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:42*	*1*
13C2 PFUnA	*97*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:42*	*1*
13C2 PFDoA	*103*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:42*	*1*
13C2 PFTeDA	*119*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:42*	*1*
13C3 PFBS	*87*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:42*	*1*
18O2 PFHxS	*98*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:42*	*1*
13C4 PFOS	*99*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:42*	*1*
d3-NMeFOSAA	*83*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:42*	*1*
d5-NEtFOSAA	*86*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:42*	*1*
13C3 HFPO-DA	*96*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:42*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS PW

Job ID: 320-71796-1

Client Sample ID: PW-012
Date Collected: 03/24/21 15:05
Date Received: 03/29/21 17:16

Lab Sample ID: 320-71796-7
Matrix: Water

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	0.51	ng/L		03/31/21 04:16	04/04/21 15:51	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		03/31/21 04:16	04/04/21 15:51	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.75	ng/L		03/31/21 04:16	04/04/21 15:51	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		03/31/21 04:16	04/04/21 15:51	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		03/31/21 04:16	04/04/21 15:51	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.98	ng/L		03/31/21 04:16	04/04/21 15:51	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		03/31/21 04:16	04/04/21 15:51	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		03/31/21 04:16	04/04/21 15:51	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		03/31/21 04:16	04/04/21 15:51	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		03/31/21 04:16	04/04/21 15:51	1
Perfluorohexanesulfonic acid (PFHxS)	**1.5**	**J**	1.8	0.51	ng/L		03/31/21 04:16	04/04/21 15:51	1
Perfluorooctanesulfonic acid (PFOS)	**7.7**		1.8	0.48	ng/L		03/31/21 04:16	04/04/21 15:51	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		03/31/21 04:16	04/04/21 15:51	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.2	ng/L		03/31/21 04:16	04/04/21 15:51	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		03/31/21 04:16	04/04/21 15:51	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		03/31/21 04:16	04/04/21 15:51	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		03/31/21 04:16	04/04/21 15:51	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		03/31/21 04:16	04/04/21 15:51	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*81*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:51*	*1*
13C4 PFHpA	*85*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:51*	*1*
13C4 PFOA	*91*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:51*	*1*
13C5 PFNA	*91*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:51*	*1*
13C2 PFDA	*83*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:51*	*1*
13C2 PFUnA	*79*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:51*	*1*
13C2 PFDoA	*89*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:51*	*1*
13C2 PFTeDA	*98*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:51*	*1*
13C3 PFBS	*70*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:51*	*1*
18O2 PFHxS	*87*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:51*	*1*
13C4 PFOS	*76*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:51*	*1*
d3-NMeFOSAA	*71*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:51*	*1*
d5-NEtFOSAA	*66*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:51*	*1*
13C3 HFPO-DA	*86*		*50 - 150*	*03/31/21 04:16*	*04/04/21 15:51*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS PW

Job ID: 320-71796-1

Client Sample ID: PW-211
Date Collected: 03/24/21 09:23
Date Received: 03/29/21 17:16

Lab Sample ID: 320-71796-8
Matrix: Water

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		03/31/21 04:16	04/04/21 16:19	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		03/31/21 04:16	04/04/21 16:19	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		03/31/21 04:16	04/04/21 16:19	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		03/31/21 04:16	04/04/21 16:19	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		03/31/21 04:16	04/04/21 16:19	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		03/31/21 04:16	04/04/21 16:19	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		03/31/21 04:16	04/04/21 16:19	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		03/31/21 04:16	04/04/21 16:19	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		03/31/21 04:16	04/04/21 16:19	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		03/31/21 04:16	04/04/21 16:19	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		03/31/21 04:16	04/04/21 16:19	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		03/31/21 04:16	04/04/21 16:19	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		03/31/21 04:16	04/04/21 16:19	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		03/31/21 04:16	04/04/21 16:19	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		03/31/21 04:16	04/04/21 16:19	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		03/31/21 04:16	04/04/21 16:19	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		03/31/21 04:16	04/04/21 16:19	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		03/31/21 04:16	04/04/21 16:19	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*91*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:19*	*1*
13C4 PFHpA	*104*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:19*	*1*
13C4 PFOA	*98*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:19*	*1*
13C5 PFNA	*107*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:19*	*1*
13C2 PFDA	*93*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:19*	*1*
13C2 PFUnA	*88*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:19*	*1*
13C2 PFDoA	*97*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:19*	*1*
13C2 PFTeDA	*104*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:19*	*1*
13C3 PFBS	*71*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:19*	*1*
18O2 PFHxS	*92*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:19*	*1*
13C4 PFOS	*90*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:19*	*1*
d3-NMeFOSAA	*75*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:19*	*1*
d5-NEtFOSAA	*77*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:19*	*1*
13C3 HFPO-DA	*84*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:19*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS PW

Job ID: 320-71796-1

Client Sample ID: PW-010
Date Collected: 03/24/21 10:50
Date Received: 03/29/21 17:16

Lab Sample ID: 320-71796-9
Matrix: Water

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	0.51	ng/L		03/31/21 04:16	04/04/21 16:28	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		03/31/21 04:16	04/04/21 16:28	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.75	ng/L		03/31/21 04:16	04/04/21 16:28	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		03/31/21 04:16	04/04/21 16:28	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		03/31/21 04:16	04/04/21 16:28	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.97	ng/L		03/31/21 04:16	04/04/21 16:28	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.48	ng/L		03/31/21 04:16	04/04/21 16:28	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.1	ng/L		03/31/21 04:16	04/04/21 16:28	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.64	ng/L		03/31/21 04:16	04/04/21 16:28	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		03/31/21 04:16	04/04/21 16:28	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.50	ng/L		03/31/21 04:16	04/04/21 16:28	1
Perfluorooctanesulfonic acid (PFOS)	**0.79**	**J**	1.8	0.48	ng/L		03/31/21 04:16	04/04/21 16:28	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		03/31/21 04:16	04/04/21 16:28	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		03/31/21 04:16	04/04/21 16:28	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		03/31/21 04:16	04/04/21 16:28	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		03/31/21 04:16	04/04/21 16:28	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		03/31/21 04:16	04/04/21 16:28	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		03/31/21 04:16	04/04/21 16:28	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*97*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:28*	*1*
13C4 PFHpA	*98*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:28*	*1*
13C4 PFOA	*98*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:28*	*1*
13C5 PFNA	*103*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:28*	*1*
13C2 PFDA	*108*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:28*	*1*
13C2 PFUnA	*89*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:28*	*1*
13C2 PFDoA	*103*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:28*	*1*
13C2 PFTeDA	*114*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:28*	*1*
13C3 PFBS	*78*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:28*	*1*
18O2 PFHxS	*99*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:28*	*1*
13C4 PFOS	*95*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:28*	*1*
d3-NMeFOSAA	*82*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:28*	*1*
d5-NEtFOSAA	*90*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:28*	*1*
13C3 HFPO-DA	*98*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:28*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS PW

Job ID: 320-71796-1

Client Sample ID: PW-059

Date Collected: 03/24/21 12:10
Date Received: 03/29/21 17:16

Lab Sample ID: 320-71796-10

Matrix: Water

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)	**1.1**	**J**	1.7	0.49	ng/L		03/31/21 04:16	04/04/21 16:38	1
Perfluoroheptanoic acid (PFHpA)	**0.26**	**J**	1.7	0.21	ng/L		03/31/21 04:16	04/04/21 16:38	1
Perfluorooctanoic acid (PFOA)	**0.96**	**J**	1.7	0.72	ng/L		03/31/21 04:16	04/04/21 16:38	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		03/31/21 04:16	04/04/21 16:38	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		03/31/21 04:16	04/04/21 16:38	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.94	ng/L		03/31/21 04:16	04/04/21 16:38	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47	ng/L		03/31/21 04:16	04/04/21 16:38	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		03/31/21 04:16	04/04/21 16:38	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.62	ng/L		03/31/21 04:16	04/04/21 16:38	1
Perfluorobutanesulfonic acid (PFBS)	**1.3**	**J**	1.7	0.17	ng/L		03/31/21 04:16	04/04/21 16:38	1
Perfluorohexanesulfonic acid (PFHxS)	**1.7**		1.7	0.49	ng/L		03/31/21 04:16	04/04/21 16:38	1
Perfluorooctanesulfonic acid (PFOS)	**1.6**	**J**	1.7	0.46	ng/L		03/31/21 04:16	04/04/21 16:38	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.3	1.0	ng/L		03/31/21 04:16	04/04/21 16:38	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.3	1.1	ng/L		03/31/21 04:16	04/04/21 16:38	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		03/31/21 04:16	04/04/21 16:38	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		03/31/21 04:16	04/04/21 16:38	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		03/31/21 04:16	04/04/21 16:38	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.34	ng/L		03/31/21 04:16	04/04/21 16:38	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*92*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:38*	*1*
13C4 PFHpA	*89*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:38*	*1*
13C4 PFOA	*99*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:38*	*1*
13C5 PFNA	*96*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:38*	*1*
13C2 PFDA	*101*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:38*	*1*
13C2 PFUnA	*91*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:38*	*1*
13C2 PFDoA	*103*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:38*	*1*
13C2 PFTeDA	*108*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:38*	*1*
13C3 PFBS	*77*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:38*	*1*
18O2 PFHxS	*94*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:38*	*1*
13C4 PFOS	*86*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:38*	*1*
d3-NMeFOSAA	*89*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:38*	*1*
d5-NEtFOSAA	*89*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:38*	*1*
13C3 HFPO-DA	*98*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:38*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS PW

Job ID: 320-71796-1

Client Sample ID: PW-203
Date Collected: 03/23/21 17:24
Date Received: 03/29/21 17:16

Lab Sample ID: 320-71796-11
Matrix: Water

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		1.7	0.50	ng/L		03/31/21 04:16	04/04/21 16:47	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.21	ng/L		03/31/21 04:16	04/04/21 16:47	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.73	ng/L		03/31/21 04:16	04/04/21 16:47	1
Perfluorononanoic acid (PFNA)	**0.50**	**J**	1.7	0.23	ng/L		03/31/21 04:16	04/04/21 16:47	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		03/31/21 04:16	04/04/21 16:47	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.94	ng/L		03/31/21 04:16	04/04/21 16:47	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47	ng/L		03/31/21 04:16	04/04/21 16:47	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		03/31/21 04:16	04/04/21 16:47	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.63	ng/L		03/31/21 04:16	04/04/21 16:47	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		03/31/21 04:16	04/04/21 16:47	1
Perfluorohexanesulfonic acid (PFHxS)	**0.90**	**J**	1.7	0.49	ng/L		03/31/21 04:16	04/04/21 16:47	1
Perfluorooctanesulfonic acid (PFOS)	**1.8**		1.7	0.46	ng/L		03/31/21 04:16	04/04/21 16:47	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.3	1.0	ng/L		03/31/21 04:16	04/04/21 16:47	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.3	1.1	ng/L		03/31/21 04:16	04/04/21 16:47	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		03/31/21 04:16	04/04/21 16:47	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		03/31/21 04:16	04/04/21 16:47	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		03/31/21 04:16	04/04/21 16:47	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.34	ng/L		03/31/21 04:16	04/04/21 16:47	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*90*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:47*	*1*
13C4 PFHpA	*92*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:47*	*1*
13C4 PFOA	*99*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:47*	*1*
13C5 PFNA	*96*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:47*	*1*
13C2 PFDA	*101*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:47*	*1*
13C2 PFUnA	*79*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:47*	*1*
13C2 PFDoA	*93*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:47*	*1*
13C2 PFTeDA	*97*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:47*	*1*
13C3 PFBS	*69*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:47*	*1*
18O2 PFHxS	*93*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:47*	*1*
13C4 PFOS	*80*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:47*	*1*
d3-NMeFOSAA	*82*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:47*	*1*
d5-NEtFOSAA	*81*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:47*	*1*
13C3 HFPO-DA	*84*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:47*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS PW

Job ID: 320-71796-1

Client Sample ID: PW-037
Date Collected: 03/25/21 13:17
Date Received: 03/29/21 17:16

Lab Sample ID: 320-71796-12
Matrix: Water

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		1.7	0.50	ng/L		03/31/21 04:16	04/04/21 16:56	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.22	ng/L		03/31/21 04:16	04/04/21 16:56	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.74	ng/L		03/31/21 04:16	04/04/21 16:56	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.24	ng/L		03/31/21 04:16	04/04/21 16:56	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		03/31/21 04:16	04/04/21 16:56	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.96	ng/L		03/31/21 04:16	04/04/21 16:56	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		03/31/21 04:16	04/04/21 16:56	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		03/31/21 04:16	04/04/21 16:56	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.64	ng/L		03/31/21 04:16	04/04/21 16:56	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		03/31/21 04:16	04/04/21 16:56	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.50	ng/L		03/31/21 04:16	04/04/21 16:56	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.47	ng/L		03/31/21 04:16	04/04/21 16:56	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.0	ng/L		03/31/21 04:16	04/04/21 16:56	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		03/31/21 04:16	04/04/21 16:56	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		03/31/21 04:16	04/04/21 16:56	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		03/31/21 04:16	04/04/21 16:56	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		03/31/21 04:16	04/04/21 16:56	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.35	ng/L		03/31/21 04:16	04/04/21 16:56	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*104*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:56*	*1*
13C4 PFHpA	*103*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:56*	*1*
13C4 PFOA	*106*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:56*	*1*
13C5 PFNA	*107*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:56*	*1*
13C2 PFDA	*106*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:56*	*1*
13C2 PFUnA	*94*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:56*	*1*
13C2 PFDoA	*109*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:56*	*1*
13C2 PFTeDA	*121*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:56*	*1*
13C3 PFBS	*85*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:56*	*1*
18O2 PFHxS	*103*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:56*	*1*
13C4 PFOS	*101*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:56*	*1*
d3-NMeFOSAA	*86*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:56*	*1*
d5-NEtFOSAA	*85*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:56*	*1*
13C3 HFPO-DA	*94*		*50 - 150*	*03/31/21 04:16*	*04/04/21 16:56*	*1*

Client Sample ID: PW-038

Date Collected: 03/25/21 12:48
Date Received: 03/29/21 17:16

Lab Sample ID: 320-71796-13

Matrix: Water

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		1.6	0.48	ng/L		03/31/21 04:16	04/04/21 17:06	1
Perfluoroheptanoic acid (PFHpA)	ND		1.6	0.21	ng/L		03/31/21 04:16	04/04/21 17:06	1
Perfluorooctanoic acid (PFOA)	ND		1.6	0.70	ng/L		03/31/21 04:16	04/04/21 17:06	1
Perfluorononanoic acid (PFNA)	ND		1.6	0.22	ng/L		03/31/21 04:16	04/04/21 17:06	1
Perfluorodecanoic acid (PFDA)	ND		1.6	0.26	ng/L		03/31/21 04:16	04/04/21 17:06	1
Perfluoroundecanoic acid (PFUnA)	ND		1.6	0.91	ng/L		03/31/21 04:16	04/04/21 17:06	1
Perfluorododecanoic acid (PFDoA)	ND		1.6	0.45	ng/L		03/31/21 04:16	04/04/21 17:06	1
Perfluorotridecanoic acid (PFTriA)	ND		1.6	1.1	ng/L		03/31/21 04:16	04/04/21 17:06	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.6	0.60	ng/L		03/31/21 04:16	04/04/21 17:06	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.6	0.16	ng/L		03/31/21 04:16	04/04/21 17:06	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.6	0.47	ng/L		03/31/21 04:16	04/04/21 17:06	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.6	0.45	ng/L		03/31/21 04:16	04/04/21 17:06	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.1	0.99	ng/L		03/31/21 04:16	04/04/21 17:06	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.1	1.1	ng/L		03/31/21 04:16	04/04/21 17:06	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.6	0.20	ng/L		03/31/21 04:16	04/04/21 17:06	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.3	1.2	ng/L		03/31/21 04:16	04/04/21 17:06	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.6	0.26	ng/L		03/31/21 04:16	04/04/21 17:06	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.6	0.33	ng/L		03/31/21 04:16	04/04/21 17:06	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*91*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:06*	*1*
13C4 PFHpA	*102*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:06*	*1*
13C4 PFOA	*107*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:06*	*1*
13C5 PFNA	*112*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:06*	*1*
13C2 PFDA	*103*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:06*	*1*
13C2 PFUnA	*97*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:06*	*1*
13C2 PFDoA	*112*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:06*	*1*
13C2 PFTeDA	*133*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:06*	*1*
13C3 PFBS	*85*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:06*	*1*
18O2 PFHxS	*101*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:06*	*1*
13C4 PFOS	*100*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:06*	*1*
d3-NMeFOSAA	*95*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:06*	*1*
d5-NEtFOSAA	*96*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:06*	*1*
13C3 HFPO-DA	*93*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:06*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS PW

Job ID: 320-71796-1

Client Sample ID: PW-141
Date Collected: 03/25/21 12:04
Date Received: 03/29/21 17:16

Lab Sample ID: 320-71796-14
Matrix: Water

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		1.7	0.50	ng/L		03/31/21 04:16	04/04/21 17:15	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.22	ng/L		03/31/21 04:16	04/04/21 17:15	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.73	ng/L		03/31/21 04:16	04/04/21 17:15	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		03/31/21 04:16	04/04/21 17:15	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		03/31/21 04:16	04/04/21 17:15	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.95	ng/L		03/31/21 04:16	04/04/21 17:15	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47	ng/L		03/31/21 04:16	04/04/21 17:15	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		03/31/21 04:16	04/04/21 17:15	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.63	ng/L		03/31/21 04:16	04/04/21 17:15	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		03/31/21 04:16	04/04/21 17:15	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.49	ng/L		03/31/21 04:16	04/04/21 17:15	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.47	ng/L		03/31/21 04:16	04/04/21 17:15	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.3	1.0	ng/L		03/31/21 04:16	04/04/21 17:15	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.3	1.1	ng/L		03/31/21 04:16	04/04/21 17:15	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		03/31/21 04:16	04/04/21 17:15	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		03/31/21 04:16	04/04/21 17:15	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		03/31/21 04:16	04/04/21 17:15	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.35	ng/L		03/31/21 04:16	04/04/21 17:15	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*98*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:15*	*1*
13C4 PFHpA	*105*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:15*	*1*
13C4 PFOA	*105*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:15*	*1*
13C5 PFNA	*101*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:15*	*1*
13C2 PFDA	*100*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:15*	*1*
13C2 PFUnA	*92*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:15*	*1*
13C2 PFDoA	*112*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:15*	*1*
13C2 PFTeDA	*133*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:15*	*1*
13C3 PFBS	*86*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:15*	*1*
18O2 PFHxS	*109*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:15*	*1*
13C4 PFOS	*95*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:15*	*1*
d3-NMeFOSAA	*89*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:15*	*1*
d5-NEtFOSAA	*99*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:15*	*1*
13C3 HFPO-DA	*86*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:15*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS PW

Job ID: 320-71796-1

Client Sample ID: PW-040
Date Collected: 03/25/21 12:14
Date Received: 03/29/21 17:16

Lab Sample ID: 320-71796-15
Matrix: Water

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		03/31/21 04:16	04/04/21 17:25	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		03/31/21 04:16	04/04/21 17:25	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		03/31/21 04:16	04/04/21 17:25	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		03/31/21 04:16	04/04/21 17:25	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		03/31/21 04:16	04/04/21 17:25	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		03/31/21 04:16	04/04/21 17:25	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		03/31/21 04:16	04/04/21 17:25	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		03/31/21 04:16	04/04/21 17:25	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		03/31/21 04:16	04/04/21 17:25	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		03/31/21 04:16	04/04/21 17:25	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		03/31/21 04:16	04/04/21 17:25	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		03/31/21 04:16	04/04/21 17:25	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		03/31/21 04:16	04/04/21 17:25	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		03/31/21 04:16	04/04/21 17:25	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		03/31/21 04:16	04/04/21 17:25	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		03/31/21 04:16	04/04/21 17:25	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		03/31/21 04:16	04/04/21 17:25	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		03/31/21 04:16	04/04/21 17:25	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*89*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:25*	*1*
13C4 PFHpA	*98*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:25*	*1*
13C4 PFOA	*96*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:25*	*1*
13C5 PFNA	*98*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:25*	*1*
13C2 PFDA	*96*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:25*	*1*
13C2 PFUnA	*92*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:25*	*1*
13C2 PFDoA	*109*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:25*	*1*
13C2 PFTeDA	*130*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:25*	*1*
13C3 PFBS	*77*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:25*	*1*
18O2 PFHxS	*94*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:25*	*1*
13C4 PFOS	*90*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:25*	*1*
d3-NMeFOSAA	*82*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:25*	*1*
d5-NEtFOSAA	*94*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:25*	*1*
13C3 HFPO-DA	*86*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:25*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS PW

Job ID: 320-71796-1

Client Sample ID: PW-039
Date Collected: 03/25/21 13:45
Date Received: 03/29/21 17:16

Lab Sample ID: 320-71796-16
Matrix: Water

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		03/31/21 04:16	04/04/21 17:34	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		03/31/21 04:16	04/04/21 17:34	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.76	ng/L		03/31/21 04:16	04/04/21 17:34	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		03/31/21 04:16	04/04/21 17:34	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		03/31/21 04:16	04/04/21 17:34	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.98	ng/L		03/31/21 04:16	04/04/21 17:34	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		03/31/21 04:16	04/04/21 17:34	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		03/31/21 04:16	04/04/21 17:34	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		03/31/21 04:16	04/04/21 17:34	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		03/31/21 04:16	04/04/21 17:34	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.51	ng/L		03/31/21 04:16	04/04/21 17:34	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.48	ng/L		03/31/21 04:16	04/04/21 17:34	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		03/31/21 04:16	04/04/21 17:34	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		03/31/21 04:16	04/04/21 17:34	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		03/31/21 04:16	04/04/21 17:34	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		03/31/21 04:16	04/04/21 17:34	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		03/31/21 04:16	04/04/21 17:34	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		03/31/21 04:16	04/04/21 17:34	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*102*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:34*	*1*
13C4 PFHpA	*107*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:34*	*1*
13C4 PFOA	*99*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:34*	*1*
13C5 PFNA	*107*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:34*	*1*
13C2 PFDA	*109*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:34*	*1*
13C2 PFUnA	*110*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:34*	*1*
13C2 PFDoA	*116*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:34*	*1*
13C2 PFTeDA	*118*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:34*	*1*
13C3 PFBS	*88*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:34*	*1*
18O2 PFHxS	*104*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:34*	*1*
13C4 PFOS	*98*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:34*	*1*
d3-NMeFOSAA	*90*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:34*	*1*
d5-NEtFOSAA	*101*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:34*	*1*
13C3 HFPO-DA	*96*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:34*	*1*

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS PW

Job ID: 320-71796-1

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDoA (50-150)	PFTDA (50-150)
320-71796-1	NPS Well	97	101	100	94	98	85	84	101
320-71796-2	PW-501	89	95	101	96	91	89	98	104
320-71796-3	PW-208	102	104	103	108	103	102	102	119
320-71796-4	PW-221	104	100	96	101	96	95	93	99
320-71796-5	PW-401	80	94	84	86	83	84	88	101
320-71796-6	PW-112	102	105	106	106	105	97	103	119
320-71796-7	PW-012	81	85	91	91	83	79	89	98
320-71796-8	PW-211	91	104	98	107	93	88	97	104
320-71796-9	PW-010	97	98	98	103	108	89	103	114
320-71796-10	PW-059	92	89	99	96	101	91	103	108
320-71796-11	PW-203	90	92	99	96	101	79	93	97
320-71796-12	PW-037	104	103	106	107	106	94	109	121
320-71796-13	PW-038	91	102	107	112	103	97	112	133
320-71796-14	PW-141	98	105	105	101	100	92	112	133
320-71796-15	PW-040	89	98	96	98	96	92	109	130
320-71796-16	PW-039	102	107	99	107	109	110	116	118
LCS 320-475229/2-A	Lab Control Sample	110	116	103	102	103	95	106	117
LCSD 320-475229/3-A	Lab Control Sample Dup	100	97	91	98	93	85	99	106
MB 320-475229/1-A	Method Blank	99	114	108	103	94	97	98	115

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)		
320-71796-1	NPS Well	90	89	89	90	82	106		
320-71796-2	PW-501	77	94	88	88	87	88		
320-71796-3	PW-208	87	106	96	87	101	106		
320-71796-4	PW-221	80	95	89	80	84	96		
320-71796-5	PW-401	65	85	80	77	75	89		
320-71796-6	PW-112	87	98	99	83	86	96		
320-71796-7	PW-012	70	87	76	71	66	86		
320-71796-8	PW-211	71	92	90	75	77	84		
320-71796-9	PW-010	78	99	95	82	90	98		
320-71796-10	PW-059	77	94	86	89	89	98		
320-71796-11	PW-203	69	93	80	82	81	84		
320-71796-12	PW-037	85	103	101	86	85	94		
320-71796-13	PW-038	85	101	100	95	96	93		
320-71796-14	PW-141	86	109	95	89	99	86		
320-71796-15	PW-040	77	94	90	82	94	86		
320-71796-16	PW-039	88	104	98	90	101	96		
LCS 320-475229/2-A	Lab Control Sample	101	109	96	92	101	103		
LCSD 320-475229/3-A	Lab Control Sample Dup	98	96	87	88	88	99		
MB 320-475229/1-A	Method Blank	91	103	95	92	101	99		

Surrogate Legend

PFHxA = 13C2 PFHxA
C4PFHA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS PW

Job ID: 320-71796-1

PFTDA = 13C2 PFTeDA
C3PFBS = 13C3 PFBS
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
HFPODA = 13C3 HFPO-DA

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Lab Sample ID: MB 320-475229/1-A
Matrix: Water
Analysis Batch: 476504

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 475229

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		03/31/21 04:16	04/04/21 14:27	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		03/31/21 04:16	04/04/21 14:27	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		03/31/21 04:16	04/04/21 14:27	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		03/31/21 04:16	04/04/21 14:27	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		03/31/21 04:16	04/04/21 14:27	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		03/31/21 04:16	04/04/21 14:27	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		03/31/21 04:16	04/04/21 14:27	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		03/31/21 04:16	04/04/21 14:27	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		03/31/21 04:16	04/04/21 14:27	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		03/31/21 04:16	04/04/21 14:27	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		03/31/21 04:16	04/04/21 14:27	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		03/31/21 04:16	04/04/21 14:27	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		03/31/21 04:16	04/04/21 14:27	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		03/31/21 04:16	04/04/21 14:27	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		03/31/21 04:16	04/04/21 14:27	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		03/31/21 04:16	04/04/21 14:27	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		03/31/21 04:16	04/04/21 14:27	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		03/31/21 04:16	04/04/21 14:27	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*99*		*50 - 150*	*03/31/21 0416*	*04/ 0421 14:27*	*1*
13C4 PFHpA	*114*		*50 - 150*	*03/ 31/21 0416*	*04/ 04/21 14:27*	*1*
13C4 PFOA	*108*		*50 - 150*	*03/ 31/21 04:16*	*04/ 0421 1427*	*1*
13C5 PFNA	*103*		*50 - 150*	*03/ 31/21 04:16*	*04/ 0421 1427*	*1*
13C2 PFDA	*94*		*50 - 150*	*03/ 31/21 04:16*	*04/ 0421 14:27*	*1*
13C2 PFUnA	*97*		*50 - 150*	*03/ 31/21 04:16*	*04/ 0421 14:27*	*1*
13C2 PFDoA	*98*		*50 - 150*	*03/ 31/21 04:16*	*04/ 0421 14:27*	*1*
13C2 PFTeDA	*115*		*50 - 150*	*03/ 31/21 0416*	*04/ 04/21 14:27*	*1*
13C3 PFBS	*91*		*50 - 150*	*03/ 31/21 04:16*	*04/ 0421 14:27*	*1*
18O2 PFHxS	*103*		*50 - 150*	*03/ 31/21 04:16*	*04/ 0421 1427*	*1*
13C4 PFOS	*95*		*50 - 150*	*03/ 31/21 04:16*	*04/ 0421 14:27*	*1*
d3-NMeFOSAA	*92*		*50 - 150*	*03/ 31/21 04:16*	*04/ 0421 14:27*	*1*
d5-NEtFOSAA	*101*		*50 - 150*	*03/ 31/21 04:16*	*04/ 0421 1427*	*1*
13C3 HFPO-DA	*99*		*50 - 150*	*03/ 31/21 04:16*	*04/ 0421 14:27*	*1*

Lab Sample ID: LCS 320-475229/2-A
Matrix: Water
Analysis Batch: 476504

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 475229

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid (PFHxA)	40.0	45.1		ng/L		113	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	43.9		ng/L		110	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	45.2		ng/L		113	71 - 133
Perfluorononanoic acid (PFNA)	40.0	45.7		ng/L		114	69 - 130

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCS 320-475229/2-A
Matrix: Water
Analysis Batch: 476504

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 475229

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorodecanoic acid (PFDA)	40.0	44.1		ng/L		110	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	52.2		ng/L		131	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	41.6		ng/L		104	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	44.7		ng/L		112	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	43.3		ng/L		108	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.4	40.0		ng/L		113	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	38.9		ng/L		107	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.1	39.1		ng/L		105	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	44.3		ng/L		111	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	40.1		ng/L		100	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	45.8		ng/L		123	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	45.7		ng/L		114	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	44.3		ng/L		118	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	43.6		ng/L		116	81 - 141

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*110*		*50 - 150*
13C4 PFHpA	*116*		*50 - 150*
13C4 PFOA	*103*		*50 - 150*
13C5 PFNA	*102*		*50 - 150*
13C2 PFDA	*103*		*50 - 150*
13C2 PFUnA	*95*		*50 - 150*
13C2 PFDoA	*106*		*50 - 150*
13C2 PFTeDA	*117*		*50 - 150*
13C3 PFBS	*101*		*50 - 150*
18O2 PFHxS	*109*		*50 - 150*
13C4 PFOS	*96*		*50 - 150*
d3-NMeFOSAA	*92*		*50 - 150*
d5-NEtFOSAA	*101*		*50 - 150*
13C3 HFPO-DA	*103*		*50 - 150*

Lab Sample ID: LCSD 320-475229/3-A
Matrix: Water
Analysis Batch: 476504

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 475229

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	43.5		ng/L		109	72 - 129	4	30
Perfluoroheptanoic acid (PFHpA)	40.0	43.9		ng/L		110	72 - 130	0	30
Perfluorooctanoic acid (PFOA)	40.0	44.3		ng/L		111	71 - 133	2	30

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCSD 320-475229/3-A
Matrix: Water
Analysis Batch: 476504

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 475229

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)			40.0	44.4		ng/L		111	69 - 130	3	30
Perfluorodecanoic acid (PFDA)			40.0	45.3		ng/L		113	71 - 129	3	30
Perfluoroundecanoic acid (PFUnA)			40.0	50.7		ng/L		127	69 - 133	3	30
Perfluorododecanoic acid (PFDoA)			40.0	39.9		ng/L		100	72 - 134	4	30
Perfluorotridecanoic acid (PFTriA)			40.0	45.9		ng/L		115	65 - 144	3	30
Perfluorotetradecanoic acid (PFTeA)			40.0	45.6		ng/L		114	71 - 132	5	30
Perfluorobutanesulfonic acid (PFBS)			35.4	35.4		ng/L		100	72 - 130	12	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	41.3		ng/L		113	68 - 131	6	30
Perfluorooctanesulfonic acid (PFOS)			37.1	38.5		ng/L		104	65 - 140	2	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			40.0	42.1		ng/L		105	65 - 136	5	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	40.4		ng/L		101	61 - 135	1	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid			37.3	44.0		ng/L		118	77 - 137	4	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			40.0	39.6		ng/L		99	72 - 132	14	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid			37.7	43.1		ng/L		114	76 - 136	3	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.7	46.8		ng/L		124	81 - 141	7	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*100*		*50 - 150*
13C4 PFHpA	*97*		*50 - 150*
13C4 PFOA	*91*		*50 - 150*
13C5 PFNA	*98*		*50 - 150*
13C2 PFDA	*93*		*50 - 150*
13C2 PFUnA	*85*		*50 - 150*
13C2 PFDoA	*99*		*50 - 150*
13C2 PFTeDA	*106*		*50 - 150*
13C3 PFBS	*98*		*50 - 150*
18O2 PFHxS	*96*		*50 - 150*
13C4 PFOS	*87*		*50 - 150*
d3-NMeFOSAA	*88*		*50 - 150*
d5-NEtFOSAA	*88*		*50 - 150*
13C3 HFPO-DA	*99*		*50 - 150*

LCMS

Prep Batch: 475229

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-71796-1	NPS Well	Total/NA	Water	3535	
320-71796-2	PW-501	Total/NA	Water	3535	
320-71796-3	PW-208	Total/NA	Water	3535	
320-71796-4	PW-221	Total/NA	Water	3535	
320-71796-5	PW-401	Total/NA	Water	3535	
320-71796-6	PW-112	Total/NA	Water	3535	
320-71796-7	PW-012	Total/NA	Water	3535	
320-71796-8	PW-211	Total/NA	Water	3535	
320-71796-9	PW-010	Total/NA	Water	3535	
320-71796-10	PW-059	Total/NA	Water	3535	
320-71796-11	PW-203	Total/NA	Water	3535	
320-71796-12	PW-037	Total/NA	Water	3535	
320-71796-13	PW-038	Total/NA	Water	3535	
320-71796-14	PW-141	Total/NA	Water	3535	
320-71796-15	PW-040	Total/NA	Water	3535	
320-71796-16	PW-039	Total/NA	Water	3535	
MB 320-475229/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-475229/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-475229/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 476504

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-71796-1	NPS Well	Total/NA	Water	EPA 537(Mod)	475229
320-71796-2	PW-501	Total/NA	Water	EPA 537(Mod)	475229
320-71796-3	PW-208	Total/NA	Water	EPA 537(Mod)	475229
320-71796-4	PW-221	Total/NA	Water	EPA 537(Mod)	475229
320-71796-5	PW-401	Total/NA	Water	EPA 537(Mod)	475229
320-71796-6	PW-112	Total/NA	Water	EPA 537(Mod)	475229
320-71796-7	PW-012	Total/NA	Water	EPA 537(Mod)	475229
320-71796-8	PW-211	Total/NA	Water	EPA 537(Mod)	475229
320-71796-9	PW-010	Total/NA	Water	EPA 537(Mod)	475229
320-71796-10	PW-059	Total/NA	Water	EPA 537(Mod)	475229
320-71796-11	PW-203	Total/NA	Water	EPA 537(Mod)	475229
320-71796-12	PW-037	Total/NA	Water	EPA 537(Mod)	475229
320-71796-13	PW-038	Total/NA	Water	EPA 537(Mod)	475229
320-71796-14	PW-141	Total/NA	Water	EPA 537(Mod)	475229
320-71796-15	PW-040	Total/NA	Water	EPA 537(Mod)	475229
320-71796-16	PW-039	Total/NA	Water	EPA 537(Mod)	475229
MB 320-475229/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	475229
LCS 320-475229/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	475229
LCSD 320-475229/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	475229

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS PW

Job ID: 320-71796-1

Client Sample ID: NPS Well
Date Collected: 03/25/21 09:16
Date Received: 03/29/21 17:16

Lab Sample ID: 320-71796-1
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			268.9 mL	10.00 mL	475229	03/31/21 04:16	MA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			476504	04/04/21 14:55	RS1	TAL SAC

Client Sample ID: PW-501
Date Collected: 03/23/21 12:27
Date Received: 03/29/21 17:16

Lab Sample ID: 320-71796-2
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			266.7 mL	10.00 mL	475229	03/31/21 04:16	MA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			476504	04/04/21 15:04	RS1	TAL SAC

Client Sample ID: PW-208
Date Collected: 03/23/21 13:54
Date Received: 03/29/21 17:16

Lab Sample ID: 320-71796-3
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			273.4 mL	10.00 mL	475229	03/31/21 04:16	MA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			476504	04/04/21 15:14	RS1	TAL SAC

Client Sample ID: PW-221
Date Collected: 03/24/21 10:02
Date Received: 03/29/21 17:16

Lab Sample ID: 320-71796-4
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			278.2 mL	10.00 mL	475229	03/31/21 04:16	MA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			476504	04/04/21 15:23	RS1	TAL SAC

Client Sample ID: PW-401
Date Collected: 03/23/21 12:37
Date Received: 03/29/21 17:16

Lab Sample ID: 320-71796-5
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			280.2 mL	10.00 mL	475229	03/31/21 04:16	MA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			476504	04/04/21 15:32	RS1	TAL SAC

Client Sample ID: PW-112
Date Collected: 03/24/21 14:55
Date Received: 03/29/21 17:16

Lab Sample ID: 320-71796-6
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			283.1 mL	10.00 mL	475229	03/31/21 04:16	MA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			476504	04/04/21 15:42	RS1	TAL SAC

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS PW

Job ID: 320-71796-1

Client Sample ID: PW-012
Date Collected: 03/24/21 15:05
Date Received: 03/29/21 17:16

Lab Sample ID: 320-71796-7
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			281.7 mL	10.00 mL	475229	03/31/21 04:16	MA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			476504	04/04/21 15:51	RS1	TAL SAC

Client Sample ID: PW-211
Date Collected: 03/24/21 09:23
Date Received: 03/29/21 17:16

Lab Sample ID: 320-71796-8
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			276.6 mL	10.00 mL	475229	03/31/21 04:16	MA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			476504	04/04/21 16:19	RS1	TAL SAC

Client Sample ID: PW-010
Date Collected: 03/24/21 10:50
Date Received: 03/29/21 17:16

Lab Sample ID: 320-71796-9
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			284 mL	10.00 mL	475229	03/31/21 04:16	MA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			476504	04/04/21 16:28	RS1	TAL SAC

Client Sample ID: PW-059
Date Collected: 03/24/21 12:10
Date Received: 03/29/21 17:16

Lab Sample ID: 320-71796-10
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			293.6 mL	10.00 mL	475229	03/31/21 04:16	MA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			476504	04/04/21 16:38	RS1	TAL SAC

Client Sample ID: PW-203
Date Collected: 03/23/21 17:24
Date Received: 03/29/21 17:16

Lab Sample ID: 320-71796-11
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			291.5 mL	10.00 mL	475229	03/31/21 04:16	MA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			476504	04/04/21 16:47	RS1	TAL SAC

Client Sample ID: PW-037
Date Collected: 03/25/21 13:17
Date Received: 03/29/21 17:16

Lab Sample ID: 320-71796-12
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			287.2 mL	10.00 mL	475229	03/31/21 04:16	MA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			476504	04/04/21 16:56	RS1	TAL SAC

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS PW

Job ID: 320-71796-1

Client Sample ID: PW-038
Date Collected: 03/25/21 12:48
Date Received: 03/29/21 17:16

Lab Sample ID: 320-71796-13
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			303.3 mL	10.00 mL	475229	03/31/21 04:16	MA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			476504	04/04/21 17:06	RS1	TAL SAC

Client Sample ID: PW-141
Date Collected: 03/25/21 12:04
Date Received: 03/29/21 17:16

Lab Sample ID: 320-71796-14
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			289.5 mL	10.00 mL	475229	03/31/21 04:16	MA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			476504	04/04/21 17:15	RS1	TAL SAC

Client Sample ID: PW-040
Date Collected: 03/25/21 12:14
Date Received: 03/29/21 17:16

Lab Sample ID: 320-71796-15
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			275.1 mL	10.00 mL	475229	03/31/21 04:16	MA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			476504	04/04/21 17:25	RS1	TAL SAC

Client Sample ID: PW-039
Date Collected: 03/25/21 13:45
Date Received: 03/29/21 17:16

Lab Sample ID: 320-71796-16
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			279.6 mL	10.00 mL	475229	03/31/21 04:16	MA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			476504	04/04/21 17:34	RS1	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: GUS PFAS PW

Job ID: 320-71796-1

Laboratory: Eurofins TestAmerica, Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

Method Summary

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS PW

Job ID: 320-71796-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod)	PFAS for QSM 5.3, Table B-15	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: GUS PFAS PW

Job ID: 320-71796-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-71796-1	NPS Well	Water	03/25/21 09:16	03/29/21 17:16	
320-71796-2	PW-501	Water	03/23/21 12:27	03/29/21 17:16	
320-71796-3	PW-208	Water	03/23/21 13:54	03/29/21 17:16	
320-71796-4	PW-221	Water	03/24/21 10:02	03/29/21 17:16	
320-71796-5	PW-401	Water	03/23/21 12:37	03/29/21 17:16	
320-71796-6	PW-112	Water	03/24/21 14:55	03/29/21 17:16	
320-71796-7	PW-012	Water	03/24/21 15:05	03/29/21 17:16	
320-71796-8	PW-211	Water	03/24/21 09:23	03/29/21 17:16	
320-71796-9	PW-010	Water	03/24/21 10:50	03/29/21 17:16	
320-71796-10	PW-059	Water	03/24/21 12:10	03/29/21 17:16	
320-71796-11	PW-203	Water	03/23/21 17:24	03/29/21 17:16	
320-71796-12	PW-037	Water	03/25/21 13:17	03/29/21 17:16	
320-71796-13	PW-038	Water	03/25/21 12:48	03/29/21 17:16	
320-71796-14	PW-141	Water	03/25/21 12:04	03/29/21 17:16	
320-71796-15	PW-040	Water	03/25/21 12:14	03/29/21 17:16	
320-71796-16	PW-039	Water	03/25/21 13:45	03/29/21 17:16	

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600
www.shannonwilson.com

CHAIN-OF-CUSTODY RECORD

Laboratory TestAmerica
Attn: D. Althuckes

Turn Around Time: [X] Normal [ ] Rush — Please Specify

Quote No:

J-Flags: [X] Yes [ ] No

Analytical Methods (include preservative if used)

320-71796 Chain of Custody

Sample Identity	Lab No.	Time	Date Sampled	PFAS 537.1	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
~~PW-565~~		~~0805~~	~~3/25/21~~	X	2	Groundwater
NPS Well		0916	3/25/21	X	2	
~~PW-465~~		~~0815~~	~~3/25/21~~	X	2	
PW-501		1227	3/23/21	X	2	
PW-208		1354	3/23/21	X	2	
PW-221		1002	3/24/21	X	2	
PW-401		1237	3/23/21	X	2	
PW-112		1455	3/24/21	X	2	
PW-012		505	3/24/21	X	2	
PW-211		0923	3/24/21	X	2	

Project Information	
Number:	102599-013
Name:	GUS PFAS PW
Contact:	KRF@shanwil.
Ongoing Project?	Yes [X] No [ ]
Sampler:	ARM

Sample Receipt	
Total No. of Containers:	
COC Seals/Intact? Y/N/NA	
Received Good Cond./Cold	
Temp:	
Delivery Method:	

Notes:

2.5°

Reliquished By: 1.	Reliquished By: 2.	Reliquished By: 3.
Signature:	Signature:	Signature:
Time: 0900	Time:	Time:
Printed Name: A. Mastos	Printed Name:	Printed Name:
Date: 3/26/21	Date:	Date:
Company: Shannon + Wilson, Inc	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature:	Signature:	Signature:
Time: 1155	Time:	Time:
Printed Name: ETA-SAC	Printed Name:	Printed Name:
Date: 03/29/21	Date:	Date:
Company:	Company:	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

No. 36383

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600
www.shannonwilson.com

CHAIN-OF-CUSTODY RECORD

Laboratory Test America
Attn: D. Altuckar

Turn Around Time: [X] Normal [ ] Rush — Please Specify

Quote No:

J-Flags: [ ] Yes [ ] No

Analytical Methods (include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	PFAS + 16 537.1	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
PW-011		1050	3/24/21	X	2	groundwater
PW-059		1210	3/24/21	X	2	
PW-203		1724	3/23/21	X	2	
PW-037		1317	3/25/21	X	2	
PW-038		1248	3/25/21	X	2	
PW-141		1204	3/25/21	X	2	
PW-040		1214	3/25/21	X	2	
PW-039		1345	3/25/21	X	2	

Project Information

Number: See page 1
Name:
Contact:
Ongoing Project? Yes [ ] No [ ]
Sampler:

Sample Receipt

Total No. of Containers:
COC Seals/Intact? Y/N/NA
Received Good Cond./Cold
Temp:
Delivery Method:

Notes:

2.5 ea

Reliquished By: 1.	Reliquished By: 2.	Reliquished By: 3.
Signature: Time: 0900	Signature: Time:	Signature: Time:
Printed Name: A. Mastos Date: 3/26/21	Printed Name: Date:	Printed Name: Date:
Company: Shannon + Wilson, Inc.	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time: 1155	Signature: Time:	Signature: Time:
Printed Name: ETA-SAC Date: 03/29/21	Printed Name: Date:	Printed Name: Date:
Company:	Company:	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

No. 36384

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-71796-1

Login Number: 71796
List Number: 1
Creator: Guzman, Juan

List Source: Eurofins TestAmerica, Sacramento

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 on cooler
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:

April 6, 2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins / TestAmerica Laboratories, Inc. (TestAmerica)

Laboratory Report Number:

320-71796-1

Laboratory Report Date:

April 6, 2021

CS Site Name:

DOT&PF Gustavus Airport Statewide PFAS

ADEC File Number:

1507.38.017

Hazard Identification Number:

26904

320-71796-1

Laboratory Report Date:

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 DEC certified TestAmerica of West Sacramento, CA for the analysis of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) on February 6, 2018 by method 537. These compounds were included in the DEC'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:

   The requested analyses were conducted by TestAmerica of 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:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

   Yes☒ No☐ N/A☐ Comments:

   Samples were preserved with Trizma.

   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, properly preserved, and at a temperature of 2.5° C.

Laboratory Report Date:

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 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 case narrative indicates the following:
The COC lists sample ID as *PW-011*, client requested sample ID be changed to *PW-010.*

The "I" qualifier means the transition mass ratio for Perfluorobutanesulfonic acid (PFBS) was outside of the established ratio limit in sample *PW-208*. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte.

The following samples contain a small amount of sediment at the bottom of the bottles prior to extraction: *NPS Well, PW-501, PW-208, PW-221, PW-401, PW-012, PW-112, PW-010, PW-203, PW-037,* and *PW-039*.

There was insufficient sample volume available to perform a matrix spike (MS) and MS duplicate (MSD) in conjunction with preparation batch 320-475229.

c. Were all corrective actions documented?

Yes☒ No☐ N/A☐ Comments:

Analyst judgment was used to positively identify the analyte listed above with the “I” qualifier.

Laboratory Report Date:

d. What is the effect on data quality/usability according to the case narrative?

Comments:

Due to the uncertainty associated with *PW-208* and the "I" flagged analyte (PFBS), the PFBS result is considered an estimated. The laboratory notes there may be a high bias; therefore, the analytes has been flagged 'JH' in the analytical tables.

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 limits (RL) are less than the applicable DEC regulatory limit for the project.

e. Data quality or usability affected?

The 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:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes☒ No☐ N/A☐ Comments:

Laboratory Report Date:

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

There were no detections 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:

Qualification of the data was not required. See above.

v. Data quality or usability affected?

Comments:

Results are 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:

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:

N/A; 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:

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 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:

Insufficient sample volume was available to perform a MS/MSD with the associated preparatory batches. However, the laboratory analyzed an LCS and LCSD to assess laboratory accuracy and precision.

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:

MS and MSD samples were not analyzed for this work order.

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:

MS and MSD samples were not analyzed for this work order.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A; MS and MSD samples were not analyzed for this work order.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes☐ No☐ N/A☒ Comments:

MS and MSD samples were not analyzed for this work order.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The 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 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; 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. A trip blank is not required for the requested analysis.

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 for the requested analysis.

iii. All results less than LOQ and project specified objectives?

Yes☐ No☐ N/A☒ Comments:

A trip blank is not required for the requested analysis.

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; a trip blank is not required for the requested analysis.

v. Data quality or usability affected?

Comments:

The 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 *PW-040/PW-141, PW-012/PW-112,* and *PW-401/PW-501* were submitted with this work order; one for each day of sampling. Note: duplicate sample *PW-141* should have been named *PW-140* using project naming conventions. This does not affect data quality or usability and has been confirmed to be a duplicate of *PW-040.*

iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water, 50% soil)

RPD (%) = 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:

PFBS results for duplicate pair *PW-401/PW-501* exceeded RPD limits. We note both detected concentrations are flagged as estimates due to detection below the reporting limit. There were no detections in duplicate pair *PW-040/PW-141;* RPD could not be calculated.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

PFBS results for duplicate pair *PW-401/PW-501* are less than the reporting limit, therefore are considered estimated and flagged 'J' by the laboratory. No further flagging has been applied.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes☐ No☐ N/A☒ Comments:

Decontamination or equipment blank were not required for this project.

Laboratory Report Date:

i. All results less than LOQ and project specified objectives?

Yes☐ No☐ N/A☒ Comments:

Decontamination or equipment blank were not required for this project.

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

Decontamination or equipment blank were not required for this project.

iii. Data quality or usability affected?

Comments:

The 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:

No additional data flags are required.

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-71798-1
Client Project/Site: GUS PFAS DOT-MW

For:
Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

Attn: Kristen Freiburger

Authorized for release by:
4/7/2021 1:18:07 PM

David Alltucker, Project Manager I
(916)374-4383
David.Alltucker@Eurofinset.com

Table of Contents

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS DOT-MW

Job ID: 320-71798-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*5-	Isotope dilution analyte is outside acceptance limits, low 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.
¤	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

Job ID: 320-71798-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative
320-71798-1

Receipt
The samples were received on 3/29/2021 11:55 AM. 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 3.4º C.

LCMS
Method EPA 537(Mod): The "I" qualifier means the transition mass ratio for the indicated analyte were outside of the established ratio limit. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte. (CCVL 320-476514/2)

Method EPA 537(Mod): Several Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit: MW-10-20 (320-71798-9) and MW-6-20 (320-71798-12). 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 sample(s).

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 yellow prior to extraction: MW-9-30 (320-71798-4), MW-3-15 (320-71798-5), MW-8-20 (320-71798-8), MW-10-20 (320-71798-9), MW-4-20 (320-71798-11), MW-6-20 (320-71798-12), MW-12-10 (320-71798-13) and MW-7-20 (320-71798-17).

Method 3535: The following samples contained floating particulates in the sample bottle prior to extraction: MW-9-30 (320-71798-4), MW-3-15 (320-71798-5), MW-10-20 (320-71798-9), MW-6-20 (320-71798-12) and MW-7-20 (320-71798-17).

Method 3535: During the solid phase extraction process, the following samples contain non-settable particulates which clogged the solid phase extraction column: MW-9-30 (320-71798-4), MW-3-15 (320-71798-5), MW-10-20 (320-71798-9), MW-6-20 (320-71798-12) and MW-7-20 (320-71798-17).

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-475057.

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: GUS PFAS DOT-MW

Job ID: 320-71798-1

Client Sample ID: MW-2-20 — Lab Sample ID: 320-71798-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	31		1.7	0.49	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	26		1.7	0.21	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	78		1.7	0.72	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	3.8		1.7	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.4		1.7	0.17	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	100		1.7	0.48	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	250		1.7	0.46	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: MW-1-15 — Lab Sample ID: 320-71798-2

No Detections.

