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FINAL

SUMMARY REPORT

June 2020 through June 2021 Water Supply Well Monitoring

ILIAMNA, ALASKA

SHANNON & WILSON

May 2022

Shannon & Wilson No: 105201-004

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Submitted To: Alaska Department of Transportation & Public Facilities
PO Box 112506
Juneau, AK 99811-2506
Attn: Samantha Cummings and Marcus Zimmerman

Subject: FINAL SUMMARY REPORT, JUNE 2020 THROUGH JUNE 2021
WATER SUPPLY WELL MONITORING, ILIAMNA, ALASKA

Shannon & Wilson prepared this report to summarize the water supply well efforts performed between June 2020 through June 2021 at the Iliamna Airport (ILI) in Iliamna Alaska. The services were conducted on behalf of the Alaska Department of Transportation & Public Facilities (DOT&PF). Shannon & Wilson's scope of services was specified in proposals dated May 20, 2019 and November 9, 2019 and authorized on May 31, 2019 and December 5, 2019, respectively, by DOT&PF under Professional Services Agreement Number 25-19-1-013 Per- and Polyfluoroalkyl Substance (PFAS) Related Environmental & Engineering Services. This report was prepared for the DOT&PF in accordance with the terms and conditions of Shannon & Wilson's contract, relevant Alaska Department of Environmental Conservation guidance documents, and Title 18 of the Alaska Administrative Code (AAC) Chapter 75.335.

Shannon & Wilson appreciates the opportunity to be of service to the DOT&PF on this project. If there are questions concerning this report, please contact us.

Sincerely,

SHANNON & WILSON, INC.

For Justin Risley

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Role: Primary Author

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Role: Project Manager

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ACRONYMS

AAC	Alaska Administrative Code
AFFF	aqueous film forming foam
ARFF	aircraft rescue and firefighting
bgs	below ground surface
°C	degrees Celsius
CFR	Code of Federal Regulations
COC	chain-of-custody
CSP	Contaminated Sites Program
DEC	Alaska Department of Environmental Conservation
DHSS	Alaska Department of Health & Social Services
DONA	4,8-dioxa-3H-perfluorononanoic acid
DOT&PF	Alaska Department of Transportation & Public Facilities
DVPP	Data Validation Program Plan
EPA	U.S. Environmental Protection Agency
GWP	General Work Plan
HFPO-DA	hexafluoropropylene oxide dimer acid
ILI	Iliamna Airport
LDRC	Laboratory Data Review Checklist
LHA	Lifetime Health Advisory
ng/L	nanograms per liter
µS/cm	microsiemens per centimeter
N-EtFOSAA	N-ethyl perfluorooctane sulfonamidoacetic acid
N-MeFOSAA	N-methyl perfluorooctane sulfonamidoacetic acid
PFAS	per- and polyfluoroalkyl substances
PFBS	perfluorobutanesulfonic acid
PFDA	perfluorodecanoic acid
PFDoA	perfluorododecanoic acid
PFHpA	perfluoroheptanoic acid
PFHxA	perfluorohexanoic acid
PFHxS	perfluorohexanesulfonic acid
PFNA	perfluorononanoic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
PFTeA	perfluorotetradecanoic acid
PFTrDA	perfluorotridecanoic acid
PFUnA	perfluoroundecanoic acid
ppt	parts per trillion
PSDI	PFAS Site Discovery Investigation
QA	quality assurance
QC	quality control
WO	work order
YSI	multiprobe water quality meter
11Cl-PF3OUdS	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid
9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid

1 INTRODUCTION

Shannon & Wilson has prepared this summary report to document water supply well efforts at and near the Iliamna Airport (ILI) in Iliamna, Alaska. This work was conducted for the Alaska Department of Transportation and Public Facilities (DOT&PF). This report describes the initial sampling event conducted by the Alaska Department of Environmental Conservation (DEC) in June of 2020 and addresses activities conducted by Shannon & Wilson in November 2020 and June 2021. The DEC Contaminated Sites Program (CSP) database lists the status of the ILI PFAS project as "informational" due to the presence of low-level per- and polyfluoroalkyl substances (PFAS) concentrations in water supply well samples (DEC File Number 2560.38.013, Hazard ID 27265).