Client Sample ID: MW-1-40 — Lab Sample ID: 320-71798-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.68	J	1.7	0.49	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: MW-9-30 — Lab Sample ID: 320-71798-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	8.9		1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.0		1.8	0.22	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1.0	J	1.8	0.76	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)	15		1.8	0.51	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	97		1.8	0.48	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: MW-3-15 — Lab Sample ID: 320-71798-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.87	J	1.7	0.50	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.24	J	1.7	0.17	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.9		1.7	0.49	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.1		1.7	0.47	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: MW-3-40 — Lab Sample ID: 320-71798-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	2.4		1.7	0.51	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1.7		1.7	0.74	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.93	J	1.7	0.17	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	17		1.7	0.50	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	13		1.7	0.47	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: MW-102-20 — Lab Sample ID: 320-71798-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	30		1.7	0.50	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	24		1.7	0.22	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	72		1.7	0.74	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	4.0		1.7	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.3		1.7	0.17	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	98		1.7	0.49	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	240		1.7	0.47	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: GUS PFAS DOT-MW

Job ID: 320-71798-1

Client Sample ID: MW-8-20 — Lab Sample ID: 320-71798-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.57	J	1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: MW-10-20 — Lab Sample ID: 320-71798-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	16		1.7	0.50	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	4.8		1.7	0.22	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1.9		1.7	0.74	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.3	J	1.7	0.17	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	17		1.7	0.50	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	37		1.7	0.47	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: MW-2-30 — Lab Sample ID: 320-71798-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.91	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.54	J	1.8	0.50	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: MW-4-20 — Lab Sample ID: 320-71798-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.50	J	1.7	0.50	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: MW-6-20 — Lab Sample ID: 320-71798-12

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		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.0	J	1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.5	J	1.8	0.49	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: MW-12-10 — Lab Sample ID: 320-71798-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	4.8		1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.8		1.8	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	2.9		1.8	0.77	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	0.64	J	1.8	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.52	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	9.4		1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	36		1.8	0.49	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: MW-11-15 — Lab Sample ID: 320-71798-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	15		1.7	0.49	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.0		1.7	0.21	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	2.2		1.7	0.72	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	0.62	J	1.7	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.2	J	1.7	0.17	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	17		1.7	0.48	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	210		1.7	0.46	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS DOT-MW

Job ID: 320-71798-1

Client Sample ID: MW-5-20 — Lab Sample ID: 320-71798-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.89	J	1.7	0.49	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	0.87	J	1.7	0.73	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	0.65	J	1.7	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.45	J	1.7	0.17	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.4	J	1.7	0.49	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.7		1.7	0.46	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: MW-111-15 — Lab Sample ID: 320-71798-16

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	13		1.7	0.50	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.7		1.7	0.21	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	2.2		1.7	0.73	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	0.60	J	1.7	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.4	J	1.7	0.17	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	20		1.7	0.49	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	200		1.7	0.46	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: MW-7-20 — Lab Sample ID: 320-71798-17

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.3	J	1.7	0.51	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.0	J	1.7	0.22	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	2.3		1.7	0.74	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.98	J	1.7	0.50	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	5.0		1.7	0.47	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: GAC — Lab Sample ID: 320-71798-18

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-2-20

Date Collected: 03/24/21 10:41
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-1
Matrix: Water

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)	**31**		1.7	0.49	ng/L		03/30/21 11:57	04/05/21 02:27	1
Perfluoroheptanoic acid (PFHpA)	**26**		1.7	0.21	ng/L		03/30/21 11:57	04/05/21 02:27	1
Perfluorooctanoic acid (PFOA)	**78**		1.7	0.72	ng/L		03/30/21 11:57	04/05/21 02:27	1
Perfluorononanoic acid (PFNA)	**3.8**		1.7	0.23	ng/L		03/30/21 11:57	04/05/21 02:27	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		03/30/21 11:57	04/05/21 02:27	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.93	ng/L		03/30/21 11:57	04/05/21 02:27	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.46	ng/L		03/30/21 11:57	04/05/21 02:27	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		03/30/21 11:57	04/05/21 02:27	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.62	ng/L		03/30/21 11:57	04/05/21 02:27	1
Perfluorobutanesulfonic acid (PFBS)	**2.4**		1.7	0.17	ng/L		03/30/21 11:57	04/05/21 02:27	1
Perfluorohexanesulfonic acid (PFHxS)	**100**		1.7	0.48	ng/L		03/30/21 11:57	04/05/21 02:27	1
Perfluorooctanesulfonic acid (PFOS)	**250**		1.7	0.46	ng/L		03/30/21 11:57	04/05/21 02:27	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.2	1.0	ng/L		03/30/21 11:57	04/05/21 02:27	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.2	1.1	ng/L		03/30/21 11:57	04/05/21 02:27	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		03/30/21 11:57	04/05/21 02:27	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		03/30/21 11:57	04/05/21 02:27	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		03/30/21 11:57	04/05/21 02:27	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.34	ng/L		03/30/21 11:57	04/05/21 02:27	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*87*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:27*	*1*
13C4 PFHpA	*98*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:27*	*1*
13C4 PFOA	*91*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:27*	*1*
13C5 PFNA	*104*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:27*	*1*
13C2 PFDA	*96*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:27*	*1*
13C2 PFUnA	*88*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:27*	*1*
13C2 PFDoA	*103*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:27*	*1*
13C2 PFTeDA	*119*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:27*	*1*
13C3 PFBS	*75*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:27*	*1*
18O2 PFHxS	*87*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:27*	*1*
13C4 PFOS	*88*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:27*	*1*
d3-NMeFOSAA	*92*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:27*	*1*
d5-NEtFOSAA	*106*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:27*	*1*
13C3 HFPO-DA	*89*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:27*	*1*

Client Sample ID: MW-1-15

Date Collected: 03/24/21 15:53
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-2
Matrix: Water

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	0.51	ng/L		03/30/21 11:57	04/05/21 02:36	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		03/30/21 11:57	04/05/21 02:36	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.75	ng/L		03/30/21 11:57	04/05/21 02:36	1

Client Sample ID: MW-1-15

Date Collected: 03/24/21 15:53
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-2
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		03/30/21 11:57	04/05/21 02:36	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		03/30/21 11:57	04/05/21 02:36	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.97	ng/L		03/30/21 11:57	04/05/21 02:36	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.48	ng/L		03/30/21 11:57	04/05/21 02:36	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.1	ng/L		03/30/21 11:57	04/05/21 02:36	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.64	ng/L		03/30/21 11:57	04/05/21 02:36	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		03/30/21 11:57	04/05/21 02:36	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.50	ng/L		03/30/21 11:57	04/05/21 02:36	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.47	ng/L		03/30/21 11:57	04/05/21 02:36	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		03/30/21 11:57	04/05/21 02:36	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		03/30/21 11:57	04/05/21 02:36	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		03/30/21 11:57	04/05/21 02:36	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		03/30/21 11:57	04/05/21 02:36	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		03/30/21 11:57	04/05/21 02:36	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		03/30/21 11:57	04/05/21 02:36	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*85*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:36*	*1*
13C4 PFHpA	*83*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:36*	*1*
13C4 PFOA	*86*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:36*	*1*
13C5 PFNA	*89*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:36*	*1*
13C2 PFDA	*87*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:36*	*1*
13C2 PFUnA	*82*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:36*	*1*
13C2 PFDoA	*89*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:36*	*1*
13C2 PFTeDA	*110*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:36*	*1*
13C3 PFBS	*72*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:36*	*1*
18O2 PFHxS	*85*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:36*	*1*
13C4 PFOS	*81*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:36*	*1*
d3-NMeFOSAA	*84*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:36*	*1*
d5-NEtFOSAA	*85*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:36*	*1*
13C3 HFPO-DA	*86*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:36*	*1*

Client Sample ID: MW-1-40

Date Collected: 03/24/21 16:48
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-3
Matrix: Water

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		1.7	0.50	ng/L		03/30/21 11:57	04/05/21 02:46	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.21	ng/L		03/30/21 11:57	04/05/21 02:46	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.73	ng/L		03/30/21 11:57	04/05/21 02:46	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		03/30/21 11:57	04/05/21 02:46	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		03/30/21 11:57	04/05/21 02:46	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.94	ng/L		03/30/21 11:57	04/05/21 02:46	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47	ng/L		03/30/21 11:57	04/05/21 02:46	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		03/30/21 11:57	04/05/21 02:46	1

Client Sample ID: MW-1-40

Date Collected: 03/24/21 16:48
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-3

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.62	ng/L		03/30/21 11:57	04/05/21 02:46	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		03/30/21 11:57	04/05/21 02:46	1
Perfluorohexanesulfonic acid (PFHxS)	**0.68**	**J**	1.7	0.49	ng/L		03/30/21 11:57	04/05/21 02:46	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.46	ng/L		03/30/21 11:57	04/05/21 02:46	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.3	1.0	ng/L		03/30/21 11:57	04/05/21 02:46	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.3	1.1	ng/L		03/30/21 11:57	04/05/21 02:46	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		03/30/21 11:57	04/05/21 02:46	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		03/30/21 11:57	04/05/21 02:46	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		03/30/21 11:57	04/05/21 02:46	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.34	ng/L		03/30/21 11:57	04/05/21 02:46	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*70*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:46*	*1*
13C4 PFHpA	*76*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:46*	*1*
13C4 PFOA	*81*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:46*	*1*
13C5 PFNA	*83*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:46*	*1*
13C2 PFDA	*81*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:46*	*1*
13C2 PFUnA	*66*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:46*	*1*
13C2 PFDoA	*79*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:46*	*1*
13C2 PFTeDA	*97*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:46*	*1*
13C3 PFBS	*63*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:46*	*1*
18O2 PFHxS	*74*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:46*	*1*
13C4 PFOS	*77*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:46*	*1*
d3-NMeFOSAA	*74*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:46*	*1*
d5-NEtFOSAA	*82*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:46*	*1*
13C3 HFPO-DA	*74*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:46*	*1*

Client Sample ID: MW-9-30

Date Collected: 03/24/21 20:44
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-4

Matrix: Water

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)	**8.9**		1.8	0.52	ng/L		03/30/21 11:57	04/05/21 02:55	1
Perfluoroheptanoic acid (PFHpA)	**3.0**		1.8	0.22	ng/L		03/30/21 11:57	04/05/21 02:55	1
Perfluorooctanoic acid (PFOA)	**1.0**	**J**	1.8	0.76	ng/L		03/30/21 11:57	04/05/21 02:55	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		03/30/21 11:57	04/05/21 02:55	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		03/30/21 11:57	04/05/21 02:55	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.98	ng/L		03/30/21 11:57	04/05/21 02:55	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		03/30/21 11:57	04/05/21 02:55	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		03/30/21 11:57	04/05/21 02:55	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		03/30/21 11:57	04/05/21 02:55	1
Perfluorobutanesulfonic acid (PFBS)	**1.2**	**J**	1.8	0.18	ng/L		03/30/21 11:57	04/05/21 02:55	1
Perfluorohexanesulfonic acid (PFHxS)	**15**		1.8	0.51	ng/L		03/30/21 11:57	04/05/21 02:55	1

Client Sample ID: MW-9-30

Date Collected: 03/24/21 20:44
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-4

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**97**		1.8	0.48	ng/L		03/30/21 11:57	04/05/21 02:55	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		03/30/21 11:57	04/05/21 02:55	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		03/30/21 11:57	04/05/21 02:55	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		03/30/21 11:57	04/05/21 02:55	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		03/30/21 11:57	04/05/21 02:55	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		03/30/21 11:57	04/05/21 02:55	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		03/30/21 11:57	04/05/21 02:55	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*68*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:55*	*1*
13C4 PFHpA	*78*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:55*	*1*
13C4 PFOA	*74*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:55*	*1*
13C5 PFNA	*80*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:55*	*1*
13C2 PFDA	*70*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:55*	*1*
13C2 PFUnA	*60*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:55*	*1*
13C2 PFDoA	*56*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:55*	*1*
13C2 PFTeDA	*61*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:55*	*1*
13C3 PFBS	*58*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:55*	*1*
18O2 PFHxS	*75*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:55*	*1*
13C4 PFOS	*76*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:55*	*1*
d3-NMeFOSAA	*58*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:55*	*1*
d5-NEtFOSAA	*55*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:55*	*1*
13C3 HFPO-DA	*71*		*50 - 150*	*03/30/21 11:57*	*04/05/21 02:55*	*1*

Client Sample ID: MW-3-15

Date Collected: 03/24/21 12:29
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-5

Matrix: Water

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)	**0.87**	**J**	1.7	0.50	ng/L		03/30/21 11:57	04/05/21 03:04	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.22	ng/L		03/30/21 11:57	04/05/21 03:04	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.74	ng/L		03/30/21 11:57	04/05/21 03:04	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		03/30/21 11:57	04/05/21 03:04	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		03/30/21 11:57	04/05/21 03:04	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.95	ng/L		03/30/21 11:57	04/05/21 03:04	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		03/30/21 11:57	04/05/21 03:04	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		03/30/21 11:57	04/05/21 03:04	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.63	ng/L		03/30/21 11:57	04/05/21 03:04	1
Perfluorobutanesulfonic acid (PFBS)	**0.24**	**J**	1.7	0.17	ng/L		03/30/21 11:57	04/05/21 03:04	1
Perfluorohexanesulfonic acid (PFHxS)	**1.9**		1.7	0.49	ng/L		03/30/21 11:57	04/05/21 03:04	1
Perfluorooctanesulfonic acid (PFOS)	**3.1**		1.7	0.47	ng/L		03/30/21 11:57	04/05/21 03:04	1

Client Sample ID: MW-3-15

Date Collected: 03/24/21 12:29
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-5

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.3	1.0	ng/L		03/30/21 11:57	04/05/21 03:04	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.3	1.1	ng/L		03/30/21 11:57	04/05/21 03:04	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		03/30/21 11:57	04/05/21 03:04	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		03/30/21 11:57	04/05/21 03:04	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		03/30/21 11:57	04/05/21 03:04	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.35	ng/L		03/30/21 11:57	04/05/21 03:04	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*82*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:04*	*1*
13C4 PFHpA	*90*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:04*	*1*
13C4 PFOA	*87*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:04*	*1*
13C5 PFNA	*94*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:04*	*1*
13C2 PFDA	*89*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:04*	*1*
13C2 PFUnA	*81*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:04*	*1*
13C2 PFDoA	*75*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:04*	*1*
13C2 PFTeDA	*84*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:04*	*1*
13C3 PFBS	*71*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:04*	*1*
18O2 PFHxS	*87*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:04*	*1*
13C4 PFOS	*87*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:04*	*1*
d3-NMeFOSAA	*74*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:04*	*1*
d5-NEtFOSAA	*74*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:04*	*1*
13C3 HFPO-DA	*92*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:04*	*1*

Client Sample ID: MW-3-40

Date Collected: 03/24/21 13:23
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-6

Matrix: Water

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)	**2.4**		1.7	0.51	ng/L		03/30/21 11:57	04/05/21 03:32	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.22	ng/L		03/30/21 11:57	04/05/21 03:32	1
Perfluorooctanoic acid (PFOA)	**1.7**		1.7	0.74	ng/L		03/30/21 11:57	04/05/21 03:32	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.24	ng/L		03/30/21 11:57	04/05/21 03:32	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		03/30/21 11:57	04/05/21 03:32	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.96	ng/L		03/30/21 11:57	04/05/21 03:32	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		03/30/21 11:57	04/05/21 03:32	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		03/30/21 11:57	04/05/21 03:32	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.64	ng/L		03/30/21 11:57	04/05/21 03:32	1
Perfluorobutanesulfonic acid (PFBS)	**0.93**	**J**	1.7	0.17	ng/L		03/30/21 11:57	04/05/21 03:32	1
Perfluorohexanesulfonic acid (PFHxS)	**17**		1.7	0.50	ng/L		03/30/21 11:57	04/05/21 03:32	1
Perfluorooctanesulfonic acid (PFOS)	**13**		1.7	0.47	ng/L		03/30/21 11:57	04/05/21 03:32	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.0	ng/L		03/30/21 11:57	04/05/21 03:32	1

Client Sample ID: MW-3-40

Date Collected: 03/24/21 13:23
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-6
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		03/30/21 11:57	04/05/21 03:32	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		03/30/21 11:57	04/05/21 03:32	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		03/30/21 11:57	04/05/21 03:32	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		03/30/21 11:57	04/05/21 03:32	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.35	ng/L		03/30/21 11:57	04/05/21 03:32	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*84*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:32*	*1*
13C4 PFHpA	*87*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:32*	*1*
13C4 PFOA	*89*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:32*	*1*
13C5 PFNA	*97*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:32*	*1*
13C2 PFDA	*90*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:32*	*1*
13C2 PFUnA	*82*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:32*	*1*
13C2 PFDoA	*81*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:32*	*1*
13C2 PFTeDA	*105*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:32*	*1*
13C3 PFBS	*78*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:32*	*1*
18O2 PFHxS	*90*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:32*	*1*
13C4 PFOS	*91*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:32*	*1*
d3-NMeFOSAA	*83*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:32*	*1*
d5-NEtFOSAA	*85*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:32*	*1*
13C3 HFPO-DA	*81*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:32*	*1*

Client Sample ID: MW-102-20

Date Collected: 03/24/21 10:31
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-7
Matrix: Water

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)	**30**		1.7	0.50	ng/L		03/30/21 11:57	04/05/21 03:42	1
Perfluoroheptanoic acid (PFHpA)	**24**		1.7	0.22	ng/L		03/30/21 11:57	04/05/21 03:42	1
Perfluorooctanoic acid (PFOA)	**72**		1.7	0.74	ng/L		03/30/21 11:57	04/05/21 03:42	1
Perfluorononanoic acid (PFNA)	**4.0**		1.7	0.23	ng/L		03/30/21 11:57	04/05/21 03:42	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		03/30/21 11:57	04/05/21 03:42	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.95	ng/L		03/30/21 11:57	04/05/21 03:42	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		03/30/21 11:57	04/05/21 03:42	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		03/30/21 11:57	04/05/21 03:42	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.63	ng/L		03/30/21 11:57	04/05/21 03:42	1
Perfluorobutanesulfonic acid (PFBS)	**2.3**		1.7	0.17	ng/L		03/30/21 11:57	04/05/21 03:42	1
Perfluorohexanesulfonic acid (PFHxS)	**98**		1.7	0.49	ng/L		03/30/21 11:57	04/05/21 03:42	1
Perfluorooctanesulfonic acid (PFOS)	**240**		1.7	0.47	ng/L		03/30/21 11:57	04/05/21 03:42	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.3	1.0	ng/L		03/30/21 11:57	04/05/21 03:42	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.3	1.1	ng/L		03/30/21 11:57	04/05/21 03:42	1

Client Sample ID: MW-102-20

Date Collected: 03/24/21 10:31
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-7
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		03/30/21 11:57	04/05/21 03:42	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		03/30/21 11:57	04/05/21 03:42	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		03/30/21 11:57	04/05/21 03:42	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.35	ng/L		03/30/21 11:57	04/05/21 03:42	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*76*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:42*	*1*
13C4 PFHpA	*84*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:42*	*1*
13C4 PFOA	*84*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:42*	*1*
13C5 PFNA	*91*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:42*	*1*
13C2 PFDA	*89*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:42*	*1*
13C2 PFUnA	*80*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:42*	*1*
13C2 PFDoA	*90*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:42*	*1*
13C2 PFTeDA	*104*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:42*	*1*
13C3 PFBS	*69*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:42*	*1*
18O2 PFHxS	*83*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:42*	*1*
13C4 PFOS	*80*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:42*	*1*
d3-NMeFOSAA	*81*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:42*	*1*
d5-NEtFOSAA	*89*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:42*	*1*
13C3 HFPO-DA	*79*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:42*	*1*

Client Sample ID: MW-8-20

Date Collected: 03/24/21 18:12
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-8
Matrix: Water

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		03/30/21 11:57	04/05/21 03:51	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		03/30/21 11:57	04/05/21 03:51	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		03/30/21 11:57	04/05/21 03:51	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		03/30/21 11:57	04/05/21 03:51	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		03/30/21 11:57	04/05/21 03:51	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		03/30/21 11:57	04/05/21 03:51	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		03/30/21 11:57	04/05/21 03:51	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		03/30/21 11:57	04/05/21 03:51	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		03/30/21 11:57	04/05/21 03:51	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		03/30/21 11:57	04/05/21 03:51	1
Perfluorohexanesulfonic acid (PFHxS)	**0.57**	**J**	1.8	0.52	ng/L		03/30/21 11:57	04/05/21 03:51	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		03/30/21 11:57	04/05/21 03:51	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		03/30/21 11:57	04/05/21 03:51	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		03/30/21 11:57	04/05/21 03:51	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		03/30/21 11:57	04/05/21 03:51	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		03/30/21 11:57	04/05/21 03:51	1

Client Sample ID: MW-8-20

Date Collected: 03/24/21 18:12
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-8
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		03/30/21 11:57	04/05/21 03:51	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		03/30/21 11:57	04/05/21 03:51	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*80*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:51*	*1*
13C4 PFHpA	*80*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:51*	*1*
13C4 PFOA	*83*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:51*	*1*
13C5 PFNA	*82*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:51*	*1*
13C2 PFDA	*80*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:51*	*1*
13C2 PFUnA	*78*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:51*	*1*
13C2 PFDoA	*84*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:51*	*1*
13C2 PFTeDA	*100*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:51*	*1*
13C3 PFBS	*67*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:51*	*1*
18O2 PFHxS	*81*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:51*	*1*
13C4 PFOS	*79*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:51*	*1*
d3-NMeFOSAA	*78*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:51*	*1*
d5-NEtFOSAA	*80*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:51*	*1*
13C3 HFPO-DA	*78*		*50 - 150*	*03/30/21 11:57*	*04/05/21 03:51*	*1*

Client Sample ID: MW-10-20

Date Collected: 03/24/21 19:14
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-9
Matrix: Water

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)	**16**		1.7	0.50	ng/L		03/30/21 11:57	04/05/21 04:00	1
Perfluoroheptanoic acid (PFHpA)	**4.8**		1.7	0.22	ng/L		03/30/21 11:57	04/05/21 04:00	1
Perfluorooctanoic acid (PFOA)	**1.9**		1.7	0.74	ng/L		03/30/21 11:57	04/05/21 04:00	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		03/30/21 11:57	04/05/21 04:00	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		03/30/21 11:57	04/05/21 04:00	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.96	ng/L		03/30/21 11:57	04/05/21 04:00	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		03/30/21 11:57	04/05/21 04:00	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		03/30/21 11:57	04/05/21 04:00	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.63	ng/L		03/30/21 11:57	04/05/21 04:00	1
Perfluorobutanesulfonic acid (PFBS)	**1.3**	**J**	1.7	0.17	ng/L		03/30/21 11:57	04/05/21 04:00	1
Perfluorohexanesulfonic acid (PFHxS)	**17**		1.7	0.50	ng/L		03/30/21 11:57	04/05/21 04:00	1
Perfluorooctanesulfonic acid (PFOS)	**37**		1.7	0.47	ng/L		03/30/21 11:57	04/05/21 04:00	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.3	1.0	ng/L		03/30/21 11:57	04/05/21 04:00	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.3	1.1	ng/L		03/30/21 11:57	04/05/21 04:00	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		03/30/21 11:57	04/05/21 04:00	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		03/30/21 11:57	04/05/21 04:00	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		03/30/21 11:57	04/05/21 04:00	1

Client Sample ID: MW-10-20

Date Collected: 03/24/21 19:14
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-9
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.35	ng/L		03/30/21 11:57	04/05/21 04:00	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*49*	**5-*	*50 - 150*	*03/30/21 11:57*	*04/05/21 04:00*	*1*
13C4 PFHpA	*51*		*50 - 150*	*03/30/21 11:57*	*04/05/21 04:00*	*1*
13C4 PFOA	*52*		*50 - 150*	*03/30/21 11:57*	*04/05/21 04:00*	*1*
13C5 PFNA	*52*		*50 - 150*	*03/30/21 11:57*	*04/05/21 04:00*	*1*
13C2 PFDA	*48*	**5-*	*50 - 150*	*03/30/21 11:57*	*04/05/21 04:00*	*1*
13C2 PFUnA	*45*	**5-*	*50 - 150*	*03/30/21 11:57*	*04/05/21 04:00*	*1*
13C2 PFDoA	*41*	**5-*	*50 - 150*	*03/30/21 11:57*	*04/05/21 04:00*	*1*
13C2 PFTeDA	*45*	**5-*	*50 - 150*	*03/30/21 11:57*	*04/05/21 04:00*	*1*
13C3 PFBS	*41*	**5-*	*50 - 150*	*03/30/21 11:57*	*04/05/21 04:00*	*1*
18O2 PFHxS	*45*	**5-*	*50 - 150*	*03/30/21 11:57*	*04/05/21 04:00*	*1*
13C4 PFOS	*47*	**5-*	*50 - 150*	*03/30/21 11:57*	*04/05/21 04:00*	*1*
d3-NMeFOSAA	*43*	**5-*	*50 - 150*	*03/30/21 11:57*	*04/05/21 04:00*	*1*
d5-NEtFOSAA	*40*	**5-*	*50 - 150*	*03/30/21 11:57*	*04/05/21 04:00*	*1*
13C3 HFPO-DA	*46*	**5-*	*50 - 150*	*03/30/21 11:57*	*04/05/21 04:00*	*1*

Client Sample ID: MW-2-30

Date Collected: 03/24/21 09:54
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-10
Matrix: Water

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	0.51	ng/L		03/30/21 11:57	04/05/21 04:10	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		03/30/21 11:57	04/05/21 04:10	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.75	ng/L		03/30/21 11:57	04/05/21 04:10	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		03/30/21 11:57	04/05/21 04:10	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		03/30/21 11:57	04/05/21 04:10	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.97	ng/L		03/30/21 11:57	04/05/21 04:10	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		03/30/21 11:57	04/05/21 04:10	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		03/30/21 11:57	04/05/21 04:10	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		03/30/21 11:57	04/05/21 04:10	1
Perfluorobutanesulfonic acid (PFBS)	**0.91**	**J**	1.8	0.18	ng/L		03/30/21 11:57	04/05/21 04:10	1
Perfluorohexanesulfonic acid (PFHxS)	**0.54**	**J**	1.8	0.50	ng/L		03/30/21 11:57	04/05/21 04:10	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.48	ng/L		03/30/21 11:57	04/05/21 04:10	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		03/30/21 11:57	04/05/21 04:10	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.2	ng/L		03/30/21 11:57	04/05/21 04:10	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		03/30/21 11:57	04/05/21 04:10	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		03/30/21 11:57	04/05/21 04:10	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		03/30/21 11:57	04/05/21 04:10	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		03/30/21 11:57	04/05/21 04:10	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*95*		*50 - 150*	*03/30/21 11:57*	*04/05/21 04:10*	*1*

Client Sample ID: MW-2-30

Date Collected: 03/24/21 09:54
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-10
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFHpA	98		50 - 150	03/30/21 11:57	04/05/21 04:10	1
13C4 PFOA	98		50 - 150	03/30/21 11:57	04/05/21 04:10	1
13C5 PFNA	104		50 - 150	03/30/21 11:57	04/05/21 04:10	1
13C2 PFDA	107		50 - 150	03/30/21 11:57	04/05/21 04:10	1
13C2 PFUnA	102		50 - 150	03/30/21 11:57	04/05/21 04:10	1
13C2 PFDoA	114		50 - 150	03/30/21 11:57	04/05/21 04:10	1
13C2 PFTeDA	123		50 - 150	03/30/21 11:57	04/05/21 04:10	1
13C3 PFBS	74		50 - 150	03/30/21 11:57	04/05/21 04:10	1
18O2 PFHxS	96		50 - 150	03/30/21 11:57	04/05/21 04:10	1
13C4 PFOS	93		50 - 150	03/30/21 11:57	04/05/21 04:10	1
d3-NMeFOSAA	96		50 - 150	03/30/21 11:57	04/05/21 04:10	1
d5-NEtFOSAA	102		50 - 150	03/30/21 11:57	04/05/21 04:10	1
13C3 HFPO-DA	92		50 - 150	03/30/21 11:57	04/05/21 04:10	1

Client Sample ID: MW-4-20

Date Collected: 03/25/21 15:20
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-11
Matrix: Water

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		1.7	0.50	ng/L		03/30/21 11:57	04/05/21 04:19	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.22	ng/L		03/30/21 11:57	04/05/21 04:19	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.74	ng/L		03/30/21 11:57	04/05/21 04:19	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		03/30/21 11:57	04/05/21 04:19	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		03/30/21 11:57	04/05/21 04:19	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.96	ng/L		03/30/21 11:57	04/05/21 04:19	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		03/30/21 11:57	04/05/21 04:19	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		03/30/21 11:57	04/05/21 04:19	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.64	ng/L		03/30/21 11:57	04/05/21 04:19	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		03/30/21 11:57	04/05/21 04:19	1
Perfluorohexanesulfonic acid (PFHxS)	**0.50**	**J**	1.7	0.50	ng/L		03/30/21 11:57	04/05/21 04:19	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.47	ng/L		03/30/21 11:57	04/05/21 04:19	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.3	1.0	ng/L		03/30/21 11:57	04/05/21 04:19	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.3	1.1	ng/L		03/30/21 11:57	04/05/21 04:19	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		03/30/21 11:57	04/05/21 04:19	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		03/30/21 11:57	04/05/21 04:19	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		03/30/21 11:57	04/05/21 04:19	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.35	ng/L		03/30/21 11:57	04/05/21 04:19	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	86		50 - 150	03/30/21 11:57	04/05/21 04:19	1
13C4 PFHpA	86		50 - 150	03/30/21 11:57	04/05/21 04:19	1
13C4 PFOA	91		50 - 150	03/30/21 11:57	04/05/21 04:19	1
13C5 PFNA	95		50 - 150	03/30/21 11:57	04/05/21 04:19	1
13C2 PFDA	84		50 - 150	03/30/21 11:57	04/05/21 04:19	1

Client Sample ID: MW-4-20

Date Collected: 03/25/21 15:20
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-11
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFUnA	*86*		*50 - 150*	*03/30/21 11:57*	*04/05/21 04:19*	*1*
13C2 PFDoA	*98*		*50 - 150*	*03/30/21 11:57*	*04/05/21 04:19*	*1*
13C2 PFTeDA	*110*		*50 - 150*	*03/30/21 11:57*	*04/05/21 04:19*	*1*
13C3 PFBS	*70*		*50 - 150*	*03/30/21 11:57*	*04/05/21 04:19*	*1*
18O2 PFHxS	*85*		*50 - 150*	*03/30/21 11:57*	*04/05/21 04:19*	*1*
13C4 PFOS	*82*		*50 - 150*	*03/30/21 11:57*	*04/05/21 04:19*	*1*
d3-NMeFOSAA	*75*		*50 - 150*	*03/30/21 11:57*	*04/05/21 04:19*	*1*
d5-NEtFOSAA	*86*		*50 - 150*	*03/30/21 11:57*	*04/05/21 04:19*	*1*
13C3 HFPO-DA	*84*		*50 - 150*	*03/30/21 11:57*	*04/05/21 04:19*	*1*

Client Sample ID: MW-6-20

Date Collected: 03/25/21 16:40
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-12
Matrix: Water

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		03/30/21 11:57	04/05/21 04:28	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		03/30/21 11:57	04/05/21 04:28	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		03/30/21 11:57	04/05/21 04:28	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		03/30/21 11:57	04/05/21 04:28	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		03/30/21 11:57	04/05/21 04:28	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		03/30/21 11:57	04/05/21 04:28	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		03/30/21 11:57	04/05/21 04:28	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		03/30/21 11:57	04/05/21 04:28	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		03/30/21 11:57	04/05/21 04:28	1
Perfluorobutanesulfonic acid (PFBS)	**0.30**	**J**	1.8	0.18	ng/L		03/30/21 11:57	04/05/21 04:28	1
Perfluorohexanesulfonic acid (PFHxS)	**1.0**	**J**	1.8	0.52	ng/L		03/30/21 11:57	04/05/21 04:28	1
Perfluorooctanesulfonic acid (PFOS)	**1.5**	**J**	1.8	0.49	ng/L		03/30/21 11:57	04/05/21 04:28	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		03/30/21 11:57	04/05/21 04:28	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		03/30/21 11:57	04/05/21 04:28	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		03/30/21 11:57	04/05/21 04:28	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		03/30/21 11:57	04/05/21 04:28	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		03/30/21 11:57	04/05/21 04:28	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		03/30/21 11:57	04/05/21 04:28	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*44*	**5-*	*50 - 150*	*03/30/21 11:57*	*04/05/21 04:28*	*1*
13C4 PFHpA	*47*	**5-*	*50 - 150*	*03/30/21 11:57*	*04/05/21 04:28*	*1*
13C4 PFOA	*50*		*50 - 150*	*03/30/21 11:57*	*04/05/21 04:28*	*1*
13C5 PFNA	*51*		*50 - 150*	*03/30/21 11:57*	*04/05/21 04:28*	*1*
13C2 PFDA	*47*	**5-*	*50 - 150*	*03/30/21 11:57*	*04/05/21 04:28*	*1*
13C2 PFUnA	*40*	**5-*	*50 - 150*	*03/30/21 11:57*	*04/05/21 04:28*	*1*
13C2 PFDoA	*39*	**5-*	*50 - 150*	*03/30/21 11:57*	*04/05/21 04:28*	*1*
13C2 PFTeDA	*43*	**5-*	*50 - 150*	*03/30/21 11:57*	*04/05/21 04:28*	*1*

Client Sample ID: MW-6-20

Date Collected: 03/25/21 16:40
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-12
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 PFBS	40	*5-	50 - 150	03/30/21 11:57	04/05/21 04:28	1
18O2 PFHxS	48	*5-	50 - 150	03/30/21 11:57	04/05/21 04:28	1
13C4 PFOS	43	*5-	50 - 150	03/30/21 11:57	04/05/21 04:28	1
d3-NMeFOSAA	38	*5-	50 - 150	03/30/21 11:57	04/05/21 04:28	1
d5-NEtFOSAA	42	*5-	50 - 150	03/30/21 11:57	04/05/21 04:28	1
13C3 HFPO-DA	43	*5-	50 - 150	03/30/21 11:57	04/05/21 04:28	1

Client Sample ID: MW-12-10

Date Collected: 03/25/21 12:05
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-13
Matrix: Water

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)	**4.8**		1.8	0.52	ng/L		03/30/21 11:57	04/05/21 04:38	1
Perfluoroheptanoic acid (PFHpA)	**3.8**		1.8	0.23	ng/L		03/30/21 11:57	04/05/21 04:38	1
Perfluorooctanoic acid (PFOA)	**2.9**		1.8	0.77	ng/L		03/30/21 11:57	04/05/21 04:38	1
Perfluorononanoic acid (PFNA)	**0.64**	**J**	1.8	0.24	ng/L		03/30/21 11:57	04/05/21 04:38	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		03/30/21 11:57	04/05/21 04:38	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		03/30/21 11:57	04/05/21 04:38	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		03/30/21 11:57	04/05/21 04:38	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		03/30/21 11:57	04/05/21 04:38	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		03/30/21 11:57	04/05/21 04:38	1
Perfluorobutanesulfonic acid (PFBS)	**0.52**	**J**	1.8	0.18	ng/L		03/30/21 11:57	04/05/21 04:38	1
Perfluorohexanesulfonic acid (PFHxS)	**9.4**		1.8	0.52	ng/L		03/30/21 11:57	04/05/21 04:38	1
Perfluorooctanesulfonic acid (PFOS)	**36**		1.8	0.49	ng/L		03/30/21 11:57	04/05/21 04:38	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		03/30/21 11:57	04/05/21 04:38	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		03/30/21 11:57	04/05/21 04:38	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		03/30/21 11:57	04/05/21 04:38	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		03/30/21 11:57	04/05/21 04:38	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		03/30/21 11:57	04/05/21 04:38	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		03/30/21 11:57	04/05/21 04:38	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	67		50 - 150	03/30/21 11:57	04/05/21 04:38	1
13C4 PFHpA	67		50 - 150	03/30/21 11:57	04/05/21 04:38	1
13C4 PFOA	74		50 - 150	03/30/21 11:57	04/05/21 04:38	1
13C5 PFNA	75		50 - 150	03/30/21 11:57	04/05/21 04:38	1
13C2 PFDA	71		50 - 150	03/30/21 11:57	04/05/21 04:38	1
13C2 PFUnA	67		50 - 150	03/30/21 11:57	04/05/21 04:38	1
13C2 PFDoA	71		50 - 150	03/30/21 11:57	04/05/21 04:38	1
13C2 PFTeDA	91		50 - 150	03/30/21 11:57	04/05/21 04:38	1
13C3 PFBS	61		50 - 150	03/30/21 11:57	04/05/21 04:38	1
18O2 PFHxS	67		50 - 150	03/30/21 11:57	04/05/21 04:38	1
13C4 PFOS	68		50 - 150	03/30/21 11:57	04/05/21 04:38	1

Client Sample ID: MW-12-10

Date Collected: 03/25/21 12:05
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-13
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d3-NMeFOSAA	75		50 - 150	03/30/21 11:57	04/05/21 04:38	1
d5-NEtFOSAA	74		50 - 150	03/30/21 11:57	04/05/21 04:38	1
13C3 HFPO-DA	63		50 - 150	03/30/21 11:57	04/05/21 04:38	1

Client Sample ID: MW-11-15

Date Collected: 03/25/21 10:35
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-14
Matrix: Water

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)	**15**		1.7	0.49	ng/L		03/30/21 11:57	04/05/21 04:47	1
Perfluoroheptanoic acid (PFHpA)	**3.0**		1.7	0.21	ng/L		03/30/21 11:57	04/05/21 04:47	1
Perfluorooctanoic acid (PFOA)	**2.2**		1.7	0.72	ng/L		03/30/21 11:57	04/05/21 04:47	1
Perfluorononanoic acid (PFNA)	**0.62**	**J**	1.7	0.23	ng/L		03/30/21 11:57	04/05/21 04:47	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		03/30/21 11:57	04/05/21 04:47	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.93	ng/L		03/30/21 11:57	04/05/21 04:47	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.46	ng/L		03/30/21 11:57	04/05/21 04:47	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		03/30/21 11:57	04/05/21 04:47	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.62	ng/L		03/30/21 11:57	04/05/21 04:47	1
Perfluorobutanesulfonic acid (PFBS)	**1.2**	**J**	1.7	0.17	ng/L		03/30/21 11:57	04/05/21 04:47	1
Perfluorohexanesulfonic acid (PFHxS)	**17**		1.7	0.48	ng/L		03/30/21 11:57	04/05/21 04:47	1
Perfluorooctanesulfonic acid (PFOS)	**210**		1.7	0.46	ng/L		03/30/21 11:57	04/05/21 04:47	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.2	1.0	ng/L		03/30/21 11:57	04/05/21 04:47	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.2	1.1	ng/L		03/30/21 11:57	04/05/21 04:47	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		03/30/21 11:57	04/05/21 04:47	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		03/30/21 11:57	04/05/21 04:47	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		03/30/21 11:57	04/05/21 04:47	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.34	ng/L		03/30/21 11:57	04/05/21 04:47	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	98		50 - 150	03/30/21 11:57	04/05/21 04:47	1
13C4 PFHpA	108		50 - 150	03/30/21 11:57	04/05/21 04:47	1
13C4 PFOA	110		50 - 150	03/30/21 11:57	04/05/21 04:47	1
13C5 PFNA	115		50 - 150	03/30/21 11:57	04/05/21 04:47	1
13C2 PFDA	111		50 - 150	03/30/21 11:57	04/05/21 04:47	1
13C2 PFUnA	105		50 - 150	03/30/21 11:57	04/05/21 04:47	1
13C2 PFDoA	102		50 - 150	03/30/21 11:57	04/05/21 04:47	1
13C2 PFTeDA	132		50 - 150	03/30/21 11:57	04/05/21 04:47	1
13C3 PFBS	99		50 - 150	03/30/21 11:57	04/05/21 04:47	1
18O2 PFHxS	110		50 - 150	03/30/21 11:57	04/05/21 04:47	1
13C4 PFOS	102		50 - 150	03/30/21 11:57	04/05/21 04:47	1
d3-NMeFOSAA	106		50 - 150	03/30/21 11:57	04/05/21 04:47	1
d5-NEtFOSAA	110		50 - 150	03/30/21 11:57	04/05/21 04:47	1
13C3 HFPO-DA	103		50 - 150	03/30/21 11:57	04/05/21 04:47	1

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS DOT-MW

Job ID: 320-71798-1

Client Sample ID: MW-5-20

Date Collected: 03/25/21 09:07
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-15

Matrix: Water

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)	**0.89**	**J**	1.7	0.49	ng/L		03/30/21 11:57	04/05/21 04:56	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.21	ng/L		03/30/21 11:57	04/05/21 04:56	1
Perfluorooctanoic acid (PFOA)	**0.87**	**J**	1.7	0.73	ng/L		03/30/21 11:57	04/05/21 04:56	1
Perfluorononanoic acid (PFNA)	**0.65**	**J**	1.7	0.23	ng/L		03/30/21 11:57	04/05/21 04:56	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		03/30/21 11:57	04/05/21 04:56	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.94	ng/L		03/30/21 11:57	04/05/21 04:56	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47	ng/L		03/30/21 11:57	04/05/21 04:56	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		03/30/21 11:57	04/05/21 04:56	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.62	ng/L		03/30/21 11:57	04/05/21 04:56	1
Perfluorobutanesulfonic acid (PFBS)	**0.45**	**J**	1.7	0.17	ng/L		03/30/21 11:57	04/05/21 04:56	1
Perfluorohexanesulfonic acid (PFHxS)	**1.4**	**J**	1.7	0.49	ng/L		03/30/21 11:57	04/05/21 04:56	1
Perfluorooctanesulfonic acid (PFOS)	**2.7**		1.7	0.46	ng/L		03/30/21 11:57	04/05/21 04:56	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.3	1.0	ng/L		03/30/21 11:57	04/05/21 04:56	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.3	1.1	ng/L		03/30/21 11:57	04/05/21 04:56	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		03/30/21 11:57	04/05/21 04:56	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		03/30/21 11:57	04/05/21 04:56	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		03/30/21 11:57	04/05/21 04:56	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.34	ng/L		03/30/21 11:57	04/05/21 04:56	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*96*		*50 - 150*	*03/30/21 11:57*	*04/05/21 04:56*	*1*
13C4 PFHpA	*102*		*50 - 150*	*03/30/21 11:57*	*04/05/21 04:56*	*1*
13C4 PFOA	*97*		*50 - 150*	*03/30/21 11:57*	*04/05/21 04:56*	*1*
13C5 PFNA	*99*		*50 - 150*	*03/30/21 11:57*	*04/05/21 04:56*	*1*
13C2 PFDA	*101*		*50 - 150*	*03/30/21 11:57*	*04/05/21 04:56*	*1*
13C2 PFUnA	*102*		*50 - 150*	*03/30/21 11:57*	*04/05/21 04:56*	*1*
13C2 PFDoA	*120*		*50 - 150*	*03/30/21 11:57*	*04/05/21 04:56*	*1*
13C2 PFTeDA	*126*		*50 - 150*	*03/30/21 11:57*	*04/05/21 04:56*	*1*
13C3 PFBS	*82*		*50 - 150*	*03/30/21 11:57*	*04/05/21 04:56*	*1*
18O2 PFHxS	*96*		*50 - 150*	*03/30/21 11:57*	*04/05/21 04:56*	*1*
13C4 PFOS	*91*		*50 - 150*	*03/30/21 11:57*	*04/05/21 04:56*	*1*
d3-NMeFOSAA	*103*		*50 - 150*	*03/30/21 11:57*	*04/05/21 04:56*	*1*
d5-NEtFOSAA	*108*		*50 - 150*	*03/30/21 11:57*	*04/05/21 04:56*	*1*
13C3 HFPO-DA	*97*		*50 - 150*	*03/30/21 11:57*	*04/05/21 04:56*	*1*

Client Sample ID: MW-111-15

Date Collected: 03/25/21 10:25
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-16

Matrix: Water

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)	**13**		1.7	0.50	ng/L		03/30/21 11:57	04/05/21 05:25	1
Perfluoroheptanoic acid (PFHpA)	**2.7**		1.7	0.21	ng/L		03/30/21 11:57	04/05/21 05:25	1
Perfluorooctanoic acid (PFOA)	**2.2**		1.7	0.73	ng/L		03/30/21 11:57	04/05/21 05:25	1

Client Sample ID: MW-111-15

Date Collected: 03/25/21 10:25
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-16
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorononanoic acid (PFNA)	**0.60**	**J**	1.7	0.23	ng/L		03/30/21 11:57	04/05/21 05:25	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		03/30/21 11:57	04/05/21 05:25	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.94	ng/L		03/30/21 11:57	04/05/21 05:25	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47	ng/L		03/30/21 11:57	04/05/21 05:25	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		03/30/21 11:57	04/05/21 05:25	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.63	ng/L		03/30/21 11:57	04/05/21 05:25	1
Perfluorobutanesulfonic acid (PFBS)	**1.4**	**J**	1.7	0.17	ng/L		03/30/21 11:57	04/05/21 05:25	1
Perfluorohexanesulfonic acid (PFHxS)	**20**		1.7	0.49	ng/L		03/30/21 11:57	04/05/21 05:25	1
Perfluorooctanesulfonic acid (PFOS)	**200**		1.7	0.46	ng/L		03/30/21 11:57	04/05/21 05:25	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.3	1.0	ng/L		03/30/21 11:57	04/05/21 05:25	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.3	1.1	ng/L		03/30/21 11:57	04/05/21 05:25	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		03/30/21 11:57	04/05/21 05:25	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		03/30/21 11:57	04/05/21 05:25	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		03/30/21 11:57	04/05/21 05:25	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.34	ng/L		03/30/21 11:57	04/05/21 05:25	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*97*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:25*	*1*
13C4 PFHpA	*98*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:25*	*1*
13C4 PFOA	*89*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:25*	*1*
13C5 PFNA	*90*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:25*	*1*
13C2 PFDA	*93*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:25*	*1*
13C2 PFUnA	*93*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:25*	*1*
13C2 PFDoA	*101*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:25*	*1*
13C2 PFTeDA	*115*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:25*	*1*
13C3 PFBS	*89*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:25*	*1*
18O2 PFHxS	*83*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:25*	*1*
13C4 PFOS	*85*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:25*	*1*
d3-NMeFOSAA	*95*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:25*	*1*
d5-NEtFOSAA	*94*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:25*	*1*
13C3 HFPO-DA	*87*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:25*	*1*

Client Sample ID: MW-7-20

Date Collected: 03/25/21 14:00
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-17
Matrix: Water

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)	**1.3**	**J**	1.7	0.51	ng/L		03/30/21 11:57	04/05/21 05:34	1
Perfluoroheptanoic acid (PFHpA)	**1.0**	**J**	1.7	0.22	ng/L		03/30/21 11:57	04/05/21 05:34	1
Perfluorooctanoic acid (PFOA)	**2.3**		1.7	0.74	ng/L		03/30/21 11:57	04/05/21 05:34	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.24	ng/L		03/30/21 11:57	04/05/21 05:34	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		03/30/21 11:57	04/05/21 05:34	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.96	ng/L		03/30/21 11:57	04/05/21 05:34	1

Client Sample ID: MW-7-20

Date Collected: 03/25/21 14:00
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-17

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		03/30/21 11:57	04/05/21 05:34	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		03/30/21 11:57	04/05/21 05:34	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.64	ng/L		03/30/21 11:57	04/05/21 05:34	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		03/30/21 11:57	04/05/21 05:34	1
Perfluorohexanesulfonic acid (PFHxS)	**0.98**	**J**	1.7	0.50	ng/L		03/30/21 11:57	04/05/21 05:34	1
Perfluorooctanesulfonic acid (PFOS)	**5.0**		1.7	0.47	ng/L		03/30/21 11:57	04/05/21 05:34	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.0	ng/L		03/30/21 11:57	04/05/21 05:34	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		03/30/21 11:57	04/05/21 05:34	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		03/30/21 11:57	04/05/21 05:34	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		03/30/21 11:57	04/05/21 05:34	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		03/30/21 11:57	04/05/21 05:34	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.35	ng/L		03/30/21 11:57	04/05/21 05:34	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*78*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:34*	*1*
13C4 PFHpA	*85*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:34*	*1*
13C4 PFOA	*78*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:34*	*1*
13C5 PFNA	*77*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:34*	*1*
13C2 PFDA	*79*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:34*	*1*
13C2 PFUnA	*66*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:34*	*1*
13C2 PFDoA	*67*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:34*	*1*
13C2 PFTeDA	*71*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:34*	*1*
13C3 PFBS	*68*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:34*	*1*
18O2 PFHxS	*77*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:34*	*1*
13C4 PFOS	*70*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:34*	*1*
d3-NMeFOSAA	*72*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:34*	*1*
d5-NEtFOSAA	*69*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:34*	*1*
13C3 HFPO-DA	*82*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:34*	*1*

Client Sample ID: GAC

Date Collected: 03/25/21 18:02
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-18

Matrix: Water

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		1.7	0.50	ng/L		03/30/21 11:57	04/05/21 05:43	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.22	ng/L		03/30/21 11:57	04/05/21 05:43	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.73	ng/L		03/30/21 11:57	04/05/21 05:43	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		03/30/21 11:57	04/05/21 05:43	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		03/30/21 11:57	04/05/21 05:43	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.95	ng/L		03/30/21 11:57	04/05/21 05:43	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47	ng/L		03/30/21 11:57	04/05/21 05:43	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		03/30/21 11:57	04/05/21 05:43	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.63	ng/L		03/30/21 11:57	04/05/21 05:43	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		03/30/21 11:57	04/05/21 05:43	1

Client Sample ID: GAC
Date Collected: 03/25/21 18:02
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-18
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.49	ng/L		03/30/21 11:57	04/05/21 05:43	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.47	ng/L		03/30/21 11:57	04/05/21 05:43	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.3	1.0	ng/L		03/30/21 11:57	04/05/21 05:43	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.3	1.1	ng/L		03/30/21 11:57	04/05/21 05:43	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		03/30/21 11:57	04/05/21 05:43	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		03/30/21 11:57	04/05/21 05:43	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		03/30/21 11:57	04/05/21 05:43	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.34	ng/L		03/30/21 11:57	04/05/21 05:43	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*62*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:43*	*1*
13C4 PFHpA	*65*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:43*	*1*
13C4 PFOA	*70*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:43*	*1*
13C5 PFNA	*66*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:43*	*1*
13C2 PFDA	*65*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:43*	*1*
13C2 PFUnA	*67*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:43*	*1*
13C2 PFDoA	*72*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:43*	*1*
13C2 PFTeDA	*79*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:43*	*1*
13C3 PFBS	*62*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:43*	*1*
18O2 PFHxS	*60*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:43*	*1*
13C4 PFOS	*58*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:43*	*1*
d3-NMeFOSAA	*65*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:43*	*1*
d5-NEtFOSAA	*66*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:43*	*1*
13C3 HFPO-DA	*68*		*50 - 150*	*03/30/21 11:57*	*04/05/21 05:43*	*1*