1.1 Purpose and Objective

The purpose of the services described in this report was to evaluate the potential for human exposure to PFAS-containing water in water supply wells. Shannon & Wilson's objectives were to identify properties with water supply wells potentially affected by PFAS contamination at and near the ILI, collect analytical groundwater samples for the analysis of PFAS from potentially affected water supply wells, and establish and implement annual monitoring criteria. Section 1.5 outlines the scope of services implemented to achieve these objectives.

1.2 Site Location

The ILI is located at 1 Airport Road in Iliamna, Alaska. The City of Iliamna is located on the northwest shore of Lake Iliamna. Iliamna is a part of the Lake and Peninsula Borough, which occupies most of the Alaska Peninsula. Iliamna lies approximately 200 miles southwest of Anchorage (Figure 1). Figure 1 also shows the ILI well search extent and identifies known aircraft rescue and firefighting (ARFF) sites associated with aqueous film forming foam (AFFF) releases. The geographic coordinates of the ILI apron are latitude 59.7559° N, longitude -154.9075° W.

1.3 Geology and Hydrology

Iliamna is located on a lake terrace north of Lake Iliamna. Two dominant surficial deposits have been mapped in the Iliamna area, including lake terrace and beach ridge deposits. Volcanic ash and beach sediment are also present within the lake terrace.

Unconfined groundwater in the Iliamna area has been found to range in depth from about 18 feet below ground surface (bgs) to greater than 50 feet bgs.

2 BACKGROUND

This section discusses the previous activities at the ILI.

2.1 Site History

The ILI is a former Title 14, Code of Federal Regulations (CFR), Part 139 airport, which requires specific certification through the Federal Aviation Administration. This certification requires, among other things, ARFF to ensure safety in air transportation. As part of this certification, Part 139 airports are required to conduct annual training for emergency response situations using AFFF and demonstrate compliance with federal regulations. Prior to 2019 these annual training events occurred on the ground surface.

2.2 AFFF Use at the Iliamna Airport

PFAS-containing AFFF has been known to be stored and used for emergency and training purposes at various locations on the ILI property, see Figure 1. There are no longer ARFF vehicles or AFFF at the ILI.

2.3 PFAS Regulatory History

AFFF contains PFAS, a category of persistent organic compounds considered emerging contaminants. Perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) are two PFAS commonly found at sites where AFFF has been used. Due to their persistence, toxicity, and bioaccumulative potential, these compounds are of increasing concern to environmental and health agencies. The U.S. Environmental Protection Agency (EPA) published a Lifetime Health Advisory (LHA) level for PFOS and PFOA in drinking water in May 2016 of 70 parts per trillion (ppt; equivalent to nanograms per liter [ng/L]) for the sum of PFOS and PFOA. The DEC CSP published groundwater-cleanup levels for PFOS and PFOA in November 2016 of 400 ng/L for each compound individually. Prior to the publication of these levels, there were no state-level cleanup levels established for PFAS.

On August 20, 2018, the DEC CSP published a Technical Memorandum outlining a new action level for the sum of five PFAS (PFOA, PFOS, perfluorohexanesulfonic acid [PFHxS], perfluoroheptanoic acid [PFHpA], and perfluorononanoic acid [PFNA]) in drinking water. The action levels proposed in the August 2018 Technical Memorandum were submitted as proposed regulation. PFAS projects for the State of Alaska adopted the proposed regulatory

action level from August 2018 to March 2019, per DEC direction. On April 9, 2019, DEC issued an amendment to its August 20, 2018 Technical Memorandum to align DEC's action level with the EPA LHA of 70 ng/L for the sum of PFOS and PFOA. On October 2, 2019, DEC published a Technical Memorandum amending the April 9, 2019 Technical Memorandum and adding an additional testing requirement to analyze for and report all analytes for the appropriate PFAS analytical method, although the action level remains 70 ng/L for the sum of PFOS and PFOA.

2.4 PFAS Discovery at the Iliamna Airport

In late 2018, as part of a Cooperative Agreement with the EPA, the DEC's CSP conducted a limited PFAS Site Discovery Investigation (PSDI). This included identifying potentially PFAS impacted communities in Alaska, conducting a risk analysis of identified communities, collecting water supply well samples for the analysis of PFAS, and reporting those results. The ILI was identified as a potentially PFAS affected site and DEC sampled nine water supply wells at and near the ILI in June 2020 (Exhibit 1-1, below). None of the water supply wells sampled had PFAS concentrations exceeding the DEC Action Level, however, levels were within monitoring range. Shannon & Wilson reviewed the analytical data provided by DEC and performed an internal quality assurance/quality control (QA/QC) assessment and completed a DEC Laboratory Data Review Checklist (LDRC). The Eurofins TestAmerica work order (WO) 320-62008-1 and the associated LDRC are included in Appendix A. Table 1 summarizes the PFAS analytical results from DEC's PDSI efforts at the ILI.

Exhibit 2-1: DEC Sampling Summary

DEC Sample Name	Address/Location Description	Exceeds DEC Action Level[1]
IL-001-DW	Iliamna Air Taxi	No
IL-002-DW	Pike Lake Cabin	No
IL-003-DW	IDC Store	No
IL-004-DW	DOT&PF	No
IL-005-DW	DOT&PF – duplicate sample	No
IL-006-DW	Ace/Everts Air Cargo	No
IL-007-DW	East Wind Lake #1	No
IL-008-DW	East Wind Lake #2	No
IL-009-DW	Old Pebble Partnership	No
IL-010-DW	East Wind Lake #3	No
IL-011-DW	East Wind Lake #3 - duplicate	No

Notes:

1 DEC PFAS action level for the sum of two PFAS (70 ng/L, PFOS + PFOA).

DEC = Alaska Department of Environmental Conservation, DOT&PF = Alaska Department of Transportation & Public Facilities

2.5 Contaminants of Concern and Action Levels

The primary contaminants of concern are PFOS and PFOA. As previously mentioned in Section 1.2, the October 2, 2019 DEC Technical Memorandum requires reporting for all PFAS analytes listed in a given analytical method. For the purposes of this project, samples were submitted for analytical method EPA Method 537.1 which includes the following list of 18 PFAS.

- PFOS
- PFOA
- PFHpA
- PFNA
- PFHxS
- perfluorobutanesulfonic acid (PFBS)
- perfluorodecanoic acid (PFDA)
- perfluorododecanoic acid (PFDoA)
- perfluorohexanoic acid (PFHxA)
- perfluorotetradecanoic acid (PFTeA)
- perfluorotridecanoic acid (PFTrDA)
- perfluoroundecanoic acid (PFUnA)
- hexafluoropropylene oxide dimer acid (HFPO-DA)
- N-ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)
- N-methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)
- 11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)
- 9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)
- 4,8-dioxa-3H-perfluorononanoic acid (DONA)

Of these contaminants of concern, only PFOS and PFOA are regulated with numeric action levels or cleanup levels, as summarized in Exhibit 2-2 below.

Exhibit 2-2: Applicable Regulatory Action Levels

Media	Analyte	Action Level
Drinking Water[1]	PFOS + PFOA	70 ng/L
Groundwater[2]	PFOS	400 ng/L
	PFOA	400 ng/L
Soil[3]	PFOS	3.0 µg/kg
	PFOA	1.7 µg/kg

Notes:

1 Drinking water action level reported in DEC October 2019 Technical Memorandum

2 DEC groundwater cleanup level reported in 18 AAC 75.345, Table C.

3 DEC migration to groundwater soil cleanup levels reported in 18 AAC 75.341, Table B1.

AAC = Alaska Administrative Code, DEC = Alaska Department of Environmental Conservation, PFOA = perfluorooctanoic acid, PFOS = perfluorooctanesulfonic acid; µg/kg = micrograms per kilogram, ng/L = nanograms per liter