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS DOT-MW

Job ID: 320-71798-1

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDoA (50-150)	PFTDA (50-150)
320-71798-1	MW-2-20	87	98	91	104	96	88	103	119
320-71798-2	MW-1-15	85	83	86	89	87	82	89	110
320-71798-3	MW-1-40	70	76	81	83	81	66	79	97
320-71798-4	MW-9-30	68	78	74	80	70	60	56	61
320-71798-5	MW-3-15	82	90	87	94	89	81	75	84
320-71798-6	MW-3-40	84	87	89	97	90	82	81	105
320-71798-7	MW-102-20	76	84	84	91	89	80	90	104
320-71798-8	MW-8-20	80	80	83	82	80	78	84	100
320-71798-9	MW-10-20	49 *5-	51	52	52	48 *5-	45 *5-	41 *5-	45 *5-
320-71798-10	MW-2-30	95	98	98	104	107	102	114	123
320-71798-11	MW-4-20	86	86	91	95	84	86	98	110
320-71798-12	MW-6-20	44 *5-	47 *5-	50	51	47 *5-	40 *5-	39 *5-	43 *5-
320-71798-13	MW-12-10	67	67	74	75	71	67	71	91
320-71798-14	MW-11-15	98	108	110	115	111	105	102	132
320-71798-15	MW-5-20	96	102	97	99	101	102	120	126
320-71798-16	MW-111-15	97	98	89	90	93	93	101	115
320-71798-17	MW-7-20	78	85	78	77	79	66	67	71
320-71798-18	GAC	62	65	70	66	65	67	72	79
LCS 320-475057/2-A	Lab Control Sample	76	87	89	93	92	81	92	100
LCSD 320-475057/3-A	Lab Control Sample Dup	68	79	78	82	80	73	76	89
MB 320-475057/1-A	Method Blank	88	99	99	98	89	88	95	112

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)		
320-71798-1	MW-2-20	75	87	88	92	106	89		
320-71798-2	MW-1-15	72	85	81	84	85	86		
320-71798-3	MW-1-40	63	74	77	74	82	74		
320-71798-4	MW-9-30	58	75	76	58	55	71		
320-71798-5	MW-3-15	71	87	87	74	74	92		
320-71798-6	MW-3-40	78	90	91	83	85	81		
320-71798-7	MW-102-20	69	83	80	81	89	79		
320-71798-8	MW-8-20	67	81	79	78	80	78		
320-71798-9	MW-10-20	41 *5-	45 *5-	47 *5-	43 *5-	40 *5-	46 *5-		
320-71798-10	MW-2-30	74	96	93	96	102	92		
320-71798-11	MW-4-20	70	85	82	75	86	84		
320-71798-12	MW-6-20	40 *5-	48 *5-	43 *5-	38 *5-	42 *5-	43 *5-		
320-71798-13	MW-12-10	61	67	68	75	74	63		
320-71798-14	MW-11-15	99	110	102	106	110	103		
320-71798-15	MW-5-20	82	96	91	103	108	97		
320-71798-16	MW-111-15	89	83	85	95	94	87		
320-71798-17	MW-7-20	68	77	70	72	69	82		
320-71798-18	GAC	62	60	58	65	66	68		
LCS 320-475057/2-A	Lab Control Sample	80	86	82	79	83	84		
LCSD 320-475057/3-A	Lab Control Sample Dup	68	72	73	74	74	71		
MB 320-475057/1-A	Method Blank	87	93	91	90	95	89		

Surrogate Legend

PFHxA = 13C2 PFHxA
C4PFHA = 13C4 PFHpA
PFOA = 13C4 PFOA

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS DOT-MW

Job ID: 320-71798-1

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

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Lab Sample ID: MB 320-475057/1-A
Matrix: Water
Analysis Batch: 476520

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 475057

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		03/30/21 11:57	04/05/21 01:40	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		03/30/21 11:57	04/05/21 01:40	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		03/30/21 11:57	04/05/21 01:40	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		03/30/21 11:57	04/05/21 01:40	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		03/30/21 11:57	04/05/21 01:40	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		03/30/21 11:57	04/05/21 01:40	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		03/30/21 11:57	04/05/21 01:40	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		03/30/21 11:57	04/05/21 01:40	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		03/30/21 11:57	04/05/21 01:40	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		03/30/21 11:57	04/05/21 01:40	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		03/30/21 11:57	04/05/21 01:40	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		03/30/21 11:57	04/05/21 01:40	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		03/30/21 11:57	04/05/21 01:40	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		03/30/21 11:57	04/05/21 01:40	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		03/30/21 11:57	04/05/21 01:40	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		03/30/21 11:57	04/05/21 01:40	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		03/30/21 11:57	04/05/21 01:40	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		03/30/21 11:57	04/05/21 01:40	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*88*		*50 - 150*	*03/30/21 11:57*	*04/ 05/21 01:40*	*1*
13C4 PFHpA	*99*		*50 - 150*	*03/ 30/21 11:57*	*04/ 05/21 01:40*	*1*
13C4 PFOA	*99*		*50 - 150*	*03/ 30/21 11:57*	*04/ 05/21 01:40*	*1*
13C5 PFNA	*98*		*50 - 150*	*03/ 30/21 11:57*	*04/ 05/21 01:40*	*1*
13C2 PFDA	*89*		*50 - 150*	*03/ 30/21 11:57*	*04/ 05/21 01:40*	*1*
13C2 PFUnA	*88*		*50 - 150*	*03/ 30/21 11:57*	*04/ 05/21 01:40*	*1*
13C2 PFDoA	*95*		*50 - 150*	*03/ 30/21 11:57*	*04/ 05/21 01:40*	*1*
13C2 PFTeDA	*112*		*50 - 150*	*03/30/21 11:57*	*04/ 05/21 01:40*	*1*
13C3 PFBS	*87*		*50 - 150*	*03/ 30/21 11:57*	*04/ 05/21 01:40*	*1*
18O2 PFHxS	*93*		*50 - 150*	*03/ 30/21 11:57*	*04/ 05/21 01:40*	*1*
13C4 PFOS	*91*		*50 - 150*	*03/ 30/21 11:57*	*04/ 05/21 01:40*	*1*
d3-NMeFOSAA	*90*		*50 - 150*	*03/ 30/21 11:57*	*04/ 05/21 01:40*	*1*
d5-NEt FOSAA	*95*		*50 - 150*	*03/ 30/21 11:57*	*04/ 05/21 01:40*	*1*
13C3 HFPO-DA	*89*		*50 - 150*	*03/ 30/21 11:57*	*04/ 05/21 01:40*	*1*

Lab Sample ID: LCS 320-475057/2-A
Matrix: Water
Analysis Batch: 476520

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 475057

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid (PFHxA)	40.0	48.2		ng/L		121	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	42.8		ng/L		107	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	43.3		ng/L		108	71 - 133
Perfluorononanoic acid (PFNA)	40.0	45.8		ng/L		114	69 - 130

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCS 320-475057/2-A
Matrix: Water
Analysis Batch: 476520

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 475057

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorodecanoic acid (PFDA)	40.0	40.8		ng/L		102	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	46.5		ng/L		116	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	40.0		ng/L		100	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	41.9		ng/L		105	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	40.1		ng/L		100	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.4	37.7		ng/L		107	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	39.0		ng/L		107	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.1	36.1		ng/L		97	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.1		ng/L		100	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	39.2		ng/L		98	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	43.3		ng/L		116	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	41.5		ng/L		104	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	41.8		ng/L		111	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	43.5		ng/L		115	81 - 141

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*76*		*50 - 150*
13C4 PFHpA	*87*		*50 - 150*
13C4 PFOA	*89*		*50 - 150*
13C5 PFNA	*93*		*50 - 150*
13C2 PFDA	*92*		*50 - 150*
13C2 PFUnA	*81*		*50 - 150*
13C2 PFDoA	*92*		*50 - 150*
13C2 PFTeDA	*100*		*50 - 150*
13C3 PFBS	*80*		*50 - 150*
18O2 PFHxS	*86*		*50 - 150*
13C4 PFOS	*82*		*50 - 150*
d3-NMeFOSAA	*79*		*50 - 150*
d5-NEt FOSAA	*83*		*50 - 150*
13C3 HFPO-DA	*84*		*50 - 150*

Lab Sample ID: LCSD 320-475057/3-A
Matrix: Water
Analysis Batch: 476520

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 475057

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	50.9		ng/L		127	72 - 129	5	30
Perfluoroheptanoic acid (PFHpA)	40.0	40.5		ng/L		101	72 - 130	6	30
Perfluorooctanoic acid (PFOA)	40.0	43.0		ng/L		108	71 - 133	1	30

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCSD 320-475057/3-A
Matrix: Water
Analysis Batch: 476520

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 475057

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	43.9		ng/L		110	69 - 130	4	30
Perfluorodecanoic acid (PFDA)	40.0	39.5		ng/L		99	71 - 129	3	30
Perfluoroundecanoic acid (PFUnA)	40.0	45.2		ng/L		113	69 - 133	3	30
Perfluorododecanoic acid (PFDoA)	40.0	41.9		ng/L		105	72 - 134	5	30
Perfluorotridecanoic acid (PFTriA)	40.0	43.6		ng/L		109	65 - 144	4	30
Perfluorotetradecanoic acid (PFTeA)	40.0	41.4		ng/L		104	71 - 132	3	30
Perfluorobutanesulfonic acid (PFBS)	35.4	37.7		ng/L		107	72 - 130	0	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	40.5		ng/L		111	68 - 131	4	30
Perfluorooctanesulfonic acid (PFOS)	37.1	37.7		ng/L		101	65 - 140	4	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	39.5		ng/L		99	65 - 136	1	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	37.9		ng/L		95	61 - 135	3	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	41.9		ng/L		112	77 - 137	3	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	39.5		ng/L		99	72 - 132	5	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	41.3		ng/L		110	76 - 136	1	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	43.8		ng/L		116	81 - 141	1	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*68*		*50 - 150*
13C4 PFHpA	*79*		*50 - 150*
13C4 PFOA	*78*		*50 - 150*
13C5 PFNA	*82*		*50 - 150*
13C2 PFDA	*80*		*50 - 150*
13C2 PFUnA	*73*		*50 - 150*
13C2 PFDoA	*76*		*50 - 150*
13C2 PFTeDA	*89*		*50 - 150*
13C3 PFBS	*68*		*50 - 150*
18O2 PFHxS	*72*		*50 - 150*
13C4 PFOS	*73*		*50 - 150*
d3-NMeFOSAA	*74*		*50 - 150*
d5-NEt FOSAA	*74*		*50 - 150*
13C3 HFPO-DA	*71*		*50 - 150*

LCMS

Prep Batch: 475057

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-71798-1	MW-2-20	Total/NA	Water	3535	
320-71798-2	MW-1-15	Total/NA	Water	3535	
320-71798-3	MW-1-40	Total/NA	Water	3535	
320-71798-4	MW-9-30	Total/NA	Water	3535	
320-71798-5	MW-3-15	Total/NA	Water	3535	
320-71798-6	MW-3-40	Total/NA	Water	3535	
320-71798-7	MW-102-20	Total/NA	Water	3535	
320-71798-8	MW-8-20	Total/NA	Water	3535	
320-71798-9	MW-10-20	Total/NA	Water	3535	
320-71798-10	MW-2-30	Total/NA	Water	3535	
320-71798-11	MW-4-20	Total/NA	Water	3535	
320-71798-12	MW-6-20	Total/NA	Water	3535	
320-71798-13	MW-12-10	Total/NA	Water	3535	
320-71798-14	MW-11-15	Total/NA	Water	3535	
320-71798-15	MW-5-20	Total/NA	Water	3535	
320-71798-16	MW-111-15	Total/NA	Water	3535	
320-71798-17	MW-7-20	Total/NA	Water	3535	
320-71798-18	GAC	Total/NA	Water	3535	
MB 320-475057/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-475057/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-475057/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 476520

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-71798-1	MW-2-20	Total/NA	Water	EPA 537(Mod)	475057
320-71798-2	MW-1-15	Total/NA	Water	EPA 537(Mod)	475057
320-71798-3	MW-1-40	Total/NA	Water	EPA 537(Mod)	475057
320-71798-4	MW-9-30	Total/NA	Water	EPA 537(Mod)	475057
320-71798-5	MW-3-15	Total/NA	Water	EPA 537(Mod)	475057
320-71798-6	MW-3-40	Total/NA	Water	EPA 537(Mod)	475057
320-71798-7	MW-102-20	Total/NA	Water	EPA 537(Mod)	475057
320-71798-8	MW-8-20	Total/NA	Water	EPA 537(Mod)	475057
320-71798-9	MW-10-20	Total/NA	Water	EPA 537(Mod)	475057
320-71798-10	MW-2-30	Total/NA	Water	EPA 537(Mod)	475057
320-71798-11	MW-4-20	Total/NA	Water	EPA 537(Mod)	475057
320-71798-12	MW-6-20	Total/NA	Water	EPA 537(Mod)	475057
320-71798-13	MW-12-10	Total/NA	Water	EPA 537(Mod)	475057
320-71798-14	MW-11-15	Total/NA	Water	EPA 537(Mod)	475057
320-71798-15	MW-5-20	Total/NA	Water	EPA 537(Mod)	475057
320-71798-16	MW-111-15	Total/NA	Water	EPA 537(Mod)	475057
320-71798-17	MW-7-20	Total/NA	Water	EPA 537(Mod)	475057
320-71798-18	GAC	Total/NA	Water	EPA 537(Mod)	475057
MB 320-475057/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	475057
LCS 320-475057/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	475057
LCSD 320-475057/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	475057

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS DOT-MW

Job ID: 320-71798-1

Client Sample ID: MW-2-20
Date Collected: 03/24/21 10:41
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-1
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			295.7 mL	10.0 mL	475057	03/30/21 11:57	LN	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			476520	04/05/21 02:27	RS1	TAL SAC

Client Sample ID: MW-1-15
Date Collected: 03/24/21 15:53
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-2
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			284.3 mL	10.0 mL	475057	03/30/21 11:57	LN	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			476520	04/05/21 02:36	RS1	TAL SAC

Client Sample ID: MW-1-40
Date Collected: 03/24/21 16:48
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-3
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			292.4 mL	10.0 mL	475057	03/30/21 11:57	LN	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			476520	04/05/21 02:46	RS1	TAL SAC

Client Sample ID: MW-9-30
Date Collected: 03/24/21 20:44
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-4
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			279.7 mL	10.0 mL	475057	03/30/21 11:57	LN	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			476520	04/05/21 02:55	RS1	TAL SAC

Client Sample ID: MW-3-15
Date Collected: 03/24/21 12:29
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-5
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			288.5 mL	10.0 mL	475057	03/30/21 11:57	LN	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			476520	04/05/21 03:04	RS1	TAL SAC

Client Sample ID: MW-3-40
Date Collected: 03/24/21 13:23
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-6
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			286 mL	10.0 mL	475057	03/30/21 11:57	LN	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			476520	04/05/21 03:32	RS1	TAL SAC

Client Sample ID: MW-102-20
Lab Sample ID: 320-71798-7

Date Collected: 03/24/21 10:31
Matrix: Water
Date Received: 03/29/21 11:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			288.7 mL	10.0 mL	475057	03/30/21 11:57	LN	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			476520	04/05/21 03:42	RS1	TAL SAC

Client Sample ID: MW-8-20
Lab Sample ID: 320-71798-8

Date Collected: 03/24/21 18:12
Matrix: Water
Date Received: 03/29/21 11:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			273.1 mL	10.0 mL	475057	03/30/21 11:57	LN	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			476520	04/05/21 03:51	RS1	TAL SAC

Client Sample ID: MW-10-20
Lab Sample ID: 320-71798-9

Date Collected: 03/24/21 19:14
Matrix: Water
Date Received: 03/29/21 11:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			287.7 mL	10.0 mL	475057	03/30/21 11:57	LN	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			476520	04/05/21 04:00	RS1	TAL SAC

Client Sample ID: MW-2-30
Lab Sample ID: 320-71798-10

Date Collected: 03/24/21 09:54
Matrix: Water
Date Received: 03/29/21 11:55

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	10.0 mL	475057	03/30/21 11:57	LN	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			476520	04/05/21 04:10	RS1	TAL SAC

Client Sample ID: MW-4-20
Lab Sample ID: 320-71798-11

Date Collected: 03/25/21 15:20
Matrix: Water
Date Received: 03/29/21 11:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			287.4 mL	10.0 mL	475057	03/30/21 11:57	LN	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			476520	04/05/21 04:19	RS1	TAL SAC

Client Sample ID: MW-6-20
Lab Sample ID: 320-71798-12

Date Collected: 03/25/21 16:40
Matrix: Water
Date Received: 03/29/21 11:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			276.3 mL	10.0 mL	475057	03/30/21 11:57	LN	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			476520	04/05/21 04:28	RS1	TAL SAC

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS DOT-MW

Job ID: 320-71798-1

Client Sample ID: MW-12-10
Date Collected: 03/25/21 12:05
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-13
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			276.4 mL	10.0 mL	475057	03/30/21 11:57	LN	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			476520	04/05/21 04:38	RS1	TAL SAC

Client Sample ID: MW-11-15
Date Collected: 03/25/21 10:35
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-14
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			295.7 mL	10.0 mL	475057	03/30/21 11:57	LN	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			476520	04/05/21 04:47	RS1	TAL SAC

Client Sample ID: MW-5-20
Date Collected: 03/25/21 09:07
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-15
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			293.1 mL	10.0 mL	475057	03/30/21 11:57	LN	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			476520	04/05/21 04:56	RS1	TAL SAC

Client Sample ID: MW-111-15
Date Collected: 03/25/21 10:25
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-16
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			291.8 mL	10.0 mL	475057	03/30/21 11:57	LN	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			476520	04/05/21 05:25	RS1	TAL SAC

Client Sample ID: MW-7-20
Date Collected: 03/25/21 14:00
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-17
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			287.1 mL	10.0 mL	475057	03/30/21 11:57	LN	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			476520	04/05/21 05:34	RS1	TAL SAC

Client Sample ID: GAC
Date Collected: 03/25/21 18:02
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71798-18
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			290.1 mL	10.0 mL	475057	03/30/21 11:57	LN	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			476520	04/05/21 05:43	RS1	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: GUS PFAS DOT-MW

Job ID: 320-71798-1

Laboratory: Eurofins TestAmerica, Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

Method Summary

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS DOT-MW

Job ID: 320-71798-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod)	PFAS for QSM 5.3, Table B-15	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: GUS PFAS DOT-MW

Job ID: 320-71798-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-71798-1	MW-2-20	Water	03/24/21 10:41	03/29/21 11:55	
320-71798-2	MW-1-15	Water	03/24/21 15:53	03/29/21 11:55	
320-71798-3	MW-1-40	Water	03/24/21 16:48	03/29/21 11:55	
320-71798-4	MW-9-30	Water	03/24/21 20:44	03/29/21 11:55	
320-71798-5	MW-3-15	Water	03/24/21 12:29	03/29/21 11:55	
320-71798-6	MW-3-40	Water	03/24/21 13:23	03/29/21 11:55	
320-71798-7	MW-102-20	Water	03/24/21 10:31	03/29/21 11:55	
320-71798-8	MW-8-20	Water	03/24/21 18:12	03/29/21 11:55	
320-71798-9	MW-10-20	Water	03/24/21 19:14	03/29/21 11:55	
320-71798-10	MW-2-30	Water	03/24/21 09:54	03/29/21 11:55	
320-71798-11	MW-4-20	Water	03/25/21 15:20	03/29/21 11:55	
320-71798-12	MW-6-20	Water	03/25/21 16:40	03/29/21 11:55	
320-71798-13	MW-12-10	Water	03/25/21 12:05	03/29/21 11:55	
320-71798-14	MW-11-15	Water	03/25/21 10:35	03/29/21 11:55	
320-71798-15	MW-5-20	Water	03/25/21 09:07	03/29/21 11:55	
320-71798-16	MW-111-15	Water	03/25/21 10:25	03/29/21 11:55	
320-71798-17	MW-7-20	Water	03/25/21 14:00	03/29/21 11:55	
320-71798-18	GAC	Water	03/25/21 18:02	03/29/21 11:55	

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600
www.shannonwilson.com

CHAIN-OF-CUSTODY RECORD

Laboratory Test America
Attn: D. Alltucker

Turn Around Time: [X] Normal [ ] Rush — Please Specify

Quote No:

J-Flags: [X] Yes [ ] No

Analytical Methods (include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	DTAS +16 537.1	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
MW-2-20		1041	3/24/21	X	2	Groundwaters
MW-1-15		1553	3/24/21	X		
MW-1-40		1648	3/24/21	X		
MW-9-30		2044	3/24/21	X		
MW-3-15		1229	3/24/21	X		
MW-3-40		1323	3/24/21	X		
MW-102-20		1031	3/24/21	X		
~~MW-3-40~~		~~1323~~	~~3/24/21~~	~~X~~		
MW-8-20		1812	3/24/21	X		
MW-10-20		1914	3/24/21	X		

320-71798 Chain of Custody

Project Information	
Number:	102594-012
Name:	GUS DTAS DOT-MW
Contact:	KRF
Ongoing Project?	Yes [X] No [ ]
Sampler:	JKR

Sample Receipt	
Total No. of Containers:	
COC Seals/Intact? Y/N/NA	
Received Good Cond./Cold	
Temp:	
Delivery Method:	

Notes:

3.4°C

Reliquished By: 1.	Reliquished By: 2.	Reliquished By: 3.
Signature: Time: 0900	Signature: Time:	Signature: Time:
Printed Name: A Masters Date: 3/26/21	Printed Name: Date:	Printed Name: Date:
Company: Shannon + Wilson, Inc.	Company:	Company:
Received By: 1.	**Received By: 2.**	**Received By: 3.**
Signature: Time: 1155	Signature: Time:	Signature: Time:
Printed Name: ETASAC Date: 03/29/21	Printed Name: Date:	Printed Name: Date:
Company:	Company:	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

No. 36322

4/7/2021

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600
www.shannonwilson.com

CHAIN-OF-CUSTODY RECORD

Laboratory _____
Attn: _____

Turn Around Time: [X] Normal [ ] Rush — Please Specify

Quote No:

J-Flags: [X] Yes [ ] No

Analytical Methods (include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	PFAS x16 537.1	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
MW-2-30		0954	3/24/21	X	2	groundwater
MW-4-20		1520	3/25/21	X		
MW-6-20		1640	3/25/21	X		
MW-12-10		1205	3/25/21	X		
MW-11-15		1035	3/25/21	X		
MW-5-20		0907	3/25/21	X		
MW-111-15		1025	3/25/21	X		
MW-7-20		1400	3/25/21	X		
GAC		18:02	3/25/21	X		Gac effluent

Project Information	
Number:	See page 1
Name:	
Contact:	
Ongoing Project?	Yes ☐ No ☐
Sampler:	JKR

Sample Receipt	
Total No. of Containers:	
COC Seals/Intact? Y/N/NA	
Received Good Cond./Cold	
Temp:	
Delivery Method:	

Notes:

3.4°

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Time: 0900	Signature: Time:	Signature: Time:
Printed Name: A. Mastus Date: 3/26/21	Printed Name: Date:	Printed Name: Date:
Company: Shannon & Wilson, Inc.	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time: 1155	Signature: Time:	Signature: Time:
Printed Name: ETASAC Date: 03/29/21	Printed Name: Date:	Printed Name: Date:
Company:	Company:	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

No. 36325

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-71798-1

Login Number: 71798
List Number: 1
Creator: Guzman, Juan

List Source: Eurofins TestAmerica, Sacramento

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	1029558 & 1029556
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:

April 8, 2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins / TestAmerica Laboratories, Inc. (TestAmerica)

Laboratory Report Number:

320-71798-1

Laboratory Report Date:

April 7, 2021

CS Site Name:

DOT&PF Gustavus Airport Statewide PFAS

ADEC File Number:

2569.38.033

Hazard Identification Number:

26981

320-71798-1

Laboratory Report Date:

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 DEC certified TestAmerica of West Sacramento, CA for the analysis of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) on February 6, 2018 by method 537. These compounds were included in the DEC'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:

   The requested analyses were conducted by TestAmerica of 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 of the cooler at receipt was 3.4°C.

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

   Yes☐ No☐ N/A☒ Comments:

   Samples do not require preservation other than temperature.

   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.

Laboratory Report Date:

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 discrepancies were noted.

e. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

4. Case Narrative

a. Present and understandable?

Yes☒ No☐ N/A☐ Comments:

Laboratory Report Date:

b. Discrepancies, errors, or QC failures identified by the lab?

Yes☒ No☐ N/A☐ Comments:

The case narrative indicates the following:

Method EPA 537(Mod): The "I" qualifier means the transition mass ratio for the indicated analyte were outside of the established ratio limit. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte. (CCVL 320-476514/2)

Method EPA 537(Mod): Several Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit: *MW-10-20* (320-71798-9) and *MW-6-20* (320-71798-12). 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 sample(s).

Method 3535: The following samples were yellow prior to extraction: *MW-9-30* (320-71798-4), *MW-3-15* (320-71798-5), *MW-8-20* (320-71798-8), *MW-10-20* (320-71798-9), *MW-4-20* (320-71798-11), *MW-6-20* (320-71798-12), *MW-12-10* (320-71798-13) and *MW-7-20* (320-71798-17).

Method 3535: The following samples contained floating particulates in the sample bottle prior to extraction: *MW-9-30* (320-71798-4), *MW-3-15* (320-71798-5), *MW-10-20* (320-71798-9), *MW-6-20* (320-71798-12) and *MW-7-20* (320-71798-17).

Method 3535: During the solid phase extraction process, the following samples contain non-settable particulates which clogged the solid phase extraction column: *MW-9-30* (320-71798-4), *MW-3-15* (320-71798-5), *MW-10-20* (320-71798-9), *MW-6-20* (320-71798-12) and *MW-7-20* (320-71798-17).

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-475057.

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 or usability.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes☒ No☐ N/A☐ Comments:

320-71798-1

Laboratory Report Date:

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 (RL) is less than the applicable DEC regulatory limit for the project.

e. Data quality or usability affected?

The 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:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes☒ No☐ N/A☐ Comments:

There were no detections in the method blank sample associated with these project samples.

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:

The data quality and/or usability was not affected; see above.

Laboratory Report Date:

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:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A; 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 was not affected; see above.

Laboratory Report Date:

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. However, the laboratory analyzed LCS and LCSD samples to assess laboratory accuracy and precision.

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:

MS and MSD samples were not analyzed for this work order.

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:

MS and MSD samples were not analyzed for this work order.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

NA; MS and MSD samples were not analyzed for this work order.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes☐ No☐ N/A☒ Comments:

MS and MSD samples were not analyzed for this work order.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The 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 for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes☐ No☒ N/A☐ Comments:

IDA %R for PFHxA, PFDA, PFUnA, PFDoA, PFTeDA, PFBS, PFHxS, PFOS, d3-NMeFOSAA, d5-NEtFOSAA, and HFPO-DA were low for project sample *MW-10-20*.

IDA %R for PFHxA, PFHpA, PFDA, PFUnA, PFDoA, PFTeDA, PFBS, PFHxS, PFOS, d3-NMeFOSAA, d5-NEtFOSAA, and HFPO-DA were low for project sample *MW-6-20*.

The associated analytes for the listed project samples are considered estimate. Detected analytes are flagged "J" and not detected analytes are flagged "UJ" in the associated data tables.

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:

Yes; see above.

iv. Data quality or usability affected?

Comments:

The data quality and/or usability was 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. A trip blank is not required for the requested analysis.

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 for the requested analysis.

iii. All results less than LOQ and project specified objectives?

Yes☐ No☐ N/A☒ Comments:

A trip blank is not required for the requested analysis.

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; a trip blank is not required for the requested analysis.

v. Data quality or usability affected?

Comments:

The 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 *MW-2-20/MW-102-20* and *MW-11-15/MW-111-15* were submitted with this work order.

iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water, 50% soil)

RPD (%) = 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 DQO (30%), 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 was not affected; see above.

320-71798-1

Laboratory Report Date:

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 sample collection. Therefore, decontamination or equipment blank samples were not required. A peri-pump was used to collect the requested analytes.

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:

N/A; see above.

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:

The following wells did not have sufficient purge:

MW-3-15 – 'J' flag detected results, 'UJ' flag not detected results
MW-8-20 – 'J' flag detected results, 'UJ' flag not detected results

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-71800-1
Client Project/Site: GUS PFAS - DRM

For:
Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

Attn: Kristen Freiburger

Authorized for release by:
4/6/2021 11:57:08 AM

David Alltucker, Project Manager I
(916)374-4383
David.Alltucker@Eurofinset.com

Table of Contents

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS - DRM

Job ID: 320-71800-1

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
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

Job ID: 320-71800-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative
320-71800-1

Receipt
The samples were received on 3/29/2021 11:55 AM. 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 2.5º C.

LCMS
Method EPA 537(Mod): The "I" qualifier means the transition mass ratio for the indicated analyte was outside of the established ratio limit. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte. PW-200 (320-71800-7)

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 contained a small amount of sediment: PW-200 (320-71800-7)

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-475229.

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: GUS PFAS - DRM

Job ID: 320-71800-1

Client Sample ID: PW-200-Sink — Lab Sample ID: 320-71800-3

No Detections.

Client Sample ID: PW-200-C Port Composite — Lab Sample ID: 320-71800-6

No Detections.

Client Sample ID: PW-200 — Lab Sample ID: 320-71800-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	7.4		1.7	0.49	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.8		1.7	0.21	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1.3	J	1.7	0.71	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.2	J I	1.7	0.17	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	12		1.7	0.48	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	60		1.7	0.45	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: PW-200-Sink

Lab Sample ID: 320-71800-3

Date Collected: 03/23/21 14:38

Matrix: Water

Date Received: 03/29/21 11:55

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		1.7	0.49	ng/L		03/31/21 04:16	04/04/21 17:43	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.21	ng/L		03/31/21 04:16	04/04/21 17:43	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.72	ng/L		03/31/21 04:16	04/04/21 17:43	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		03/31/21 04:16	04/04/21 17:43	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		03/31/21 04:16	04/04/21 17:43	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.93	ng/L		03/31/21 04:16	04/04/21 17:43	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47	ng/L		03/31/21 04:16	04/04/21 17:43	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		03/31/21 04:16	04/04/21 17:43	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.62	ng/L		03/31/21 04:16	04/04/21 17:43	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		03/31/21 04:16	04/04/21 17:43	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.48	ng/L		03/31/21 04:16	04/04/21 17:43	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.46	ng/L		03/31/21 04:16	04/04/21 17:43	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.2	1.0	ng/L		03/31/21 04:16	04/04/21 17:43	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.2	1.1	ng/L		03/31/21 04:16	04/04/21 17:43	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		03/31/21 04:16	04/04/21 17:43	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		03/31/21 04:16	04/04/21 17:43	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		03/31/21 04:16	04/04/21 17:43	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.34	ng/L		03/31/21 04:16	04/04/21 17:43	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*106*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:43*	*1*
13C4 PFHpA	*106*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:43*	*1*
13C4 PFOA	*102*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:43*	*1*
13C5 PFNA	*100*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:43*	*1*
13C2 PFDA	*106*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:43*	*1*
13C2 PFUnA	*92*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:43*	*1*
13C2 PFDoA	*106*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:43*	*1*
13C2 PFTeDA	*120*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:43*	*1*
13C3 PFBS	*91*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:43*	*1*
18O2 PFHxS	*103*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:43*	*1*
13C4 PFOS	*95*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:43*	*1*
d3-NMeFOSAA	*87*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:43*	*1*
d5-NEtFOSAA	*98*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:43*	*1*
13C3 HFPO-DA	*99*		*50 - 150*	*03/31/21 04:16*	*04/04/21 17:43*	*1*

Client Sample ID: PW-200-C Port Composite

Lab Sample ID: 320-71800-6

Date Collected: 03/23/21 15:10

Matrix: Water

Date Received: 03/29/21 11:55

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		1.7	0.49	ng/L		03/31/21 04:16	04/04/21 18:11	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.21	ng/L		03/31/21 04:16	04/04/21 18:11	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.72	ng/L		03/31/21 04:16	04/04/21 18:11	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		03/31/21 04:16	04/04/21 18:11	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		03/31/21 04:16	04/04/21 18:11	1

Client Sample ID: PW-200-C Port Composite

Lab Sample ID: 320-71800-6
Matrix: Water
Date Collected: 03/23/21 15:10
Date Received: 03/29/21 11:55

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.93	ng/L		03/31/21 04:16	04/04/21 18:11	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.46	ng/L		03/31/21 04:16	04/04/21 18:11	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		03/31/21 04:16	04/04/21 18:11	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.62	ng/L		03/31/21 04:16	04/04/21 18:11	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		03/31/21 04:16	04/04/21 18:11	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.48	ng/L		03/31/21 04:16	04/04/21 18:11	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.46	ng/L		03/31/21 04:16	04/04/21 18:11	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.2	1.0	ng/L		03/31/21 04:16	04/04/21 18:11	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.2	1.1	ng/L		03/31/21 04:16	04/04/21 18:11	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		03/31/21 04:16	04/04/21 18:11	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		03/31/21 04:16	04/04/21 18:11	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		03/31/21 04:16	04/04/21 18:11	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.34	ng/L		03/31/21 04:16	04/04/21 18:11	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*104*		*50 - 150*	*03/31/21 04:16*	*04/04/21 18:11*	*1*
13C4 PFHpA	*102*		*50 - 150*	*03/31/21 04:16*	*04/04/21 18:11*	*1*
13C4 PFOA	*100*		*50 - 150*	*03/31/21 04:16*	*04/04/21 18:11*	*1*
13C5 PFNA	*98*		*50 - 150*	*03/31/21 04:16*	*04/04/21 18:11*	*1*
13C2 PFDA	*94*		*50 - 150*	*03/31/21 04:16*	*04/04/21 18:11*	*1*
13C2 PFUnA	*96*		*50 - 150*	*03/31/21 04:16*	*04/04/21 18:11*	*1*
13C2 PFDoA	*93*		*50 - 150*	*03/31/21 04:16*	*04/04/21 18:11*	*1*
13C2 PFTeDA	*115*		*50 - 150*	*03/31/21 04:16*	*04/04/21 18:11*	*1*
13C3 PFBS	*97*		*50 - 150*	*03/31/21 04:16*	*04/04/21 18:11*	*1*
18O2 PFHxS	*96*		*50 - 150*	*03/31/21 04:16*	*04/04/21 18:11*	*1*
13C4 PFOS	*94*		*50 - 150*	*03/31/21 04:16*	*04/04/21 18:11*	*1*
d3-NMeFOSAA	*88*		*50 - 150*	*03/31/21 04:16*	*04/04/21 18:11*	*1*
d5-NEtFOSAA	*96*		*50 - 150*	*03/31/21 04:16*	*04/04/21 18:11*	*1*
13C3 HFPO-DA	*103*		*50 - 150*	*03/31/21 04:16*	*04/04/21 18:11*	*1*

Client Sample ID: PW-200

Lab Sample ID: 320-71800-7
Matrix: Water
Date Collected: 03/23/21 15:16
Date Received: 03/29/21 11:55

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)	**7.4**		1.7	0.49	ng/L		03/31/21 04:16	04/04/21 18:21	1
Perfluoroheptanoic acid (PFHpA)	**3.8**		1.7	0.21	ng/L		03/31/21 04:16	04/04/21 18:21	1
Perfluorooctanoic acid (PFOA)	**1.3**	**J**	1.7	0.71	ng/L		03/31/21 04:16	04/04/21 18:21	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		03/31/21 04:16	04/04/21 18:21	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		03/31/21 04:16	04/04/21 18:21	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.92	ng/L		03/31/21 04:16	04/04/21 18:21	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.46	ng/L		03/31/21 04:16	04/04/21 18:21	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		03/31/21 04:16	04/04/21 18:21	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.61	ng/L		03/31/21 04:16	04/04/21 18:21	1

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS - DRM

Job ID: 320-71800-1

Client Sample ID: PW-200
Date Collected: 03/23/21 15:16
Date Received: 03/29/21 11:55

Lab Sample ID: 320-71800-7
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	**1.2**	**J I**	1.7	0.17	ng/L		03/31/21 04:16	04/04/21 18:21	1
Perfluorohexanesulfonic acid (PFHxS)	**12**		1.7	0.48	ng/L		03/31/21 04:16	04/04/21 18:21	1
Perfluorooctanesulfonic acid (PFOS)	**60**		1.7	0.45	ng/L		03/31/21 04:16	04/04/21 18:21	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.2	1.0	ng/L		03/31/21 04:16	04/04/21 18:21	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.2	1.1	ng/L		03/31/21 04:16	04/04/21 18:21	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		03/31/21 04:16	04/04/21 18:21	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		03/31/21 04:16	04/04/21 18:21	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		03/31/21 04:16	04/04/21 18:21	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.34	ng/L		03/31/21 04:16	04/04/21 18:21	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*89*		*50 - 150*	*03/31/21 04:16*	*04/04/21 18:21*	*1*
13C4 PFHpA	*97*		*50 - 150*	*03/31/21 04:16*	*04/04/21 18:21*	*1*
13C4 PFOA	*97*		*50 - 150*	*03/31/21 04:16*	*04/04/21 18:21*	*1*
13C5 PFNA	*92*		*50 - 150*	*03/31/21 04:16*	*04/04/21 18:21*	*1*
13C2 PFDA	*91*		*50 - 150*	*03/31/21 04:16*	*04/04/21 18:21*	*1*
13C2 PFUnA	*68*		*50 - 150*	*03/31/21 04:16*	*04/04/21 18:21*	*1*
13C2 PFDoA	*63*		*50 - 150*	*03/31/21 04:16*	*04/04/21 18:21*	*1*
13C2 PFTeDA	*97*		*50 - 150*	*03/31/21 04:16*	*04/04/21 18:21*	*1*
13C3 PFBS	*73*		*50 - 150*	*03/31/21 04:16*	*04/04/21 18:21*	*1*
18O2 PFHxS	*87*		*50 - 150*	*03/31/21 04:16*	*04/04/21 18:21*	*1*
13C4 PFOS	*87*		*50 - 150*	*03/31/21 04:16*	*04/04/21 18:21*	*1*
d3-NMeFOSAA	*69*		*50 - 150*	*03/31/21 04:16*	*04/04/21 18:21*	*1*
d5-NEtFOSAA	*62*		*50 - 150*	*03/31/21 04:16*	*04/04/21 18:21*	*1*
13C3 HFPO-DA	*78*		*50 - 150*	*03/31/21 04:16*	*04/04/21 18:21*	*1*

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS - DRM

Job ID: 320-71800-1

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFHxA	C4PFHA	PFOA	PFNA	PFDA	PFUnA	PFDoA	PFTDA
Lab Sample ID	Client Sample ID	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)
320-71800-3	PW-200-Sink	106	106	102	100	106	92	106	120
320-71800-6	PW-200-C Port Composite	104	102	100	98	94	96	93	115
320-71800-7	PW-200	89	97	97	92	91	68	63	97
LCS 320-475229/2-A	Lab Control Sample	110	116	103	102	103	95	106	117
LCSD 320-475229/3-A	Lab Control Sample Dup	100	97	91	98	93	85	99	106
MB 320-475229/1-A	Method Blank	99	114	108	103	94	97	98	115

		Percent Isotope Dilution Recovery (Acceptance Limits)					
		C3PFBS	PFHxS	PFOS	d3NMFOS	d5NEFOS	HFPODA
Lab Sample ID	Client Sample ID	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)
320-71800-3	PW-200-Sink	91	103	95	87	98	99
320-71800-6	PW-200-C Port Composite	97	96	94	88	96	103
320-71800-7	PW-200	73	87	87	69	62	78
LCS 320-475229/2-A	Lab Control Sample	101	109	96	92	101	103
LCSD 320-475229/3-A	Lab Control Sample Dup	98	96	87	88	88	99
MB 320-475229/1-A	Method Blank	91	103	95	92	101	99

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

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Lab Sample ID: MB 320-475229/1-A
Matrix: Water
Analysis Batch: 476504

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 475229

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		03/31/21 04:16	04/04/21 14:27	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		03/31/21 04:16	04/04/21 14:27	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		03/31/21 04:16	04/04/21 14:27	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		03/31/21 04:16	04/04/21 14:27	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		03/31/21 04:16	04/04/21 14:27	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		03/31/21 04:16	04/04/21 14:27	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		03/31/21 04:16	04/04/21 14:27	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		03/31/21 04:16	04/04/21 14:27	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		03/31/21 04:16	04/04/21 14:27	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		03/31/21 04:16	04/04/21 14:27	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		03/31/21 04:16	04/04/21 14:27	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		03/31/21 04:16	04/04/21 14:27	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		03/31/21 04:16	04/04/21 14:27	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		03/31/21 04:16	04/04/21 14:27	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		03/31/21 04:16	04/04/21 14:27	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		03/31/21 04:16	04/04/21 14:27	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		03/31/21 04:16	04/04/21 14:27	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		03/31/21 04:16	04/04/21 14:27	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*99*		*50 - 150*	*03/31/21 04:16*	*04/04/21 14:27*	*1*
13C4PFHpA	*114*		*50 - 150*	*03/31/21 04:16*	*04/04/21 14:27*	*1*
13C4PFOA	*108*		*50 - 150*	*03/31/21 04:16*	*04/04/21 14:27*	*1*
13C5 PFNA	*103*		*50 - 150*	*03/31/21 04:16*	*04/04/21 14:27*	*1*
13C2 PFDA	*94*		*50 - 150*	*03/31/21 04:16*	*04/04/21 14:27*	*1*
13C2 PFUnA	*97*		*50 - 150*	*03/31/21 04:16*	*04/04/21 14:27*	*1*
13C2 PFDoA	*98*		*50 - 150*	*03/31/21 04:16*	*04/04/21 14:27*	*1*
13C2 PFTeDA	*115*		*50 - 150*	*03/31/21 04:16*	*04/04/21 14:27*	*1*
13C3 PFBS	*91*		*50 - 150*	*03/31/21 04:16*	*04/04/21 14:27*	*1*
18 O2 PFHxS	*103*		*50 - 150*	*03/31/21 04:16*	*04/04/21 14:27*	*1*
13C4PFOS	*95*		*50 - 150*	*03/31/21 04:16*	*04/04/21 14:27*	*1*
d3-NMeFOSAA	*92*		*50 - 150*	*03/31/21 04:16*	*04/04/21 14:27*	*1*
d5-NEtFOSAA	*101*		*50 - 150*	*03/31/21 04:16*	*04/04/21 14:27*	*1*
13C3 HFPO-DA	*99*		*50 - 150*	*03/31/21 04:16*	*04/04/21 14:27*	*1*

Lab Sample ID: LCS 320-475229/2-A
Matrix: Water
Analysis Batch: 476504

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 475229

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid (PFHxA)	40.0	45.1		ng/L		113	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	43.9		ng/L		110	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	45.2		ng/L		113	71 - 133
Perfluorononanoic acid (PFNA)	40.0	45.7		ng/L		114	69 - 130

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCS 320-475229/2-A
Matrix: Water
Analysis Batch: 476504

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 475229

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorodecanoic acid (PFDA)	40.0	44.1		ng/L		110	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	52.2		ng/L		131	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	41.6		ng/L		104	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	44.7		ng/L		112	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	43.3		ng/L		108	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.4	40.0		ng/L		113	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	38.9		ng/L		107	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.1	39.1		ng/L		105	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	44.3		ng/L		111	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	40.1		ng/L		100	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	45.8		ng/L		123	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	45.7		ng/L		114	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	44.3		ng/L		118	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	43.6		ng/L		116	81 - 141

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*110*		*50 - 150*
13C4PFHpA	*116*		*50 - 150*
13C4PFOA	*103*		*50 - 150*
13C5 PFNA	*102*		*50 - 150*
13C2 PFDA	*103*		*50 - 150*
13C2 PFUnA	*95*		*50 - 150*
13C2 PFDoA	*106*		*50 - 150*
13C2 PFTeDA	*117*		*50 - 150*
13C3 PFBS	*101*		*50 - 150*
18 O2 PFHxS	*109*		*50 - 150*
13C4PFOS	*96*		*50 - 150*
d3-NMeFOSAA	*92*		*50 - 150*
d5-NEtFOSAA	*101*		*50 - 150*
13C3 HFPO-DA	*103*		*50 - 150*

Lab Sample ID: LCSD 320-475229/3-A
Matrix: Water
Analysis Batch: 476504

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 475229

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	43.5		ng/L		109	72 - 129	4	30
Perfluoroheptanoic acid (PFHpA)	40.0	43.9		ng/L		110	72 - 130	0	30
Perfluorooctanoic acid (PFOA)	40.0	44.3		ng/L		111	71 - 133	2	30

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCSD 320-475229/3-A
Matrix: Water
Analysis Batch: 476504

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 475229

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)			40.0	44.4		ng/L		111	69 - 130	3	30
Perfluorodecanoic acid (PFDA)			40.0	45.3		ng/L		113	71 - 129	3	30
Perfluoroundecanoic acid (PFUnA)			40.0	50.7		ng/L		127	69 - 133	3	30
Perfluorododecanoic acid (PFDoA)			40.0	39.9		ng/L		100	72 - 134	4	30
Perfluorotridecanoic acid (PFTriA)			40.0	45.9		ng/L		115	65 - 144	3	30
Perfluorotetradecanoic acid (PFTeA)			40.0	45.6		ng/L		114	71 - 132	5	30
Perfluorobutanesulfonic acid (PFBS)			35.4	35.4		ng/L		100	72 - 130	12	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	41.3		ng/L		113	68 - 131	6	30
Perfluorooctanesulfonic acid (PFOS)			37.1	38.5		ng/L		104	65 - 140	2	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			40.0	42.1		ng/L		105	65 - 136	5	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	40.4		ng/L		101	61 - 135	1	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid			37.3	44.0		ng/L		118	77 - 137	4	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			40.0	39.6		ng/L		99	72 - 132	14	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid			37.7	43.1		ng/L		114	76 - 136	3	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.7	46.8		ng/L		124	81 - 141	7	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*100*		*50 - 150*
13C4PFHpA	*97*		*50 - 150*
13C4PFOA	*91*		*50 - 150*
13C5 PFNA	*98*		*50 - 150*
13C2 PFDA	*93*		*50 - 150*
13C2 PFUnA	*85*		*50 - 150*
13C2 PFDoA	*99*		*50 - 150*
13C2 PFTeDA	*106*		*50 - 150*
13C3 PFBS	*98*		*50 - 150*
18O2 PFHxS	*96*		*50 - 150*
13C4PFOS	*87*		*50 - 150*
d3-NMeFOSAA	*88*		*50 - 150*
d5-NEtFOSAA	*88*		*50 - 150*
13C3 HFPO-DA	*99*		*50 - 150*

LCMS

Prep Batch: 475229

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-71800-3	PW-200-Sink	Total/NA	Water	3535	
320-71800-6	PW-200-C Port Composite	Total/NA	Water	3535	
320-71800-7	PW-200	Total/NA	Water	3535	
MB 320-475229/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-475229/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-475229/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 476504

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-71800-3	PW-200-Sink	Total/NA	Water	EPA 537(Mod)	475229
320-71800-6	PW-200-C Port Composite	Total/NA	Water	EPA 537(Mod)	475229
320-71800-7	PW-200	Total/NA	Water	EPA 537(Mod)	475229
MB 320-475229/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	475229
LCS 320-475229/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	475229
LCSD 320-475229/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	475229

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS - DRM

Job ID: 320-71800-1

Client Sample ID: PW-200-Sink

Lab Sample ID: 320-71800-3

Date Collected: 03/23/21 14:38

Matrix: Water

Date Received: 03/29/21 11:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			294.3 mL	10.00 mL	475229	03/31/21 04:16	MA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			476504	04/04/21 17:43	RS1	TAL SAC

Client Sample ID: PW-200-C Port Composite

Lab Sample ID: 320-71800-6

Date Collected: 03/23/21 15:10

Matrix: Water

Date Received: 03/29/21 11:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			296.6 mL	10.00 mL	475229	03/31/21 04:16	MA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			476504	04/04/21 18:11	RS1	TAL SAC

Client Sample ID: PW-200

Lab Sample ID: 320-71800-7

Date Collected: 03/23/21 15:16

Matrix: Water

Date Received: 03/29/21 11:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			298 mL	10.00 mL	475229	03/31/21 04:16	MA	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			476504	04/04/21 18:21	RS1	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: GUS PFAS - DRM

Job ID: 320-71800-1

Laboratory: Eurofins TestAmerica, Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

Method Summary

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS - DRM

Job ID: 320-71800-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod)	PFAS for QSM 5.3, Table B-15	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: GUS PFAS - DRM

Job ID: 320-71800-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-71800-3	PW-200-Sink	Water	03/23/21 14:38	03/29/21 11:55	
320-71800-6	PW-200-C Port Composite	Water	03/23/21 15:10	03/29/21 11:55	
320-71800-7	PW-200	Water	03/23/21 15:16	03/29/21 11:55	

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600
www.shannonwilson.com

CHAIN-OF-CUSTODY RECORD

Laboratory Test America
Attn: D. Alltucker

Turn Around Time: [X] Normal [ ] Rush — Please Specify

Quote No:

J-Flags: [ ] Yes [ ] No

Analytical Methods (include preservative if used)

320-71800 Chain of Custody

Sample Identity	Lab No.	Time	Date Sampled	PFAS	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
Hold * PW-200-Unit 2-C Port *Hold*		1453	3/23/21	X	2	Groundwaters
Hold * PW-200-F Port *Hold*		1447	3/23/21	X	2	
PW-200-Sink	1438 ~~1515~~		3/23/21	X	2	
Hold PW-200-Unit 1-C Port *Hold*		1450	3/23/21	X	2	
Hold * PW-200-Unit 3-C Port *Hold*		1504	3/23/21	X	2	
PW-200-C Port Composite		1510	3/23/21	X	2	
PW-200		1516	3/23/21	X	2	
*Hold PW-200-Unit 4-C Port *Hold*		1507	3/23/21	X	2	

Project Information	
Number:	101543-001
Name:	GUSPFAS-DRM
Contact:	KRF
Ongoing Project?	Yes [X] No [ ]
Sampler:	ARM

Sample Receipt	
Total No. of Containers:	
COC Seals/Intact? Y/N/NA	
Received Good Cond./Cold	
Temp:	
Delivery Method:	

Notes:

2.5°

Reliquished By: 1.	Reliquished By: 2.	Reliquished By: 3.
Signature: Time: 0900	Signature: Time:	Signature: Time:
Printed Name: A. Mastess Date: 3/26/21	Printed Name: Date:	Printed Name: Date:
Company: Shannon + Wilson, Inc.	Company:	Company:
Received By: 1.	**Received By: 2.**	**Received By: 3.**
Signature: Time: 1155	Signature: Time:	Signature: Time:
Printed Name: ETA-SAC Date: 03/29/21	Printed Name: Date:	Printed Name: Date:
Company:	Company:	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

4/6/2021

No. 36385

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-71800-1

Login Number: 71800
List Number: 1
Creator: Guzman, Juan

List Source: Eurofins TestAmerica, Sacramento

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 on cooler
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:

April 7, 2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins / TestAmerica Laboratories, Inc. (TestAmerica)

Laboratory Report Number:

320-71800-1

Laboratory Report Date:

April 6. 2021

CS Site Name:

[redacted]POET

ADEC File Number:

1507.38.017

Hazard Identification Number:

26904

320-71800-1

Laboratory Report Date:

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 DEC certified TestAmerica of West Sacramento, CA for the analysis of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) on February 6, 2018 by method 537. These compounds were included in the DEC'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:

   The requested analyses were conducted by TestAmerica of 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:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

   Yes☒ No☐ N/A☐ Comments:

   Samples were preserved with Trizma™.

   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 at a cooler temperature of 2.5° C.

Laboratory Report Date:

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 receipt documentation does not note any discrepancies.

e. Data quality or usability affected?

Comments:

The 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 case narrative indicates the following:

The samples arrived in good condition and properly preserved. The temperature of the sample cooler received with this shipment was 2.5º C upon arrival at the laboratory.

The following sample contained a small amount of sediment: *PW-200.*

"I" qualifier means the transition mass ratio for PFBS was outside of the established ratio limit in sample *PW-200.* The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte.

There was insufficient sample volume available to perform a matrix spike (MS) and MS duplicate (MSD) in conjunction with preparation batch 320-475229.

c. Were all corrective actions documented?