2.6 Scope of Services

Shannon & Wilson's scope of services summarized in this report includes the following:

- Conducting a water supply well search at and near the ILI to identify potentially PFAS impacted properties (Section 2.1);
- Completing water supply well surveys for each identified property within the search area to determine the presence or absence of a well, in addition to categorizing wells based on water usage as defined by the well owner/user, where practicable (Section 2.2);
- Conducting initial water supply well sampling for PFAS for the wells identified in the search area (Section 2.3). Sample custody, storage, and transport is described in Section 2.4;
- Notifying the project team (DOT&PF, DEC, and the Alaska Department of Health & Social Services [DHSS], as applicable) and the well owner/user of the analytical results of the PFAS sampling event/s (Section 2.6).
- Establishing water supply well monitoring criteria (Section 2.7);
- Implementing PFAS monitoring for those water supply wells meeting the criteria (Section 2.8);
- Performing a QA/QC evaluation of the analytical data and field forms completed for this project; (Section 4); and
- Reporting the findings.

This report provides a summary of the scope of services described above and PFAS information provided to well owners/users at the time of sampling (Section 2.10). Planned and future work and recommendations are described in Sections 5 and 6, respectively.

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 activities Shannon & Wilson 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 our recommendations. This report should not be used for other purposes without Shannon & Wilson's review. If a service is not specifically indicated in this report, do not assume it was performed.

3 WATER SUPPLY WELL ACTIVITIES

This section summarizes water supply well activities performed by Shannon & Wilson as a part of this project from November 2020 through June 2021.

3.1 Water Supply Well Search

In November 2020, Shannon & Wilson staff began the initial water supply well search by gathering information about the ILI, including but not limited to groundwater flow direction, surface water flow direction, suspected source area locations, DEC's PSDI analytical results (Section 1.2 and Table 1), owner information, well depths, and other relevant information available for the site to identify potentially PFAS-impacted properties and water supply wells. Based on this information and in coordination with DOT&PF and DEC, a well search area was defined prior to the sampling event (Figure 1).

3.2 Water Supply Well Survey

In November 2020, Shannon & Wilson staff began the water supply well survey by contacting well owners/users of the properties identified in the search area, as practicable, to

determine the presence or absence of a water supply well on the property and obtain pertinent water supply well information. This was accomplished over the telephone, via email, and during the initial sampling event (Section 2.3) through door-to-door visits using Private Well Inventory Survey Forms. Copies of the completed Private Well Inventory Survey Forms are included in Appendix B.

During the door-to-door effort an attempt was made to contact the owner or occupant of each identified property in the search area. If occupants were not present at the time the property was visited, personalized door tags were left in a location where it would be noticed.

During the water supply well survey effort, 16 wells were identified as described in Exhibit 3-1 below.

Exhibit 3-1: Water Supply Wells Identified in the Well Search Area

Sample ID Number[1]	DEC Sample ID[2]	Address/Location Description	Water Supply Well Category
ILI-001	—	Iliamna Air Taxi	1
ILI-003	—	IDC Store	1
ILI-004	—	DOT&PF	1
ILI-006	—	Ace/Everts Air Cargo	1
ILI-007	—	East Wind Lake #1	1
ILI-008	—	East Wind Lake #2	1
ILI-009	—	Abandoned Hotel – End of Iliamna Village Road	5
ILI-012	—	DOT&PF Shop	1
ILI-013	—	IDC and Weather Service	1
ILI-014	—	Portage Road	1
ILI-015	—	Pebble Partnership	1
ILI-016	—	Don Henry	1
ILI-017	—	Corner of Partage & Iliamna Village Road	1
ILI-023	—	Lot 12A Pike Lake Road	1
ILI-030	—	East Wind Lake #3	1
ILI-031	—	304 E Wind Lake Road	1

Notes:

1 Parcel ID numbers were assigned by Shannon & Wilson staff during the water supply well search.

2 DEC sample IDs could not be corroborated in the field and are therefore not included here.

DEC = Alaska Department of Environmental Conservation, DOT&PF = Alaska Department of Transportation & Public Facilities

3.2.1 Water Supply Well Categorization

Water supply wells were categorized to assess exposure risk by use as follows based on information provided by the water supply well owner/user.

- Category 1: water supply wells used for drinking or cooking, as reported by owners or occupants.
- Category 2: water supply wells used for dish washing, bathing, and other domestic purposes. Homes or businesses where the occupants report they do not drink the water, but where the water supply wells lead to kitchen or bathroom faucets, are considered possible future drinking water wells.
- Category 3: water supply wells used for vegetable gardening and are not plumbed to indoor faucets or spigots. The well water is not accessed by outdoor plumbing, but the well may be located underneath or inside the structure. These wells are considered nondrinking water wells.
- Category 4: water supply wells used for outdoor purposes only, such as irrigation or vehicle washing. These wells are considered non-drinking water wells.
- Category 5: water supply wells currently not in use. Wells that have been abandoned in place, are inoperable, disconnected, or intended for future use, are considered nondrinking water wells.

Water supply wells are categorized in this manner to facilitate sorting of wells by use and provide level of priority. Wells in Categories 1 and 2 are given a higher priority with respect to alternative water and additional monitoring.

3.3 Initial Water Supply Well Sampling

In November 2020, Shannon & Wilson staff sampled 11 water supply wells identified during the well search and survey (Exhibit 3-2, below).

The following Shannon & Wilson personnel collected analytical water samples for this project. These individuals are State of Alaska Qualified Samplers per 18 Alaska Administrative Code (AAC) 75.333[b] and 18 AAC 78.088[b].

- Rachel Willis, Environmental Scientist (November 2020)
- Sheila Hinckley, Senior Environmental Scientist (November 2020)
- Amber Masters, Biologist (June 2021)

Exhibit 3-2: Water Supply Wells Sampled in the Well Search Area

Sample ID Number[1]	Address/Location Description
ILI-001	Iliamna Air Taxi
ILI-003	IDC Store
ILI-004	DOT&PF
ILI-006	Ace/Everts Air Cargo
ILI-008	East Wind Lake #2
ILI-009	Abandoned Hotel – End of Iliamna Village Road
ILI-012	DOT&PF Shop
ILI-013	IDC and Weather Service
ILI-023	Lot 12A Pike Lake Road
ILI-030	East Wind Lake #3
ILI-031	304 E Wind Lake Road

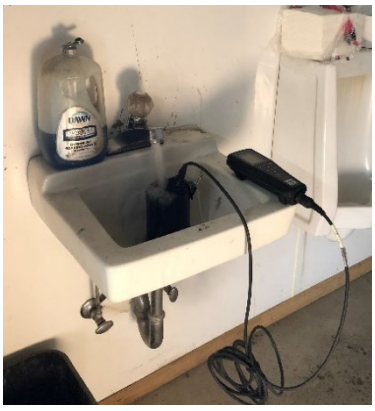
Notes:

1 Parcel ID numbers were assigned by Shannon & Wilson staff during the water supply well search.

2 DEC sample IDs could not be corroborated in the field.

DEC = Alaska Department of Environmental Conservation, DOT&PF = Alaska Department of Transportation & Public Facilities

Water supply well systems were purged prior to sampling by allowing the water to run until water parameters stabilized and the water appeared clear. Shannon & Wilson field staff measured these parameters using a multiprobe water quality meter (YSI) and recorded pH, temperature, and conductivity approximately once every three to five minutes until sample collection. The following values were used to indicate stability for a minimum of three consecutive readings: ±0.1 pH, ±0.5 degrees Celsius (°C) temperature, and ±3 percent conductivity (microsiemens per centimeter [µS/cm]). Shannon & Wilson field staff discharged purge water to indoor sinks or to the ground surface depending on the water supply well's location. In most cases, indoor plumbing led to a private septic system.