Yes☒ No☐ N/A☐ Comments:

Analyst judgment was used to positively identify the analyte.

Laboratory Report Date:

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The case narrative notes a potential high bias associated with the "I" flagged analyte in sample *PW-200.* Therefore, we consider the results to be estimated, with a high bias, and have flagged the result with a "JH" in the analytical table.

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 (RL) is less than the applicable DEC regulatory limit for the project.

e. Data quality or usability affected?

The 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:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes☒ No☐ N/A☐ Comments:

There were no detections in the method blank sample associated with these project samples.

Laboratory Report Date:

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:

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/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:

N/A; see above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes☐ No☐ N/A☒ Comments:

Data is not affected; see above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The 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:

Insufficient sample volume was available to perform a MS/MSD with the associated preparatory batches. However, the laboratory analyzed LCS and LCSD samples to assess laboratory accuracy and precision.

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:

MS and MSD samples were not analyzed for this work order.

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:

MS and MSD samples were not analyzed for this work order.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

NA; MS and MSD samples were not analyzed for this work order.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes☐ No☐ N/A☒ Comments:

MS and MSD samples were not analyzed for this work order.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The 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 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; 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. A trip blank is not required for the requested analysis.

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 for the requested analysis.

iii. All results less than LOQ and project specified objectives?

Yes☐ No☐ N/A☒ Comments:

A trip blank is not required for the requested analysis.

Laboratory Report Date:

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

NA; a trip blank is not required for the requested analysis.

v. Data quality or usability affected?

Comments:

The 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:

A field duplicate was not submitted with this work order.

ii. Submitted blind to lab?

Yes☐ No☐ N/A☒ Comments:

N/A; 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:

N/A; see above.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The 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:

Reusable equipment was not used for sample collection. Therefore, decontamination or equipment blank samples were not required. A peri-pump was used to collect the requested analytes.

i. All results less than LOQ and project specified objectives?

Yes☐ No☐ N/A☒ Comments:

See above.

Laboratory Report Date:

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above.

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:

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-75574-1
Client Project/Site: DOT PFAS - MW - GST

For:
Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

Attn: Kristen Freiburger

Authorized for release by:
7/13/2021 7:52:26 AM

David Alltucker, Project Manager I
(916)374-4383
David.Alltucker@Eurofinset.com

Table of Contents

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: DOT PFAS - MW - GST

Job ID: 320-75574-1

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.
¤	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

Job ID: 320-75574-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Receipt
The samples were received on 6/29/2021 2:55 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 4.3º C.

LCMS
Method EPA 537(Mod): Results for sample MW-2-20 (320-75574-10) 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 EPA 537(Mod): Results for sample MW-102-20 (320-75574-8) was 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 320-503371.

Method 3535: The following samples are yellow and contain floating particulates at the bottom of the bottle prior to extraction: MW-109-30 (320-75574-1), MW-10-20 (320-75574-2), MW-4-20 (320-75574-5), MW-3-40 (320-75574-6), MW-8-20 (320-75574-7), MW-9-30 (320-75574-9), MW-7-20 (320-75574-11), MW-3-15 (320-75574-12), MW-1-40 (320-75574-13), MW-2-30 (320-75574-14) and MW-12-10 (320-75574-18).

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: DOT PFAS - MW - GST

Job ID: 320-75574-1

Client Sample ID: MW-109-30 — Lab Sample ID: 320-75574-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	7.0		1.7	0.51	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.2		1.7	0.22	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	0.97	J	1.7	0.74	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.78	J	1.7	0.17	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	15		1.7	0.50	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	84		1.7	0.47	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: MW-10-20 — Lab Sample ID: 320-75574-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	15		1.8	0.51	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	5.6		1.8	0.22	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	2.0		1.8	0.74	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.87	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	21		1.8	0.50	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	95		1.8	0.47	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: MW-5-20 — Lab Sample ID: 320-75574-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	2.1		1.8	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.96	J	1.8	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	2.1		1.8	0.78	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	0.51	J	1.8	0.25	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.45	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.8		1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.5		1.8	0.50	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: MW-6-20 — Lab Sample ID: 320-75574-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	1.1	J	1.7	0.49	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: MW-4-20 — Lab Sample ID: 320-75574-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.19	J	1.7	0.17	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.63	J	1.7	0.50	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: MW-3-40 — Lab Sample ID: 320-75574-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	2.1		1.7	0.51	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.43	J	1.7	0.22	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1.5	J	1.7	0.74	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.1	J	1.7	0.17	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	15		1.7	0.50	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	15		1.7	0.47	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: MW-8-20 — Lab Sample ID: 320-75574-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.23	J	1.7	0.21	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.49	J	1.7	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: DOT PFAS - MW - GST

Job ID: 320-75574-1

Client Sample ID: MW-102-20 — Lab Sample ID: 320-75574-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	45		1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	26		1.8	0.22	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	32		1.8	0.75	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	15		1.8	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.0		1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	120		1.8	0.51	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	450		8.9	2.4	ng/L	5		EPA 537(Mod)	Total/NA

Client Sample ID: MW-9-30 — Lab Sample ID: 320-75574-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	6.7		1.8	0.51	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.2		1.8	0.22	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1.1	J	1.8	0.75	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.79	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	15		1.8	0.50	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	95		1.8	0.48	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: MW-2-20 — Lab Sample ID: 320-75574-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	48		1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	27		1.8	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	32		1.8	0.77	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	15		1.8	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorodecanoic acid (PFDA)	0.46	J	1.8	0.28	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.0		1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	110		1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	430		9.0	2.4	ng/L	5		EPA 537(Mod)	Total/NA

Client Sample ID: MW-7-20 — Lab Sample ID: 320-75574-11

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		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.96	J	1.8	0.22	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	6.7		1.8	0.76	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.46	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.0	J	1.8	0.51	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	6.2		1.8	0.48	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: MW-3-15 — Lab Sample ID: 320-75574-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.62	J	1.7	0.50	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.2	J	1.7	0.49	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.0		1.7	0.47	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: MW-1-40 — Lab Sample ID: 320-75574-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.68	J	1.8	0.51	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: DOT PFAS - MW - GST

Job ID: 320-75574-1

Client Sample ID: MW-2-30 — Lab Sample ID: 320-75574-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.60	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

Client Sample ID: MW-1-15 — Lab Sample ID: 320-75574-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.61	J	1.7	0.49	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.4	J	1.7	0.46	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: MW-11-15 — Lab Sample ID: 320-75574-16

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	15		1.8	0.51	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.0		1.8	0.22	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	2.1		1.8	0.75	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	0.85	J	1.8	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorodecanoic acid (PFDA)	0.85	J	1.8	0.27	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.97	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	13		1.8	0.50	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	130		1.8	0.48	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: MW-111-15 — Lab Sample ID: 320-75574-17

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	18		1.7	0.50	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.7		1.7	0.22	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	2.0		1.7	0.74	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	0.88	J	1.7	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorodecanoic acid (PFDA)	0.86	J	1.7	0.27	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.0	J	1.7	0.17	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	13		1.7	0.49	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	140		1.7	0.47	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: MW-12-10 — Lab Sample ID: 320-75574-18

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	5.6		1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	5.5		1.8	0.22	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	2.6		1.8	0.76	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	0.66	J	1.8	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.61	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	14		1.8	0.51	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	50		1.8	0.48	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: DOT-GAC — Lab Sample ID: 320-75574-19

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.56	J	1.9	0.56	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Client: Shannon & Wilson, Inc
Project/Site: DOT PFAS - MW - GST

Job ID: 320-75574-1

Client Sample ID: MW-109-30
Date Collected: 06/22/21 18:36
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75574-1
Matrix: Water

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)	**7.0**		1.7	0.51	ng/L		06/30/21 19:37	07/04/21 14:44	1
Perfluoroheptanoic acid (PFHpA)	**3.2**		1.7	0.22	ng/L		06/30/21 19:37	07/04/21 14:44	1
Perfluorooctanoic acid (PFOA)	**0.97**	**J**	1.7	0.74	ng/L		06/30/21 19:37	07/04/21 14:44	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.24	ng/L		06/30/21 19:37	07/04/21 14:44	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		06/30/21 19:37	07/04/21 14:44	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.96	ng/L		06/30/21 19:37	07/04/21 14:44	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		06/30/21 19:37	07/04/21 14:44	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		06/30/21 19:37	07/04/21 14:44	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.64	ng/L		06/30/21 19:37	07/04/21 14:44	1
Perfluorobutanesulfonic acid (PFBS)	**0.78**	**J**	1.7	0.17	ng/L		06/30/21 19:37	07/04/21 14:44	1
Perfluorohexanesulfonic acid (PFHxS)	**15**		1.7	0.50	ng/L		06/30/21 19:37	07/04/21 14:44	1
Perfluorooctanesulfonic acid (PFOS)	**84**		1.7	0.47	ng/L		06/30/21 19:37	07/04/21 14:44	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.0	ng/L		06/30/21 19:37	07/04/21 14:44	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		06/30/21 19:37	07/04/21 14:44	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		06/30/21 19:37	07/04/21 14:44	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		06/30/21 19:37	07/04/21 14:44	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		06/30/21 19:37	07/04/21 14:44	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.35	ng/L		06/30/21 19:37	07/04/21 14:44	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*85*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:44*	*1*
13C4 PFHpA	*94*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:44*	*1*
13C4 PFOA	*96*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:44*	*1*
13C5 PFNA	*88*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:44*	*1*
13C2 PFDA	*85*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:44*	*1*
13C2 PFUnA	*81*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:44*	*1*
13C2 PFDoA	*89*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:44*	*1*
13C2 PFTeDA	*92*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:44*	*1*
13C3 PFBS	*101*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:44*	*1*
18O2 PFHxS	*80*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:44*	*1*
13C4 PFOS	*84*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:44*	*1*
d3-NMeFOSAA	*83*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:44*	*1*
d5-NEtFOSAA	*81*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:44*	*1*
13C3 HFPO-DA	*80*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:44*	*1*

Client: Shannon & Wilson, Inc
Project/Site: DOT PFAS - MW - GST

Job ID: 320-75574-1

Client Sample ID: MW-10-20
Date Collected: 06/22/21 17:52
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75574-2
Matrix: Water

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)	**15**		1.8	0.51	ng/L		06/30/21 19:37	07/04/21 14:53	1
Perfluoroheptanoic acid (PFHpA)	**5.6**		1.8	0.22	ng/L		06/30/21 19:37	07/04/21 14:53	1
Perfluorooctanoic acid (PFOA)	**2.0**		1.8	0.74	ng/L		06/30/21 19:37	07/04/21 14:53	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		06/30/21 19:37	07/04/21 14:53	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		06/30/21 19:37	07/04/21 14:53	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.96	ng/L		06/30/21 19:37	07/04/21 14:53	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.48	ng/L		06/30/21 19:37	07/04/21 14:53	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.1	ng/L		06/30/21 19:37	07/04/21 14:53	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.64	ng/L		06/30/21 19:37	07/04/21 14:53	1
Perfluorobutanesulfonic acid (PFBS)	**0.87**	**J**	1.8	0.18	ng/L		06/30/21 19:37	07/04/21 14:53	1
Perfluorohexanesulfonic acid (PFHxS)	**21**		1.8	0.50	ng/L		06/30/21 19:37	07/04/21 14:53	1
Perfluorooctanesulfonic acid (PFOS)	**95**		1.8	0.47	ng/L		06/30/21 19:37	07/04/21 14:53	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		06/30/21 19:37	07/04/21 14:53	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		06/30/21 19:37	07/04/21 14:53	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		06/30/21 19:37	07/04/21 14:53	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		06/30/21 19:37	07/04/21 14:53	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		06/30/21 19:37	07/04/21 14:53	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		06/30/21 19:37	07/04/21 14:53	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*85*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:53*	*1*
13C4 PFHpA	*93*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:53*	*1*
13C4 PFOA	*89*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:53*	*1*
13C5 PFNA	*83*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:53*	*1*
13C2 PFDA	*83*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:53*	*1*
13C2 PFUnA	*75*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:53*	*1*
13C2 PFDoA	*79*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:53*	*1*
13C2 PFTeDA	*86*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:53*	*1*
13C3 PFBS	*91*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:53*	*1*
18O2 PFHxS	*77*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:53*	*1*
13C4 PFOS	*79*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:53*	*1*
d3-NMeFOSAA	*75*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:53*	*1*
d5-NEtFOSAA	*80*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:53*	*1*
13C3 HFPO-DA	*78*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:53*	*1*

Client Sample ID: MW-5-20

Date Collected: 06/22/21 15:56
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75574-3

Matrix: Water

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)	**2.1**		1.8	0.53	ng/L		06/30/21 19:37	07/04/21 15:02	1
Perfluoroheptanoic acid (PFHpA)	**0.96**	**J**	1.8	0.23	ng/L		06/30/21 19:37	07/04/21 15:02	1
Perfluorooctanoic acid (PFOA)	**2.1**		1.8	0.78	ng/L		06/30/21 19:37	07/04/21 15:02	1
Perfluorononanoic acid (PFNA)	**0.51**	**J**	1.8	0.25	ng/L		06/30/21 19:37	07/04/21 15:02	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		06/30/21 19:37	07/04/21 15:02	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		06/30/21 19:37	07/04/21 15:02	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		06/30/21 19:37	07/04/21 15:02	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		06/30/21 19:37	07/04/21 15:02	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		06/30/21 19:37	07/04/21 15:02	1
Perfluorobutanesulfonic acid (PFBS)	**0.45**	**J**	1.8	0.18	ng/L		06/30/21 19:37	07/04/21 15:02	1
Perfluorohexanesulfonic acid (PFHxS)	**2.8**		1.8	0.52	ng/L		06/30/21 19:37	07/04/21 15:02	1
Perfluorooctanesulfonic acid (PFOS)	**3.5**		1.8	0.50	ng/L		06/30/21 19:37	07/04/21 15:02	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		06/30/21 19:37	07/04/21 15:02	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		06/30/21 19:37	07/04/21 15:02	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		06/30/21 19:37	07/04/21 15:02	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		06/30/21 19:37	07/04/21 15:02	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		06/30/21 19:37	07/04/21 15:02	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		06/30/21 19:37	07/04/21 15:02	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*88*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:02*	*1*
13C4 PFHpA	*94*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:02*	*1*
13C4 PFOA	*91*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:02*	*1*
13C5 PFNA	*89*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:02*	*1*
13C2 PFDA	*85*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:02*	*1*
13C2 PFUnA	*85*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:02*	*1*
13C2 PFDoA	*78*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:02*	*1*
13C2 PFTeDA	*88*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:02*	*1*
13C3 PFBS	*98*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:02*	*1*
18O2 PFHxS	*84*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:02*	*1*
13C4 PFOS	*77*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:02*	*1*
d3-NMeFOSAA	*74*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:02*	*1*
d5-NEtFOSAA	*73*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:02*	*1*
13C3 HFPO-DA	*80*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:02*	*1*

Client Sample ID: MW-6-20
Date Collected: 06/22/21 14:36
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75574-4
Matrix: Water

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		1.7	0.50	ng/L		06/30/21 19:37	07/04/21 15:11	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.21	ng/L		06/30/21 19:37	07/04/21 15:11	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.73	ng/L		06/30/21 19:37	07/04/21 15:11	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		06/30/21 19:37	07/04/21 15:11	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		06/30/21 19:37	07/04/21 15:11	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.95	ng/L		06/30/21 19:37	07/04/21 15:11	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47	ng/L		06/30/21 19:37	07/04/21 15:11	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		06/30/21 19:37	07/04/21 15:11	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.63	ng/L		06/30/21 19:37	07/04/21 15:11	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		06/30/21 19:37	07/04/21 15:11	1
Perfluorohexanesulfonic acid (PFHxS)	**1.1**	**J**	1.7	0.49	ng/L		06/30/21 19:37	07/04/21 15:11	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.46	ng/L		06/30/21 19:37	07/04/21 15:11	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.3	1.0	ng/L		06/30/21 19:37	07/04/21 15:11	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.3	1.1	ng/L		06/30/21 19:37	07/04/21 15:11	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		06/30/21 19:37	07/04/21 15:11	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		06/30/21 19:37	07/04/21 15:11	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		06/30/21 19:37	07/04/21 15:11	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.34	ng/L		06/30/21 19:37	07/04/21 15:11	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*81*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:11*	*1*
13C4 PFHpA	*85*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:11*	*1*
13C4 PFOA	*95*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:11*	*1*
13C5 PFNA	*81*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:11*	*1*
13C2 PFDA	*87*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:11*	*1*
13C2 PFUnA	*81*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:11*	*1*
13C2 PFDoA	*78*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:11*	*1*
13C2 PFTeDA	*87*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:11*	*1*
13C3 PFBS	*92*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:11*	*1*
18O2 PFHxS	*87*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:11*	*1*
13C4 PFOS	*77*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:11*	*1*
d3-NMeFOSAA	*76*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:11*	*1*
d5-NEtFOSAA	*75*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:11*	*1*
13C3 HFPO-DA	*78*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:11*	*1*

Client: Shannon & Wilson, Inc
Project/Site: DOT PFAS - MW - GST

Job ID: 320-75574-1

Client Sample ID: MW-4-20

Date Collected: 06/21/21 18:47
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75574-5

Matrix: Water

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		1.7	0.50	ng/L		06/30/21 19:37	07/04/21 15:21	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.22	ng/L		06/30/21 19:37	07/04/21 15:21	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.74	ng/L		06/30/21 19:37	07/04/21 15:21	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.24	ng/L		06/30/21 19:37	07/04/21 15:21	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		06/30/21 19:37	07/04/21 15:21	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.96	ng/L		06/30/21 19:37	07/04/21 15:21	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		06/30/21 19:37	07/04/21 15:21	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		06/30/21 19:37	07/04/21 15:21	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.64	ng/L		06/30/21 19:37	07/04/21 15:21	1
Perfluorobutanesulfonic acid (PFBS)	**0.19**	**J**	1.7	0.17	ng/L		06/30/21 19:37	07/04/21 15:21	1
Perfluorohexanesulfonic acid (PFHxS)	**0.63**	**J**	1.7	0.50	ng/L		06/30/21 19:37	07/04/21 15:21	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.47	ng/L		06/30/21 19:37	07/04/21 15:21	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.0	ng/L		06/30/21 19:37	07/04/21 15:21	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		06/30/21 19:37	07/04/21 15:21	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		06/30/21 19:37	07/04/21 15:21	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		06/30/21 19:37	07/04/21 15:21	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		06/30/21 19:37	07/04/21 15:21	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.35	ng/L		06/30/21 19:37	07/04/21 15:21	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*81*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:21*	*1*
13C4 PFHpA	*94*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:21*	*1*
13C4 PFOA	*88*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:21*	*1*
13C5 PFNA	*88*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:21*	*1*
13C2 PFDA	*89*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:21*	*1*
13C2 PFUnA	*74*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:21*	*1*
13C2 PFDoA	*73*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:21*	*1*
13C2 PFTeDA	*87*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:21*	*1*
13C3 PFBS	*95*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:21*	*1*
18O2 PFHxS	*83*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:21*	*1*
13C4 PFOS	*79*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:21*	*1*
d3-NMeFOSAA	*83*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:21*	*1*
d5-NEtFOSAA	*81*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:21*	*1*
13C3 HFPO-DA	*82*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:21*	*1*

Client: Shannon & Wilson, Inc
Project/Site: DOT PFAS - MW - GST

Job ID: 320-75574-1

Client Sample ID: MW-3-40

Date Collected: 06/21/21 12:13
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75574-6

Matrix: Water

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)	**2.1**		1.7	0.51	ng/L		06/30/21 19:37	07/04/21 15:30	1
Perfluoroheptanoic acid (PFHpA)	**0.43**	**J**	1.7	0.22	ng/L		06/30/21 19:37	07/04/21 15:30	1
Perfluorooctanoic acid (PFOA)	**1.5**	**J**	1.7	0.74	ng/L		06/30/21 19:37	07/04/21 15:30	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.24	ng/L		06/30/21 19:37	07/04/21 15:30	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		06/30/21 19:37	07/04/21 15:30	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.96	ng/L		06/30/21 19:37	07/04/21 15:30	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		06/30/21 19:37	07/04/21 15:30	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		06/30/21 19:37	07/04/21 15:30	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.64	ng/L		06/30/21 19:37	07/04/21 15:30	1
Perfluorobutanesulfonic acid (PFBS)	**1.1**	**J**	1.7	0.17	ng/L		06/30/21 19:37	07/04/21 15:30	1
Perfluorohexanesulfonic acid (PFHxS)	**15**		1.7	0.50	ng/L		06/30/21 19:37	07/04/21 15:30	1
Perfluorooctanesulfonic acid (PFOS)	**15**		1.7	0.47	ng/L		06/30/21 19:37	07/04/21 15:30	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.0	ng/L		06/30/21 19:37	07/04/21 15:30	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		06/30/21 19:37	07/04/21 15:30	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		06/30/21 19:37	07/04/21 15:30	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		06/30/21 19:37	07/04/21 15:30	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		06/30/21 19:37	07/04/21 15:30	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.35	ng/L		06/30/21 19:37	07/04/21 15:30	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*87*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:30*	*1*
13C4 PFHpA	*97*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:30*	*1*
13C4 PFOA	*94*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:30*	*1*
13C5 PFNA	*85*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:30*	*1*
13C2 PFDA	*90*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:30*	*1*
13C2 PFUnA	*69*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:30*	*1*
13C2 PFDoA	*88*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:30*	*1*
13C2 PFTeDA	*88*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:30*	*1*
13C3 PFBS	*93*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:30*	*1*
18O2 PFHxS	*86*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:30*	*1*
13C4 PFOS	*79*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:30*	*1*
d3-NMeFOSAA	*81*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:30*	*1*
d5-NEtFOSAA	*74*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:30*	*1*
13C3 HFPO-DA	*87*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:30*	*1*

Client: Shannon & Wilson, Inc
Project/Site: DOT PFAS - MW - GST

Job ID: 320-75574-1

Client Sample ID: MW-8-20
Date Collected: 06/22/21 16:44
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75574-7
Matrix: Water

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		1.7	0.49	ng/L		06/30/21 19:37	07/04/21 15:39	1
Perfluoroheptanoic acid (PFHpA)	**0.23**	**J**	1.7	0.21	ng/L		06/30/21 19:37	07/04/21 15:39	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.72	ng/L		06/30/21 19:37	07/04/21 15:39	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		06/30/21 19:37	07/04/21 15:39	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		06/30/21 19:37	07/04/21 15:39	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.93	ng/L		06/30/21 19:37	07/04/21 15:39	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.46	ng/L		06/30/21 19:37	07/04/21 15:39	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		06/30/21 19:37	07/04/21 15:39	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.62	ng/L		06/30/21 19:37	07/04/21 15:39	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		06/30/21 19:37	07/04/21 15:39	1
Perfluorohexanesulfonic acid (PFHxS)	**0.49**	**J**	1.7	0.48	ng/L		06/30/21 19:37	07/04/21 15:39	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.46	ng/L		06/30/21 19:37	07/04/21 15:39	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.2	1.0	ng/L		06/30/21 19:37	07/04/21 15:39	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.2	1.1	ng/L		06/30/21 19:37	07/04/21 15:39	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		06/30/21 19:37	07/04/21 15:39	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		06/30/21 19:37	07/04/21 15:39	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		06/30/21 19:37	07/04/21 15:39	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.34	ng/L		06/30/21 19:37	07/04/21 15:39	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*80*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:39*	*1*
13C4 PFHpA	*85*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:39*	*1*
13C4 PFOA	*91*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:39*	*1*
13C5 PFNA	*78*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:39*	*1*
13C2 PFDA	*83*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:39*	*1*
13C2 PFUnA	*79*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:39*	*1*
13C2 PFDoA	*80*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:39*	*1*
13C2 PFTeDA	*92*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:39*	*1*
13C3 PFBS	*92*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:39*	*1*
18O2 PFHxS	*78*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:39*	*1*
13C4 PFOS	*73*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:39*	*1*
d3-NMeFOSAA	*70*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:39*	*1*
d5-NEtFOSAA	*69*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:39*	*1*
13C3 HFPO-DA	*79*		*50 - 150*	*06/30/21 19:37*	*07/04/21 15:39*	*1*

Client: Shannon & Wilson, Inc
Project/Site: DOT PFAS - MW - GST

Job ID: 320-75574-1

Client Sample ID: MW-102-20

Date Collected: 06/21/21 13:53
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75574-8

Matrix: Water

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)	**45**		1.8	0.52	ng/L		06/30/21 19:37	07/04/21 16:06	1
Perfluoroheptanoic acid (PFHpA)	**26**		1.8	0.22	ng/L		06/30/21 19:37	07/04/21 16:06	1
Perfluorooctanoic acid (PFOA)	**32**		1.8	0.75	ng/L		06/30/21 19:37	07/04/21 16:06	1
Perfluorononanoic acid (PFNA)	**15**		1.8	0.24	ng/L		06/30/21 19:37	07/04/21 16:06	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		06/30/21 19:37	07/04/21 16:06	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.98	ng/L		06/30/21 19:37	07/04/21 16:06	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		06/30/21 19:37	07/04/21 16:06	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		06/30/21 19:37	07/04/21 16:06	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		06/30/21 19:37	07/04/21 16:06	1
Perfluorobutanesulfonic acid (PFBS)	**2.0**		1.8	0.18	ng/L		06/30/21 19:37	07/04/21 16:06	1
Perfluorohexanesulfonic acid (PFHxS)	**120**		1.8	0.51	ng/L		06/30/21 19:37	07/04/21 16:06	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		06/30/21 19:37	07/04/21 16:06	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.2	ng/L		06/30/21 19:37	07/04/21 16:06	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		06/30/21 19:37	07/04/21 16:06	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		06/30/21 19:37	07/04/21 16:06	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		06/30/21 19:37	07/04/21 16:06	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		06/30/21 19:37	07/04/21 16:06	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*90*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:06*	*1*
13C4 PFHpA	*96*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:06*	*1*
13C4 PFOA	*91*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:06*	*1*
13C5 PFNA	*87*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:06*	*1*
13C2 PFDA	*88*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:06*	*1*
13C2 PFUnA	*90*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:06*	*1*
13C2 PFDoA	*85*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:06*	*1*
13C2 PFTeDA	*90*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:06*	*1*
13C3 PFBS	*96*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:06*	*1*
18O2 PFHxS	*80*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:06*	*1*
13C4 PFOS	*81*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:06*	*1*
d3-NMeFOSAA	*82*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:06*	*1*
d5-NEtFOSAA	*81*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:06*	*1*
13C3 HFPO-DA	*82*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:06*	*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
Perfluorooctanesulfonic acid (PFOS)	**450**		8.9	2.4	ng/L		06/30/21 19:37	07/08/21 16:41	5

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*78*		*50 - 150*	*06/30/21 19:37*	*07/08/21 16:41*	*5*

Client Sample ID: MW-9-30
Date Collected: 06/22/21 18:46
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75574-9
Matrix: Water

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)	**6.7**		1.8	0.51	ng/L		06/30/21 19:37	07/04/21 16:15	1
Perfluoroheptanoic acid (PFHpA)	**3.2**		1.8	0.22	ng/L		06/30/21 19:37	07/04/21 16:15	1
Perfluorooctanoic acid (PFOA)	**1.1**	**J**	1.8	0.75	ng/L		06/30/21 19:37	07/04/21 16:15	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		06/30/21 19:37	07/04/21 16:15	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		06/30/21 19:37	07/04/21 16:15	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.97	ng/L		06/30/21 19:37	07/04/21 16:15	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.48	ng/L		06/30/21 19:37	07/04/21 16:15	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.1	ng/L		06/30/21 19:37	07/04/21 16:15	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.64	ng/L		06/30/21 19:37	07/04/21 16:15	1
Perfluorobutanesulfonic acid (PFBS)	**0.79**	**J**	1.8	0.18	ng/L		06/30/21 19:37	07/04/21 16:15	1
Perfluorohexanesulfonic acid (PFHxS)	**15**		1.8	0.50	ng/L		06/30/21 19:37	07/04/21 16:15	1
Perfluorooctanesulfonic acid (PFOS)	**95**		1.8	0.48	ng/L		06/30/21 19:37	07/04/21 16:15	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		06/30/21 19:37	07/04/21 16:15	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		06/30/21 19:37	07/04/21 16:15	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		06/30/21 19:37	07/04/21 16:15	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		06/30/21 19:37	07/04/21 16:15	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		06/30/21 19:37	07/04/21 16:15	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		06/30/21 19:37	07/04/21 16:15	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*84*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:15*	*1*
13C4 PFHpA	*86*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:15*	*1*
13C4 PFOA	*92*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:15*	*1*
13C5 PFNA	*83*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:15*	*1*
13C2 PFDA	*87*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:15*	*1*
13C2 PFUnA	*72*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:15*	*1*
13C2 PFDoA	*73*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:15*	*1*
13C2 PFTeDA	*85*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:15*	*1*
13C3 PFBS	*96*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:15*	*1*
18O2 PFHxS	*81*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:15*	*1*
13C4 PFOS	*70*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:15*	*1*
d3-NMeFOSAA	*72*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:15*	*1*
d5-NEtFOSAA	*71*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:15*	*1*
13C3 HFPO-DA	*81*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:15*	*1*

Client Sample ID: MW-2-20

Date Collected: 06/21/21 14:03
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75574-10

Matrix: Water

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)	**48**		1.8	0.52	ng/L		06/30/21 19:37	07/04/21 16:24	1
Perfluoroheptanoic acid (PFHpA)	**27**		1.8	0.23	ng/L		06/30/21 19:37	07/04/21 16:24	1
Perfluorooctanoic acid (PFOA)	**32**		1.8	0.77	ng/L		06/30/21 19:37	07/04/21 16:24	1
Perfluorononanoic acid (PFNA)	**15**		1.8	0.24	ng/L		06/30/21 19:37	07/04/21 16:24	1
Perfluorodecanoic acid (PFDA)	**0.46**	**J**	1.8	0.28	ng/L		06/30/21 19:37	07/04/21 16:24	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		06/30/21 19:37	07/04/21 16:24	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		06/30/21 19:37	07/04/21 16:24	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		06/30/21 19:37	07/04/21 16:24	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		06/30/21 19:37	07/04/21 16:24	1
Perfluorobutanesulfonic acid (PFBS)	**2.0**		1.8	0.18	ng/L		06/30/21 19:37	07/04/21 16:24	1
Perfluorohexanesulfonic acid (PFHxS)	**110**		1.8	0.52	ng/L		06/30/21 19:37	07/04/21 16:24	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		06/30/21 19:37	07/04/21 16:24	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		06/30/21 19:37	07/04/21 16:24	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		06/30/21 19:37	07/04/21 16:24	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		06/30/21 19:37	07/04/21 16:24	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		06/30/21 19:37	07/04/21 16:24	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		06/30/21 19:37	07/04/21 16:24	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*88*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:24*	*1*
13C4 PFHpA	*93*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:24*	*1*
13C4 PFOA	*90*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:24*	*1*
13C5 PFNA	*90*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:24*	*1*
13C2 PFDA	*87*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:24*	*1*
13C2 PFUnA	*81*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:24*	*1*
13C2 PFDoA	*91*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:24*	*1*
13C2 PFTeDA	*100*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:24*	*1*
13C3 PFBS	*92*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:24*	*1*
18O2 PFHxS	*87*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:24*	*1*
13C4 PFOS	*79*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:24*	*1*
d3-NMeFOSAA	*83*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:24*	*1*
d5-NEtFOSAA	*84*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:24*	*1*
13C3 HFPO-DA	*86*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:24*	*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
Perfluorooctanesulfonic acid (PFOS)	**430**		9.0	2.4	ng/L		06/30/21 19:37	07/07/21 01:14	5

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*84*		*50 - 150*	*06/30/21 19:37*	*07/07/21 01:14*	*5*

Client: Shannon & Wilson, Inc
Project/Site: DOT PFAS - MW - GST

Job ID: 320-75574-1

Client Sample ID: MW-7-20

Date Collected: 06/22/21 08:44
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75574-11

Matrix: Water

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)	**1.2**	**J**	1.8	0.52	ng/L		06/30/21 19:37	07/04/21 16:33	1
Perfluoroheptanoic acid (PFHpA)	**0.96**	**J**	1.8	0.22	ng/L		06/30/21 19:37	07/04/21 16:33	1
Perfluorooctanoic acid (PFOA)	**6.7**		1.8	0.76	ng/L		06/30/21 19:37	07/04/21 16:33	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		06/30/21 19:37	07/04/21 16:33	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		06/30/21 19:37	07/04/21 16:33	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.98	ng/L		06/30/21 19:37	07/04/21 16:33	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		06/30/21 19:37	07/04/21 16:33	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		06/30/21 19:37	07/04/21 16:33	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		06/30/21 19:37	07/04/21 16:33	1
Perfluorobutanesulfonic acid (PFBS)	**0.46**	**J**	1.8	0.18	ng/L		06/30/21 19:37	07/04/21 16:33	1
Perfluorohexanesulfonic acid (PFHxS)	**1.0**	**J**	1.8	0.51	ng/L		06/30/21 19:37	07/04/21 16:33	1
Perfluorooctanesulfonic acid (PFOS)	**6.2**		1.8	0.48	ng/L		06/30/21 19:37	07/04/21 16:33	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		06/30/21 19:37	07/04/21 16:33	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		06/30/21 19:37	07/04/21 16:33	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		06/30/21 19:37	07/04/21 16:33	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		06/30/21 19:37	07/04/21 16:33	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		06/30/21 19:37	07/04/21 16:33	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		06/30/21 19:37	07/04/21 16:33	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*88*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:33*	*1*
13C4 PFHpA	*99*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:33*	*1*
13C4 PFOA	*94*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:33*	*1*
13C5 PFNA	*96*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:33*	*1*
13C2 PFDA	*91*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:33*	*1*
13C2 PFUnA	*77*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:33*	*1*
13C2 PFDoA	*76*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:33*	*1*
13C2 PFTeDA	*84*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:33*	*1*
13C3 PFBS	*103*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:33*	*1*
18O2 PFHxS	*93*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:33*	*1*
13C4 PFOS	*81*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:33*	*1*
d3-NMeFOSAA	*72*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:33*	*1*
d5-NEtFOSAA	*76*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:33*	*1*
13C3 HFPO-DA	*82*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:33*	*1*

Client: Shannon & Wilson, Inc
Project/Site: DOT PFAS - MW - GST

Job ID: 320-75574-1

Client Sample ID: MW-3-15

Date Collected: 06/21/21 11:24
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75574-12

Matrix: Water

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)	**0.62**	**J**	1.7	0.50	ng/L		06/30/21 19:37	07/04/21 16:43	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.22	ng/L		06/30/21 19:37	07/04/21 16:43	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.74	ng/L		06/30/21 19:37	07/04/21 16:43	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		06/30/21 19:37	07/04/21 16:43	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		06/30/21 19:37	07/04/21 16:43	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.95	ng/L		06/30/21 19:37	07/04/21 16:43	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		06/30/21 19:37	07/04/21 16:43	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		06/30/21 19:37	07/04/21 16:43	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.63	ng/L		06/30/21 19:37	07/04/21 16:43	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		06/30/21 19:37	07/04/21 16:43	1
Perfluorohexanesulfonic acid (PFHxS)	**1.2**	**J**	1.7	0.49	ng/L		06/30/21 19:37	07/04/21 16:43	1
Perfluorooctanesulfonic acid (PFOS)	**2.0**		1.7	0.47	ng/L		06/30/21 19:37	07/04/21 16:43	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.3	1.0	ng/L		06/30/21 19:37	07/04/21 16:43	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.3	1.1	ng/L		06/30/21 19:37	07/04/21 16:43	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		06/30/21 19:37	07/04/21 16:43	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		06/30/21 19:37	07/04/21 16:43	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		06/30/21 19:37	07/04/21 16:43	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.35	ng/L		06/30/21 19:37	07/04/21 16:43	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*86*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:43*	*1*
13C4 PFHpA	*91*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:43*	*1*
13C4 PFOA	*94*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:43*	*1*
13C5 PFNA	*90*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:43*	*1*
13C2 PFDA	*93*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:43*	*1*
13C2 PFUnA	*84*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:43*	*1*
13C2 PFDoA	*89*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:43*	*1*
13C2 PFTeDA	*95*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:43*	*1*
13C3 PFBS	*100*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:43*	*1*
18O2 PFHxS	*86*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:43*	*1*
13C4 PFOS	*78*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:43*	*1*
d3-NMeFOSAA	*85*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:43*	*1*
d5-NEtFOSAA	*80*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:43*	*1*
13C3 HFPO-DA	*84*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:43*	*1*

Client Sample ID: MW-1-40

Date Collected: 06/21/21 09:48
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75574-13

Matrix: Water

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		06/30/21 19:37	07/04/21 16:52	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		06/30/21 19:37	07/04/21 16:52	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.76	ng/L		06/30/21 19:37	07/04/21 16:52	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		06/30/21 19:37	07/04/21 16:52	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		06/30/21 19:37	07/04/21 16:52	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		06/30/21 19:37	07/04/21 16:52	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		06/30/21 19:37	07/04/21 16:52	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		06/30/21 19:37	07/04/21 16:52	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		06/30/21 19:37	07/04/21 16:52	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		06/30/21 19:37	07/04/21 16:52	1
Perfluorohexanesulfonic acid (PFHxS)	**0.68**	**J**	1.8	0.51	ng/L		06/30/21 19:37	07/04/21 16:52	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.48	ng/L		06/30/21 19:37	07/04/21 16:52	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		06/30/21 19:37	07/04/21 16:52	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		06/30/21 19:37	07/04/21 16:52	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		06/30/21 19:37	07/04/21 16:52	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		06/30/21 19:37	07/04/21 16:52	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		06/30/21 19:37	07/04/21 16:52	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		06/30/21 19:37	07/04/21 16:52	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*82*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:52*	*1*
13C4 PFHpA	*89*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:52*	*1*
13C4 PFOA	*93*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:52*	*1*
13C5 PFNA	*87*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:52*	*1*
13C2 PFDA	*88*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:52*	*1*
13C2 PFUnA	*75*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:52*	*1*
13C2 PFDoA	*84*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:52*	*1*
13C2 PFTeDA	*83*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:52*	*1*
13C3 PFBS	*96*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:52*	*1*
18O2 PFHxS	*81*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:52*	*1*
13C4 PFOS	*75*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:52*	*1*
d3-NMeFOSAA	*83*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:52*	*1*
d5-NEtFOSAA	*85*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:52*	*1*
13C3 HFPO-DA	*84*		*50 - 150*	*06/30/21 19:37*	*07/04/21 16:52*	*1*

Client: Shannon & Wilson, Inc
Project/Site: DOT PFAS - MW - GST

Job ID: 320-75574-1

Client Sample ID: MW-2-30

Date Collected: 06/21/21 15:39
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75574-14

Matrix: Water

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	0.51	ng/L		06/30/21 19:37	07/04/21 17:01	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		06/30/21 19:37	07/04/21 17:01	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.75	ng/L		06/30/21 19:37	07/04/21 17:01	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		06/30/21 19:37	07/04/21 17:01	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		06/30/21 19:37	07/04/21 17:01	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.97	ng/L		06/30/21 19:37	07/04/21 17:01	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.48	ng/L		06/30/21 19:37	07/04/21 17:01	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.1	ng/L		06/30/21 19:37	07/04/21 17:01	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.64	ng/L		06/30/21 19:37	07/04/21 17:01	1
Perfluorobutanesulfonic acid (PFBS)	**1.2**	**J**	1.8	0.18	ng/L		06/30/21 19:37	07/04/21 17:01	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.50	ng/L		06/30/21 19:37	07/04/21 17:01	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.47	ng/L		06/30/21 19:37	07/04/21 17:01	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		06/30/21 19:37	07/04/21 17:01	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		06/30/21 19:37	07/04/21 17:01	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		06/30/21 19:37	07/04/21 17:01	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		06/30/21 19:37	07/04/21 17:01	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		06/30/21 19:37	07/04/21 17:01	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		06/30/21 19:37	07/04/21 17:01	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*84*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:01*	*1*
13C4 PFHpA	*93*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:01*	*1*
13C4 PFOA	*94*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:01*	*1*
13C5 PFNA	*85*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:01*	*1*
13C2 PFDA	*85*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:01*	*1*
13C2 PFUnA	*77*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:01*	*1*
13C2 PFDoA	*79*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:01*	*1*
13C2 PFTeDA	*91*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:01*	*1*
13C3 PFBS	*99*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:01*	*1*
18O2 PFHxS	*91*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:01*	*1*
13C4 PFOS	*80*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:01*	*1*
d3-NMeFOSAA	*76*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:01*	*1*
d5-NEtFOSAA	*75*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:01*	*1*
13C3 HFPO-DA	*81*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:01*	*1*

Client Sample ID: MW-1-15
Date Collected: 06/21/21 08:44
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75574-15
Matrix: Water

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		1.7	0.50	ng/L		06/30/21 19:37	07/04/21 17:10	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.21	ng/L		06/30/21 19:37	07/04/21 17:10	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.73	ng/L		06/30/21 19:37	07/04/21 17:10	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		06/30/21 19:37	07/04/21 17:10	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		06/30/21 19:37	07/04/21 17:10	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.94	ng/L		06/30/21 19:37	07/04/21 17:10	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47	ng/L		06/30/21 19:37	07/04/21 17:10	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		06/30/21 19:37	07/04/21 17:10	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.63	ng/L		06/30/21 19:37	07/04/21 17:10	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		06/30/21 19:37	07/04/21 17:10	1
Perfluorohexanesulfonic acid (PFHxS)	**0.61**	**J**	1.7	0.49	ng/L		06/30/21 19:37	07/04/21 17:10	1
Perfluorooctanesulfonic acid (PFOS)	**1.4**	**J**	1.7	0.46	ng/L		06/30/21 19:37	07/04/21 17:10	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.3	1.0	ng/L		06/30/21 19:37	07/04/21 17:10	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.3	1.1	ng/L		06/30/21 19:37	07/04/21 17:10	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		06/30/21 19:37	07/04/21 17:10	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		06/30/21 19:37	07/04/21 17:10	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		06/30/21 19:37	07/04/21 17:10	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.34	ng/L		06/30/21 19:37	07/04/21 17:10	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*93*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:10*	*1*
13C4 PFHpA	*100*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:10*	*1*
13C4 PFOA	*94*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:10*	*1*
13C5 PFNA	*101*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:10*	*1*
13C2 PFDA	*102*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:10*	*1*
13C2 PFUnA	*94*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:10*	*1*
13C2 PFDoA	*83*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:10*	*1*
13C2 PFTeDA	*103*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:10*	*1*
13C3 PFBS	*103*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:10*	*1*
18O2 PFHxS	*93*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:10*	*1*
13C4 PFOS	*84*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:10*	*1*
d3-NMeFOSAA	*84*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:10*	*1*
d5-NEtFOSAA	*83*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:10*	*1*
13C3 HFPO-DA	*85*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:10*	*1*

Client: Shannon & Wilson, Inc
Project/Site: DOT PFAS - MW - GST

Job ID: 320-75574-1

Client Sample ID: MW-11-15
Date Collected: 06/23/21 10:13
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75574-16
Matrix: Water

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)	**15**		1.8	0.51	ng/L		06/30/21 19:37	07/04/21 17:19	1
Perfluoroheptanoic acid (PFHpA)	**3.0**		1.8	0.22	ng/L		06/30/21 19:37	07/04/21 17:19	1
Perfluorooctanoic acid (PFOA)	**2.1**		1.8	0.75	ng/L		06/30/21 19:37	07/04/21 17:19	1
Perfluorononanoic acid (PFNA)	**0.85**	**J**	1.8	0.24	ng/L		06/30/21 19:37	07/04/21 17:19	1
Perfluorodecanoic acid (PFDA)	**0.85**	**J**	1.8	0.27	ng/L		06/30/21 19:37	07/04/21 17:19	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.97	ng/L		06/30/21 19:37	07/04/21 17:19	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		06/30/21 19:37	07/04/21 17:19	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		06/30/21 19:37	07/04/21 17:19	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		06/30/21 19:37	07/04/21 17:19	1
Perfluorobutanesulfonic acid (PFBS)	**0.97**	**J**	1.8	0.18	ng/L		06/30/21 19:37	07/04/21 17:19	1
Perfluorohexanesulfonic acid (PFHxS)	**13**		1.8	0.50	ng/L		06/30/21 19:37	07/04/21 17:19	1
Perfluorooctanesulfonic acid (PFOS)	**130**		1.8	0.48	ng/L		06/30/21 19:37	07/04/21 17:19	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		06/30/21 19:37	07/04/21 17:19	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.2	ng/L		06/30/21 19:37	07/04/21 17:19	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		06/30/21 19:37	07/04/21 17:19	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		06/30/21 19:37	07/04/21 17:19	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		06/30/21 19:37	07/04/21 17:19	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		06/30/21 19:37	07/04/21 17:19	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*86*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:19*	*1*
13C4 PFHpA	*95*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:19*	*1*
13C4 PFOA	*93*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:19*	*1*
13C5 PFNA	*89*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:19*	*1*
13C2 PFDA	*96*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:19*	*1*
13C2 PFUnA	*83*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:19*	*1*
13C2 PFDoA	*88*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:19*	*1*
13C2 PFTeDA	*96*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:19*	*1*
13C3 PFBS	*99*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:19*	*1*
18O2 PFHxS	*88*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:19*	*1*
13C4 PFOS	*83*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:19*	*1*
d3-NMeFOSAA	*86*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:19*	*1*
d5-NEtFOSAA	*81*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:19*	*1*
13C3 HFPO-DA	*81*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:19*	*1*

Client Sample ID: MW-111-15
Date Collected: 06/23/21 10:03
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75574-17
Matrix: Water

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)	**18**		1.7	0.50	ng/L		06/30/21 19:37	07/04/21 17:28	1
Perfluoroheptanoic acid (PFHpA)	**2.7**		1.7	0.22	ng/L		06/30/21 19:37	07/04/21 17:28	1
Perfluorooctanoic acid (PFOA)	**2.0**		1.7	0.74	ng/L		06/30/21 19:37	07/04/21 17:28	1
Perfluorononanoic acid (PFNA)	**0.88**	**J**	1.7	0.23	ng/L		06/30/21 19:37	07/04/21 17:28	1
Perfluorodecanoic acid (PFDA)	**0.86**	**J**	1.7	0.27	ng/L		06/30/21 19:37	07/04/21 17:28	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.95	ng/L		06/30/21 19:37	07/04/21 17:28	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		06/30/21 19:37	07/04/21 17:28	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		06/30/21 19:37	07/04/21 17:28	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.63	ng/L		06/30/21 19:37	07/04/21 17:28	1
Perfluorobutanesulfonic acid (PFBS)	**1.0**	**J**	1.7	0.17	ng/L		06/30/21 19:37	07/04/21 17:28	1
Perfluorohexanesulfonic acid (PFHxS)	**13**		1.7	0.49	ng/L		06/30/21 19:37	07/04/21 17:28	1
Perfluorooctanesulfonic acid (PFOS)	**140**		1.7	0.47	ng/L		06/30/21 19:37	07/04/21 17:28	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.3	1.0	ng/L		06/30/21 19:37	07/04/21 17:28	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.3	1.1	ng/L		06/30/21 19:37	07/04/21 17:28	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		06/30/21 19:37	07/04/21 17:28	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		06/30/21 19:37	07/04/21 17:28	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		06/30/21 19:37	07/04/21 17:28	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.35	ng/L		06/30/21 19:37	07/04/21 17:28	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*81*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:28*	*1*
13C4 PFHpA	*96*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:28*	*1*
13C4 PFOA	*97*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:28*	*1*
13C5 PFNA	*81*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:28*	*1*
13C2 PFDA	*90*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:28*	*1*
13C2 PFUnA	*82*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:28*	*1*
13C2 PFDoA	*91*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:28*	*1*
13C2 PFTeDA	*88*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:28*	*1*
13C3 PFBS	*102*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:28*	*1*
18O2 PFHxS	*82*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:28*	*1*
13C4 PFOS	*76*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:28*	*1*
d3-NMeFOSAA	*77*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:28*	*1*
d5-NEtFOSAA	*81*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:28*	*1*
13C3 HFPO-DA	*86*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:28*	*1*

Client: Shannon & Wilson, Inc
Project/Site: DOT PFAS - MW - GST

Job ID: 320-75574-1

Client Sample ID: MW-12-10

Date Collected: 06/23/21 08:50
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75574-18

Matrix: Water

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)	**5.6**		1.8	0.52	ng/L		06/30/21 19:37	07/04/21 17:56	1
Perfluoroheptanoic acid (PFHpA)	**5.5**		1.8	0.22	ng/L		06/30/21 19:37	07/04/21 17:56	1
Perfluorooctanoic acid (PFOA)	**2.6**		1.8	0.76	ng/L		06/30/21 19:37	07/04/21 17:56	1
Perfluorononanoic acid (PFNA)	**0.66**	**J**	1.8	0.24	ng/L		06/30/21 19:37	07/04/21 17:56	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		06/30/21 19:37	07/04/21 17:56	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.98	ng/L		06/30/21 19:37	07/04/21 17:56	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		06/30/21 19:37	07/04/21 17:56	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		06/30/21 19:37	07/04/21 17:56	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		06/30/21 19:37	07/04/21 17:56	1
Perfluorobutanesulfonic acid (PFBS)	**0.61**	**J**	1.8	0.18	ng/L		06/30/21 19:37	07/04/21 17:56	1
Perfluorohexanesulfonic acid (PFHxS)	**14**		1.8	0.51	ng/L		06/30/21 19:37	07/04/21 17:56	1
Perfluorooctanesulfonic acid (PFOS)	**50**		1.8	0.48	ng/L		06/30/21 19:37	07/04/21 17:56	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		06/30/21 19:37	07/04/21 17:56	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		06/30/21 19:37	07/04/21 17:56	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		06/30/21 19:37	07/04/21 17:56	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		06/30/21 19:37	07/04/21 17:56	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		06/30/21 19:37	07/04/21 17:56	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		06/30/21 19:37	07/04/21 17:56	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*86*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:56*	*1*
13C4 PFHpA	*92*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:56*	*1*
13C4 PFOA	*93*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:56*	*1*
13C5 PFNA	*90*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:56*	*1*
13C2 PFDA	*89*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:56*	*1*
13C2 PFUnA	*74*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:56*	*1*
13C2 PFDoA	*77*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:56*	*1*
13C2 PFTeDA	*83*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:56*	*1*
13C3 PFBS	*97*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:56*	*1*
18O2 PFHxS	*84*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:56*	*1*
13C4 PFOS	*78*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:56*	*1*
d3-NMeFOSAA	*72*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:56*	*1*
d5-NEtFOSAA	*76*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:56*	*1*
13C3 HFPO-DA	*78*		*50 - 150*	*06/30/21 19:37*	*07/04/21 17:56*	*1*

Client: Shannon & Wilson, Inc
Project/Site: DOT PFAS - MW - GST

Job ID: 320-75574-1

Client Sample ID: DOT-GAC

Date Collected: 06/23/21 20:17
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75574-19