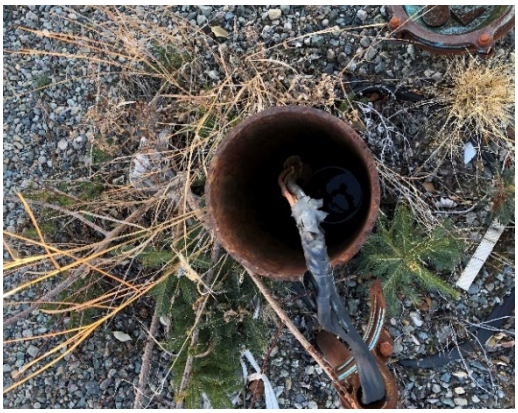


Exhibit 3-3: Photographs of Water Supply Well Sample Locations in Iliamna, Alaska.

Following parameter stabilization, field staff collected water samples for the analysis of 18 PFAS analytes by EPA Method 537.1 using laboratory-supplied containers. Copies of the Residential Well Sampling Logs are included in Appendix B.

3.4 Sample Custody, Storage, and Transport

Samples were preserved upon collection using Trizma. Immediately after collection, the sample bottles for each water supply well were placed in Ziploc bags and stored in a designated sample cooler maintained between 0 °C and 6 °C with ice substitute. The ice was separated from the sample bottles by a liner bag. Shannon & Wilson maintained custody of the samples until submitting them to the laboratory for analysis. Analytical samples and chain-of-custody (COC) forms were packaged for shipping in a hard-plastic cooler with an adequate quantity of frozen-ice substitute and packing material to prevent bottle breakage. Shannon & Wilson field staff applied custody seals to the cooler, which were observed to be intact upon receipt by the laboratory. Field staff shipped sample coolers to Eurofins TestAmerica in West Sacramento, California for analysis of 18 PFAS analytes by EPA Method 537.1.

3.5 Special Considerations for PFAS Sampling

Shannon & Wilson field staff took appropriate precautions to prevent cross contamination during sampling, including 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.

3.6 Notification of Results

Following validation of the analytical data, Shannon & Wilson prepared analytical data tables for the project team (DOT&PF, DEC, and DHSS) and then called property owners and occupants to notify them of the results of the PFAS water testing.

Shannon & Wilson also prepared letters for owners and occupants informing them of the results for the sample collected from their well. These letters were tailored to each property and analytical sample, and included the following information:

- sample name;
- comparison of analytical results to DEC's or EPA's current action levels;
- description of the project; and

- pages of the Eurofins TestAmerica laboratory report that apply to the owner or occupant's water supply well sample, including other PFAS results.

Where requested, Shannon & Wilson emailed results letters to owners and/or occupants.

A copy of the letter template used to report results to well owners/users is included in Appendix C.

3.7 Water Supply Well Monitoring Criteria

Through coordination with the DOT&PF and DEC and DEC's PFAS guidance and technical memorandums, Shannon & Wilson established the following annual water supply well monitoring criteria for the ILI following the November 2020 sampling event. Per DEC direction, these criteria were established to monitor changes in PFAS concentrations over time near affected properties and contaminant movement towards potentially affected properties.

- Active category 1 and 2 water supplies wells with a maximum combined PFOS and PFOA concentration greater than or equal to 17.5 ng/L during a previous sampling event, per DEC guidance; and
- Active category 1 and 2 water supplies wells within 500 lateral feet of water supply wells with a combined PFOS and PFOA concentration greater than or equal to 17.5 ng/L during a previous sampling event.

Lateral distance was measured from the GPS points collected during the initial round of sampling.

Exhibit 3-4 outlines the three water supply wells meeting annual monitoring criteria.

Exhibit 3-4: Water Supply Wells Meeting Annual Monitoring Criteria

Sample ID Number[1]	Address/Location Description	Water Supply Well Category
ILI-001	Iliamna Air Taxi	1
ILI-006	Ace/Everts Air Cargo	1
ILI-013	IDC and Weather Service	1

Notes:

1 Parcel ID numbers were assigned by Shannon & Wilson staff during the water supply well search.

This is the current annual monitoring criteria in place for the ILI.

3.8 Annual Monitoring

The first annual sampling event for the ILI occurred in June 2021. Shannon & Wilson employee, Amber Masters, collected water supply wells samples from each well meeting the annual criteria (Exhibit 3-4). These samples were collected using the methods described in Section 3.3. Sample custody, storage, and transport was conducted as outlined in Section 3.4. Shannon & Wilson field staff followed the special considerations for PFAS sampling included in Section 3.5. Shannon & Wilson field staff collected water samples for the analysis of 18 PFAS analytes reported by EPA Method 537.1 (PFOS, PFOA, PFHpA, PFNA, PFHxS, PFBS, PFDA, PFDoA, PFHxA, PFTeA, PFTrDA, PFUnA, HFPO-DA, N-EtFOSAA, N-MeFOSAA, 11CL-PF3OUdS, 9CL-PF3ONS and DONA), using laboratory-supplied containers.

Copies of the Water Supply Well Sampling Logs are included in Appendix B. Following validation of the analytical data, Shannon & Wilson made notification of results as described in Section 3.6.

3.9 Alternative Water Sources

Interim alternate water is not provided for this site. No water supply well results have exceeded the LHA.

3.10 Public Information

The DOT&PF hosts a webpage (http://dot.alaska.gov/airportwater) describing the PFAS water-testing project. The webpage includes a project summary, list of contacts, simplified regional results map, and links to additional resources. The map is updated after each sampling event following the receipt of analytical data. Appendix C includes results notification letter templates and other information provided during the initial sampling event in November 2020 and annual event in June 2021.

3.11 Deviations

In general, Shannon & Wilson conducted the work in accordance with the sampling procedures noted above, and based on ongoing discussion with DEC and DOT&PF. There are no deviations from the procedures described in this report, unless otherwise noted.

4 ANALYTICAL RESULTS

Table 2 and 3 summarize the PFAS concentrations for samples collected from water supply wells during the November 2020 and June 2021 sampling events. Samples were submitted for analysis by EPA Method 537.1. None of the samples exceeded the EPA LHA for the sum of PFOS and PFOA (70 ng/L).

The Eurofins TestAmerica WOs are included in chronological order followed by their LDRC in Appendix A. The highest reported water supply well PFAS analytical results to date are shown on Figure 1.

5 QUALITY ASSURANCE AND QUALITY CONTROL

QA/QC procedures assist in producing data of acceptable quality and reliability. Shannon & Wilson reviewed the analytical results provided by Eurofins TestAmerica for laboratory QC samples and conducted our own QA assessment for this project in accordance with the DEC approved Data-Validation Program Plan (DVPP) included as a part of our DOT&PF Statewide General Work Plan (GWP). Shannon & Wilson completed LDRCs for the PFAS WOs. These LDRCs are included in Appendix A after the corresponding analytical report.

By working in accordance with the proposed scope of services, Shannon & Wilson considers the samples collected to be representative of site conditions at the locations and times they were obtained. The quality of the analytical data for this project does not appear to have been compromised, and those results affected by QC anomalies were qualified with appropriate flags. See Appendix D for our QA/QC summary of the analytical data.

6 PLANNED AND FUTURE WORK

A proposal was submitted to and approved by DOT&PF for an annual event to be completed in June of 2022. This schedule is subject to change following guidance by the U.S. Centers for Disease Control and Prevention, DHSS, and City of Iliamna regarding the COVID-19 outbreak.

7 RECOMMENDATIONS

Based on the previously completed work, Shannon & Wilson recommends the DOT&PF continue to:

- attempt to identify wells at properties where well status is unknown, as appropriate (we note that we are currently unaware of properties meeting this criterion);
- attempt to sample wells meeting the annual sampling criteria; and
- work with the DEC and the DHSS to continue educating the public regarding the potential health effects of exposure to PFAS-containing water, as new information becomes available.

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 Environmental Report* has been prepared and included as an Appendix to assist you and others in understanding the use and limitations of this report.