Matrix: Water

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)	**0.56**	**J**	1.9	0.56	ng/L		06/30/21 19:37	07/04/21 18:05	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		06/30/21 19:37	07/04/21 18:05	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.82	ng/L		06/30/21 19:37	07/04/21 18:05	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		06/30/21 19:37	07/04/21 18:05	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		06/30/21 19:37	07/04/21 18:05	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		06/30/21 19:37	07/04/21 18:05	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		06/30/21 19:37	07/04/21 18:05	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		06/30/21 19:37	07/04/21 18:05	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		06/30/21 19:37	07/04/21 18:05	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		06/30/21 19:37	07/04/21 18:05	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.55	ng/L		06/30/21 19:37	07/04/21 18:05	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.52	ng/L		06/30/21 19:37	07/04/21 18:05	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.2	ng/L		06/30/21 19:37	07/04/21 18:05	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		06/30/21 19:37	07/04/21 18:05	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		06/30/21 19:37	07/04/21 18:05	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		06/30/21 19:37	07/04/21 18:05	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		06/30/21 19:37	07/04/21 18:05	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		06/30/21 19:37	07/04/21 18:05	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*86*		*50 - 150*	*06/30/21 19:37*	*07/04/21 18:05*	*1*
13C4 PFHpA	*101*		*50 - 150*	*06/30/21 19:37*	*07/04/21 18:05*	*1*
13C4 PFOA	*99*		*50 - 150*	*06/30/21 19:37*	*07/04/21 18:05*	*1*
13C5 PFNA	*91*		*50 - 150*	*06/30/21 19:37*	*07/04/21 18:05*	*1*
13C2 PFDA	*97*		*50 - 150*	*06/30/21 19:37*	*07/04/21 18:05*	*1*
13C2 PFUnA	*93*		*50 - 150*	*06/30/21 19:37*	*07/04/21 18:05*	*1*
13C2 PFDoA	*89*		*50 - 150*	*06/30/21 19:37*	*07/04/21 18:05*	*1*
13C2 PFTeDA	*99*		*50 - 150*	*06/30/21 19:37*	*07/04/21 18:05*	*1*
13C3 PFBS	*111*		*50 - 150*	*06/30/21 19:37*	*07/04/21 18:05*	*1*
18O2 PFHxS	*91*		*50 - 150*	*06/30/21 19:37*	*07/04/21 18:05*	*1*
13C4 PFOS	*88*		*50 - 150*	*06/30/21 19:37*	*07/04/21 18:05*	*1*
d3-NMeFOSAA	*86*		*50 - 150*	*06/30/21 19:37*	*07/04/21 18:05*	*1*
d5-NEtFOSAA	*89*		*50 - 150*	*06/30/21 19:37*	*07/04/21 18:05*	*1*
13C3 HFPO-DA	*88*		*50 - 150*	*06/30/21 19:37*	*07/04/21 18:05*	*1*

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: DOT PFAS - MW - GST

Job ID: 320-75574-1

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDoA (50-150)	PFTDA (50-150)
320-75574-1	MW-109-30	85	94	96	88	85	81	89	92
320-75574-2	MW-10-20	85	93	89	83	83	75	79	86
320-75574-3	MW-5-20	88	94	91	89	85	85	78	88
320-75574-4	MW-6-20	81	85	95	81	87	81	78	87
320-75574-5	MW-4-20	81	94	88	88	89	74	73	87
320-75574-6	MW-3-40	87	97	94	85	90	69	88	88
320-75574-7	MW-8-20	80	85	91	78	83	79	80	92
320-75574-8	MW-102-20	90	96	91	87	88	90	85	90
320-75574-8 - DL	MW-102-20								
320-75574-9	MW-9-30	84	86	92	83	87	72	73	85
320-75574-10	MW-2-20	88	93	90	90	87	81	91	100
320-75574-10 - DL	MW-2-20								
320-75574-11	MW-7-20	88	99	94	96	91	77	76	84
320-75574-12	MW-3-15	86	91	94	90	93	84	89	95
320-75574-13	MW-1-40	82	89	93	87	88	75	84	83
320-75574-14	MW-2-30	84	93	94	85	85	77	79	91
320-75574-15	MW-1-15	93	100	94	101	102	94	83	103
320-75574-16	MW-11-15	86	95	93	89	96	83	88	96
320-75574-17	MW-111-15	81	96	97	81	90	82	91	88
320-75574-18	MW-12-10	86	92	93	90	89	74	77	83
320-75574-19	DOT-GAC	86	101	99	91	97	93	89	99
LCS 320-503371/2-A	Lab Control Sample	95	98	97	96	99	89	94	104
LCSD 320-503371/3-A	Lab Control Sample Dup	88	105	97	90	99	93	90	94
MB 320-503371/1-A	Method Blank	93	102	97	102	103	87	94	109

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)		
320-75574-1	MW-109-30	101	80	84	83	81	80		
320-75574-2	MW-10-20	91	77	79	75	80	78		
320-75574-3	MW-5-20	98	84	77	74	73	80		
320-75574-4	MW-6-20	92	87	77	76	75	78		
320-75574-5	MW-4-20	95	83	79	83	81	82		
320-75574-6	MW-3-40	93	86	79	81	74	87		
320-75574-7	MW-8-20	92	78	73	70	69	79		
320-75574-8	MW-102-20	96	80	81	82	81	82		
320-75574-8 - DL	MW-102-20			78					
320-75574-9	MW-9-30	96	81	70	72	71	81		
320-75574-10	MW-2-20	92	87	79	83	84	86		
320-75574-10 - DL	MW-2-20			84					
320-75574-11	MW-7-20	103	93	81	72	76	82		
320-75574-12	MW-3-15	100	86	78	85	80	84		
320-75574-13	MW-1-40	96	81	75	83	85	84		
320-75574-14	MW-2-30	99	91	80	76	75	81		
320-75574-15	MW-1-15	103	93	84	84	83	85		
320-75574-16	MW-11-15	99	88	83	86	81	81		
320-75574-17	MW-111-15	102	82	76	77	81	86		
320-75574-18	MW-12-10	97	84	78	72	76	78		
320-75574-19	DOT-GAC	111	91	88	86	89	88		
LCS 320-503371/2-A	Lab Control Sample	110	90	87	89	84	90		

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Job ID: 320-75574-1
Project/Site: DOT PFAS - MW - GST

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Matrix: Water
Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)		
LCSD 320-503371/3-A	Lab Control Sample Dup	103	89	88	83	77	94		
MB 320-503371/1-A	Method Blank	99	92	90	82	79	98		

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

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Lab Sample ID: MB 320-503371/1-A
Matrix: Water
Analysis Batch: 504280

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 503371

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		06/30/21 19:37	07/04/21 14:17	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		06/30/21 19:37	07/04/21 14:17	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		06/30/21 19:37	07/04/21 14:17	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		06/30/21 19:37	07/04/21 14:17	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		06/30/21 19:37	07/04/21 14:17	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		06/30/21 19:37	07/04/21 14:17	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		06/30/21 19:37	07/04/21 14:17	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		06/30/21 19:37	07/04/21 14:17	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		06/30/21 19:37	07/04/21 14:17	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		06/30/21 19:37	07/04/21 14:17	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		06/30/21 19:37	07/04/21 14:17	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		06/30/21 19:37	07/04/21 14:17	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		06/30/21 19:37	07/04/21 14:17	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		06/30/21 19:37	07/04/21 14:17	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		06/30/21 19:37	07/04/21 14:17	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		06/30/21 19:37	07/04/21 14:17	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		06/30/21 19:37	07/04/21 14:17	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		06/30/21 19:37	07/04/21 14:17	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*93*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:17*	*1*
13C4 PFHpA	*102*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:17*	*1*
13C4 PFOA	*97*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:17*	*1*
13C5 PFNA	*102*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:17*	*1*
13C2 PFDA	*103*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:17*	*1*
13C2 PFUnA	*87*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:17*	*1*
13C2 PFDoA	*94*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:17*	*1*
13C2 PFTeDA	*109*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:17*	*1*
13C3 PFBS	*99*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:17*	*1*
18O2 PFHxS	*92*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:17*	*1*
13C4 PFOS	*90*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:17*	*1*
d3-NMeFOSAA	*82*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:17*	*1*
d5-NEtFOSAA	*79*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:17*	*1*
13C3 HFPO-DA	*98*		*50 - 150*	*06/30/21 19:37*	*07/04/21 14:17*	*1*

Lab Sample ID: LCS 320-503371/2-A
Matrix: Water
Analysis Batch: 504280

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 503371

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid (PFHxA)	40.0	44.4		ng/L		111	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	45.3		ng/L		113	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	43.4		ng/L		108	71 - 133
Perfluorononanoic acid (PFNA)	40.0	43.7		ng/L		109	69 - 130

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCS 320-503371/2-A
Matrix: Water
Analysis Batch: 504280

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 503371

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorodecanoic acid (PFDA)	40.0	42.6		ng/L		106	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	48.4		ng/L		121	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	45.9		ng/L		115	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	44.4		ng/L		111	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	47.6		ng/L		119	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.4	33.2		ng/L		94	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	42.7		ng/L		117	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.1	43.3		ng/L		117	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	44.7		ng/L		112	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	47.9		ng/L		120	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	46.8		ng/L		126	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	48.1		ng/L		120	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	45.4		ng/L		121	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	50.8		ng/L		135	81 - 141

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*95*		*50 - 150*
13C4 PFHpA	*98*		*50 - 150*
13C4 PFOA	*97*		*50 - 150*
13C5 PFNA	*96*		*50 - 150*
13C2 PFDA	*99*		*50 - 150*
13C2 PFUnA	*89*		*50 - 150*
13C2 PFDoA	*94*		*50 - 150*
13C2 PFTeDA	*104*		*50 - 150*
13C3 PFBS	*110*		*50 - 150*
18O2 PFHxS	*90*		*50 - 150*
13C4 PFOS	*87*		*50 - 150*
d3-NMeFOSAA	*89*		*50 - 150*
d5-NEtFOSAA	*84*		*50 - 150*
13C3 HFPO-DA	*90*		*50 - 150*

Lab Sample ID: LCSD 320-503371/3-A
Matrix: Water
Analysis Batch: 504280

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 503371

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	46.7		ng/L		117	72 - 129	5	30
Perfluoroheptanoic acid (PFHpA)	40.0	42.9		ng/L		107	72 - 130	5	30
Perfluorooctanoic acid (PFOA)	40.0	42.2		ng/L		106	71 - 133	3	30

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCSD 320-503371/3-A
Matrix: Water
Analysis Batch: 504280

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 503371

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)			40.0	49.7		ng/L		124	69 - 130	13	30
Perfluorodecanoic acid (PFDA)			40.0	43.7		ng/L		109	71 - 129	3	30
Perfluoroundecanoic acid (PFUnA)			40.0	48.0		ng/L		120	69 - 133	1	30
Perfluorododecanoic acid (PFDoA)			40.0	42.5		ng/L		106	72 - 134	8	30
Perfluorotridecanoic acid (PFTriA)			40.0	38.0		ng/L		95	65 - 144	15	30
Perfluorotetradecanoic acid (PFTeA)			40.0	49.0		ng/L		123	71 - 132	3	30
Perfluorobutanesulfonic acid (PFBS)			35.4	35.4		ng/L		100	72 - 130	6	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	40.8		ng/L		112	68 - 131	5	30
Perfluorooctanesulfonic acid (PFOS)			37.1	44.1		ng/L		119	65 - 140	2	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			40.0	42.4		ng/L		106	65 - 136	5	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	46.7		ng/L		117	61 - 135	3	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid			37.3	41.8		ng/L		112	77 - 137	11	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			40.0	46.7		ng/L		117	72 - 132	3	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid			37.7	40.8		ng/L		108	76 - 136	11	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.7	47.8		ng/L		127	81 - 141	6	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*88*		*50 - 150*
13C4 PFHpA	*105*		*50 - 150*
13C4 PFOA	*97*		*50 - 150*
13C5 PFNA	*90*		*50 - 150*
13C2 PFDA	*99*		*50 - 150*
13C2 PFUnA	*93*		*50 - 150*
13C2 PFDoA	*90*		*50 - 150*
13C2 PFTeDA	*94*		*50 - 150*
13C3 PFBS	*103*		*50 - 150*
18O2 PFHxS	*89*		*50 - 150*
13C4 PFOS	*88*		*50 - 150*
d3-NMeFOSAA	*83*		*50 - 150*
d5-NEtFOSAA	*77*		*50 - 150*
13C3 HFPO-DA	*94*		*50 - 150*

LCMS

Prep Batch: 503371

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-75574-1	MW-109-30	Total/NA	Water	3535	
320-75574-2	MW-10-20	Total/NA	Water	3535	
320-75574-3	MW-5-20	Total/NA	Water	3535	
320-75574-4	MW-6-20	Total/NA	Water	3535	
320-75574-5	MW-4-20	Total/NA	Water	3535	
320-75574-6	MW-3-40	Total/NA	Water	3535	
320-75574-7	MW-8-20	Total/NA	Water	3535	
320-75574-8 - DL	MW-102-20	Total/NA	Water	3535	
320-75574-8	MW-102-20	Total/NA	Water	3535	
320-75574-9	MW-9-30	Total/NA	Water	3535	
320-75574-10	MW-2-20	Total/NA	Water	3535	
320-75574-10 - DL	MW-2-20	Total/NA	Water	3535	
320-75574-11	MW-7-20	Total/NA	Water	3535	
320-75574-12	MW-3-15	Total/NA	Water	3535	
320-75574-13	MW-1-40	Total/NA	Water	3535	
320-75574-14	MW-2-30	Total/NA	Water	3535	
320-75574-15	MW-1-15	Total/NA	Water	3535	
320-75574-16	MW-11-15	Total/NA	Water	3535	
320-75574-17	MW-111-15	Total/NA	Water	3535	
320-75574-18	MW-12-10	Total/NA	Water	3535	
320-75574-19	DOT-GAC	Total/NA	Water	3535	
MB 320-503371/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-503371/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-503371/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 504280

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-75574-1	MW-109-30	Total/NA	Water	EPA 537(Mod)	503371
320-75574-2	MW-10-20	Total/NA	Water	EPA 537(Mod)	503371
320-75574-3	MW-5-20	Total/NA	Water	EPA 537(Mod)	503371
320-75574-4	MW-6-20	Total/NA	Water	EPA 537(Mod)	503371
320-75574-5	MW-4-20	Total/NA	Water	EPA 537(Mod)	503371
320-75574-6	MW-3-40	Total/NA	Water	EPA 537(Mod)	503371
320-75574-7	MW-8-20	Total/NA	Water	EPA 537(Mod)	503371
320-75574-8	MW-102-20	Total/NA	Water	EPA 537(Mod)	503371
320-75574-9	MW-9-30	Total/NA	Water	EPA 537(Mod)	503371
320-75574-10	MW-2-20	Total/NA	Water	EPA 537(Mod)	503371
320-75574-11	MW-7-20	Total/NA	Water	EPA 537(Mod)	503371
320-75574-12	MW-3-15	Total/NA	Water	EPA 537(Mod)	503371
320-75574-13	MW-1-40	Total/NA	Water	EPA 537(Mod)	503371
320-75574-14	MW-2-30	Total/NA	Water	EPA 537(Mod)	503371
320-75574-15	MW-1-15	Total/NA	Water	EPA 537(Mod)	503371
320-75574-16	MW-11-15	Total/NA	Water	EPA 537(Mod)	503371
320-75574-17	MW-111-15	Total/NA	Water	EPA 537(Mod)	503371
320-75574-18	MW-12-10	Total/NA	Water	EPA 537(Mod)	503371
320-75574-19	DOT-GAC	Total/NA	Water	EPA 537(Mod)	503371
MB 320-503371/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	503371
LCS 320-503371/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	503371
LCSD 320-503371/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	503371

LCMS

Analysis Batch: 504628

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-75574-10 - DL	MW-2-20	Total/NA	Water	EPA 537(Mod)	503371

Analysis Batch: 505107

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-75574-8 - DL	MW-102-20	Total/NA	Water	EPA 537(Mod)	503371

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: DOT PFAS - MW - GST

Job ID: 320-75574-1

Client Sample ID: MW-109-30
Date Collected: 06/22/21 18:36
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75574-1
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			286.2 mL	10.0 mL	503371	06/30/21 19:37	PV	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504280	07/04/21 14:44	RS1	TAL SAC

Client Sample ID: MW-10-20
Date Collected: 06/22/21 17:52
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75574-2
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			285.3 mL	10.0 mL	503371	06/30/21 19:37	PV	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504280	07/04/21 14:53	RS1	TAL SAC

Client Sample ID: MW-5-20
Date Collected: 06/22/21 15:56
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75574-3
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	10.0 mL	503371	06/30/21 19:37	PV	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504280	07/04/21 15:02	RS1	TAL SAC

Client Sample ID: MW-6-20
Date Collected: 06/22/21 14:36
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75574-4
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			290.9 mL	10.0 mL	503371	06/30/21 19:37	PV	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504280	07/04/21 15:11	RS1	TAL SAC

Client Sample ID: MW-4-20
Date Collected: 06/21/21 18:47
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75574-5
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			287.2 mL	10.0 mL	503371	06/30/21 19:37	PV	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504280	07/04/21 15:21	RS1	TAL SAC

Client Sample ID: MW-3-40
Date Collected: 06/21/21 12:13
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75574-6
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			286.9 mL	10.0 mL	503371	06/30/21 19:37	PV	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504280	07/04/21 15:30	RS1	TAL SAC

Client Sample ID: MW-8-20
Lab Sample ID: 320-75574-7

Date Collected: 06/22/21 16:44
Matrix: Water
Date Received: 06/29/21 14:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			296.1 mL	10.0 mL	503371	06/30/21 19:37	PV	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504280	07/04/21 15:39	RS1	TAL SAC

Client Sample ID: MW-102-20
Lab Sample ID: 320-75574-8

Date Collected: 06/21/21 13:53
Matrix: Water
Date Received: 06/29/21 14:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535	DL		281.5 mL	10.0 mL	503371	06/30/21 19:37	PV	TAL SAC
Total/NA	Analysis	EPA 537(Mod)	DL	5			505107	07/08/21 16:41	S1M	TAL SAC
Total/NA	Prep	3535			281.5 mL	10.0 mL	503371	06/30/21 19:37	PV	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504280	07/04/21 16:06	RS1	TAL SAC

Client Sample ID: MW-9-30
Lab Sample ID: 320-75574-9

Date Collected: 06/22/21 18:46
Matrix: Water
Date Received: 06/29/21 14:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			284.2 mL	10.0 mL	503371	06/30/21 19:37	PV	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504280	07/04/21 16:15	RS1	TAL SAC

Client Sample ID: MW-2-20
Lab Sample ID: 320-75574-10

Date Collected: 06/21/21 14:03
Matrix: Water
Date Received: 06/29/21 14:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			276.6 mL	10.0 mL	503371	06/30/21 19:37	PV	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504280	07/04/21 16:24	RS1	TAL SAC
Total/NA	Prep	3535	DL		276.6 mL	10.0 mL	503371	06/30/21 19:37	PV	TAL SAC
Total/NA	Analysis	EPA 537(Mod)	DL	5			504628	07/07/21 01:14	D1R	TAL SAC

Client Sample ID: MW-7-20
Lab Sample ID: 320-75574-11

Date Collected: 06/22/21 08:44
Matrix: Water
Date Received: 06/29/21 14:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			280.2 mL	10.0 mL	503371	06/30/21 19:37	PV	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504280	07/04/21 16:33	RS1	TAL SAC

Client Sample ID: MW-3-15
Lab Sample ID: 320-75574-12

Date Collected: 06/21/21 11:24
Matrix: Water
Date Received: 06/29/21 14:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			289 mL	10.0 mL	503371	06/30/21 19:37	PV	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504280	07/04/21 16:43	RS1	TAL SAC

Client Sample ID: MW-1-40
Date Collected: 06/21/21 09:48
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75574-13
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			278.7 mL	10.0 mL	503371	06/30/21 19:37	PV	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504280	07/04/21 16:52	RS1	TAL SAC

Client Sample ID: MW-2-30
Date Collected: 06/21/21 15:39
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75574-14
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			284.6 mL	10.0 mL	503371	06/30/21 19:37	PV	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504280	07/04/21 17:01	RS1	TAL SAC

Client Sample ID: MW-1-15
Date Collected: 06/21/21 08:44
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75574-15
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			291.3 mL	10.0 mL	503371	06/30/21 19:37	PV	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504280	07/04/21 17:10	RS1	TAL SAC

Client Sample ID: MW-11-15
Date Collected: 06/23/21 10:13
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75574-16
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			282.2 mL	10.0 mL	503371	06/30/21 19:37	PV	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504280	07/04/21 17:19	RS1	TAL SAC

Client Sample ID: MW-111-15
Date Collected: 06/23/21 10:03
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75574-17
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			288.5 mL	10.0 mL	503371	06/30/21 19:37	PV	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504280	07/04/21 17:28	RS1	TAL SAC

Client Sample ID: MW-12-10
Date Collected: 06/23/21 08:50
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75574-18
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			279.4 mL	10.0 mL	503371	06/30/21 19:37	PV	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504280	07/04/21 17:56	RS1	TAL SAC

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: DOT PFAS - MW - GST

Job ID: 320-75574-1

Client Sample ID: DOT-GAC

Date Collected: 06/23/21 20:17
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75574-19

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			260.7 mL	10.0 mL	503371	06/30/21 19:37	PV	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504280	07/04/21 18:05	RS1	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: DOT PFAS - MW - GST

Job ID: 320-75574-1

Laboratory: Eurofins TestAmerica, Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

Method Summary

Client: Shannon & Wilson, Inc
Project/Site: DOT PFAS - MW - GST

Job ID: 320-75574-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod)	PFAS for QSM 5.3, Table B-15	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: DOT PFAS - MW - GST

Job ID: 320-75574-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-75574-1	MW-109-30	Water	06/22/21 18:36	06/29/21 14:55	
320-75574-2	MW-10-20	Water	06/22/21 17:52	06/29/21 14:55	
320-75574-3	MW-5-20	Water	06/22/21 15:56	06/29/21 14:55	
320-75574-4	MW-6-20	Water	06/22/21 14:36	06/29/21 14:55	
320-75574-5	MW-4-20	Water	06/21/21 18:47	06/29/21 14:55	
320-75574-6	MW-3-40	Water	06/21/21 12:13	06/29/21 14:55	
320-75574-7	MW-8-20	Water	06/22/21 16:44	06/29/21 14:55	
320-75574-8	MW-102-20	Water	06/21/21 13:53	06/29/21 14:55	
320-75574-9	MW-9-30	Water	06/22/21 18:46	06/29/21 14:55	
320-75574-10	MW-2-20	Water	06/21/21 14:03	06/29/21 14:55	
320-75574-11	MW-7-20	Water	06/22/21 08:44	06/29/21 14:55	
320-75574-12	MW-3-15	Water	06/21/21 11:24	06/29/21 14:55	
320-75574-13	MW-1-40	Water	06/21/21 09:48	06/29/21 14:55	
320-75574-14	MW-2-30	Water	06/21/21 15:39	06/29/21 14:55	
320-75574-15	MW-1-15	Water	06/21/21 08:44	06/29/21 14:55	
320-75574-16	MW-11-15	Water	06/23/21 10:13	06/29/21 14:55	
320-75574-17	MW-111-15	Water	06/23/21 10:03	06/29/21 14:55	
320-75574-18	MW-12-10	Water	06/23/21 08:50	06/29/21 14:55	
320-75574-19	DOT-GAC	Water	06/23/21 20:17	06/29/21 14:55	

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600
www.shannonwilson.com

CHAIN-OF-CUSTODY RECORD

Laboratory Test America
Attn: D. Allfrey

Turn Around Time: [X] Normal [ ] Rush — Please Specify

Quote No:

J-Flags: [X] Yes [ ] No

Analytical Methods (include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	PFAS x18	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
MW-109-30		1836	6/22/21	X	2	groundwater
MW-10-20		1752	6/22/21	X	2	
MW-5-20		1556	6/22/21	X	2	
MW-6-20		1436	6/22/21	X	2	
MW-4-20		1847	6/21/21	X	2	
MW-3-40		1213	6/21/21	X	2	
MW-8-20		1644	6/22/21	X	2	
MW-102-20		1353	6/21/21	X	2	
MW-9-30		1846	6/22/21	X	2	
MW-2-20		1403	6/21/21	X	2	

320-75574 Chain of Custody

Project Information	Sample Receipt
Number: 102599-012	Total No. of Containers:
Name: DOT PFAS - MW-GS	COC Seals/Intact? Y/N/NA
Contact: KRF	Received Good Cond./Cold
Ongoing Project? Yes [X] No [ ]	Temp: 4.3
Sampler: ARM JKR	Delivery Method:

Notes:

Reliquished By: 1.	Reliquished By: 2.	Reliquished By: 3.
Signature: Time: 1300	Signature: Time:	Signature: Time:
Printed Name: A. Masters Date: 6/23/21	Printed Name: Date:	Printed Name: Date:
Company: Shannon & Wilson, Inc.	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time: 1455	Signature: Time:	Signature: Time:
Printed Name: David Ha Date: 6/24/21	Printed Name: Date:	Printed Name: Date:
Company: ETH	Company:	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

No. 36328

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

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Fairbanks, AK 99709
(907) 479-0600
www.shannonwilson.com

CHAIN-OF-CUSTODY RECORD

Page 2 of 2

Laboratory: Test America
Attn: D. Alltucker

Turn Around Time: [X] Normal [ ] Rush
Please Specify

Quote No:

J-Flags: [X] Yes [ ] No

Analytical Methods (include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	PFAS x 18							Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
MW-7-20		0844	6/22/21	X							2	groundwater
MW-3-15		1124	6/21/21	X							2	
MW-1-40		0948	6/21/21	X							2	
MW-2-30		1539	6/21/21	X							2	
MW-1-15		0844	6/21/21	X							2	
MW-11-15		1013	6/23/21	X							2	
MW-11-15		1003	6/23/21	X							2	
MW-12-10		0850	6/23/21	X							2	
DOT-GAC		2017	6/23/21	X							2	

Project Information
Number: 102599
Name: GUS PFAS - DOT MW
Contact: KRF
Ongoing Project? Yes [X] No [ ]
Sampler: KRF

Sample Receipt
Total No. of Containers:
COC Seals/Intact? Y/N/NA
Received Good Cond./Cold
Temp: 4.3c
Delivery Method:

Reliquished By: 1.
Signature: [signature] Time: 1300
Printed Name: A. Masters Date: 6/28/21
Company: Shannon + Wilson, Inc

Reliquished By: 2.
Signature: Time:
Printed Name: Date:
Company:

Reliquished By: 3.
Signature: Time:
Printed Name: Date:
Company:

Notes:

Received By: 1.
Signature: [signature] Time: 1455
Printed Name: David Alltucker Date: 6/28/21
Company: ETA SAL

Received By: 2.
Signature: Time:
Printed Name: Date:
Company:

Received By: 3.
Signature: Time:
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

No. 36329

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-75574-1

Login Number: 75574
List Number: 1
Creator: Her, David A

List Source: Eurofins TestAmerica, Sacramento

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:

August 7, 2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins / TestAmerica Laboratories, Inc. (TestAmerica)

Laboratory Report Number:

320-755741-1

Laboratory Report Date:

July 13, 2021

CS Site Name:

DOT&PF Gustavus Airport Statewide PFAS

ADEC File Number:

1507.38.017

Hazard Identification Number:

26904

320-755741-1

Laboratory Report Date:

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 DEC certified TestAmerica of West Sacramento, CA for the analysis of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) on February 6, 2018 by method 537. These compounds were included in the DEC'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:

   The requested analyses were conducted by TestAmerica of 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 of the cooler at receipt was 4.3°C.

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

   Yes☐ No☐ N/A☒ Comments:

   Samples do not require preservation other than temperature.

   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.

Laboratory Report Date:

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 discrepancies were noted.

e. Data quality or usability affected?

Comments:

The 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 case narrative indicates the following:

Method EPA 537(Mod): Results for sample *MW-2-20* 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): Results for sample *MW-102-20* was 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 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-503371.

Method 3535: The following samples are yellow and contain floating particulates at the bottom of the bottle prior to extraction: *MW-109-30, MW-10-20, MW-4-20, MW-3-40, MW-8-20, MW-9-30, MW-7-20, MW-3-15, MW-1-40, MW-2-30,* and *MW-12-10*.

c. Were all corrective actions documented?

Yes☒ No☐ N/A☐ Comments:

See above.

Laboratory Report Date:

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 or 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:

The reporting limit (RL) is less than the applicable DEC regulatory limit for the project.

e. Data quality or usability affected?

The 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:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes☒ No☐ N/A☐ Comments:

There were no detections in the method blank sample associated with these project samples.

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:

The 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:

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:

N/A; 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 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:

Insufficient sample volume was available to perform a MS/MSD with the associated preparatory batch. However, the laboratory analyzed LCS and LCSD samples to assess laboratory accuracy and precision.

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:

MS and MSD samples were not analyzed for this work order.

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:

MS and MSD samples were not analyzed for this work order.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A; MS and MSD samples were not analyzed for this work order.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes☐ No☐ N/A☒ Comments:

MS and MSD samples were not analyzed for this work order.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The 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 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:

No; see above.

iv. Data quality or usability affected?

Comments:

The data quality and/or usability was 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. A trip blank is not required for the requested analysis.

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 for the requested analysis.

iii. All results less than LOQ and project specified objectives?

Yes☐ No☐ N/A☒ Comments:

A trip blank is not required for the requested analysis.

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; a trip blank is not required for the requested analysis.

v. Data quality or usability affected?

Comments:

The 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 *MW-2-20/MW-102-20, MW-9-30/MW-109-30,* and *MW-11-15/MW-111-15* were submitted with this work order.

iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water, 50% soil)

RPD (%) = 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 DQO (30%), 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 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:

Reusable equipment was not used for sample collection. Therefore, decontamination or equipment blank samples were not required. A peri-pump was used to collect the requested analytes.

i. All results less than LOQ and project specified objectives?

Yes☐ No☐ N/A☒ Comments:

See above.

Laboratory Report Date:

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; see above.

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:

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-75575-1
Client Project/Site: GUS PFAS-DOT
Revision: 1

For:
Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

Attn: Kristen Freiburger

Authorized for release by:
7/12/2021 1:27:29 PM

David Alltucker, Project Manager I
(916)374-4383
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Table of Contents

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS-DOT

Job ID: 320-75575-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
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
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

Job ID: 320-75575-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Revision 7-12-2021: This report has been revised to update case narrate comment with affected sample list

Receipt

The samples were received on 6/29/2021 2:55 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 5.3º C.

LCMS

Method EPA 537(Mod): The laboratory control sample (LCS) for 320-503377 recovered outside control limits for N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA). This analyte was biased high in the LCS and were not detected in the associated sample; therefore, the data have been reported.

Method EPA 537(Mod): The laboratory control sample duplicate (LCSD) for 320-503377 recovered outside control limits for Perfluorotetradecanoic acid (PFTeA). This analyte was biased high in the LCSD and were not detected in the associated sample; therefore, the data have been reported.

Method EPA 537(Mod): The laboratory control sample (LCS) for preparation batch 320-503375 and analytical batch 320-504274 recovered outside control limits for the following analytes: Hexafluoropropylene Oxide Dimer Acid (HFPO-DA). These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Method EPA 537(Mod): 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, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte.

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 320-503375.

Method 3535: The following samples were preserved with trizma: PW-062 (320-75575-1), PW-038 (320-75575-2), PW-501 (320-75575-3), PW-037 (320-75575-4), PW-208.1 (320-75575-5), PW-040 (320-75575-6), PW-401 (320-75575-7), PW-039 (320-75575-8), PW-321 (320-75575-9), PW-221 (320-75575-10), PW-203 (320-75575-11), PW-045 (320-75575-12), PW-211 (320-75575-13), PW-419 (320-75575-14), PW-010 (320-75575-15), PW-112 (320-75575-16), PW-205.1 (320-75575-17), PW-012 (320-75575-18), PW-204.1 (320-75575-19) and PW-059 (320-75575-20). Thus, the MB, LCS and LCSD also contain trizma. Batch 320-503375

Method 3535: The following samples were yellow prior to extraction: PW-062 (320-75575-1), PW-501 (320-75575-3), PW-037 (320-75575-4), PW-321 (320-75575-9), PW-112 (320-75575-16), PW-205.1 (320-75575-17) and PW-012 (320-75575-18).

Method 3535: The following samples contained a thin layer of sediment at the bottom of the bottle prior to extraction: PW-062 (320-75575-1), PW-501 (320-75575-3), PW-401 (320-75575-7), PW-221 (320-75575-10), PW-203 (320-75575-11), PW-045 (320-75575-12), PW-419 (320-75575-14), PW-112 (320-75575-16), PW-205.1 (320-75575-17) and PW-012 (320-75575-18).

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-503377

Method 3535: The following sample was yellow and contained a thin layer of sediment at the bottom of the bottle prior to extraction: PW-010 (320-75575-15).

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: GUS PFAS-DOT

Job ID: 320-75575-1

Client Sample ID: PW-062 — Lab Sample ID: 320-75575-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.63	J	2.0	0.57	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.39	J	2.0	0.25	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.23	J	2.0	0.20	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.2	J	2.0	0.53	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PW-038 — Lab Sample ID: 320-75575-2

No Detections.

Client Sample ID: PW-501 — Lab Sample ID: 320-75575-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.1	J	2.0	0.57	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.32	J	2.0	0.25	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.8	J	2.0	0.56	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	13		2.0	0.53	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PW-037 — Lab Sample ID: 320-75575-4

No Detections.

Client Sample ID: PW-208.1 — Lab Sample ID: 320-75575-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	4.0		2.0	0.58	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.7	J	2.0	0.25	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	2.6		2.0	0.86	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.74	J	2.0	0.20	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	11		2.0	0.57	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	67		2.0	0.54	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PW-040 — Lab Sample ID: 320-75575-6

No Detections.

Client Sample ID: PW-401 — Lab Sample ID: 320-75575-7

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		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.32	J I	1.9	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.28	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.2		1.9	0.55	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	14		1.9	0.53	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PW-039 — Lab Sample ID: 320-75575-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.92	J	1.9	0.55	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PW-321 — Lab Sample ID: 320-75575-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.60	J	2.0	0.57	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.97	J	2.0	0.54	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: GUS PFAS-DOT

Job ID: 320-75575-1

Client Sample ID: PW-221 — Lab Sample ID: 320-75575-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.59	J	1.9	0.55	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.98	J	1.9	0.52	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PW-203 — Lab Sample ID: 320-75575-11

No Detections.

Client Sample ID: PW-045 — Lab Sample ID: 320-75575-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.94	J	1.9	0.55	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.99	J	1.9	0.52	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PW-211 — Lab Sample ID: 320-75575-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.76	J	2.0	0.57	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PW-419 — Lab Sample ID: 320-75575-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.93	J	2.0	0.57	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.5	J	2.0	0.54	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PW-010 — Lab Sample ID: 320-75575-15

No Detections.

Client Sample ID: PW-112 — Lab Sample ID: 320-75575-16

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.27	J	2.1	0.21	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.2		2.1	0.60	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	5.5		2.1	0.57	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PW-205.1 — Lab Sample ID: 320-75575-17

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.78	J	2.1	0.60	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.27	J	2.1	0.21	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.5	J	2.1	0.59	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.2		2.1	0.56	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PW-012 — Lab Sample ID: 320-75575-18

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.21	J	2.0	0.20	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	4.8		2.0	0.57	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	5.6		2.0	0.54	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PW-204.1 — Lab Sample ID: 320-75575-19

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	11		2.0	0.58	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.8		2.0	0.25	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	2.8		2.0	0.85	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: PW-204.1 (Continued)

Lab Sample ID: 320-75575-19

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	2.4		2.0	0.20	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	30		2.0	0.57	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	49		2.0	0.54	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PW-059

Lab Sample ID: 320-75575-20

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.3	J	2.0	0.58	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.33	J	2.0	0.25	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.81	J	2.0	0.20	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.1		2.0	0.57	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.4	J	2.0	0.54	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS-DOT

Job ID: 320-75575-1

Client Sample ID: PW-062

Date Collected: 06/22/21 17:08
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-1

Matrix: Water

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)	**0.63**	**J**	2.0	0.57	ng/L		07/01/21 04:16	07/04/21 10:10	1
Perfluoroheptanoic acid (PFHpA)	**0.39**	**J**	2.0	0.25	ng/L		07/01/21 04:16	07/04/21 10:10	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.83	ng/L		07/01/21 04:16	07/04/21 10:10	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		07/01/21 04:16	07/04/21 10:10	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.30	ng/L		07/01/21 04:16	07/04/21 10:10	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		07/01/21 04:16	07/04/21 10:10	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.54	ng/L		07/01/21 04:16	07/04/21 10:10	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		07/01/21 04:16	07/04/21 10:10	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.72	ng/L		07/01/21 04:16	07/04/21 10:10	1
Perfluorobutanesulfonic acid (PFBS)	**0.23**	**J**	2.0	0.20	ng/L		07/01/21 04:16	07/04/21 10:10	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.56	ng/L		07/01/21 04:16	07/04/21 10:10	1
Perfluorooctanesulfonic acid (PFOS)	**1.2**	**J**	2.0	0.53	ng/L		07/01/21 04:16	07/04/21 10:10	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.9	1.2	ng/L		07/01/21 04:16	07/04/21 10:10	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.9	1.3	ng/L		07/01/21 04:16	07/04/21 10:10	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		07/01/21 04:16	07/04/21 10:10	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	*+	3.9	1.5	ng/L		07/01/21 04:16	07/04/21 10:10	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.31	ng/L		07/01/21 04:16	07/04/21 10:10	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.39	ng/L		07/01/21 04:16	07/04/21 10:10	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*76*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:10*	*1*
13C4 PFHpA	*83*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:10*	*1*
13C4 PFOA	*86*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:10*	*1*
13C5 PFNA	*83*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:10*	*1*
13C2 PFDA	*83*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:10*	*1*
13C2 PFUnA	*78*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:10*	*1*
13C2 PFDoA	*75*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:10*	*1*
13C2 PFTeDA	*84*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:10*	*1*
13C3 PFBS	*89*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:10*	*1*
18O2 PFHxS	*81*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:10*	*1*
13C4 PFOS	*75*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:10*	*1*
d3-NMeFOSAA	*77*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:10*	*1*
d5-NEtFOSAA	*83*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:10*	*1*
13C3 HFPO-DA	*75*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:10*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS-DOT

Job ID: 320-75575-1

Client Sample ID: PW-038
Date Collected: 06/23/21 10:25
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-2
Matrix: Water

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		1.9	0.56	ng/L		07/01/21 04:16	07/04/21 10:20	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		07/01/21 04:16	07/04/21 10:20	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.82	ng/L		07/01/21 04:16	07/04/21 10:20	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		07/01/21 04:16	07/04/21 10:20	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		07/01/21 04:16	07/04/21 10:20	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		07/01/21 04:16	07/04/21 10:20	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		07/01/21 04:16	07/04/21 10:20	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.3	ng/L		07/01/21 04:16	07/04/21 10:20	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.71	ng/L		07/01/21 04:16	07/04/21 10:20	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		07/01/21 04:16	07/04/21 10:20	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.55	ng/L		07/01/21 04:16	07/04/21 10:20	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.52	ng/L		07/01/21 04:16	07/04/21 10:20	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.2	ng/L		07/01/21 04:16	07/04/21 10:20	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.3	ng/L		07/01/21 04:16	07/04/21 10:20	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		07/01/21 04:16	07/04/21 10:20	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	*+	3.9	1.4	ng/L		07/01/21 04:16	07/04/21 10:20	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		07/01/21 04:16	07/04/21 10:20	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.39	ng/L		07/01/21 04:16	07/04/21 10:20	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*90*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:20*	*1*
13C4 PFHpA	*89*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:20*	*1*
13C4 PFOA	*90*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:20*	*1*
13C5 PFNA	*92*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:20*	*1*
13C2 PFDA	*89*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:20*	*1*
13C2 PFUnA	*93*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:20*	*1*
13C2 PFDoA	*89*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:20*	*1*
13C2 PFTeDA	*90*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:20*	*1*
13C3 PFBS	*110*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:20*	*1*
18O2 PFHxS	*90*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:20*	*1*
13C4 PFOS	*83*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:20*	*1*
d3-NMeFOSAA	*85*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:20*	*1*
d5-NEtFOSAA	*89*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:20*	*1*
13C3 HFPO-DA	*84*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:20*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS-DOT

Job ID: 320-75575-1

Client Sample ID: PW-501

Date Collected: 06/23/21 08:08
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-3

Matrix: Water

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)	**1.1**	**J**	2.0	0.57	ng/L		07/01/21 04:16	07/04/21 10:29	1
Perfluoroheptanoic acid (PFHpA)	**0.32**	**J**	2.0	0.25	ng/L		07/01/21 04:16	07/04/21 10:29	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.83	ng/L		07/01/21 04:16	07/04/21 10:29	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		07/01/21 04:16	07/04/21 10:29	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.30	ng/L		07/01/21 04:16	07/04/21 10:29	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		07/01/21 04:16	07/04/21 10:29	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.54	ng/L		07/01/21 04:16	07/04/21 10:29	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		07/01/21 04:16	07/04/21 10:29	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.72	ng/L		07/01/21 04:16	07/04/21 10:29	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		07/01/21 04:16	07/04/21 10:29	1
Perfluorohexanesulfonic acid (PFHxS)	**1.8**	**J**	2.0	0.56	ng/L		07/01/21 04:16	07/04/21 10:29	1
Perfluorooctanesulfonic acid (PFOS)	**13**		2.0	0.53	ng/L		07/01/21 04:16	07/04/21 10:29	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.9	1.2	ng/L		07/01/21 04:16	07/04/21 10:29	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.9	1.3	ng/L		07/01/21 04:16	07/04/21 10:29	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		07/01/21 04:16	07/04/21 10:29	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	*+	3.9	1.5	ng/L		07/01/21 04:16	07/04/21 10:29	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.31	ng/L		07/01/21 04:16	07/04/21 10:29	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.39	ng/L		07/01/21 04:16	07/04/21 10:29	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*84*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:29*	*1*
13C4 PFHpA	*88*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:29*	*1*
13C4 PFOA	*88*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:29*	*1*
13C5 PFNA	*89*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:29*	*1*
13C2 PFDA	*92*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:29*	*1*
13C2 PFUnA	*83*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:29*	*1*
13C2 PFDoA	*90*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:29*	*1*
13C2 PFTeDA	*87*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:29*	*1*
13C3 PFBS	*99*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:29*	*1*
18O2 PFHxS	*83*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:29*	*1*
13C4 PFOS	*79*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:29*	*1*
d3-NMeFOSAA	*87*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:29*	*1*
d5-NEtFOSAA	*82*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:29*	*1*
13C3 HFPO-DA	*78*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:29*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS-DOT

Job ID: 320-75575-1

Client Sample ID: PW-037
Date Collected: 06/23/21 10:48
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-4
Matrix: Water

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		07/01/21 04:16	07/04/21 10:38	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		07/01/21 04:16	07/04/21 10:38	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.83	ng/L		07/01/21 04:16	07/04/21 10:38	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.26	ng/L		07/01/21 04:16	07/04/21 10:38	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.30	ng/L		07/01/21 04:16	07/04/21 10:38	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		07/01/21 04:16	07/04/21 10:38	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.54	ng/L		07/01/21 04:16	07/04/21 10:38	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		07/01/21 04:16	07/04/21 10:38	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.72	ng/L		07/01/21 04:16	07/04/21 10:38	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		07/01/21 04:16	07/04/21 10:38	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.56	ng/L		07/01/21 04:16	07/04/21 10:38	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.53	ng/L		07/01/21 04:16	07/04/21 10:38	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.9	1.2	ng/L		07/01/21 04:16	07/04/21 10:38	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.9	1.3	ng/L		07/01/21 04:16	07/04/21 10:38	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		07/01/21 04:16	07/04/21 10:38	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	*+	3.9	1.5	ng/L		07/01/21 04:16	07/04/21 10:38	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.31	ng/L		07/01/21 04:16	07/04/21 10:38	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.39	ng/L		07/01/21 04:16	07/04/21 10:38	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*86*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:38*	*1*
13C4 PFHpA	*91*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:38*	*1*
13C4 PFOA	*91*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:38*	*1*
13C5 PFNA	*83*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:38*	*1*
13C2 PFDA	*86*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:38*	*1*
13C2 PFUnA	*83*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:38*	*1*
13C2 PFDoA	*88*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:38*	*1*
13C2 PFTeDA	*92*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:38*	*1*
13C3 PFBS	*105*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:38*	*1*
18O2 PFHxS	*84*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:38*	*1*
13C4 PFOS	*81*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:38*	*1*
d3-NMeFOSAA	*80*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:38*	*1*
d5-NEtFOSAA	*88*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:38*	*1*
13C3 HFPO-DA	*81*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:38*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS-DOT

Job ID: 320-75575-1

Client Sample ID: PW-208.1
Date Collected: 06/21/21 10:03
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-5
Matrix: Water

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)	**4.0**		2.0	0.58	ng/L		07/01/21 04:16	07/04/21 10:47	1
Perfluoroheptanoic acid (PFHpA)	**1.7**	**J**	2.0	0.25	ng/L		07/01/21 04:16	07/04/21 10:47	1
Perfluorooctanoic acid (PFOA)	**2.6**		2.0	0.86	ng/L		07/01/21 04:16	07/04/21 10:47	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		07/01/21 04:16	07/04/21 10:47	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		07/01/21 04:16	07/04/21 10:47	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		07/01/21 04:16	07/04/21 10:47	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		07/01/21 04:16	07/04/21 10:47	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		07/01/21 04:16	07/04/21 10:47	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		07/01/21 04:16	07/04/21 10:47	1
Perfluorobutanesulfonic acid (PFBS)	**0.74**	**J**	2.0	0.20	ng/L		07/01/21 04:16	07/04/21 10:47	1
Perfluorohexanesulfonic acid (PFHxS)	**11**		2.0	0.57	ng/L		07/01/21 04:16	07/04/21 10:47	1
Perfluorooctanesulfonic acid (PFOS)	**67**		2.0	0.54	ng/L		07/01/21 04:16	07/04/21 10:47	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		07/01/21 04:16	07/04/21 10:47	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		07/01/21 04:16	07/04/21 10:47	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		07/01/21 04:16	07/04/21 10:47	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	*+	4.0	1.5	ng/L		07/01/21 04:16	07/04/21 10:47	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		07/01/21 04:16	07/04/21 10:47	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		07/01/21 04:16	07/04/21 10:47	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*83*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:47*	*1*
13C4 PFHpA	*86*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:47*	*1*
13C4 PFOA	*92*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:47*	*1*
13C5 PFNA	*85*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:47*	*1*
13C2 PFDA	*84*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:47*	*1*
13C2 PFUnA	*71*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:47*	*1*
13C2 PFDoA	*84*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:47*	*1*
13C2 PFTeDA	*97*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:47*	*1*
13C3 PFBS	*96*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:47*	*1*
18O2 PFHxS	*87*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:47*	*1*
13C4 PFOS	*76*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:47*	*1*
d3-NMeFOSAA	*81*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:47*	*1*
d5-NEtFOSAA	*84*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:47*	*1*
13C3 HFPO-DA	*83*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:47*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS-DOT

Job ID: 320-75575-1

Client Sample ID: PW-040
Date Collected: 06/23/21 12:02
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-6
Matrix: Water

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		2.1	0.61	ng/L		07/01/21 04:16	07/04/21 10:56	1
Perfluoroheptanoic acid (PFHpA)	ND		2.1	0.26	ng/L		07/01/21 04:16	07/04/21 10:56	1
Perfluorooctanoic acid (PFOA)	ND		2.1	0.90	ng/L		07/01/21 04:16	07/04/21 10:56	1
Perfluorononanoic acid (PFNA)	ND		2.1	0.29	ng/L		07/01/21 04:16	07/04/21 10:56	1
Perfluorodecanoic acid (PFDA)	ND		2.1	0.33	ng/L		07/01/21 04:16	07/04/21 10:56	1
Perfluoroundecanoic acid (PFUnA)	ND		2.1	1.2	ng/L		07/01/21 04:16	07/04/21 10:56	1
Perfluorododecanoic acid (PFDoA)	ND		2.1	0.58	ng/L		07/01/21 04:16	07/04/21 10:56	1
Perfluorotridecanoic acid (PFTriA)	ND		2.1	1.4	ng/L		07/01/21 04:16	07/04/21 10:56	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.1	0.77	ng/L		07/01/21 04:16	07/04/21 10:56	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.1	0.21	ng/L		07/01/21 04:16	07/04/21 10:56	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.1	0.60	ng/L		07/01/21 04:16	07/04/21 10:56	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.1	0.57	ng/L		07/01/21 04:16	07/04/21 10:56	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.3	1.3	ng/L		07/01/21 04:16	07/04/21 10:56	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.3	1.4	ng/L		07/01/21 04:16	07/04/21 10:56	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.1	0.25	ng/L		07/01/21 04:16	07/04/21 10:56	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	*+	4.2	1.6	ng/L		07/01/21 04:16	07/04/21 10:56	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.1	0.34	ng/L		07/01/21 04:16	07/04/21 10:56	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.1	0.42	ng/L		07/01/21 04:16	07/04/21 10:56	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*85*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:56*	*1*
13C4 PFHpA	*87*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:56*	*1*
13C4 PFOA	*92*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:56*	*1*
13C5 PFNA	*83*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:56*	*1*
13C2 PFDA	*85*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:56*	*1*
13C2 PFUnA	*73*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:56*	*1*
13C2 PFDoA	*82*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:56*	*1*
13C2 PFTeDA	*88*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:56*	*1*
13C3 PFBS	*97*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:56*	*1*
18O2 PFHxS	*83*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:56*	*1*
13C4 PFOS	*84*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:56*	*1*
d3-NMeFOSAA	*82*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:56*	*1*
d5-NEtFOSAA	*80*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:56*	*1*
13C3 HFPO-DA	*79*		*50 - 150*	*07/01/21 04:16*	*07/04/21 10:56*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS-DOT

Job ID: 320-75575-1

Client Sample ID: PW-401
Date Collected: 06/23/21 08:18
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-7
Matrix: Water

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)	**1.2**	**J**	1.9	0.56	ng/L		07/01/21 04:16	07/04/21 11:05	1
Perfluoroheptanoic acid (PFHpA)	**0.32**	**J I**	1.9	0.24	ng/L		07/01/21 04:16	07/04/21 11:05	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.83	ng/L		07/01/21 04:16	07/04/21 11:05	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		07/01/21 04:16	07/04/21 11:05	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		07/01/21 04:16	07/04/21 11:05	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		07/01/21 04:16	07/04/21 11:05	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.54	ng/L		07/01/21 04:16	07/04/21 11:05	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.3	ng/L		07/01/21 04:16	07/04/21 11:05	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.71	ng/L		07/01/21 04:16	07/04/21 11:05	1
Perfluorobutanesulfonic acid (PFBS)	**0.28**	**J**	1.9	0.19	ng/L		07/01/21 04:16	07/04/21 11:05	1
Perfluorohexanesulfonic acid (PFHxS)	**2.2**		1.9	0.55	ng/L		07/01/21 04:16	07/04/21 11:05	1
Perfluorooctanesulfonic acid (PFOS)	**14**		1.9	0.53	ng/L		07/01/21 04:16	07/04/21 11:05	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.9	1.2	ng/L		07/01/21 04:16	07/04/21 11:05	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.9	1.3	ng/L		07/01/21 04:16	07/04/21 11:05	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		07/01/21 04:16	07/04/21 11:05	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	*+	3.9	1.5	ng/L		07/01/21 04:16	07/04/21 11:05	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		07/01/21 04:16	07/04/21 11:05	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.39	ng/L		07/01/21 04:16	07/04/21 11:05	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*84*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:05*	*1*
13C4 PFHpA	*89*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:05*	*1*
13C4 PFOA	*93*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:05*	*1*
13C5 PFNA	*90*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:05*	*1*
13C2 PFDA	*88*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:05*	*1*
13C2 PFUnA	*91*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:05*	*1*
13C2 PFDoA	*92*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:05*	*1*
13C2 PFTeDA	*91*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:05*	*1*
13C3 PFBS	*95*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:05*	*1*
18O2 PFHxS	*86*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:05*	*1*
13C4 PFOS	*77*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:05*	*1*
d3-NMeFOSAA	*89*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:05*	*1*
d5-NEtFOSAA	*87*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:05*	*1*
13C3 HFPO-DA	*82*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:05*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS-DOT

Job ID: 320-75575-1

Client Sample ID: PW-039
Date Collected: 06/23/21 11:32
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-8
Matrix: Water

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)	**0.92**	**J**	1.9	0.55	ng/L		07/01/21 04:16	07/04/21 11:33	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		07/01/21 04:16	07/04/21 11:33	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.81	ng/L		07/01/21 04:16	07/04/21 11:33	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		07/01/21 04:16	07/04/21 11:33	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		07/01/21 04:16	07/04/21 11:33	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		07/01/21 04:16	07/04/21 11:33	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		07/01/21 04:16	07/04/21 11:33	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		07/01/21 04:16	07/04/21 11:33	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		07/01/21 04:16	07/04/21 11:33	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		07/01/21 04:16	07/04/21 11:33	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.54	ng/L		07/01/21 04:16	07/04/21 11:33	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.52	ng/L		07/01/21 04:16	07/04/21 11:33	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.1	ng/L		07/01/21 04:16	07/04/21 11:33	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		07/01/21 04:16	07/04/21 11:33	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		07/01/21 04:16	07/04/21 11:33	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	*+	3.8	1.4	ng/L		07/01/21 04:16	07/04/21 11:33	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		07/01/21 04:16	07/04/21 11:33	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		07/01/21 04:16	07/04/21 11:33	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*92*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:33*	*1*
13C4 PFHpA	*96*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:33*	*1*
13C4 PFOA	*90*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:33*	*1*
13C5 PFNA	*87*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:33*	*1*
13C2 PFDA	*88*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:33*	*1*
13C2 PFUnA	*78*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:33*	*1*
13C2 PFDoA	*80*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:33*	*1*
13C2 PFTeDA	*83*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:33*	*1*
13C3 PFBS	*102*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:33*	*1*
18O2 PFHxS	*85*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:33*	*1*
13C4 PFOS	*77*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:33*	*1*
d3-NMeFOSAA	*81*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:33*	*1*
d5-NEtFOSAA	*80*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:33*	*1*
13C3 HFPO-DA	*85*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:33*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS-DOT

Job ID: 320-75575-1

Client Sample ID: PW-321

Date Collected: 06/22/21 12:17
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-9

Matrix: Water

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	0.58	ng/L		07/01/21 04:16	07/04/21 11:42	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		07/01/21 04:16	07/04/21 11:42	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		07/01/21 04:16	07/04/21 11:42	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		07/01/21 04:16	07/04/21 11:42	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		07/01/21 04:16	07/04/21 11:42	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		07/01/21 04:16	07/04/21 11:42	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		07/01/21 04:16	07/04/21 11:42	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		07/01/21 04:16	07/04/21 11:42	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		07/01/21 04:16	07/04/21 11:42	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		07/01/21 04:16	07/04/21 11:42	1
Perfluorohexanesulfonic acid (PFHxS)	**0.60**	**J**	2.0	0.57	ng/L		07/01/21 04:16	07/04/21 11:42	1
Perfluorooctanesulfonic acid (PFOS)	**0.97**	**J**	2.0	0.54	ng/L		07/01/21 04:16	07/04/21 11:42	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		07/01/21 04:16	07/04/21 11:42	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		07/01/21 04:16	07/04/21 11:42	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		07/01/21 04:16	07/04/21 11:42	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	*+	4.0	1.5	ng/L		07/01/21 04:16	07/04/21 11:42	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		07/01/21 04:16	07/04/21 11:42	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		07/01/21 04:16	07/04/21 11:42	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*87*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:42*	*1*
13C4 PFHpA	*89*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:42*	*1*
13C4 PFOA	*91*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:42*	*1*
13C5 PFNA	*88*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:42*	*1*
13C2 PFDA	*94*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:42*	*1*
13C2 PFUnA	*84*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:42*	*1*
13C2 PFDoA	*93*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:42*	*1*
13C2 PFTeDA	*85*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:42*	*1*
13C3 PFBS	*98*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:42*	*1*
18O2 PFHxS	*90*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:42*	*1*
13C4 PFOS	*81*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:42*	*1*
d3-NMeFOSAA	*85*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:42*	*1*
d5-NEtFOSAA	*82*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:42*	*1*
13C3 HFPO-DA	*84*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:42*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS-DOT

Job ID: 320-75575-1

Client Sample ID: PW-221
Date Collected: 06/22/21 12:27
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-10
Matrix: Water

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		1.9	0.56	ng/L		07/01/21 04:16	07/04/21 11:51	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		07/01/21 04:16	07/04/21 11:51	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.82	ng/L		07/01/21 04:16	07/04/21 11:51	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		07/01/21 04:16	07/04/21 11:51	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		07/01/21 04:16	07/04/21 11:51	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		07/01/21 04:16	07/04/21 11:51	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		07/01/21 04:16	07/04/21 11:51	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.3	ng/L		07/01/21 04:16	07/04/21 11:51	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.71	ng/L		07/01/21 04:16	07/04/21 11:51	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		07/01/21 04:16	07/04/21 11:51	1
Perfluorohexanesulfonic acid (PFHxS)	**0.59**	**J**	1.9	0.55	ng/L		07/01/21 04:16	07/04/21 11:51	1
Perfluorooctanesulfonic acid (PFOS)	**0.98**	**J**	1.9	0.52	ng/L		07/01/21 04:16	07/04/21 11:51	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.2	ng/L		07/01/21 04:16	07/04/21 11:51	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.3	ng/L		07/01/21 04:16	07/04/21 11:51	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		07/01/21 04:16	07/04/21 11:51	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	*+	3.9	1.5	ng/L		07/01/21 04:16	07/04/21 11:51	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		07/01/21 04:16	07/04/21 11:51	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.39	ng/L		07/01/21 04:16	07/04/21 11:51	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*84*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:51*	*1*
13C4 PFHpA	*91*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:51*	*1*
13C4 PFOA	*87*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:51*	*1*
13C5 PFNA	*79*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:51*	*1*
13C2 PFDA	*84*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:51*	*1*
13C2 PFUnA	*77*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:51*	*1*
13C2 PFDoA	*84*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:51*	*1*
13C2 PFTeDA	*88*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:51*	*1*
13C3 PFBS	*94*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:51*	*1*
18O2 PFHxS	*81*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:51*	*1*
13C4 PFOS	*77*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:51*	*1*
d3-NMeFOSAA	*80*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:51*	*1*
d5-NEtFOSAA	*86*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:51*	*1*
13C3 HFPO-DA	*79*		*50 - 150*	*07/01/21 04:16*	*07/04/21 11:51*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS-DOT

Job ID: 320-75575-1

Client Sample ID: PW-203
Date Collected: 06/21/21 09:13
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-11
Matrix: Water

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	0.59	ng/L		07/01/21 04:16	07/04/21 12:00	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.26	ng/L		07/01/21 04:16	07/04/21 12:00	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.87	ng/L		07/01/21 04:16	07/04/21 12:00	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.28	ng/L		07/01/21 04:16	07/04/21 12:00	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.32	ng/L		07/01/21 04:16	07/04/21 12:00	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		07/01/21 04:16	07/04/21 12:00	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.56	ng/L		07/01/21 04:16	07/04/21 12:00	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		07/01/21 04:16	07/04/21 12:00	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.75	ng/L		07/01/21 04:16	07/04/21 12:00	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		07/01/21 04:16	07/04/21 12:00	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.58	ng/L		07/01/21 04:16	07/04/21 12:00	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.55	ng/L		07/01/21 04:16	07/04/21 12:00	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.1	1.2	ng/L		07/01/21 04:16	07/04/21 12:00	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.1	1.3	ng/L		07/01/21 04:16	07/04/21 12:00	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.25	ng/L		07/01/21 04:16	07/04/21 12:00	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	*+	4.1	1.5	ng/L		07/01/21 04:16	07/04/21 12:00	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.33	ng/L		07/01/21 04:16	07/04/21 12:00	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.41	ng/L		07/01/21 04:16	07/04/21 12:00	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*84*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:00*	*1*
13C4 PFHpA	*86*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:00*	*1*
13C4 PFOA	*88*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:00*	*1*
13C5 PFNA	*89*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:00*	*1*
13C2 PFDA	*79*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:00*	*1*
13C2 PFUnA	*73*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:00*	*1*
13C2 PFDoA	*80*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:00*	*1*
13C2 PFTeDA	*91*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:00*	*1*
13C3 PFBS	*98*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:00*	*1*
18O2 PFHxS	*81*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:00*	*1*
13C4 PFOS	*75*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:00*	*1*
d3-NMeFOSAA	*80*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:00*	*1*
d5-NEtFOSAA	*82*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:00*	*1*
13C3 HFPO-DA	*75*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:00*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS-DOT

Job ID: 320-75575-1

Client Sample ID: PW-045
Date Collected: 06/22/21 11:42
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-12
Matrix: Water

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		1.9	0.56	ng/L		07/01/21 04:16	07/04/21 12:09	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		07/01/21 04:16	07/04/21 12:09	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.82	ng/L		07/01/21 04:16	07/04/21 12:09	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		07/01/21 04:16	07/04/21 12:09	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		07/01/21 04:16	07/04/21 12:09	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		07/01/21 04:16	07/04/21 12:09	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		07/01/21 04:16	07/04/21 12:09	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.3	ng/L		07/01/21 04:16	07/04/21 12:09	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		07/01/21 04:16	07/04/21 12:09	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		07/01/21 04:16	07/04/21 12:09	1
Perfluorohexanesulfonic acid (PFHxS)	**0.94**	**J**	1.9	0.55	ng/L		07/01/21 04:16	07/04/21 12:09	1
Perfluorooctanesulfonic acid (PFOS)	**0.99**	**J**	1.9	0.52	ng/L		07/01/21 04:16	07/04/21 12:09	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.2	ng/L		07/01/21 04:16	07/04/21 12:09	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.3	ng/L		07/01/21 04:16	07/04/21 12:09	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		07/01/21 04:16	07/04/21 12:09	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	*+	3.9	1.4	ng/L		07/01/21 04:16	07/04/21 12:09	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		07/01/21 04:16	07/04/21 12:09	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.39	ng/L		07/01/21 04:16	07/04/21 12:09	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*83*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:09*	*1*
13C4 PFHpA	*87*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:09*	*1*
13C4 PFOA	*95*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:09*	*1*
13C5 PFNA	*90*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:09*	*1*
13C2 PFDA	*93*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:09*	*1*
13C2 PFUnA	*78*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:09*	*1*
13C2 PFDoA	*88*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:09*	*1*
13C2 PFTeDA	*95*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:09*	*1*
13C3 PFBS	*97*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:09*	*1*
18O2 PFHxS	*89*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:09*	*1*
13C4 PFOS	*84*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:09*	*1*
d3-NMeFOSAA	*84*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:09*	*1*
d5-NEtFOSAA	*80*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:09*	*1*
13C3 HFPO-DA	*86*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:09*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS-DOT

Job ID: 320-75575-1

Client Sample ID: PW-211
Date Collected: 06/21/21 08:24
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-13
Matrix: Water

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	0.58	ng/L		07/01/21 04:16	07/04/21 12:18	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		07/01/21 04:16	07/04/21 12:18	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		07/01/21 04:16	07/04/21 12:18	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		07/01/21 04:16	07/04/21 12:18	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		07/01/21 04:16	07/04/21 12:18	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		07/01/21 04:16	07/04/21 12:18	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		07/01/21 04:16	07/04/21 12:18	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		07/01/21 04:16	07/04/21 12:18	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		07/01/21 04:16	07/04/21 12:18	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		07/01/21 04:16	07/04/21 12:18	1
Perfluorohexanesulfonic acid (PFHxS)	**0.76**	**J**	2.0	0.57	ng/L		07/01/21 04:16	07/04/21 12:18	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		07/01/21 04:16	07/04/21 12:18	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		07/01/21 04:16	07/04/21 12:18	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		07/01/21 04:16	07/04/21 12:18	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		07/01/21 04:16	07/04/21 12:18	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	*+	4.0	1.5	ng/L		07/01/21 04:16	07/04/21 12:18	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		07/01/21 04:16	07/04/21 12:18	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		07/01/21 04:16	07/04/21 12:18	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*82*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:18*	*1*
13C4 PFHpA	*90*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:18*	*1*
13C4 PFOA	*89*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:18*	*1*
13C5 PFNA	*89*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:18*	*1*
13C2 PFDA	*88*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:18*	*1*
13C2 PFUnA	*82*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:18*	*1*
13C2 PFDoA	*95*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:18*	*1*
13C2 PFTeDA	*96*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:18*	*1*
13C3 PFBS	*97*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:18*	*1*
18O2 PFHxS	*81*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:18*	*1*
13C4 PFOS	*77*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:18*	*1*
d3-NMeFOSAA	*84*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:18*	*1*
d5-NEtFOSAA	*80*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:18*	*1*
13C3 HFPO-DA	*79*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:18*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS-DOT

Job ID: 320-75575-1

Client Sample ID: PW-419

Date Collected: 06/22/21 14:55
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-14

Matrix: Water

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	0.58	ng/L		07/01/21 04:16	07/04/21 12:27	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		07/01/21 04:16	07/04/21 12:27	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		07/01/21 04:16	07/04/21 12:27	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		07/01/21 04:16	07/04/21 12:27	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		07/01/21 04:16	07/04/21 12:27	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		07/01/21 04:16	07/04/21 12:27	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		07/01/21 04:16	07/04/21 12:27	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		07/01/21 04:16	07/04/21 12:27	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		07/01/21 04:16	07/04/21 12:27	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		07/01/21 04:16	07/04/21 12:27	1
Perfluorohexanesulfonic acid (PFHxS)	**0.93**	**J**	2.0	0.57	ng/L		07/01/21 04:16	07/04/21 12:27	1
Perfluorooctanesulfonic acid (PFOS)	**1.5**	**J**	2.0	0.54	ng/L		07/01/21 04:16	07/04/21 12:27	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		07/01/21 04:16	07/04/21 12:27	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		07/01/21 04:16	07/04/21 12:27	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		07/01/21 04:16	07/04/21 12:27	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	*+	4.0	1.5	ng/L		07/01/21 04:16	07/04/21 12:27	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		07/01/21 04:16	07/04/21 12:27	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		07/01/21 04:16	07/04/21 12:27	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*77*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:27*	*1*
13C4 PFHpA	*85*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:27*	*1*
13C4 PFOA	*89*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:27*	*1*
13C5 PFNA	*79*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:27*	*1*
13C2 PFDA	*81*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:27*	*1*
13C2 PFUnA	*71*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:27*	*1*
13C2 PFDoA	*76*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:27*	*1*
13C2 PFTeDA	*86*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:27*	*1*
13C3 PFBS	*86*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:27*	*1*
18O2 PFHxS	*73*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:27*	*1*
13C4 PFOS	*69*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:27*	*1*
d3-NMeFOSAA	*72*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:27*	*1*
d5-NEtFOSAA	*78*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:27*	*1*
13C3 HFPO-DA	*76*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:27*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS-DOT

Job ID: 320-75575-1

Client Sample ID: PW-010
Date Collected: 06/22/21 12:52
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-15
Matrix: Water

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		1.9	0.55	ng/L		07/01/21 04:58	07/03/21 16:41	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		07/01/21 04:58	07/03/21 16:41	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.81	ng/L		07/01/21 04:58	07/03/21 16:41	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		07/01/21 04:58	07/03/21 16:41	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		07/01/21 04:58	07/03/21 16:41	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		07/01/21 04:58	07/03/21 16:41	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		07/01/21 04:58	07/03/21 16:41	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		07/01/21 04:58	07/03/21 16:41	1
Perfluorotetradecanoic acid (PFTeA)	ND	*+	1.9	0.69	ng/L		07/01/21 04:58	07/03/21 16:41	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		07/01/21 04:58	07/03/21 16:41	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.54	ng/L		07/01/21 04:58	07/03/21 16:41	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		07/01/21 04:58	07/03/21 16:41	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.1	ng/L		07/01/21 04:58	07/03/21 16:41	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	*+	4.8	1.2	ng/L		07/01/21 04:58	07/03/21 16:41	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		07/01/21 04:58	07/03/21 16:41	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		07/01/21 04:58	07/03/21 16:41	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		07/01/21 04:58	07/03/21 16:41	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		07/01/21 04:58	07/03/21 16:41	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*84*		*50 - 150*	*07/01/21 04:58*	*07/03/21 16:41*	*1*
13C4 PFHpA	*77*		*50 - 150*	*07/01/21 04:58*	*07/03/21 16:41*	*1*
13C4 PFOA	*88*		*50 - 150*	*07/01/21 04:58*	*07/03/21 16:41*	*1*
13C5 PFNA	*81*		*50 - 150*	*07/01/21 04:58*	*07/03/21 16:41*	*1*
13C2 PFDA	*91*		*50 - 150*	*07/01/21 04:58*	*07/03/21 16:41*	*1*
13C2 PFUnA	*88*		*50 - 150*	*07/01/21 04:58*	*07/03/21 16:41*	*1*
13C2 PFDoA	*90*		*50 - 150*	*07/01/21 04:58*	*07/03/21 16:41*	*1*
13C2 PFTeDA	*98*		*50 - 150*	*07/01/21 04:58*	*07/03/21 16:41*	*1*
13C3 PFBS	*89*		*50 - 150*	*07/01/21 04:58*	*07/03/21 16:41*	*1*
18O2 PFHxS	*84*		*50 - 150*	*07/01/21 04:58*	*07/03/21 16:41*	*1*
13C4 PFOS	*82*		*50 - 150*	*07/01/21 04:58*	*07/03/21 16:41*	*1*
d3-NMeFOSAA	*88*		*50 - 150*	*07/01/21 04:58*	*07/03/21 16:41*	*1*
d5-NEtFOSAA	*81*		*50 - 150*	*07/01/21 04:58*	*07/03/21 16:41*	*1*
13C3 HFPO-DA	*75*		*50 - 150*	*07/01/21 04:58*	*07/03/21 16:41*	*1*

Client Sample ID: PW-112
Date Collected: 06/21/21 13:30
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-16
Matrix: Water

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		2.1	0.61	ng/L		07/01/21 04:16	07/04/21 12:36	1
Perfluoroheptanoic acid (PFHpA)	ND		2.1	0.26	ng/L		07/01/21 04:16	07/04/21 12:36	1
Perfluorooctanoic acid (PFOA)	ND		2.1	0.89	ng/L		07/01/21 04:16	07/04/21 12:36	1
Perfluorononanoic acid (PFNA)	ND		2.1	0.28	ng/L		07/01/21 04:16	07/04/21 12:36	1
Perfluorodecanoic acid (PFDA)	ND		2.1	0.33	ng/L		07/01/21 04:16	07/04/21 12:36	1
Perfluoroundecanoic acid (PFUnA)	ND		2.1	1.2	ng/L		07/01/21 04:16	07/04/21 12:36	1
Perfluorododecanoic acid (PFDoA)	ND		2.1	0.58	ng/L		07/01/21 04:16	07/04/21 12:36	1
Perfluorotridecanoic acid (PFTriA)	ND		2.1	1.4	ng/L		07/01/21 04:16	07/04/21 12:36	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.1	0.77	ng/L		07/01/21 04:16	07/04/21 12:36	1
Perfluorobutanesulfonic acid (PFBS)	**0.27**	**J**	2.1	0.21	ng/L		07/01/21 04:16	07/04/21 12:36	1
Perfluorohexanesulfonic acid (PFHxS)	**5.2**		2.1	0.60	ng/L		07/01/21 04:16	07/04/21 12:36	1
Perfluorooctanesulfonic acid (PFOS)	**5.5**		2.1	0.57	ng/L		07/01/21 04:16	07/04/21 12:36	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.2	1.3	ng/L		07/01/21 04:16	07/04/21 12:36	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.2	1.4	ng/L		07/01/21 04:16	07/04/21 12:36	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.1	0.25	ng/L		07/01/21 04:16	07/04/21 12:36	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	*+	4.2	1.6	ng/L		07/01/21 04:16	07/04/21 12:36	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.1	0.34	ng/L		07/01/21 04:16	07/04/21 12:36	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.1	0.42	ng/L		07/01/21 04:16	07/04/21 12:36	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*80*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:36*	*1*
13C4 PFHpA	*85*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:36*	*1*
13C4 PFOA	*85*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:36*	*1*
13C5 PFNA	*80*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:36*	*1*
13C2 PFDA	*76*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:36*	*1*
13C2 PFUnA	*69*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:36*	*1*
13C2 PFDoA	*82*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:36*	*1*
13C2 PFTeDA	*84*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:36*	*1*
13C3 PFBS	*90*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:36*	*1*
18O2 PFHxS	*73*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:36*	*1*
13C4 PFOS	*68*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:36*	*1*
d3-NMeFOSAA	*78*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:36*	*1*
d5-NEtFOSAA	*79*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:36*	*1*
13C3 HFPO-DA	*71*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:36*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS-DOT

Job ID: 320-75575-1

Client Sample ID: PW-205.1

Date Collected: 06/21/21 14:22
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-17

Matrix: Water

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)	**0.78**	**J**	2.1	0.60	ng/L		07/01/21 04:16	07/04/21 12:46	1
Perfluoroheptanoic acid (PFHpA)	ND		2.1	0.26	ng/L		07/01/21 04:16	07/04/21 12:46	1
Perfluorooctanoic acid (PFOA)	ND		2.1	0.88	ng/L		07/01/21 04:16	07/04/21 12:46	1
Perfluorononanoic acid (PFNA)	ND		2.1	0.28	ng/L		07/01/21 04:16	07/04/21 12:46	1
Perfluorodecanoic acid (PFDA)	ND		2.1	0.32	ng/L		07/01/21 04:16	07/04/21 12:46	1
Perfluoroundecanoic acid (PFUnA)	ND		2.1	1.1	ng/L		07/01/21 04:16	07/04/21 12:46	1
Perfluorododecanoic acid (PFDoA)	ND		2.1	0.57	ng/L		07/01/21 04:16	07/04/21 12:46	1
Perfluorotridecanoic acid (PFTriA)	ND		2.1	1.4	ng/L		07/01/21 04:16	07/04/21 12:46	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.1	0.76	ng/L		07/01/21 04:16	07/04/21 12:46	1
Perfluorobutanesulfonic acid (PFBS)	**0.27**	**J**	2.1	0.21	ng/L		07/01/21 04:16	07/04/21 12:46	1
Perfluorohexanesulfonic acid (PFHxS)	**1.5**	**J**	2.1	0.59	ng/L		07/01/21 04:16	07/04/21 12:46	1
Perfluorooctanesulfonic acid (PFOS)	**2.2**		2.1	0.56	ng/L		07/01/21 04:16	07/04/21 12:46	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.2	1.2	ng/L		07/01/21 04:16	07/04/21 12:46	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.2	1.4	ng/L		07/01/21 04:16	07/04/21 12:46	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.1	0.25	ng/L		07/01/21 04:16	07/04/21 12:46	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	*+	4.2	1.6	ng/L		07/01/21 04:16	07/04/21 12:46	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.1	0.33	ng/L		07/01/21 04:16	07/04/21 12:46	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.1	0.42	ng/L		07/01/21 04:16	07/04/21 12:46	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*84*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:46*	*1*
13C4 PFHpA	*91*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:46*	*1*
13C4 PFOA	*91*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:46*	*1*
13C5 PFNA	*90*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:46*	*1*
13C2 PFDA	*84*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:46*	*1*
13C2 PFUnA	*84*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:46*	*1*
13C2 PFDoA	*83*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:46*	*1*
13C2 PFTeDA	*81*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:46*	*1*
13C3 PFBS	*105*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:46*	*1*
18O2 PFHxS	*81*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:46*	*1*
13C4 PFOS	*76*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:46*	*1*
d3-NMeFOSAA	*81*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:46*	*1*
d5-NEtFOSAA	*76*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:46*	*1*
13C3 HFPO-DA	*83*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:46*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS-DOT

Job ID: 320-75575-1

Client Sample ID: PW-012
Date Collected: 06/21/21 13:40
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-18
Matrix: Water

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	0.58	ng/L		07/01/21 04:16	07/04/21 12:55	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		07/01/21 04:16	07/04/21 12:55	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		07/01/21 04:16	07/04/21 12:55	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		07/01/21 04:16	07/04/21 12:55	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		07/01/21 04:16	07/04/21 12:55	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		07/01/21 04:16	07/04/21 12:55	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		07/01/21 04:16	07/04/21 12:55	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		07/01/21 04:16	07/04/21 12:55	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		07/01/21 04:16	07/04/21 12:55	1
Perfluorobutanesulfonic acid (PFBS)	**0.21**	**J**	2.0	0.20	ng/L		07/01/21 04:16	07/04/21 12:55	1
Perfluorohexanesulfonic acid (PFHxS)	**4.8**		2.0	0.57	ng/L		07/01/21 04:16	07/04/21 12:55	1
Perfluorooctanesulfonic acid (PFOS)	**5.6**		2.0	0.54	ng/L		07/01/21 04:16	07/04/21 12:55	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		07/01/21 04:16	07/04/21 12:55	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		07/01/21 04:16	07/04/21 12:55	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		07/01/21 04:16	07/04/21 12:55	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	*+	4.0	1.5	ng/L		07/01/21 04:16	07/04/21 12:55	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		07/01/21 04:16	07/04/21 12:55	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		07/01/21 04:16	07/04/21 12:55	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*84*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:55*	*1*
13C4 PFHpA	*99*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:55*	*1*
13C4 PFOA	*83*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:55*	*1*
13C5 PFNA	*92*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:55*	*1*
13C2 PFDA	*92*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:55*	*1*
13C2 PFUnA	*82*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:55*	*1*
13C2 PFDoA	*94*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:55*	*1*
13C2 PFTeDA	*89*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:55*	*1*
13C3 PFBS	*100*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:55*	*1*
18O2 PFHxS	*88*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:55*	*1*
13C4 PFOS	*80*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:55*	*1*
d3-NMeFOSAA	*86*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:55*	*1*
d5-NEtFOSAA	*84*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:55*	*1*
13C3 HFPO-DA	*80*		*50 - 150*	*07/01/21 04:16*	*07/04/21 12:55*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS-DOT

Job ID: 320-75575-1

Client Sample ID: PW-204.1

Date Collected: 06/21/21 07:48
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-19

Matrix: Water

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**		2.0	0.58	ng/L		07/01/21 04:16	07/04/21 13:22	1
Perfluoroheptanoic acid (PFHpA)	**3.8**		2.0	0.25	ng/L		07/01/21 04:16	07/04/21 13:22	1
Perfluorooctanoic acid (PFOA)	**2.8**		2.0	0.85	ng/L		07/01/21 04:16	07/04/21 13:22	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		07/01/21 04:16	07/04/21 13:22	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		07/01/21 04:16	07/04/21 13:22	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		07/01/21 04:16	07/04/21 13:22	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		07/01/21 04:16	07/04/21 13:22	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		07/01/21 04:16	07/04/21 13:22	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		07/01/21 04:16	07/04/21 13:22	1
Perfluorobutanesulfonic acid (PFBS)	**2.4**		2.0	0.20	ng/L		07/01/21 04:16	07/04/21 13:22	1
Perfluorohexanesulfonic acid (PFHxS)	**30**		2.0	0.57	ng/L		07/01/21 04:16	07/04/21 13:22	1
Perfluorooctanesulfonic acid (PFOS)	**49**		2.0	0.54	ng/L		07/01/21 04:16	07/04/21 13:22	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		07/01/21 04:16	07/04/21 13:22	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		07/01/21 04:16	07/04/21 13:22	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		07/01/21 04:16	07/04/21 13:22	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	*+	4.0	1.5	ng/L		07/01/21 04:16	07/04/21 13:22	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		07/01/21 04:16	07/04/21 13:22	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		07/01/21 04:16	07/04/21 13:22	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*82*		*50 - 150*	*07/01/21 04:16*	*07/04/21 13:22*	*1*
13C4 PFHpA	*84*		*50 - 150*	*07/01/21 04:16*	*07/04/21 13:22*	*1*
13C4 PFOA	*87*		*50 - 150*	*07/01/21 04:16*	*07/04/21 13:22*	*1*
13C5 PFNA	*81*		*50 - 150*	*07/01/21 04:16*	*07/04/21 13:22*	*1*
13C2 PFDA	*82*		*50 - 150*	*07/01/21 04:16*	*07/04/21 13:22*	*1*
13C2 PFUnA	*81*		*50 - 150*	*07/01/21 04:16*	*07/04/21 13:22*	*1*
13C2 PFDoA	*83*		*50 - 150*	*07/01/21 04:16*	*07/04/21 13:22*	*1*
13C2 PFTeDA	*87*		*50 - 150*	*07/01/21 04:16*	*07/04/21 13:22*	*1*
13C3 PFBS	*96*		*50 - 150*	*07/01/21 04:16*	*07/04/21 13:22*	*1*
18O2 PFHxS	*76*		*50 - 150*	*07/01/21 04:16*	*07/04/21 13:22*	*1*
13C4 PFOS	*74*		*50 - 150*	*07/01/21 04:16*	*07/04/21 13:22*	*1*
d3-NMeFOSAA	*82*		*50 - 150*	*07/01/21 04:16*	*07/04/21 13:22*	*1*
d5-NEtFOSAA	*80*		*50 - 150*	*07/01/21 04:16*	*07/04/21 13:22*	*1*
13C3 HFPO-DA	*78*		*50 - 150*	*07/01/21 04:16*	*07/04/21 13:22*	*1*

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS-DOT

Job ID: 320-75575-1

Client Sample ID: PW-059

Date Collected: 06/21/21 12:16
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-20

Matrix: Water

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)	**1.3**	**J**	2.0	0.58	ng/L		07/01/21 04:16	07/04/21 13:31	1
Perfluoroheptanoic acid (PFHpA)	**0.33**	**J**	2.0	0.25	ng/L		07/01/21 04:16	07/04/21 13:31	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		07/01/21 04:16	07/04/21 13:31	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		07/01/21 04:16	07/04/21 13:31	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		07/01/21 04:16	07/04/21 13:31	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		07/01/21 04:16	07/04/21 13:31	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		07/01/21 04:16	07/04/21 13:31	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		07/01/21 04:16	07/04/21 13:31	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		07/01/21 04:16	07/04/21 13:31	1
Perfluorobutanesulfonic acid (PFBS)	**0.81**	**J**	2.0	0.20	ng/L		07/01/21 04:16	07/04/21 13:31	1
Perfluorohexanesulfonic acid (PFHxS)	**2.1**		2.0	0.57	ng/L		07/01/21 04:16	07/04/21 13:31	1
Perfluorooctanesulfonic acid (PFOS)	**1.4**	**J**	2.0	0.54	ng/L		07/01/21 04:16	07/04/21 13:31	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		07/01/21 04:16	07/04/21 13:31	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		07/01/21 04:16	07/04/21 13:31	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		07/01/21 04:16	07/04/21 13:31	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	*+	4.0	1.5	ng/L		07/01/21 04:16	07/04/21 13:31	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		07/01/21 04:16	07/04/21 13:31	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		07/01/21 04:16	07/04/21 13:31	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*84*		*50 - 150*	*07/01/21 04:16*	*07/04/21 13:31*	*1*
13C4 PFHpA	*94*		*50 - 150*	*07/01/21 04:16*	*07/04/21 13:31*	*1*
13C4 PFOA	*90*		*50 - 150*	*07/01/21 04:16*	*07/04/21 13:31*	*1*
13C5 PFNA	*86*		*50 - 150*	*07/01/21 04:16*	*07/04/21 13:31*	*1*
13C2 PFDA	*91*		*50 - 150*	*07/01/21 04:16*	*07/04/21 13:31*	*1*
13C2 PFUnA	*76*		*50 - 150*	*07/01/21 04:16*	*07/04/21 13:31*	*1*
13C2 PFDoA	*85*		*50 - 150*	*07/01/21 04:16*	*07/04/21 13:31*	*1*
13C2 PFTeDA	*85*		*50 - 150*	*07/01/21 04:16*	*07/04/21 13:31*	*1*
13C3 PFBS	*101*		*50 - 150*	*07/01/21 04:16*	*07/04/21 13:31*	*1*
18O2 PFHxS	*85*		*50 - 150*	*07/01/21 04:16*	*07/04/21 13:31*	*1*
13C4 PFOS	*77*		*50 - 150*	*07/01/21 04:16*	*07/04/21 13:31*	*1*
d3-NMeFOSAA	*79*		*50 - 150*	*07/01/21 04:16*	*07/04/21 13:31*	*1*
d5-NEtFOSAA	*73*		*50 - 150*	*07/01/21 04:16*	*07/04/21 13:31*	*1*
13C3 HFPO-DA	*86*		*50 - 150*	*07/01/21 04:16*	*07/04/21 13:31*	*1*

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS-DOT

Job ID: 320-75575-1

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFHxA	C4PFHA	PFOA	PFNA	PFDA	PFUnA	PFDoA	PFTDA
Lab Sample ID	Client Sample ID	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)
320-75575-1	PW-062	76	83	86	83	83	78	75	84
320-75575-2	PW-038	90	89	90	92	89	93	89	90
320-75575-3	PW-501	84	88	88	89	92	83	90	87
320-75575-4	PW-037	86	91	91	83	86	83	88	92
320-75575-5	PW-208.1	83	86	92	85	84	71	84	97
320-75575-6	PW-040	85	87	92	83	85	73	82	88
320-75575-7	PW-401	84	89	93	90	88	91	92	91
320-75575-8	PW-039	92	96	90	87	88	78	80	83
320-75575-9	PW-321	87	89	91	88	94	84	93	85
320-75575-10	PW-221	84	91	87	79	84	77	84	88
320-75575-11	PW-203	84	86	88	89	79	73	80	91
320-75575-12	PW-045	83	87	95	90	93	78	88	95
320-75575-13	PW-211	82	90	89	89	88	82	95	96
320-75575-14	PW-419	77	85	89	79	81	71	76	86
320-75575-15	PW-010	84	77	88	81	91	88	90	98
320-75575-16	PW-112	80	85	85	80	76	69	82	84
320-75575-17	PW-205.1	84	91	91	90	84	84	83	81
320-75575-18	PW-012	84	99	83	92	92	82	94	89
320-75575-19	PW-204.1	82	84	87	81	82	81	83	87
320-75575-20	PW-059	84	94	90	86	91	76	85	85
LCS 320-503375/2-A	Lab Control Sample	85	91	92	92	88	78	94	104
LCS 320-503377/2-A	Lab Control Sample	79	81	86	83	80	77	87	97
LCSD 320-503375/3-A	Lab Control Sample Dup	100	102	93	90	98	98	94	110
LCSD 320-503377/3-A	Lab Control Sample Dup	91	88	89	87	88	87	96	95
MB 320-503375/1-A	Method Blank	96	92	92	94	97	101	108	105
MB 320-503377/1-A	Method Blank	87	87	89	88	96	87	97	107

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		C3PFBS	PFHxS	PFOS	d3NMFOS	d5NEFOS	HFPODA		
Lab Sample ID	Client Sample ID	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)		
320-75575-1	PW-062	89	81	75	77	83	75		
320-75575-2	PW-038	110	90	83	85	89	84		
320-75575-3	PW-501	99	83	79	87	82	78		
320-75575-4	PW-037	105	84	81	80	88	81		
320-75575-5	PW-208.1	96	87	76	81	84	83		
320-75575-6	PW-040	97	83	84	82	80	79		
320-75575-7	PW-401	95	86	77	89	87	82		
320-75575-8	PW-039	102	85	77	81	80	85		
320-75575-9	PW-321	98	90	81	85	82	84		
320-75575-10	PW-221	94	81	77	80	86	79		
320-75575-11	PW-203	98	81	75	80	82	75		
320-75575-12	PW-045	97	89	84	84	80	86		
320-75575-13	PW-211	97	81	77	84	80	79		
320-75575-14	PW-419	86	73	69	72	78	76		
320-75575-15	PW-010	89	84	82	88	81	75		
320-75575-16	PW-112	90	73	68	78	79	71		
320-75575-17	PW-205.1	105	81	76	81	76	83		
320-75575-18	PW-012	100	88	80	86	84	80		
320-75575-19	PW-204.1	96	76	74	82	80	78		
320-75575-20	PW-059	101	85	77	79	73	86		

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS-DOT

Job ID: 320-75575-1

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)		
LCS 320-503375/2-A	Lab Control Sample	102	86	84	86	84	80		
LCS 320-503377/2-A	Lab Control Sample	94	88	79	85	78	79		
LCSD 320-503375/3-A	Lab Control Sample Dup	108	96	94	96	98	92		
LCSD 320-503377/3-A	Lab Control Sample Dup	97	89	85	93	87	86		
MB 320-503375/1-A	Method Blank	116	97	90	101	108	85		
MB 320-503377/1-A	Method Blank	97	93	90	91	86	84		

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

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Lab Sample ID: MB 320-503375/1-A
Matrix: Water
Analysis Batch: 504274

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 503375

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		07/01/21 04:16	07/04/21 09:43	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		07/01/21 04:16	07/04/21 09:43	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		07/01/21 04:16	07/04/21 09:43	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		07/01/21 04:16	07/04/21 09:43	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		07/01/21 04:16	07/04/21 09:43	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		07/01/21 04:16	07/04/21 09:43	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		07/01/21 04:16	07/04/21 09:43	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		07/01/21 04:16	07/04/21 09:43	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		07/01/21 04:16	07/04/21 09:43	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		07/01/21 04:16	07/04/21 09:43	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		07/01/21 04:16	07/04/21 09:43	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		07/01/21 04:16	07/04/21 09:43	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		07/01/21 04:16	07/04/21 09:43	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		07/01/21 04:16	07/04/21 09:43	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		07/01/21 04:16	07/04/21 09:43	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		07/01/21 04:16	07/04/21 09:43	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		07/01/21 04:16	07/04/21 09:43	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		07/01/21 04:16	07/04/21 09:43	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*96*		*50 - 150*	*07/01/21 04:16*	*07/04/21 09:43*	*1*
13C4 PFHpA	*92*		*50 - 150*	*07/01/21 04:16*	*07/04/21 09:43*	*1*
13C4 PFOA	*92*		*50 - 150*	*07/01/21 04:16*	*07/04/21 09:43*	*1*
13C5 PFNA	*94*		*50 - 150*	*07/01/21 04:16*	*07/04/21 09:43*	*1*
13C2 PFDA	*97*		*50 - 150*	*07/01/21 04:16*	*07/04/21 09:43*	*1*
13C2 PFUnA	*101*		*50 - 150*	*07/01/21 04:16*	*07/04/21 09:43*	*1*
13C2 PFDoA	*108*		*50 - 150*	*07/01/21 04:16*	*07/04/21 09:43*	*1*
13C2 PFTeDA	*105*		*50 - 150*	*07/01/21 04:16*	*07/04/21 09:43*	*1*
13C3 PFBS	*116*		*50 - 150*	*07/01/21 04:16*	*07/04/21 09:43*	*1*
18O2 PFHxS	*97*		*50 - 150*	*07/01/21 04:16*	*07/04/21 09:43*	*1*
13C4 PFOS	*90*		*50 - 150*	*07/01/21 04:16*	*07/04/21 09:43*	*1*
d3-NMeFOSAA	*101*		*50 - 150*	*07/01/21 04:16*	*07/04/21 09:43*	*1*
d5-NEtFOSAA	*108*		*50 - 150*	*07/01/21 04:16*	*07/04/21 09:43*	*1*
13C3 HFPO-DA	*85*		*50 - 150*	*07/01/21 04:16*	*07/04/21 09:43*	*1*

Lab Sample ID: LCS 320-503375/2-A
Matrix: Water
Analysis Batch: 504274

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 503375

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid (PFHxA)	40.0	45.2		ng/L		113	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	46.7		ng/L		117	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	41.7		ng/L		104	71 - 133
Perfluorononanoic acid (PFNA)	40.0	48.9		ng/L		122	69 - 130

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCS 320-503375/2-A
Matrix: Water
Analysis Batch: 504274

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 503375

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorodecanoic acid (PFDA)	40.0	46.2		ng/L		115	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	49.4		ng/L		124	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	46.6		ng/L		116	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	49.2		ng/L		123	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	42.5		ng/L		106	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.4	34.4		ng/L		97	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	39.7		ng/L		109	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.1	44.4		ng/L		120	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	45.8		ng/L		115	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	45.2		ng/L		113	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	40.7		ng/L		109	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	53.9	*+	ng/L		135	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	44.4		ng/L		118	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	49.2		ng/L		130	81 - 141

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*85*		*50 - 150*
13C4 PFHpA	*91*		*50 - 150*
13C4 PFOA	*92*		*50 - 150*
13C5 PFNA	*92*		*50 - 150*
13C2 PFDA	*88*		*50 - 150*
13C2 PFUnA	*78*		*50 - 150*
13C2 PFDoA	*94*		*50 - 150*
13C2 PFTeDA	*104*		*50 - 150*
13C3 PFBS	*102*		*50 - 150*
18O2 PFHxS	*86*		*50 - 150*
13C4 PFOS	*84*		*50 - 150*
d3-NMeFOSAA	*86*		*50 - 150*
d5-NEtFOSAA	*84*		*50 - 150*
13C3 HFPO-DA	*80*		*50 - 150*

Lab Sample ID: LCSD 320-503375/3-A
Matrix: Water
Analysis Batch: 504274

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 503375

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	44.7		ng/L		112	72 - 129	1	30
Perfluoroheptanoic acid (PFHpA)	40.0	47.9		ng/L		120	72 - 130	2	30
Perfluorooctanoic acid (PFOA)	40.0	45.5		ng/L		114	71 - 133	9	30

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCSD 320-503375/3-A
Matrix: Water
Analysis Batch: 504274

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 503375

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)			40.0	52.0		ng/L		130	69 - 130	6	30
Perfluorodecanoic acid (PFDA)			40.0	45.9		ng/L		115	71 - 129	1	30
Perfluoroundecanoic acid (PFUnA)			40.0	43.5		ng/L		109	69 - 133	13	30
Perfluorododecanoic acid (PFDoA)			40.0	50.2		ng/L		126	72 - 134	7	30
Perfluorotridecanoic acid (PFTriA)			40.0	56.1		ng/L		140	65 - 144	13	30
Perfluorotetradecanoic acid (PFTeA)			40.0	44.0		ng/L		110	71 - 132	4	30
Perfluorobutanesulfonic acid (PFBS)			35.4	33.2		ng/L		94	72 - 130	3	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	41.4		ng/L		114	68 - 131	4	30
Perfluorooctanesulfonic acid (PFOS)			37.1	46.2		ng/L		125	65 - 140	4	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			40.0	45.6		ng/L		114	65 - 136	0	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	45.3		ng/L		113	61 - 135	0	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid			37.3	43.8		ng/L		118	77 - 137	7	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			40.0	50.4		ng/L		126	72 - 132	7	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid			37.7	45.7		ng/L		121	76 - 136	3	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.7	47.5		ng/L		126	81 - 141	3	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*100*		*50 - 150*
13C4 PFHpA	*102*		*50 - 150*
13C4 PFOA	*93*		*50 - 150*
13C5 PFNA	*90*		*50 - 150*
13C2 PFDA	*98*		*50 - 150*
13C2 PFUnA	*98*		*50 - 150*
13C2 PFDoA	*94*		*50 - 150*
13C2 PFTeDA	*110*		*50 - 150*
13C3 PFBS	*108*		*50 - 150*
18O2 PFHxS	*96*		*50 - 150*
13C4 PFOS	*94*		*50 - 150*
d3-NMeFOSAA	*96*		*50 - 150*
d5-NEtFOSAA	*98*		*50 - 150*
13C3 HFPO-DA	*92*		*50 - 150*

Lab Sample ID: MB 320-503377/1-A
Matrix: Water
Analysis Batch: 504170

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 503377

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		07/01/21 04:58	07/03/21 16:13	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		07/01/21 04:58	07/03/21 16:13	1

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: MB 320-503377/1-A
Matrix: Water
Analysis Batch: 504170

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 503377

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		07/01/21 04:58	07/03/21 16:13	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		07/01/21 04:58	07/03/21 16:13	1
Perfluorodecanoic acid (PFDA)	0.356	J	2.0	0.31	ng/L		07/01/21 04:58	07/03/21 16:13	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		07/01/21 04:58	07/03/21 16:13	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		07/01/21 04:58	07/03/21 16:13	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		07/01/21 04:58	07/03/21 16:13	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		07/01/21 04:58	07/03/21 16:13	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		07/01/21 04:58	07/03/21 16:13	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		07/01/21 04:58	07/03/21 16:13	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		07/01/21 04:58	07/03/21 16:13	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		07/01/21 04:58	07/03/21 16:13	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		07/01/21 04:58	07/03/21 16:13	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		07/01/21 04:58	07/03/21 16:13	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		07/01/21 04:58	07/03/21 16:13	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		07/01/21 04:58	07/03/21 16:13	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		07/01/21 04:58	07/03/21 16:13	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*87*		*50 - 150*	*07/01/21 04:58*	*07/03/21 16:13*	*1*
13C4 PFHpA	*87*		*50 - 150*	*07/01/21 04:58*	*07/03/21 16:13*	*1*
13C4 PFOA	*89*		*50 - 150*	*07/01/21 04:58*	*07/03/21 16:13*	*1*
13C5 PFNA	*88*		*50 - 150*	*07/01/21 04:58*	*07/03/21 16:13*	*1*
13C2 PFDA	*96*		*50 - 150*	*07/01/21 04:58*	*07/03/21 16:13*	*1*
13C2 PFUnA	*87*		*50 - 150*	*07/01/21 04:58*	*07/03/21 16:13*	*1*
13C2 PFDoA	*97*		*50 - 150*	*07/01/21 04:58*	*07/03/21 16:13*	*1*
13C2 PFTeDA	*107*		*50 - 150*	*07/01/21 04:58*	*07/03/21 16:13*	*1*
13C3 PFBS	*97*		*50 - 150*	*07/01/21 04:58*	*07/03/21 16:13*	*1*
18O2 PFHxS	*93*		*50 - 150*	*07/01/21 04:58*	*07/03/21 16:13*	*1*
13C4 PFOS	*90*		*50 - 150*	*07/01/21 04:58*	*07/03/21 16:13*	*1*
d3-NMeFOSAA	*91*		*50 - 150*	*07/01/21 04:58*	*07/03/21 16:13*	*1*
d5-NEtFOSAA	*86*		*50 - 150*	*07/01/21 04:58*	*07/03/21 16:13*	*1*
13C3 HFPO-DA	*84*		*50 - 150*	*07/01/21 04:58*	*07/03/21 16:13*	*1*

Lab Sample ID: LCS 320-503377/2-A
Matrix: Water
Analysis Batch: 504170

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 503377

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid (PFHxA)	40.0	48.8		ng/L		122	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	48.6		ng/L		121	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	47.1		ng/L		118	71 - 133
Perfluorononanoic acid (PFNA)	40.0	46.6		ng/L		117	69 - 130
Perfluorodecanoic acid (PFDA)	40.0	51.1		ng/L		128	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	51.9		ng/L		130	69 - 133

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCS 320-503377/2-A
Matrix: Water
Analysis Batch: 504170

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 503377

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorododecanoic acid (PFDoA)	40.0	47.8		ng/L		119	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	48.4		ng/L		121	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	49.7		ng/L		124	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.4	33.9		ng/L		96	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	39.7		ng/L		109	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.1	46.8		ng/L		126	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	46.0		ng/L		115	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	55.3	*+	ng/L		138	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	46.9		ng/L		126	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	50.0		ng/L		125	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	48.2		ng/L		128	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	50.6		ng/L		134	81 - 141

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*79*		*50 - 150*
13C4 PFHpA	*81*		*50 - 150*
13C4 PFOA	*86*		*50 - 150*
13C5 PFNA	*83*		*50 - 150*
13C2 PFDA	*80*		*50 - 150*
13C2 PFUnA	*77*		*50 - 150*
13C2 PFDoA	*87*		*50 - 150*
13C2 PFTeDA	*97*		*50 - 150*
13C3 PFBS	*94*		*50 - 150*
18O2 PFHxS	*88*		*50 - 150*
13C4 PFOS	*79*		*50 - 150*
d3-NMeFOSAA	*85*		*50 - 150*
d5-NEtFOSAA	*78*		*50 - 150*
13C3 HFPO-DA	*79*		*50 - 150*

Lab Sample ID: LCSD 320-503377/3-A
Matrix: Water
Analysis Batch: 504170

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 503377

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	47.5		ng/L		119	72 - 129	3	30
Perfluoroheptanoic acid (PFHpA)	40.0	46.5		ng/L		116	72 - 130	4	30
Perfluorooctanoic acid (PFOA)	40.0	46.1		ng/L		115	71 - 133	2	30
Perfluorononanoic acid (PFNA)	40.0	49.8		ng/L		124	69 - 130	6	30
Perfluorodecanoic acid (PFDA)	40.0	48.6		ng/L		121	71 - 129	5	30

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCSD 320-503377/3-A
Matrix: Water
Analysis Batch: 504170

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 503377

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoroundecanoic acid (PFUnA)			40.0	50.6		ng/L		127	69 - 133	2	30
Perfluorododecanoic acid (PFDoA)			40.0	46.0		ng/L		115	72 - 134	4	30
Perfluorotridecanoic acid (PFTriA)			40.0	49.0		ng/L		123	65 - 144	1	30
Perfluorotetradecanoic acid (PFTeA)			40.0	54.8	*+	ng/L		137	71 - 132	10	30
Perfluorobutanesulfonic acid (PFBS)			35.4	35.3		ng/L		100	72 - 130	4	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	41.9		ng/L		115	68 - 131	5	30
Perfluorooctanesulfonic acid (PFOS)			37.1	46.7		ng/L		126	65 - 140	0	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			40.0	48.0		ng/L		120	65 - 136	4	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	50.4		ng/L		126	61 - 135	9	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid			37.3	47.9		ng/L		128	77 - 137	2	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			40.0	50.6		ng/L		127	72 - 132	1	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid			37.7	46.6		ng/L		124	76 - 136	3	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.7	48.7		ng/L		129	81 - 141	4	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*91*		*50 - 150*
13C4 PFHpA	*88*		*50 - 150*
13C4 PFOA	*89*		*50 - 150*
13C5 PFNA	*87*		*50 - 150*
13C2 PFDA	*88*		*50 - 150*
13C2 PFUnA	*87*		*50 - 150*
13C2 PFDoA	*96*		*50 - 150*
13C2 PFTeDA	*95*		*50 - 150*
13C3 PFBS	*97*		*50 - 150*
18O2 PFHxS	*89*		*50 - 150*
13C4 PFOS	*85*		*50 - 150*
d3-NMeFOSAA	*93*		*50 - 150*
d5-NEtFOSAA	*87*		*50 - 150*
13C3 HFPO-DA	*86*		*50 - 150*

LCMS

Prep Batch: 503375

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-75575-1	PW-062	Total/NA	Water	3535	
320-75575-2	PW-038	Total/NA	Water	3535	
320-75575-3	PW-501	Total/NA	Water	3535	
320-75575-4	PW-037	Total/NA	Water	3535	
320-75575-5	PW-208.1	Total/NA	Water	3535	
320-75575-6	PW-040	Total/NA	Water	3535	
320-75575-7	PW-401	Total/NA	Water	3535	
320-75575-8	PW-039	Total/NA	Water	3535	
320-75575-9	PW-321	Total/NA	Water	3535	
320-75575-10	PW-221	Total/NA	Water	3535	
320-75575-11	PW-203	Total/NA	Water	3535	
320-75575-12	PW-045	Total/NA	Water	3535	
320-75575-13	PW-211	Total/NA	Water	3535	
320-75575-14	PW-419	Total/NA	Water	3535	
320-75575-16	PW-112	Total/NA	Water	3535	
320-75575-17	PW-205.1	Total/NA	Water	3535	
320-75575-18	PW-012	Total/NA	Water	3535	
320-75575-19	PW-204.1	Total/NA	Water	3535	
320-75575-20	PW-059	Total/NA	Water	3535	
MB 320-503375/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-503375/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-503375/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Prep Batch: 503377

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-75575-15	PW-010	Total/NA	Water	3535	
MB 320-503377/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-503377/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-503377/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 504170

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-75575-15	PW-010	Total/NA	Water	EPA 537(Mod)	503377
MB 320-503377/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	503377
LCS 320-503377/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	503377
LCSD 320-503377/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	503377

Analysis Batch: 504274

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-75575-1	PW-062	Total/NA	Water	EPA 537(Mod)	503375
320-75575-2	PW-038	Total/NA	Water	EPA 537(Mod)	503375
320-75575-3	PW-501	Total/NA	Water	EPA 537(Mod)	503375
320-75575-4	PW-037	Total/NA	Water	EPA 537(Mod)	503375
320-75575-5	PW-208.1	Total/NA	Water	EPA 537(Mod)	503375
320-75575-6	PW-040	Total/NA	Water	EPA 537(Mod)	503375
320-75575-7	PW-401	Total/NA	Water	EPA 537(Mod)	503375
320-75575-8	PW-039	Total/NA	Water	EPA 537(Mod)	503375
320-75575-9	PW-321	Total/NA	Water	EPA 537(Mod)	503375
320-75575-10	PW-221	Total/NA	Water	EPA 537(Mod)	503375
320-75575-11	PW-203	Total/NA	Water	EPA 537(Mod)	503375
320-75575-12	PW-045	Total/NA	Water	EPA 537(Mod)	503375

LCMS (Continued)

Analysis Batch: 504274 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-75575-13	PW-211	Total/NA	Water	EPA 537(Mod)	503375
320-75575-14	PW-419	Total/NA	Water	EPA 537(Mod)	503375
320-75575-16	PW-112	Total/NA	Water	EPA 537(Mod)	503375
320-75575-17	PW-205.1	Total/NA	Water	EPA 537(Mod)	503375
320-75575-18	PW-012	Total/NA	Water	EPA 537(Mod)	503375
320-75575-19	PW-204.1	Total/NA	Water	EPA 537(Mod)	503375
320-75575-20	PW-059	Total/NA	Water	EPA 537(Mod)	503375
MB 320-503375/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	503375
LCS 320-503375/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	503375
LCSD 320-503375/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	503375

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS-DOT

Job ID: 320-75575-1

Client Sample ID: PW-062
Date Collected: 06/22/21 17:08
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-1
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			254.6 mL	10.0 mL	503375	07/01/21 04:16	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504274	07/04/21 10:10	RS1	TAL SAC

Client Sample ID: PW-038
Date Collected: 06/23/21 10:25
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-2
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			258.8 mL	10.0 mL	503375	07/01/21 04:16	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504274	07/04/21 10:20	RS1	TAL SAC

Client Sample ID: PW-501
Date Collected: 06/23/21 08:08
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-3
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			254.7 mL	10.0 mL	503375	07/01/21 04:16	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504274	07/04/21 10:29	RS1	TAL SAC

Client Sample ID: PW-037
Date Collected: 06/23/21 10:48
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-4
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			255 mL	10.0 mL	503375	07/01/21 04:16	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504274	07/04/21 10:38	RS1	TAL SAC

Client Sample ID: PW-208.1
Date Collected: 06/21/21 10:03
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-5
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			248.5 mL	10.0 mL	503375	07/01/21 04:16	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504274	07/04/21 10:47	RS1	TAL SAC

Client Sample ID: PW-040
Date Collected: 06/23/21 12:02
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-6
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			236.8 mL	10.0 mL	503375	07/01/21 04:16	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504274	07/04/21 10:56	RS1	TAL SAC

Client Sample ID: PW-401
Date Collected: 06/23/21 08:18
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-7
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			256.8 mL	10.0 mL	503375	07/01/21 04:16	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504274	07/04/21 11:05	RS1	TAL SAC

Client Sample ID: PW-039
Date Collected: 06/23/21 11:32
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-8
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			261.5 mL	10.0 mL	503375	07/01/21 04:16	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504274	07/04/21 11:33	RS1	TAL SAC

Client Sample ID: PW-321
Date Collected: 06/22/21 12:17
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-9
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			249.4 mL	10.0 mL	503375	07/01/21 04:16	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504274	07/04/21 11:42	RS1	TAL SAC

Client Sample ID: PW-221
Date Collected: 06/22/21 12:27
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-10
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			258.1 mL	10.0 mL	503375	07/01/21 04:16	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504274	07/04/21 11:51	RS1	TAL SAC

Client Sample ID: PW-203
Date Collected: 06/21/21 09:13
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-11
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			244.4 mL	10.0 mL	503375	07/01/21 04:16	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504274	07/04/21 12:00	RS1	TAL SAC

Client Sample ID: PW-045
Date Collected: 06/22/21 11:42
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-12
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			258.9 mL	10.0 mL	503375	07/01/21 04:16	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504274	07/04/21 12:09	RS1	TAL SAC

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS-DOT

Job ID: 320-75575-1

Client Sample ID: PW-211
Date Collected: 06/21/21 08:24
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-13
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			251 mL	10.0 mL	503375	07/01/21 04:16	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504274	07/04/21 12:18	RS1	TAL SAC

Client Sample ID: PW-419
Date Collected: 06/22/21 14:55
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-14
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			249.2 mL	10.0 mL	503375	07/01/21 04:16	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504274	07/04/21 12:27	RS1	TAL SAC

Client Sample ID: PW-010
Date Collected: 06/22/21 12:52
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-15
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			263.1 mL	10.0 mL	503377	07/01/21 04:58	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504170	07/03/21 16:41	RS1	TAL SAC

Client Sample ID: PW-112
Date Collected: 06/21/21 13:30
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-16
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			238.1 mL	10.0 mL	503375	07/01/21 04:16	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504274	07/04/21 12:36	RS1	TAL SAC

Client Sample ID: PW-205.1
Date Collected: 06/21/21 14:22
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-17
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			240.3 mL	10.0 mL	503375	07/01/21 04:16	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504274	07/04/21 12:46	RS1	TAL SAC

Client Sample ID: PW-012
Date Collected: 06/21/21 13:40
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75575-18
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			248.9 mL	10.0 mL	503375	07/01/21 04:16	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504274	07/04/21 12:55	RS1	TAL SAC

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS-DOT

Job ID: 320-75575-1

Client Sample ID: PW-204.1

Lab Sample ID: 320-75575-19

Date Collected: 06/21/21 07:48

Matrix: Water

Date Received: 06/29/21 14:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			251.1 mL	10.0 mL	503375	07/01/21 04:16	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504274	07/04/21 13:22	RS1	TAL SAC

Client Sample ID: PW-059

Lab Sample ID: 320-75575-20

Date Collected: 06/21/21 12:16

Matrix: Water

Date Received: 06/29/21 14:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			251 mL	10.0 mL	503375	07/01/21 04:16	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504274	07/04/21 13:31	RS1	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: GUS PFAS-DOT

Job ID: 320-75575-1

Laboratory: Eurofins TestAmerica, Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

Method Summary

Client: Shannon & Wilson, Inc
Project/Site: GUS PFAS-DOT

Job ID: 320-75575-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod)	PFAS for QSM 5.3, Table B-15	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: GUS PFAS-DOT

Job ID: 320-75575-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-75575-1	PW-062	Water	06/22/21 17:08	06/29/21 14:55	
320-75575-2	PW-038	Water	06/23/21 10:25	06/29/21 14:55	
320-75575-3	PW-501	Water	06/23/21 08:08	06/29/21 14:55	
320-75575-4	PW-037	Water	06/23/21 10:48	06/29/21 14:55	
320-75575-5	PW-208.1	Water	06/21/21 10:03	06/29/21 14:55	
320-75575-6	PW-040	Water	06/23/21 12:02	06/29/21 14:55	
320-75575-7	PW-401	Water	06/23/21 08:18	06/29/21 14:55	
320-75575-8	PW-039	Water	06/23/21 11:32	06/29/21 14:55	
320-75575-9	PW-321	Water	06/22/21 12:17	06/29/21 14:55	
320-75575-10	PW-221	Water	06/22/21 12:27	06/29/21 14:55	
320-75575-11	PW-203	Water	06/21/21 09:13	06/29/21 14:55	
320-75575-12	PW-045	Water	06/22/21 11:42	06/29/21 14:55	
320-75575-13	PW-211	Water	06/21/21 08:24	06/29/21 14:55	
320-75575-14	PW-419	Water	06/22/21 14:55	06/29/21 14:55	
320-75575-15	PW-010	Water	06/22/21 12:52	06/29/21 14:55	
320-75575-16	PW-112	Water	06/21/21 13:30	06/29/21 14:55	
320-75575-17	PW-205.1	Water	06/21/21 14:22	06/29/21 14:55	
320-75575-18	PW-012	Water	06/21/21 13:40	06/29/21 14:55	
320-75575-19	PW-204.1	Water	06/21/21 07:48	06/29/21 14:55	
320-75575-20	PW-059	Water	06/21/21 12:16	06/29/21 14:55	

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600
www.shannonwilson.com

CHAIN-OF-CUSTODY RECORD

Laboratory TestAmerica
Attn: D. Allucter

Turn Around Time: [X] Normal [ ] Rush — Please Specify

Quote No:

J-Flags: [X] Yes [ ] No

Analytical Methods (include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	PFAS + 16	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
PW-062		1708	6/22/21	X	2	groundwater
PW-038		1025	6/23/21	X	2	
PW-501		0808	6/23/21	X	2	
PW-037		1048	6/23/21	X	2	
PW-208.1		1003	6/21/21	X	2	
PW-040		1202	6/23/21	X	2	
PW-401		0818	6/23/21	X	2	
PW-039		1132	6/23/21	X	2	
PW-321		1217	6/22/21	X	2	
PW-221		1227	6/22/21	X	2	

320-75575 Chain of Custody

Project Information	
Number: [illegible] 102599-01	
Name: GSPFAs-DOT	
Contact: KRF	
Ongoing Project? Yes [X] No [ ]	
Sampler: AEM	

Sample Receipt	
Total No. of Containers:	
COC Seals/Intact? Y/N/NA	
Received Good Cond./Cold	
Temp:	5.3c
Delivery Method:	

Notes:

Reliquished By: 1.	Reliquished By: 2.	Reliquished By: 3.
Signature: Time: 1300	Signature: Time:	Signature: Time:
Printed Name: A. Masters Date: 6/28/21	Printed Name: Date:	Printed Name: Date:
Company: Shannon + Wilson, Inc.	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time: 1458	Signature: Time:	Signature: Time:
Printed Name: David Hite Date: 6/28/21	Printed Name: Date:	Printed Name: Date:
Company: ESA	Company:	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

No. 36327

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
2355 Hill Road
Fairbanks, AK 99709
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CHAIN-OF-CUSTODY RECORD

Page 2 of 2
Laboratory Test America
Attn: D Alltucker

Turn Around Time: [X] Normal [ ] Rush
Please Specify

Quote No:

J-Flags: [X] Yes [ ] No

Analytical Methods (include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	PFAS x 18							Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
PW-203		0913	6/21/21	X							2	groundwater
PW-045		1142	6/22/21	X							2	
PW-211		0824	6/21/21	X							2	
PW-419		1455	6/22/21	X							2	
PW-010		1252	6/22/21	X							2	
PW-112		1830	6/21/21	X							2	
PW-205.1		1422	6/21/21	X							2	
PW-012		1840	6/21/21	X							2	
PW-204.1		0748	6/21/21	X							2	
PW-059		1216	6/21/21	X							2	

Project Information
Number: 102599-013
Name: GUS PFAS-DOT
Contact: KRF
Ongoing Project? Yes [X] No [ ]
Sampler: ARM

Sample Receipt
Total No. of Containers:
COC Seals/Intact? Y/N/NA
Received Good Cond./Cold
Temp: 0.3
Delivery Method:

Reliquished By: 1.
Signature: [signature] Time: 1300
Printed Name: A. Masters Date: 6/28/21
Company: Shannon+Wilson, Inc.

Reliquished By: 2.
Signature: Time:
Printed Name: Date:
Company:

Reliquished By: 3.
Signature: Time:
Printed Name: Date:
Company:

Received By: 1.
Signature: [signature] Time: 1405
Printed Name: David [illegible] Date: 6/29/21
Company: ETA

Received By: 2.
Signature: Time:
Printed Name: Date:
Company:

Received By: 3.
Signature: Time:
Printed Name: Date:
Company:

Notes:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

No. 36331

7/12/2021 (Rev. 1)

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-75575-1

Login Number: 75575
List Number: 1
Creator: Her, David A

List Source: Eurofins TestAmerica, Sacramento

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:

July 12, 2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins / TestAmerica Laboratories, Inc. (TestAmerica)

Laboratory Report Number:

320-75575-1 Rev(1)

Laboratory Report Date:

July 12, 2021

CS Site Name:

DOT&PF Gustavus Airport Statewide PFAS

ADEC File Number:

1507.38.017

Hazard Identification Number:

26904

Laboratory Report Date:

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 DEC certified TestAmerica of West Sacramento, CA for the analysis of per- and polyfluorinated alkyl substances (PFAS) on February 11, 2021 by LCMSMS compliant with QSM Version 5.3 Table B-15. These reported analytes were included in the DEC'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:

   The requested analyses were conducted by TestAmerica of 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:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

   Yes☒ No☐ N/A☐ Comments:

   Samples were preserved with Trizma.

   c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

   Yes☒ No☐ N/A☐ Comments:

Laboratory Report Date:

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 was not affected; see above.

4. Case Narrative

a. Present and understandable?

Yes☒ No☐ N/A☐ Comments:

Laboratory Report Date:

b. Discrepancies, errors, or QC failures identified by the lab?

Yes☒ No☐ N/A☐ Comments:

The case narrative form notes the following:
The samples were received in good condition, properly preserved, and at a temperature of 5.3° C.

The laboratory control sample (LCS) for 320-503377 recovered outside control limits for N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA). This analyte was biased high in the LCS and were not detected in the associated sample; therefore, the data have been reported.

The laboratory control sample duplicate (LCSD) for 320-503377 recovered outside control limits for Perfluorotetradecanoic acid (PFTeA). This analyte was biased high in the LCSD and were not detected in the associated sample; therefore, the data have been reported.

The laboratory control sample (LCS) for preparation batch 320-503375 and analytical batch 320-504274 recovered outside control limits for the following analytes: Hexafluoropropylene Oxide Dimer Acid (HFPO-DA). These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

The laboratory applied an "I" qualifier to the PFHpA results of sample *PW-401* to indicate the transition mass ratio was outside of established limits.

The following samples were preserved with trizma: *PW-062, PW-038, PW-501, PW-037, PW-208.1, PW-040, PW-401, PW-039,PW-010, PW-321, PW-221, PW-203, PW-045, PW-211, PW-419, PW-112, PW-205.1,PW- 012, PW-204* and *PW-059.*

The following samples were yellow prior to extraction: *PW-062, PW-501, PW-037, PW-321, PW-112, PW-205.1,* and *PW- 012.*

The following samples contained a thin layer of sediment at the bottom of the bottles prior to extraction: *PW-062, PW-501, PW-401, PW-221, PW-203, PW-045, PW-419, PW-112, PW-205.1,PW-012.*

PW-010 was yellow and contained a thin layer of sediment at the bottom of the bottle prior to extraction.

There was insufficient sample volume available to perform a matrix spike (MS) and MS duplicate (MSD) in conjunction with preparation batch 320-503377.

c. Were all corrective actions documented?

Yes☒ No☐ N/A☐ Comments:

Analyst judgment was used to positively identify PFHpA in sample *PW-401.*

Laboratory Report Date:

d. What is the effect on data quality/usability according to the case narrative?

Comments:

Due to the uncertainty associated with *PW-401* "I" flagged analyte (PFHpA), the PFHpA result is considered an estimate. The laboratory notes there may be a high bias; therefore, the analyte has been flagged 'JH*' in the analytical table.

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 limits (RL) are less than the applicable DEC regulatory limit for the project.

e. Data quality or usability affected?

The 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:

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 method blank samples above the LOQ; however, PFDA was detected below the LOQ in method blank sample associated with preparatory batch 503377.

Laboratory Report Date:

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

PFDA was not detected in the associated project sample. 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:

Qualification of the data was not required. See above.

v. Data quality or usability affected?

Comments:

Results are 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:

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:

Percent recovery was above laboratory limits for HFPO-DA in the LCS sample associated with preparation batch 503375.
Percent recovery was above laboratory limits for NEtFOSAA in the LCS sample associated with preparation batch 503377.
Percent recovery was above laboratory limits for PFTeA in the LCSD sample associated with preparation batch 503377.

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:

HFPO-DA was not detected in the project samples associated with preparation batch 503375. NEtFOSAA and PFTeA were not detected in the project sample associated with preparation batch 503377.
Sample results are not 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 required; see above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The 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:

Insufficient sample volume was available to perform a MS/MSD with the associated preparatory batches. However, the laboratory analyzed an LCS and LCSD to assess laboratory accuracy and precision.

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:

MS and MSD samples were not analyzed for this work order.

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:

MS and MSD samples were not analyzed for this work order.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A; MS and MSD samples were not analyzed for this work order.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes☐ No☐ N/A☒ Comments:

MS and MSD samples were not analyzed for this work order.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The 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 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; 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. A trip blank is not required for the requested analysis.

Laboratory Report Date:

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 for the requested analysis.

iii. All results less than LOQ and project specified objectives?

Yes☐ No☐ N/A☒ Comments:

A trip blank is not required for the requested analysis.

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; a trip blank is not required for the requested analysis.

v. Data quality or usability affected?

Comments:

The 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 *PW-012/PW-112, PW-221/PW-321,* and *PW-401/PW-501* 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:

RPDs were within project specified range, where calculable.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

No; data quality and usability were not affected.

Laboratory Report Date:

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes☐ No☐ N/A☒ Comments:

Decontamination or equipment blank were not required for this project.

i. All results less than LOQ and project specified objectives?

Yes☐ No☐ N/A☒ Comments:

Decontamination or equipment blank were not required for this project.

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

Decontamination or equipment blank were not required for this project.

iii. Data quality or usability affected?

Comments:

The 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:

No additional data flags are required.

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-75577-1
Client Project/Site: DRM FUS PFAS

For:
Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

Attn: Kristen Freiburger

Authorized for release by:
7/7/2021 3:08:53 PM

David Alltucker, Project Manager I
(916)374-4383
David.Alltucker@Eurofinset.com

Table of Contents

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: DRM FUS PFAS

Job ID: 320-75577-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*+	LCS and/or LCSD 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.
¤	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: DRM FUS PFAS

Job ID: 320-75577-1

Job ID: 320-75577-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Receipt
The samples were received on 6/29/2021 2:55 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 5.3º C.

LCMS
Method EPA 537(Mod): The laboratory control sample duplicate (LCSD) for 320-503381 recovered outside control limits for B53 minor. This analyte was biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Method EPA 537(Mod): The laboratory control sample (LCS) for 320-503381 recovered outside control limits for several analytes. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the 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 320-503381.

Method 3535: The following sample was light yellow and contained orange particulates in the sample bottle prior to extraction: PW-200 (320-75577-1).

Method 3535: The following samples were preserved with trizma: PW-200 (320-75577-1), PW-200-SINK (320-75577-2) and PW-200-CPort Composite (320-75577-8). Thus, the MB, LCS and LCSD also contain trizma.

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: DRM FUS PFAS

Job ID: 320-75577-1

Client Sample ID: PW-200 — Lab Sample ID: 320-75577-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	8.1		1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.8		1.8	0.22	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1.4	J	1.8	0.76	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.68	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	12		1.8	0.51	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	45		1.8	0.48	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PW-200-SINK — Lab Sample ID: 320-75577-2

No Detections.

Client Sample ID: PW-200-CPort Composite — Lab Sample ID: 320-75577-8

No Detections.

This Detection Summary does not include radiochemical test results.

Client: Shannon & Wilson, Inc
Project/Site: DRM FUS PFAS

Job ID: 320-75577-1

Client Sample ID: PW-200
Date Collected: 06/22/21 16:15
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75577-1
Matrix: Water

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)	**8.1**		1.8	0.52	ng/L		07/01/21 05:12	07/03/21 17:37	1
Perfluoroheptanoic acid (PFHpA)	**2.8**		1.8	0.22	ng/L		07/01/21 05:12	07/03/21 17:37	1
Perfluorooctanoic acid (PFOA)	**1.4**	**J**	1.8	0.76	ng/L		07/01/21 05:12	07/03/21 17:37	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		07/01/21 05:12	07/03/21 17:37	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		07/01/21 05:12	07/03/21 17:37	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		07/01/21 05:12	07/03/21 17:37	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		07/01/21 05:12	07/03/21 17:37	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		07/01/21 05:12	07/03/21 17:37	1
Perfluorotetradecanoic acid (PFTeA)	ND	*+	1.8	0.65	ng/L		07/01/21 05:12	07/03/21 17:37	1
Perfluorobutanesulfonic acid (PFBS)	**0.68**	**J**	1.8	0.18	ng/L		07/01/21 05:12	07/03/21 17:37	1
Perfluorohexanesulfonic acid (PFHxS)	**12**		1.8	0.51	ng/L		07/01/21 05:12	07/03/21 17:37	1
Perfluorooctanesulfonic acid (PFOS)	**45**		1.8	0.48	ng/L		07/01/21 05:12	07/03/21 17:37	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		07/01/21 05:12	07/03/21 17:37	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	*+	4.5	1.2	ng/L		07/01/21 05:12	07/03/21 17:37	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		07/01/21 05:12	07/03/21 17:37	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	*+	3.6	1.3	ng/L		07/01/21 05:12	07/03/21 17:37	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	*+	1.8	0.29	ng/L		07/01/21 05:12	07/03/21 17:37	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		07/01/21 05:12	07/03/21 17:37	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*94*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:37*	*1*
13C4 PFHpA	*87*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:37*	*1*
13C4 PFOA	*92*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:37*	*1*
13C5 PFNA	*87*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:37*	*1*
13C2 PFDA	*97*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:37*	*1*
13C2 PFUnA	*94*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:37*	*1*
13C2 PFDoA	*98*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:37*	*1*
13C2 PFTeDA	*103*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:37*	*1*
13C3 PFBS	*104*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:37*	*1*
18O2 PFHxS	*91*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:37*	*1*
13C4 PFOS	*91*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:37*	*1*
d3-NMeFOSAA	*100*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:37*	*1*
d5-NEtFOSAA	*92*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:37*	*1*
13C3 HFPO-DA	*83*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:37*	*1*

Client: Shannon & Wilson, Inc
Project/Site: DRM FUS PFAS

Job ID: 320-75577-1

Client Sample ID: PW-200-SINK
Date Collected: 06/22/21 15:44
Date Received: 06/29/21 14:55

Lab Sample ID: 320-75577-2
Matrix: Water

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		1.9	0.56	ng/L		07/01/21 05:12	07/03/21 17:46	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		07/01/21 05:12	07/03/21 17:46	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.81	ng/L		07/01/21 05:12	07/03/21 17:46	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		07/01/21 05:12	07/03/21 17:46	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		07/01/21 05:12	07/03/21 17:46	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		07/01/21 05:12	07/03/21 17:46	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		07/01/21 05:12	07/03/21 17:46	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		07/01/21 05:12	07/03/21 17:46	1
Perfluorotetradecanoic acid (PFTeA)	ND	*+	1.9	0.70	ng/L		07/01/21 05:12	07/03/21 17:46	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		07/01/21 05:12	07/03/21 17:46	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.55	ng/L		07/01/21 05:12	07/03/21 17:46	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.52	ng/L		07/01/21 05:12	07/03/21 17:46	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.1	ng/L		07/01/21 05:12	07/03/21 17:46	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	*+	4.8	1.2	ng/L		07/01/21 05:12	07/03/21 17:46	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		07/01/21 05:12	07/03/21 17:46	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	*+	3.8	1.4	ng/L		07/01/21 05:12	07/03/21 17:46	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	*+	1.9	0.31	ng/L		07/01/21 05:12	07/03/21 17:46	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		07/01/21 05:12	07/03/21 17:46	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*89*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:46*	*1*
13C4 PFHpA	*92*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:46*	*1*
13C4 PFOA	*95*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:46*	*1*
13C5 PFNA	*89*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:46*	*1*
13C2 PFDA	*99*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:46*	*1*
13C2 PFUnA	*89*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:46*	*1*
13C2 PFDoA	*95*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:46*	*1*
13C2 PFTeDA	*110*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:46*	*1*
13C3 PFBS	*100*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:46*	*1*
18O2 PFHxS	*96*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:46*	*1*
13C4 PFOS	*93*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:46*	*1*
d3-NMeFOSAA	*95*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:46*	*1*
d5-NEtFOSAA	*90*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:46*	*1*
13C3 HFPO-DA	*88*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:46*	*1*

Client: Shannon & Wilson, Inc
Project/Site: DRM FUS PFAS

Job ID: 320-75577-1

Client Sample ID: PW-200-CPort Composite

Lab Sample ID: 320-75577-8

Date Collected: 06/22/21 16:10

Matrix: Water

Date Received: 06/29/21 14:55

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		1.9	0.56	ng/L		07/01/21 05:12	07/03/21 17:56	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		07/01/21 05:12	07/03/21 17:56	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.82	ng/L		07/01/21 05:12	07/03/21 17:56	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		07/01/21 05:12	07/03/21 17:56	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		07/01/21 05:12	07/03/21 17:56	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		07/01/21 05:12	07/03/21 17:56	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		07/01/21 05:12	07/03/21 17:56	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.3	ng/L		07/01/21 05:12	07/03/21 17:56	1
Perfluorotetradecanoic acid (PFTeA)	ND	*+	1.9	0.70	ng/L		07/01/21 05:12	07/03/21 17:56	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		07/01/21 05:12	07/03/21 17:56	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.55	ng/L		07/01/21 05:12	07/03/21 17:56	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.52	ng/L		07/01/21 05:12	07/03/21 17:56	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.2	ng/L		07/01/21 05:12	07/03/21 17:56	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	*+	4.8	1.3	ng/L		07/01/21 05:12	07/03/21 17:56	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		07/01/21 05:12	07/03/21 17:56	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	*+	3.9	1.4	ng/L		07/01/21 05:12	07/03/21 17:56	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	*+	1.9	0.31	ng/L		07/01/21 05:12	07/03/21 17:56	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.39	ng/L		07/01/21 05:12	07/03/21 17:56	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*95*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:56*	*1*
13C4 PFHpA	*100*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:56*	*1*
13C4 PFOA	*96*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:56*	*1*
13C5 PFNA	*100*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:56*	*1*
13C2 PFDA	*100*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:56*	*1*
13C2 PFUnA	*92*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:56*	*1*
13C2 PFDoA	*108*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:56*	*1*
13C2 PFTeDA	*110*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:56*	*1*
13C3 PFBS	*109*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:56*	*1*
18O2 PFHxS	*98*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:56*	*1*
13C4 PFOS	*98*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:56*	*1*
d3-NMeFOSAA	*96*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:56*	*1*
d5-NEtFOSAA	*97*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:56*	*1*
13C3 HFPO-DA	*90*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:56*	*1*

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: DRM FUS PFAS

Job ID: 320-75577-1

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFHxA	C4PFHA	PFOA	PFNA	PFDA	PFUnA	PFDoA	PFTDA
Lab Sample ID	Client Sample ID	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)
320-75577-1	PW-200	94	87	92	87	97	94	98	103
320-75577-2	PW-200-SINK	89	92	95	89	99	89	95	110
320-75577-8	PW-200-CPort Composite	95	100	96	100	100	92	108	110
LCS 320-503381/2-A	Lab Control Sample	90	89	95	88	91	84	94	100
LCSD 320-503381/3-A	Lab Control Sample Dup	92	99	90	92	90	91	100	104
MB 320-503381/1-A	Method Blank	89	92	93	92	87	89	97	102

		Percent Isotope Dilution Recovery (Acceptance Limits)					
		C3PFBS	PFHxS	PFOS	d3NMFOS	d5NEFOS	HFPODA
Lab Sample ID	Client Sample ID	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)
320-75577-1	PW-200	104	91	91	100	92	83
320-75577-2	PW-200-SINK	100	96	93	95	90	88
320-75577-8	PW-200-CPort Composite	109	98	98	96	97	90
LCS 320-503381/2-A	Lab Control Sample	105	91	90	95	87	84
LCSD 320-503381/3-A	Lab Control Sample Dup	103	91	88	97	91	95
MB 320-503381/1-A	Method Blank	101	92	87	93	87	90

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

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Lab Sample ID: MB 320-503381/1-A
Matrix: Water
Analysis Batch: 504170

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 503381

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		07/01/21 05:12	07/03/21 17:09	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		07/01/21 05:12	07/03/21 17:09	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		07/01/21 05:12	07/03/21 17:09	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		07/01/21 05:12	07/03/21 17:09	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		07/01/21 05:12	07/03/21 17:09	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		07/01/21 05:12	07/03/21 17:09	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		07/01/21 05:12	07/03/21 17:09	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		07/01/21 05:12	07/03/21 17:09	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		07/01/21 05:12	07/03/21 17:09	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		07/01/21 05:12	07/03/21 17:09	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		07/01/21 05:12	07/03/21 17:09	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		07/01/21 05:12	07/03/21 17:09	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		07/01/21 05:12	07/03/21 17:09	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		07/01/21 05:12	07/03/21 17:09	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		07/01/21 05:12	07/03/21 17:09	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		07/01/21 05:12	07/03/21 17:09	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		07/01/21 05:12	07/03/21 17:09	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		07/01/21 05:12	07/03/21 17:09	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*89*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:09*	*1*
13C4 PFHpA	*92*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:09*	*1*
13C4 PFOA	*93*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:09*	*1*
13C5 PFNA	*92*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:09*	*1*
13C2 PFDA	*87*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:09*	*1*
13C2 PFUnA	*89*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:09*	*1*
13C2 PFDoA	*97*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:09*	*1*
13C2 PFTeDA	*102*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:09*	*1*
13C3 PFBS	*101*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:09*	*1*
18O2 PFHxS	*92*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:09*	*1*
13C4 PFOS	*87*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:09*	*1*
d3-NMeFOSAA	*93*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:09*	*1*
d5-NEtFOSAA	*87*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:09*	*1*
13C3 HFPO-DA	*90*		*50 - 150*	*07/01/21 05:12*	*07/03/21 17:09*	*1*

Lab Sample ID: LCS 320-503381/2-A
Matrix: Water
Analysis Batch: 504170

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 503381

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid (PFHxA)	40.0	47.0		ng/L		118	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	46.5		ng/L		116	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	44.9		ng/L		112	71 - 133
Perfluorononanoic acid (PFNA)	40.0	50.3		ng/L		126	69 - 130

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCS 320-503381/2-A
Matrix: Water
Analysis Batch: 504170

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 503381

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorodecanoic acid (PFDA)	40.0	48.9		ng/L		122	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	52.4		ng/L		131	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	47.6		ng/L		119	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	48.7		ng/L		122	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	55.2	*+	ng/L		138	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.4	36.8		ng/L		104	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	44.9		ng/L		123	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.1	43.0		ng/L		116	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	45.9		ng/L		115	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	54.6	*+	ng/L		136	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	44.1		ng/L		118	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	53.5	*+	ng/L		134	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	48.6		ng/L		129	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	46.6		ng/L		124	81 - 141

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*90*		*50 - 150*
13C4 PFHpA	*89*		*50 - 150*
13C4 PFOA	*95*		*50 - 150*
13C5 PFNA	*88*		*50 - 150*
13C2 PFDA	*91*		*50 - 150*
13C2 PFUnA	*84*		*50 - 150*
13C2 PFDoA	*94*		*50 - 150*
13C2 PFTeDA	*100*		*50 - 150*
13C3 PFBS	*105*		*50 - 150*
18O2 PFHxS	*91*		*50 - 150*
13C4 PFOS	*90*		*50 - 150*
d3-NMeFOSAA	*95*		*50 - 150*
d5-NEtFOSAA	*87*		*50 - 150*
13C3 HFPO-DA	*84*		*50 - 150*

Lab Sample ID: LCSD 320-503381/3-A
Matrix: Water
Analysis Batch: 504170

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 503381

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	47.6		ng/L		119	72 - 129	1	30
Perfluoroheptanoic acid (PFHpA)	40.0	46.5		ng/L		116	72 - 130	0	30
Perfluorooctanoic acid (PFOA)	40.0	47.1		ng/L		118	71 - 133	5	30

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCSD 320-503381/3-A
Matrix: Water
Analysis Batch: 504170

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 503381

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)			40.0	48.6		ng/L		121	69 - 130	3	30
Perfluorodecanoic acid (PFDA)			40.0	50.3		ng/L		126	71 - 129	3	30
Perfluoroundecanoic acid (PFUnA)			40.0	48.4		ng/L		121	69 - 133	8	30
Perfluorododecanoic acid (PFDoA)			40.0	40.9		ng/L		102	72 - 134	15	30
Perfluorotridecanoic acid (PFTriA)			40.0	47.7		ng/L		119	65 - 144	2	30
Perfluorotetradecanoic acid (PFTeA)			40.0	51.8		ng/L		129	71 - 132	6	30
Perfluorobutanesulfonic acid (PFBS)			35.4	35.4		ng/L		100	72 - 130	4	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	45.6		ng/L		125	68 - 131	1	30
Perfluorooctanesulfonic acid (PFOS)			37.1	46.4		ng/L		125	65 - 140	8	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			40.0	47.3		ng/L		118	65 - 136	3	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	51.3		ng/L		128	61 - 135	6	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid			37.3	49.0		ng/L		132	77 - 137	11	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			40.0	43.5		ng/L		109	72 - 132	21	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid			37.7	52.1	*+	ng/L		138	76 - 136	7	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.7	48.9		ng/L		130	81 - 141	5	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*92*		*50 - 150*
13C4 PFHpA	*99*		*50 - 150*
13C4 PFOA	*90*		*50 - 150*
13C5 PFNA	*92*		*50 - 150*
13C2 PFDA	*90*		*50 - 150*
13C2 PFUnA	*91*		*50 - 150*
13C2 PFDoA	*100*		*50 - 150*
13C2 PFTeDA	*104*		*50 - 150*
13C3 PFBS	*103*		*50 - 150*
18O2 PFHxS	*91*		*50 - 150*
13C4 PFOS	*88*		*50 - 150*
d3-NMeFOSAA	*97*		*50 - 150*
d5-NEtFOSAA	*91*		*50 - 150*
13C3 HFPO-DA	*95*		*50 - 150*

LCMS

Prep Batch: 503381

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-75577-1	PW-200	Total/NA	Water	3535	
320-75577-2	PW-200-SINK	Total/NA	Water	3535	
320-75577-8	PW-200-CPort Composite	Total/NA	Water	3535	
MB 320-503381/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-503381/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-503381/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 504170

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-75577-1	PW-200	Total/NA	Water	EPA 537(Mod)	503381
320-75577-2	PW-200-SINK	Total/NA	Water	EPA 537(Mod)	503381
320-75577-8	PW-200-CPort Composite	Total/NA	Water	EPA 537(Mod)	503381
MB 320-503381/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	503381
LCS 320-503381/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	503381
LCSD 320-503381/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	503381

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: DRM FUS PFAS

Job ID: 320-75577-1

Client Sample ID: PW-200

Lab Sample ID: 320-75577-1

Date Collected: 06/22/21 16:15

Matrix: Water

Date Received: 06/29/21 14:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			278.7 mL	10.0 mL	503381	07/01/21 05:12	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504170	07/03/21 17:37	RS1	TAL SAC

Client Sample ID: PW-200-SINK

Lab Sample ID: 320-75577-2

Date Collected: 06/22/21 15:44

Matrix: Water

Date Received: 06/29/21 14:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			261.1 mL	10.0 mL	503381	07/01/21 05:12	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504170	07/03/21 17:46	RS1	TAL SAC

Client Sample ID: PW-200-CPort Composite

Lab Sample ID: 320-75577-8

Date Collected: 06/22/21 16:10

Matrix: Water

Date Received: 06/29/21 14:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			259.1 mL	10.0 mL	503381	07/01/21 05:12	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			504170	07/03/21 17:56	RS1	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: DRM FUS PFAS

Job ID: 320-75577-1

Laboratory: Eurofins TestAmerica, Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

Method Summary

Client: Shannon & Wilson, Inc
Project/Site: DRM FUS PFAS

Job ID: 320-75577-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod)	PFAS for QSM 5.3, Table B-15	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: DRM FUS PFAS

Job ID: 320-75577-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-75577-1	PW-200	Water	06/22/21 16:15	06/29/21 14:55	
320-75577-2	PW-200-SINK	Water	06/22/21 15:44	06/29/21 14:55	
320-75577-8	PW-200-CPort Composite	Water	06/22/21 16:10	06/29/21 14:55	

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600
www.shannonwilson.com

CHAIN-OF-CUSTODY RECORD

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Laboratory Test America
Attn: D. Alltucker

Analytical Methods (include preservative if used)

Turn Around Time:	Quote No:	MSA Number:	J-Flags:
[X] Normal [ ] Rush			[X] Yes [ ] No
Please Specify			

320-75577 Chain of Custody

Sample Identity	Lab No.	Time	Date Sampled	PFAS x18	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
PW-200		1615	6/22/21	X	2	groundwater
PW-200 -Sink		1544		X	2	
PW-200-Unit 1-Cport *Hold*		1558		X	2	
PW-200-Unit 2-Cport *Hold		1602		X	2	
PW-200-Unit 3-Cport *Hold*		1604		X	2	
PW-200-Unit 4-Cport *Hold*		1607		X	2	
PW-200 F Port *Hold*		1552		X	2	
PW-200 -Cport Composite		1610		X	2	

Project Information		Sample Receipt	
Number:	101543-001	Total No. of Containers:	
Name:	DRM USPFAS	COC Seals/Intact? Y/N/NA	
Contact:	ICRT	Received Good Cond./Cold	
Ongoing Project?	Yes [X] No [ ]	Temp:	5.3c
Sampler:	ARM	Delivery Method:	

Notes:

Reliquished By: 1.	Reliquished By: 2.	Reliquished By: 3.
Signature: Time: 1300	Signature: Time:	Signature: Time:
Printed Name: A. Masters Date: 6/28/21	Printed Name: Date:	Printed Name: Date:
Company: Shannon & Wilson, Inc.	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time: 1455	Signature: Time:	Signature: Time:
Printed Name: David Hu Date: 6/28/21	Printed Name: Date:	Printed Name: Date:
Company: Test America	Company:	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

No.

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-75577-1

Login Number: 75577
List Number: 1
Creator: Her, David A

List Source: Eurofins TestAmerica, Sacramento

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:

Rachel Willis

Title:

Environmental Scientist

Date:

July 16, 2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins / TestAmerica Laboratories (TestAmerica)

Laboratory Report Number:

320-75577-1

Laboratory Report Date:

July 7, 2021

CS Site Name:

DRM Gustavus PFAS

ADEC File Number:

1507.38.017

Hazard Identification Number:

26904

320-75577-1

Laboratory Report Date:

July 7, 2021

CS Site Name:

DRM Gustavus 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 DEC certified TestAmerica of West Sacramento, CA for the analysis of per- and polyfluorinated alkyl substances (PFAS) on February 11, 2021 by PFAS LCMSMS compliant with QSM Version 5.3 Table B-15. These reported analytes were included in the DEC'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:

   The samples were analyzed by TestAmerica Laboratories of 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:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

   Yes☒ No☐ N/A☐ Comments:

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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:

e. Data quality or usability affected?

Comments:

Data quality and/or usability are 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:

The LCS and LCSD for 320-503381 was recovered outside control limits for multiple PFAS. The laboratory also notes there was insufficient volume for an MS/MSD sample.

c. Were all corrective actions documented?

Yes☐ No☐ N/A☒ Comments:

The laboratory does not discuss any corrective actions.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The case narrative does not note an effect on the data quality or usability.

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CS Site Name:

DRM Gustavus 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:

Soil samples were not included 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 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:

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DRM Gustavus 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:

See above.

v. Data quality or usability affected?

Comments:

The results are unaffected; see below.

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/inorganics were not included in 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:

Percent recovery was elevated for the following PFAS in the LCS sample: PFTeA, NEtFOSAA, and HFPO-DA.
Percent recovery was elevated for 11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid in the LCSD sample.

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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:

Analytes with high percent recovery were not detected in project samples; samples are not affected by the high percent recovery.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes☐ No☐ N/A☒ Comments:

No qualification of the data is required; samples not affected.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Data quality 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:

There was not enough sample volume to perform a MS/MSD. Accuracy and precision were evaluated using the LCS/LCSD sample pair.

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes☐ No☐ N/A☒ Comments:

Metals/inorganics were not included with this work order.

320-75577-1

Laboratory Report Date:

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CS Site Name:

DRM Gustavus PFAS

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:

None; 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 or usability is 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:

See above.

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Laboratory Report Date:

July 7, 2021

CS Site Name:

DRM Gustavus 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:

Flags not required.

iv. Data quality or usability affected?

Comments:

Data quality 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:

Volatile compounds were not requested for this project. A trip blank is not required for the requested analyses.

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:

See above.

v. Data quality or usability affected?

Comments:

Data quality or usability are not affected.

320-75577-1

Laboratory Report Date:

July 7, 2021

CS Site Name:

DRM Gustavus PFAS

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes☐ No☐ N/A☒ Comments:

Only three project samples were submitted with this work order.

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)

RPD (%) = 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 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 sample was not collected with reusable equipment, therefore an equipment blank is not necessary.

i. All results less than LOQ and project specified objectives?

Yes☐ No☐ N/A☒ Comments:

See above.

320-75577-1

Laboratory Report Date:

July 7, 2021

CS Site Name:

DRM Gustavus PFAS

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

None; see above.

iii. Data quality or usability affected?

Comments:

Data quality or usability are not affected.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes☐ No☐ N/A☒ Comments:

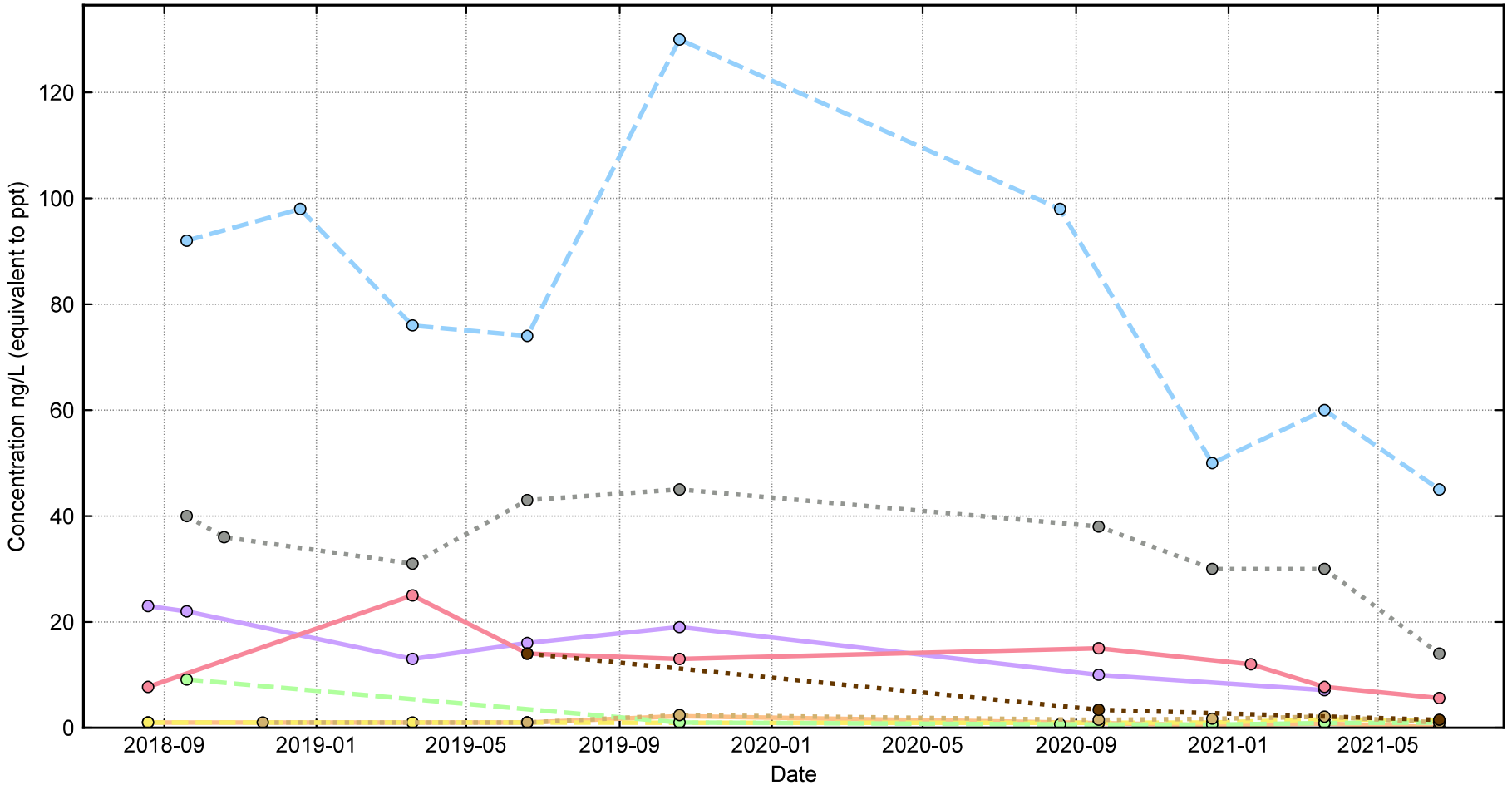
N/A

KRF

APPENDIX D: HISTORICAL DATA PLOTS

Appendix D

Historical Data Plots



Gustavus Airport Water Supply Well
Summary Report
Gustavus, Alaska

QUARTERLY PFOS RESULTS
AUGUST 2018 - JUNE 2021

December 2022 102599-018

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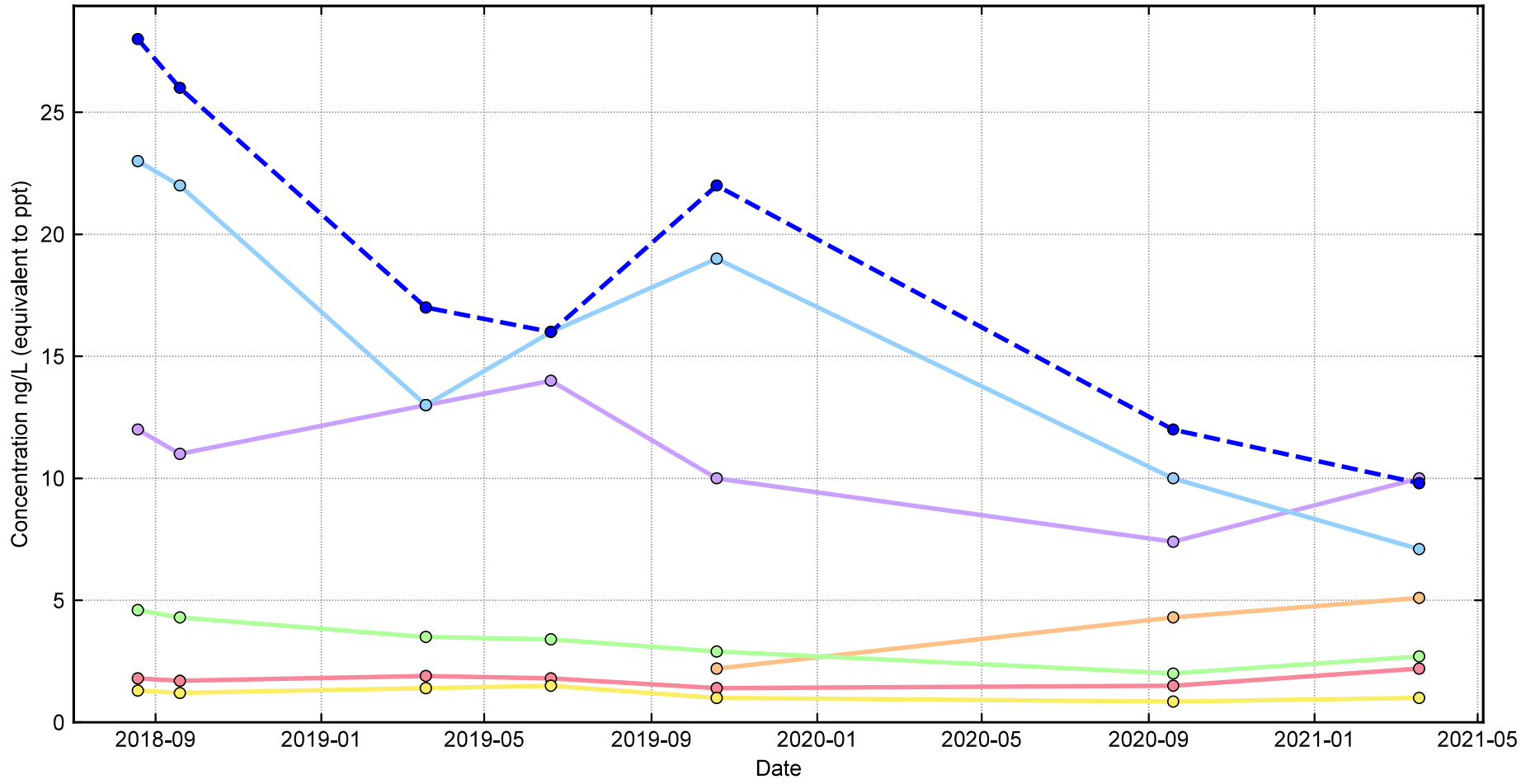
FIG. D.1



Perfluorohexanesulfonic Acid (PFHxS)
Perfluorohexanoic Acid (PFHxA)
Perfluouroheptanoic Acid (PFHpA)
Perfluourobutanesulfonic (PFBS)
Perfluourooctanesulfonic Acid (PFOS)
Perfluorooctanoic Acid (PFOA)
LHA Combined (PFOS + PFOA)

Gustavus Airport Water Supply Well
Summary Report
Gustavus, Alaska

QUARTERLY LINE GRAPH
NPS Well

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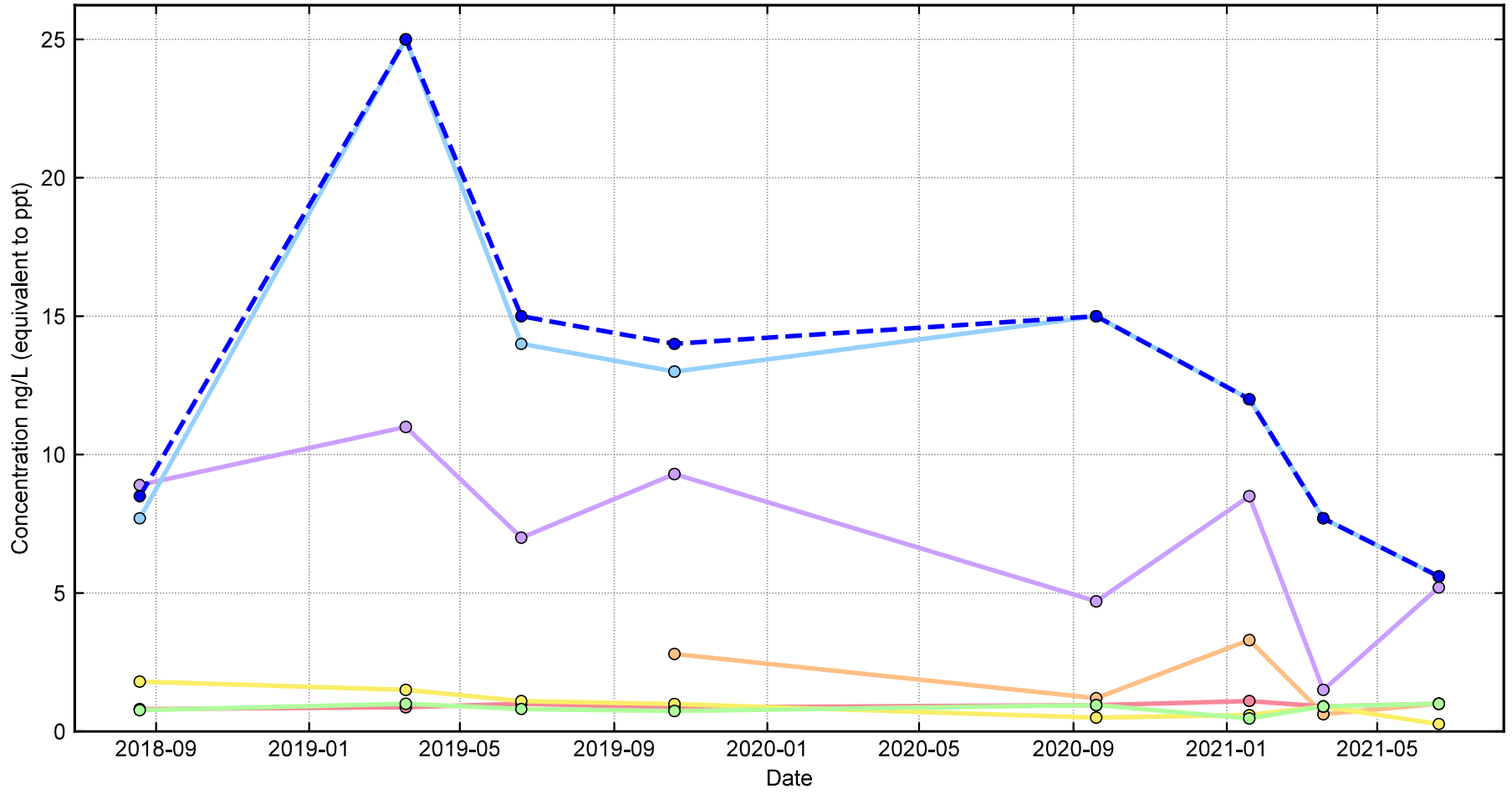
FIG. D.2



Perfluorohexanesulfonic Acid (PFHxS)
Perfluorohexanoic Acid (PFHxA)
Perfluouroheptanoic Acid (PFHpA)
Perfluourobutanesulfonic (PFBS)
Perfluouroctanesulfonic Acid (PFOS)
Perfluorooctanoic Acid (PFOA)
LHA Combined (PFOS + PFOA)

Gustavus Airport Water Supply Well
Summary Report
Gustavus, Alaska

QUARTERLY LINE GRAPH
PW-012

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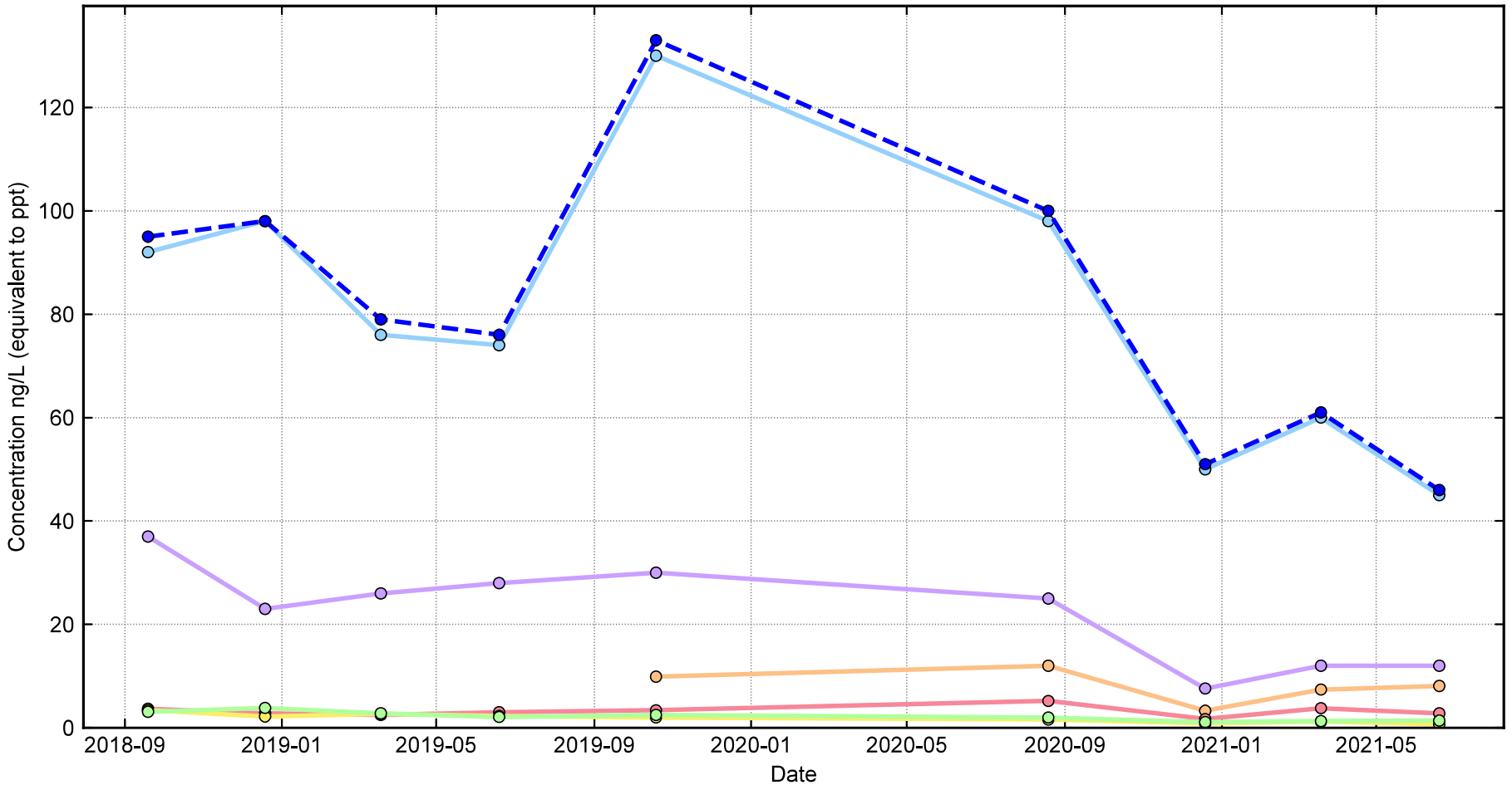
FIG. D.3



Perfluorohexanesulfonic Acid (PFHxS)
Perfluorohexanoic Acid (PFHxA)
Perfluoroheptanoic Acid (PFHpA)
Perfluorobutanesulfonic (PFBS)
Perfluorooctanesulfonic Acid (PFOS)
Perfluorooctanoic Acid (PFOA)
LHA Combined (PFOS + PFOA)

Gustavus Airport Water Supply Well
Summary Report
Gustavus, Alaska

QUARTERLY LINE GRAPH
PW-200

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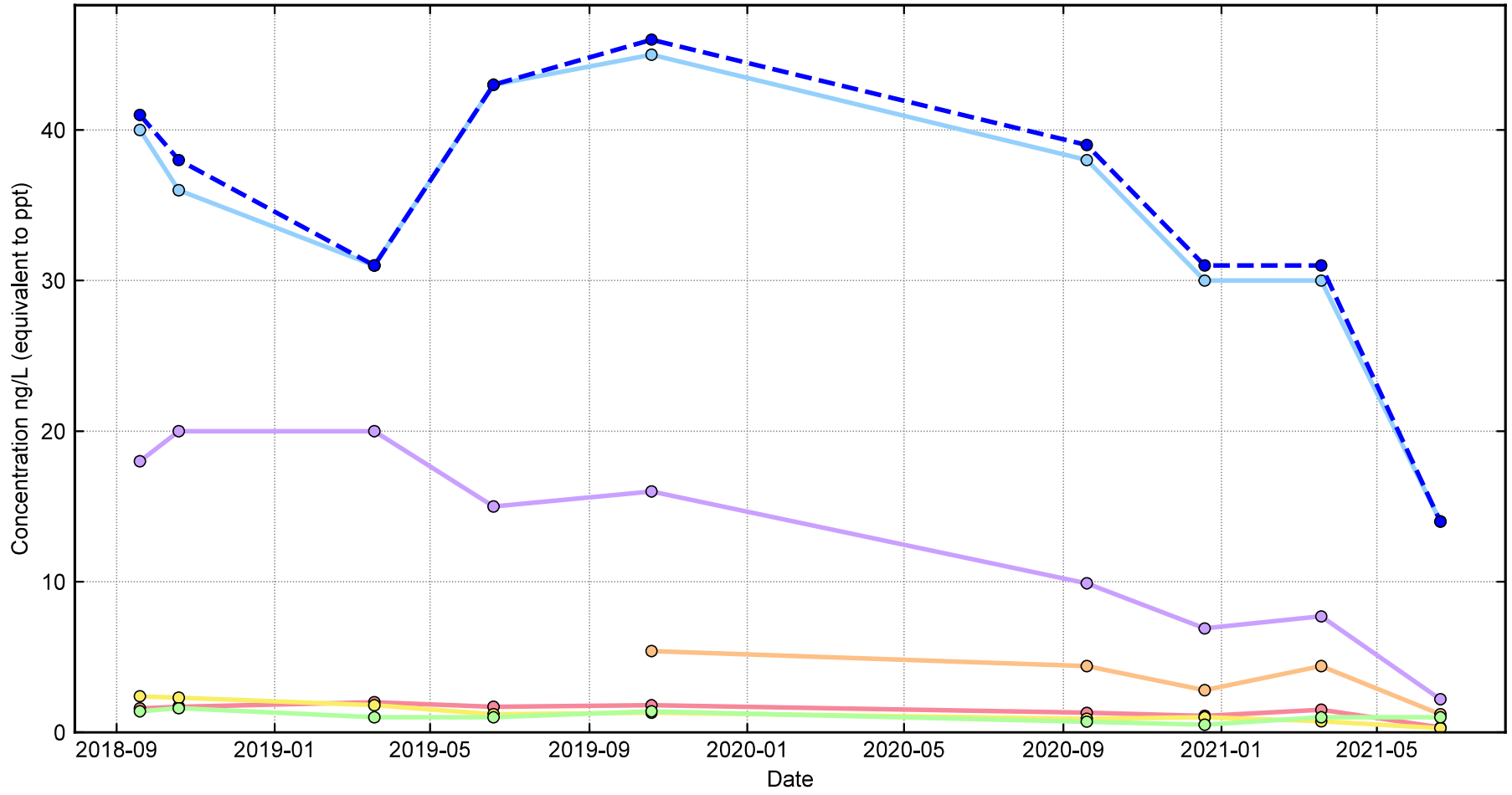
FIG. D.4



Perfluorohexanesulfonic Acid (PFHxS)
Perfluorohexanoic Acid (PFHxA)
Perfluouroheptanoic Acid (PFHpA)
Perfluourobutanesulfonic (PFBS)
Perfluourooctanesulfonic Acid (PFOS)
Perfluorooctanoic Acid (PFOA)
LHA Combined (PFOS + PFOA)

Gustavus Airport Water Supply Well
Summary Report
Gustavus, Alaska

QUARTERLY LINE GRAPH
PW-401

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FIG. D.5

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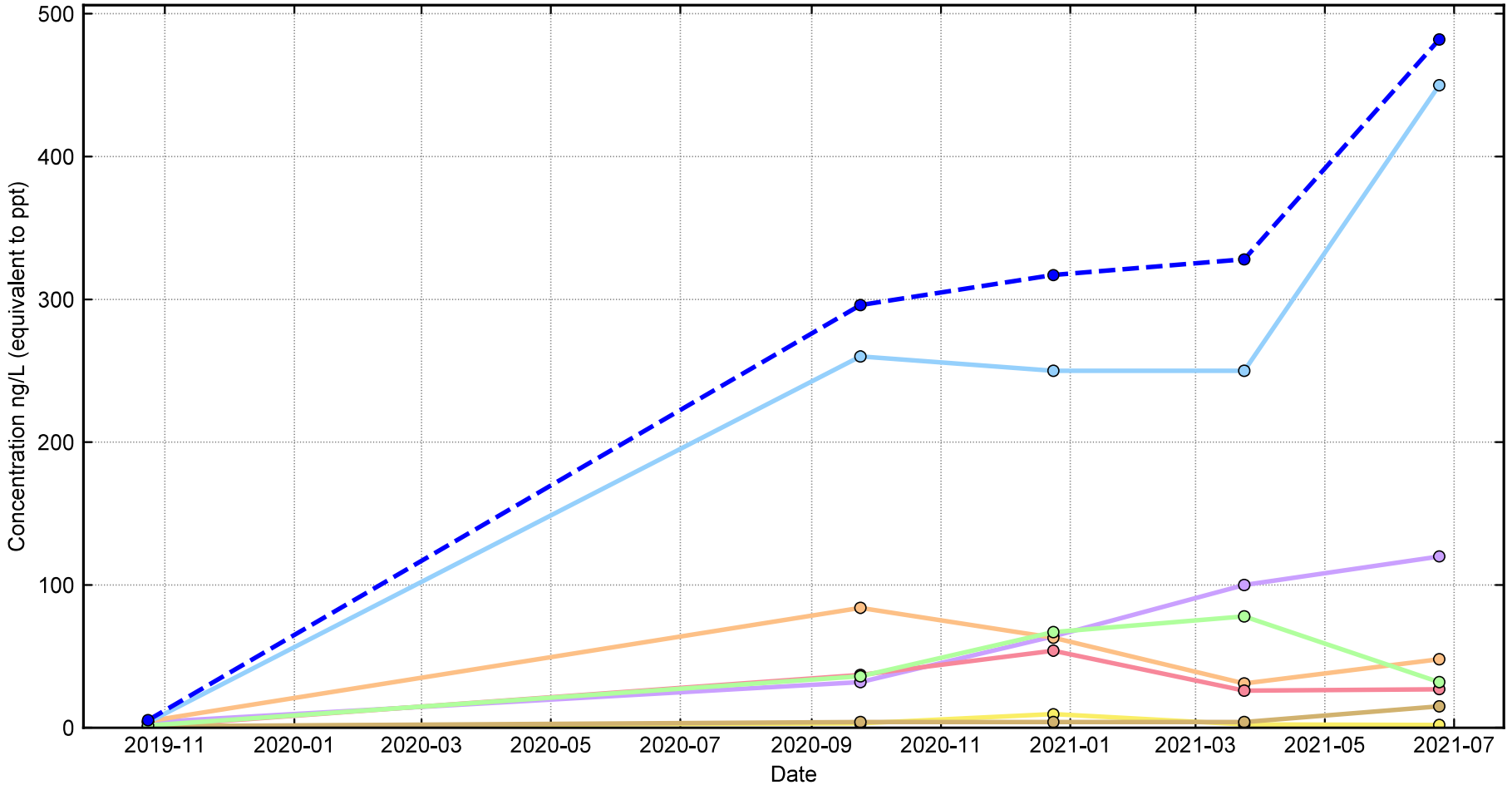

Perfluorohexanesulfonic Acid (PFHxS)
Perfluorohexanoic Acid (PFHxA)
Perfluoroheptanoic Acid (PFHpA)
Perfluorobutanesulfonic (PFBS)
Perfluorononanoic (PFNA)
Perfluorooctanesulfonic Acid (PFOS)
Perfluorooctanoic Acid (PFOA)
LHA Combined (PFOS + PFOA)

FIG. 1

C:\Users\jxs\Desktop\FAI Python\FAI Python_IV

Gustavus Airport Water Supply Well
Summary Report
Gustavus, Alaska

QUARTERLY LINE GRAPH
MW-2-20

December 2022 102599-018

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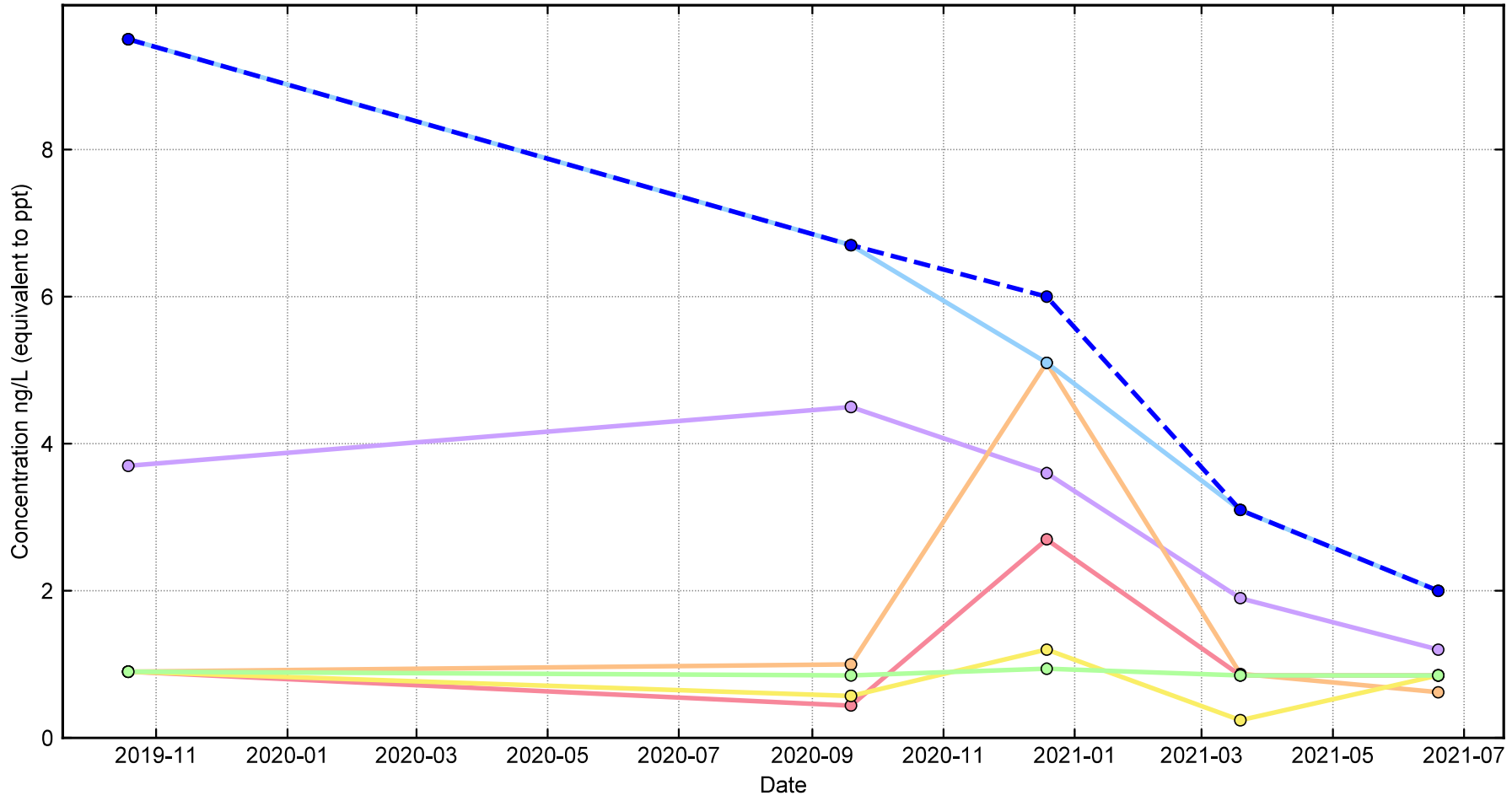
FIG. D.6



Perfluorohexanesulfonic Acid (PFHxS)
Perfluorohexanoic Acid (PFHxA)
Perfluoroheptanoic Acid (PFHpA)
Perfluorobutanesulfonic (PFBS)
Perfluorooctanesulfonic Acid (PFOS)
Perfluorooctanoic Acid (PFOA)
LHA Combined (PFOS + PFOA)

Gustavus Airport Water Supply Well
Summary Report
Gustavus, Alaska

QUARTERLY LINE GRAPH
MW-3-15

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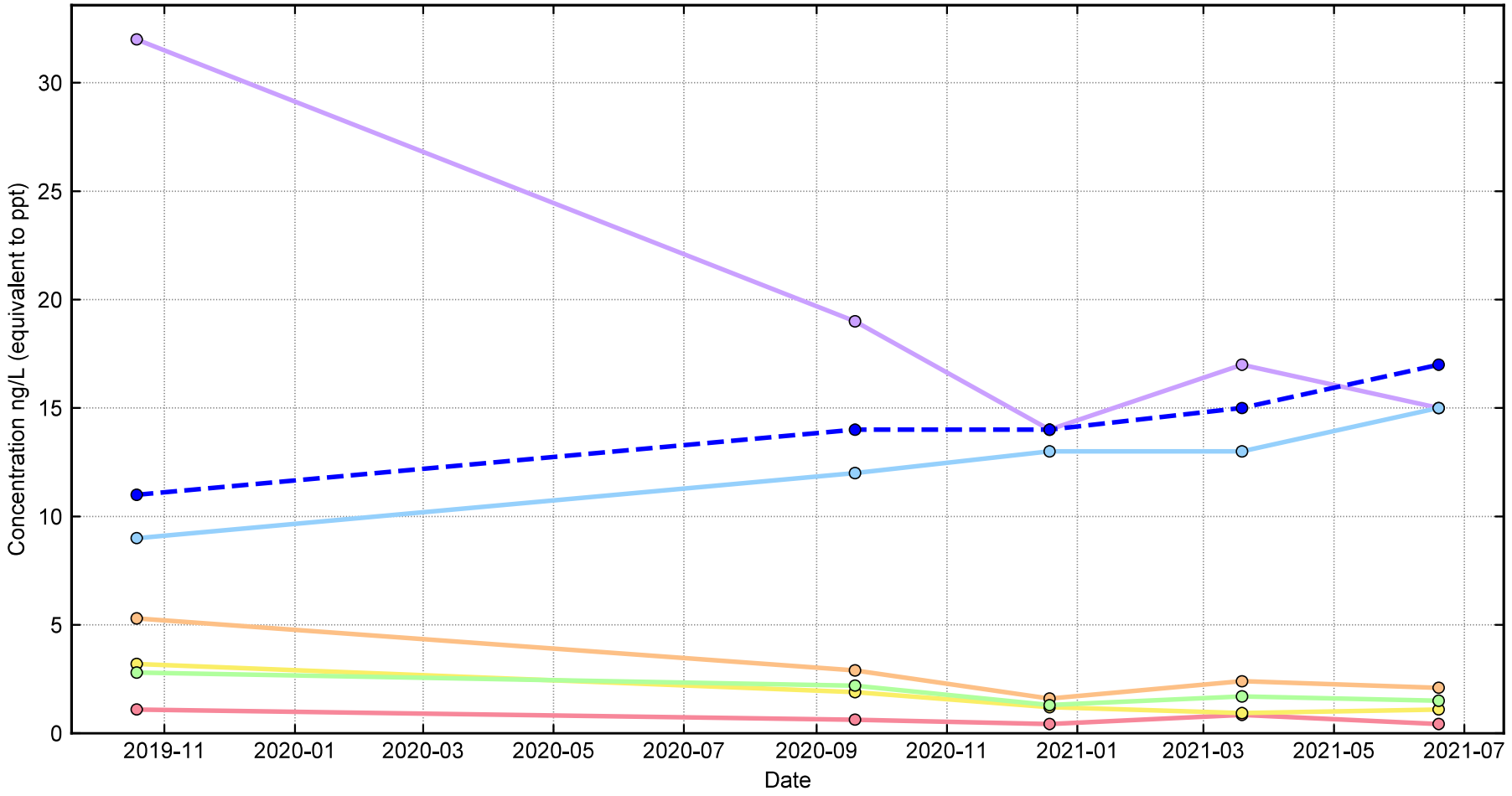
FIG. D.7



Perfluorohexanesulfonic Acid (PFHxS)
Perfluorohexanoic Acid (PFHxA)
Perfluouroheptanoic Acid (PFHpA)
Perfluourobutanesulfonic (PFBS)
Perfluourooctanesulfonic Acid (PFOS)
Perfluorooctanoic Acid (PFOA)
LHA Combined (PFOS + PFOA)

Gustavus Airport Water Supply Well
Summary Report
Gustavus, Alaska

QUARTERLY LINE GRAPH
MW-3-40

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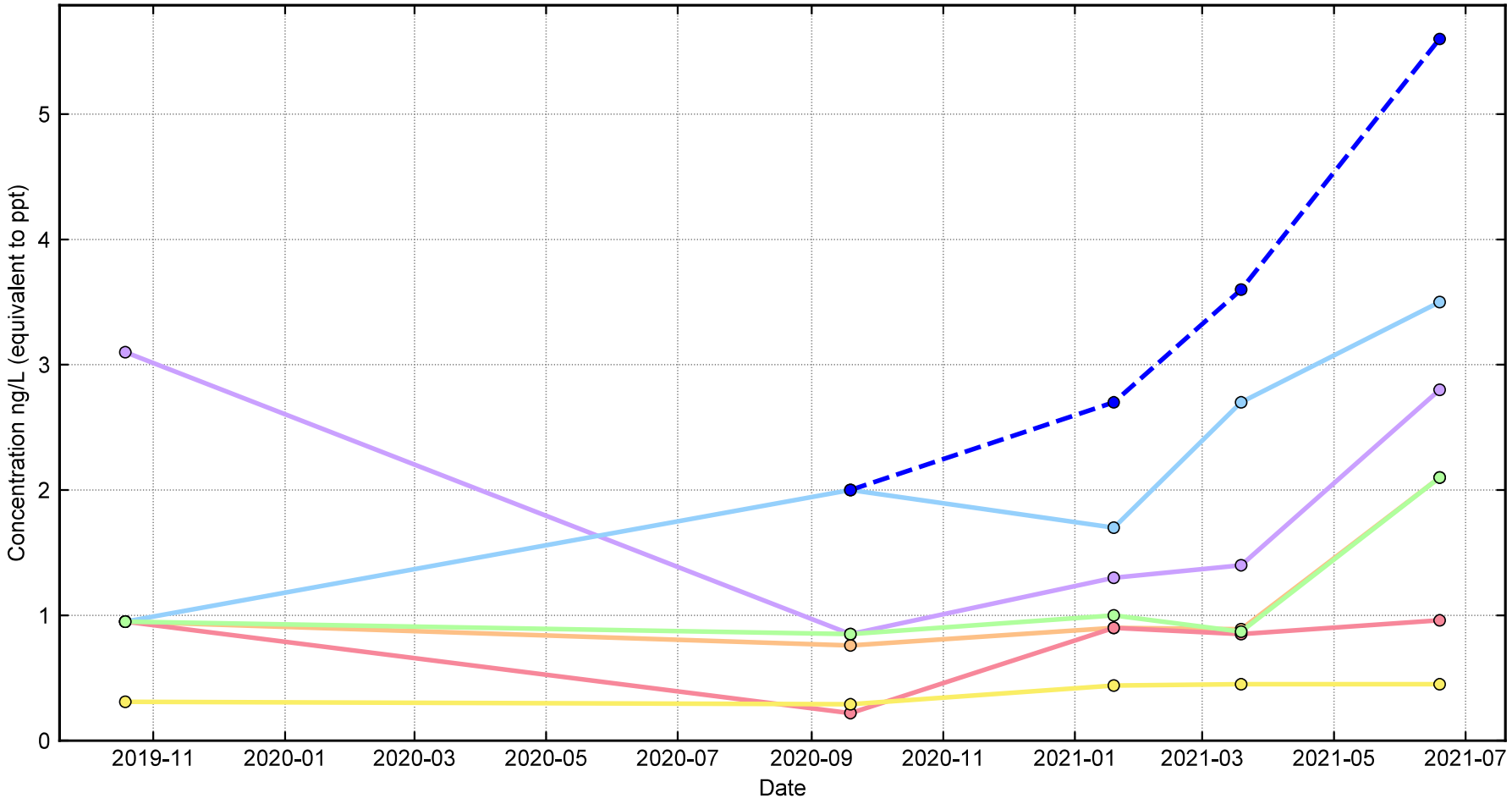
FIG. D.8



Perfluorohexanesulfonic Acid (PFHxS)
Perfluorohexanoic Acid (PFHxA)
Perfluouroheptanoic Acid (PFHpA)
Perfluourobutanesulfonic (PFBS)
Perfluourooctanesulfonic Acid (PFOS)
Perfluorooctanoic Acid (PFOA)
LHA Combined (PFOS + PFOA)

Gustavus Airport Water Supply Well
Summary Report
Gustavus, Alaska

QUARTERLY LINE GRAPH
MW-5-20

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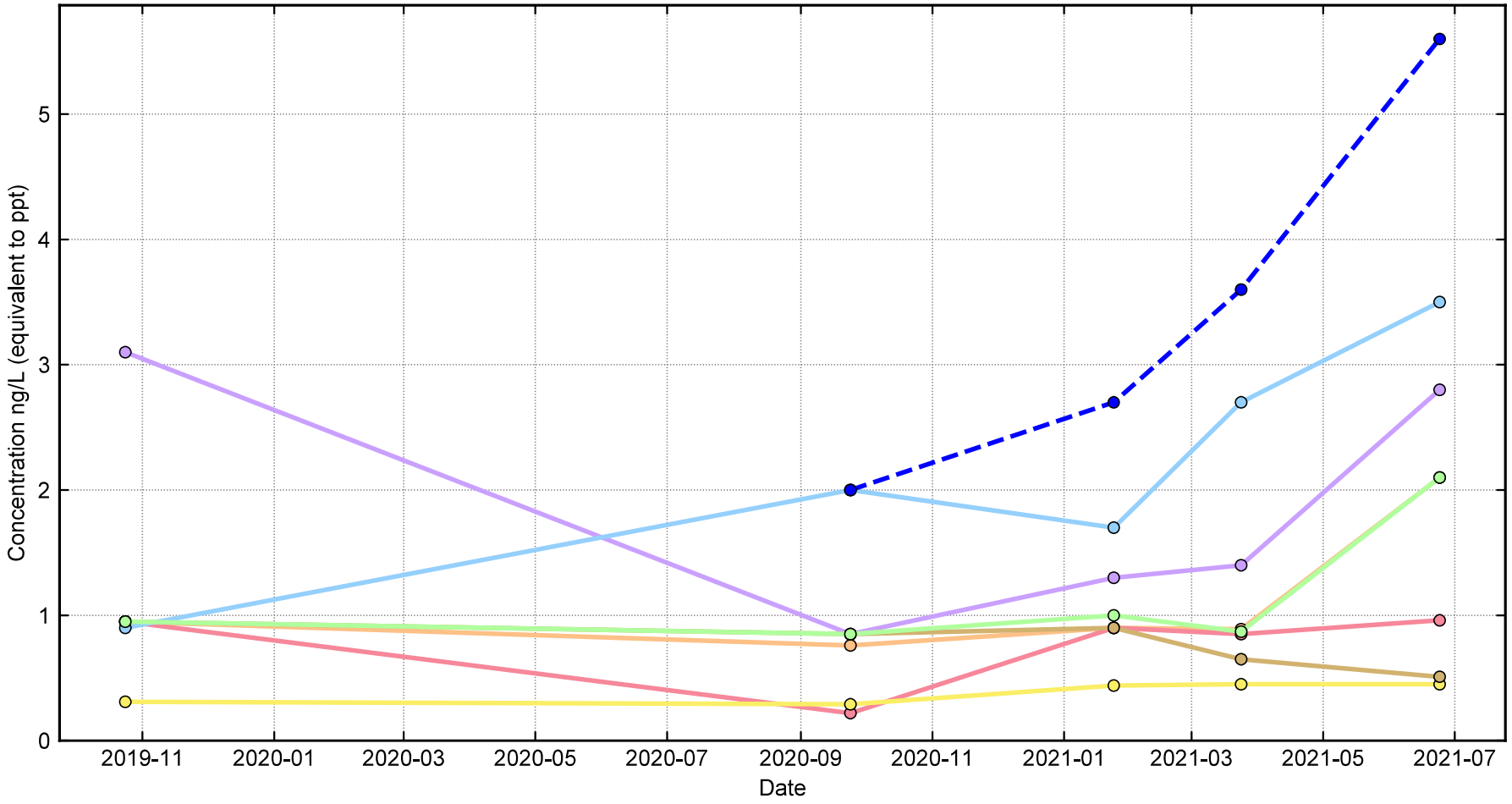
FIG. D.9



Perfluorohexanesulfonic Acid (PFHxS)
Perfluorohexanoic Acid (PFHxA)
Perfluoroheptanoic Acid (PFHpA)
Perfluorobutanesulfonic (PFBS)
Perfluorononanonic (PFNA)
Perfluorooctanesulfonic Acid (PFOS)
Perfluorooctanoic Acid (PFOA)
LHA Combined (PFOS + PFOA)

FIG. 1

Gustavus Airport Water Supply Well
Summary Report
Gustavus, Alaska

QUARTERLY LINE GRAPH
MW-7-20

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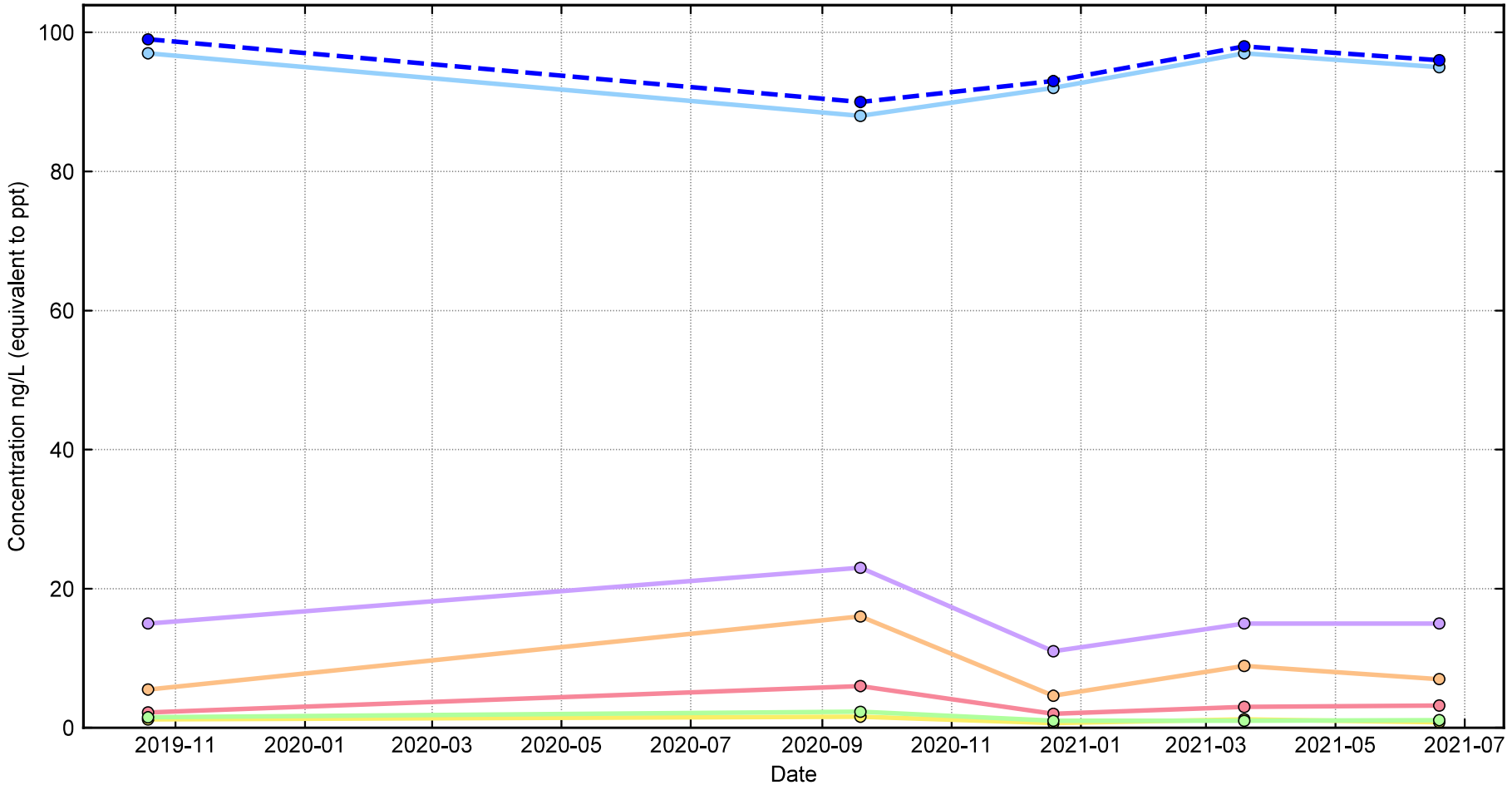
FIG. D.10



Perfluorohexanesulfonic Acid (PFHxS)
Perfluorohexanoic Acid (PFHxA)
Perfluouroheptanoic Acid (PFHpA)
Perfluourobutanesulfonic (PFBS)
Perfluourooctanesulfonic Acid (PFOS)
Perfluorooctanoic Acid (PFOA)
LHA Combined (PFOS + PFOA)

Gustavus Airport Water Supply Well
Summary Report
Gustavus, Alaska

QUARTERLY LINE GRAPH
MW-9-30

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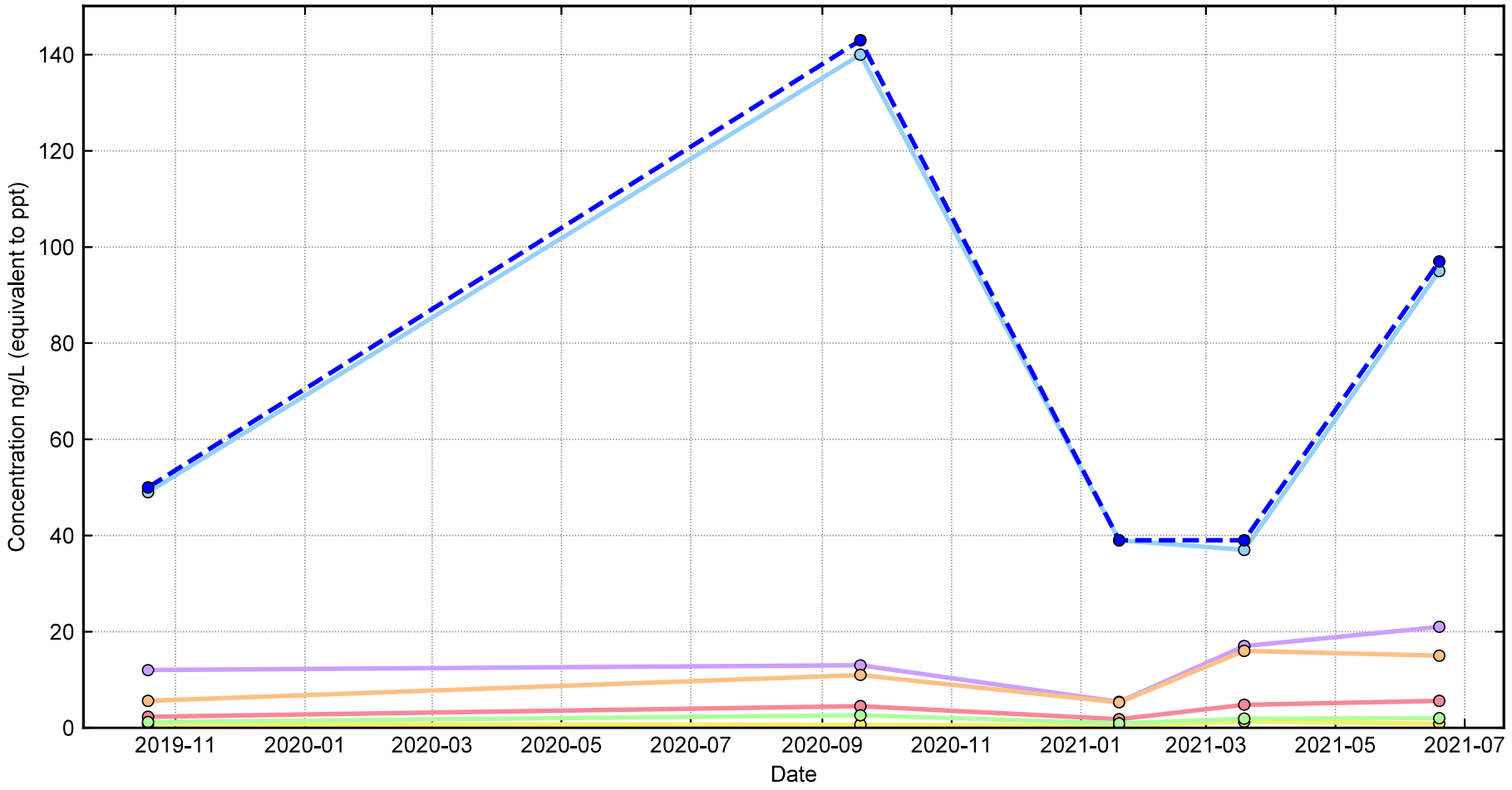
FIG. D.11



Perfluorohexanesulfonic Acid (PFHxS)
Perfluorohexanoic Acid (PFHxA)
Perfluouroheptanoic Acid (PFHpA)
Perfluourobutanesulfonic (PFBS)
Perfluourooctanesulfonic Acid (PFOS)
Perfluorooctanoic Acid (PFOA)
LHA Combined (PFOS + PFOA)

Gustavus Airport Water Supply Well
Summary Report
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QUARTERLY LINE GRAPH
MW-10-20

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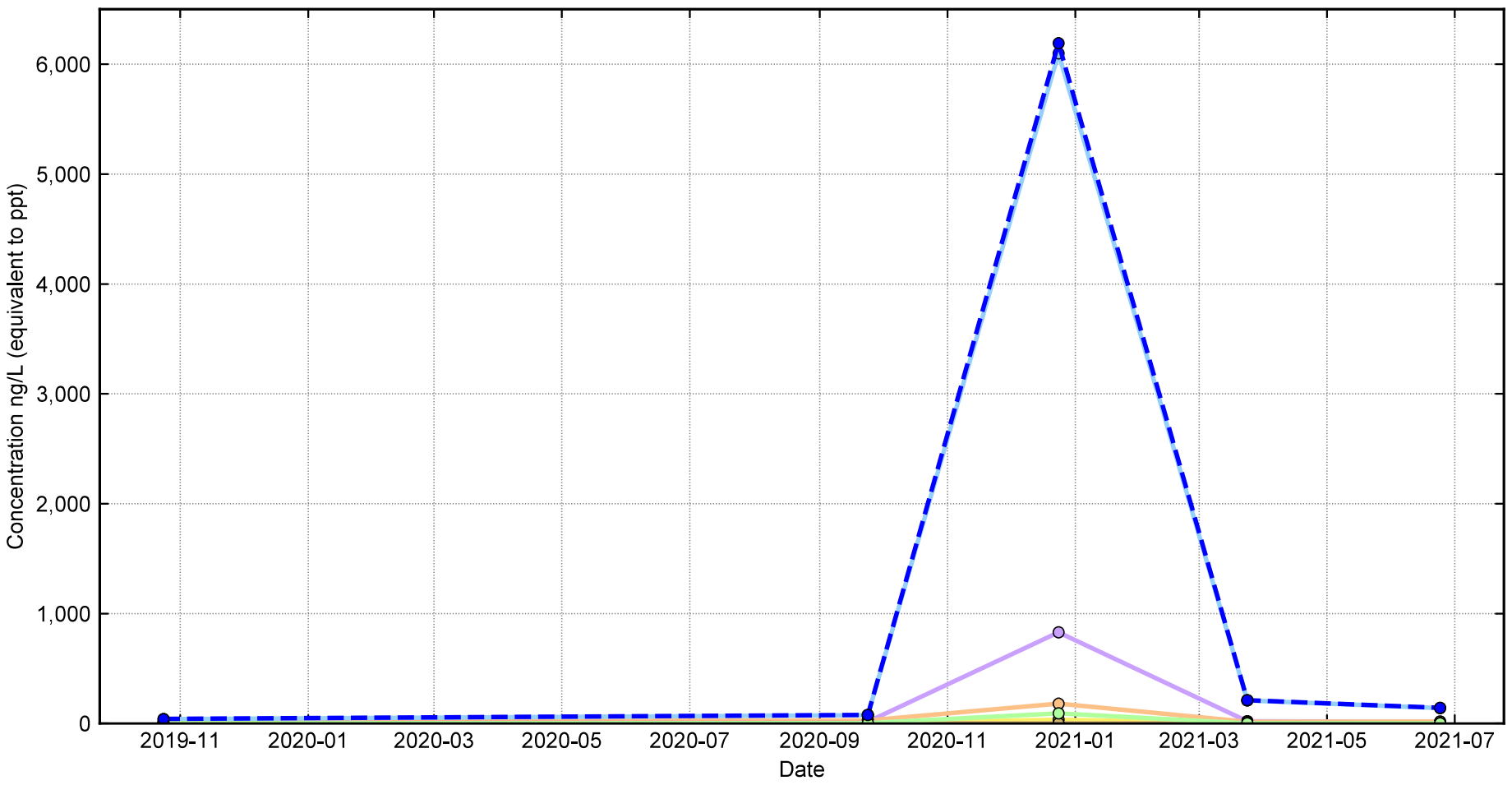
FIG. D.12



Perfluorohexanesulfonic Acid (PFHxS)
Perfluorononanoic (PFNA)
Perfluorohexanoic Acid (PFHxA)
Perfluorooctanesulfonic Acid (PFOS)
Perfluoroheptanoic Acid (PFHpA)
Perfluorooctanoic Acid (PFOA)
Perfluorobutanesulfonic (PFBS)
LHA Combined (PFOS + PFOA)

FIG. 1

Gustavus Airport Water Supply Well
Summary Report
Gustavus, Alaska

QUARTERLY LINE GRAPH
MW-11-15

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FIG. D.13

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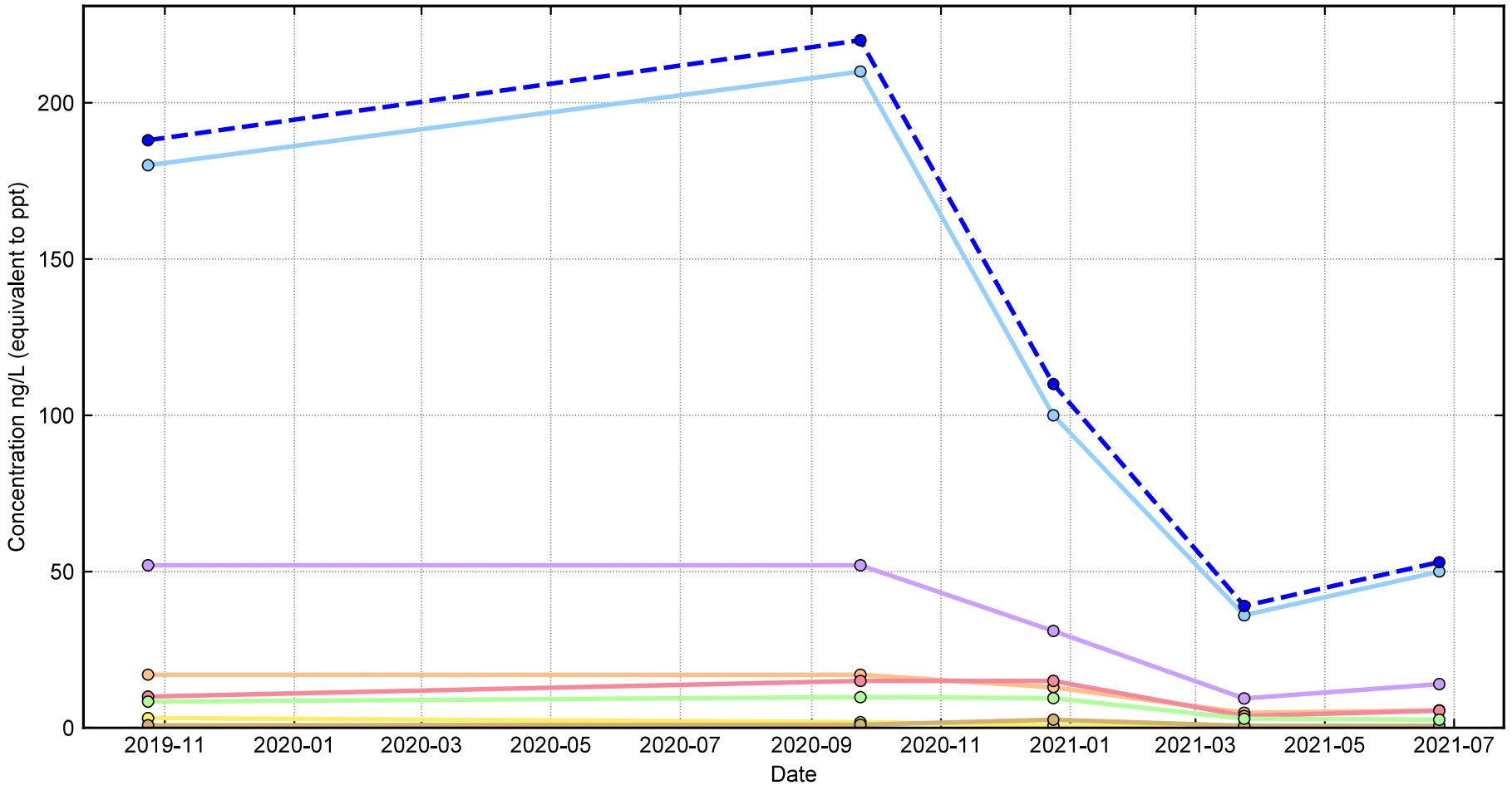

- Perfluorohexanesulfonic Acid (PFHxS)
- Perfluorohexanoic Acid (PFHxA)
- Perfluouroheptanoic Acid (PFHpA)
- Perfluourobutanesulfonic (PFBS)
- Perfluoroononanonic (PFNA)
- Perfluourooctanesulfonic Acid (PFOS)
- Perfluorooctanoic Acid (PFOA)
- LHA Combined (PFOS + PFOA)

FIG. 1

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Gustavus Airport Water Supply Well
Summary Report
Gustavus, Alaska

QUARTERLY LINE GRAPH
MW-12-10

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FIG. D.14

IMPORTANT INFORMATION

Important Information

About Your Geotechnical/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

IMPORTANT INFORMATION

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.

IMPORTANT INFORMATION

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