8 REFERENCES

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Table 1 - June 2020 DEC Water Supply Well Analytical Results

Analyte	Units	IL-001-DW Iliamna Air Taxi	IL-002-DW Pike Lake Cabin	IL-003-DW IDC Store	IL-004-DW DOT&PF	IL-005-DW DOT&PF (duplicate)	IL-006-DW Ace/Everts Air Cargo	IL-007-DW East Wind Lake #1	IL-008-DW East Wind Lake #2	IL-009-DW Old Pebble Partnership	IL-010-DW East Wind Lake #3	IL-011-DW East Wind Lake #3 (duplicate)
Perfluorohexanesulfonic acid (PFHxS)	ppt	12	<1.8	<1.8	21	20	17	<1.9	0.86 J	92 J*	0.45 J	0.48 J
Perfluorohexanoic acid (PFHxA)	ppt	2.1	<1.8	<1.8	3.3	3.5	4.9	<1.9	<1.8	4.7 J*	<1.7	<1.8
Perfluoroheptanoic acid (PFHpA)	ppt	<1.8	<1.8	<1.8	<1.8	0.50 J	0.60 J	<1.9	<1.8	0.88 J*	<1.7	<1.8
Perfluorononanoic acid (PFNA)	ppt	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.9 J*	<1.7	<1.8
Perfluorobutanesulfonic acid (PFBS)	ppt	3.9	<1.8	<1.8	5.5	5.4	5.9	<1.9	<1.8	17 J*	<1.7	<1.8
Perfluorodecanoic acid (PFDA)	ppt	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.9 J*	<1.7	<1.8
Perfluoroundecanoic acid (PFUnA)	ppt	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.9 J*	<1.7	<1.8
Perfluorododecanoic acid (PFDoA)	ppt	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.9 J*	<1.7	<1.8
Perfluorotridecanoic acid (PFTrDA)	ppt	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.9 J*	<1.7	<1.8
Perfluorotetradecanoic acid (PFTeA)	ppt	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.9 J*	<1.7	<1.8
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	ppt	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.9 J*	<1.7	<1.8
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	ppt	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.9 J*	<1.7	<1.8
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)[1]	ppt	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.9 J*	<1.7	<1.8
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)[2]	ppt	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.9 J*	<1.7	<1.8
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	ppt	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.9 J*	<1.7	<1.8
Hexafluoropropylene oxide dimer acid (HFPO-DA)[3]	ppt	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.9 J*	<1.7	<1.8
Perfluorooctanesulfonic acid (PFOS)	ppt	6.7	<1.8	<1.8	20	20	13	0.48 J	<1.8	42 J*	0.45 J	0.50 J
Perfluorooctanoic acid (PFOA)	ppt	<1.8	<1.8	<1.8	0.81 J	0.66 J	0.66 J	<1.9	<1.8	1.8 J*	<1.7	<1.8
LHA Combined (PFOS + PFOA)	ppt	6.7 ‡	N/A	N/A	21 J	21 J	14 J	0.48 J‡	N/A	44 J*	0.45 J‡	0.50 J‡

NOTES:
Samples from June 2020 were collected by DEC Contaminated Sites Program.
Sample *II-005-DW* is a field duplicate of sample *II-004-DW*.
Sample *II-011-DW* is a field duplicate of sample *II-010-DW*.
The reported units, ppt, are equivalent to nanograms per liter.
At the time of the sampling event, the DEC action limit was the sum of EPA LHA level is 70 ppt for PFOS and PFOA
EPA LHA level is 70 ppt for PFOS and PFOA is included for reference.

1 Referred to as F-53B Major in the laboratory analytical report
2 Referred to as F-53B Minor in the laboratory analytical report
3 Referred to as HFPO-DA (GenX) in the laboratory analytical report
‡ Minimum concentration, the LHA combined concentration includes one or more result that is not detected greater than the MDL.
< Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.
J Estimated concentration, detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.
J* Estimated concentration due to quality control failures. 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.
DEC = Alaska Department of Environmental Conservation; DOT&PF = Alaska Department of Transportation & Public Facilities; EPA = Environmental Protection Agency; LHA = Lifetime Health Advisory; ppt = parts per trillion

Table 2 - November 2020 Initial Water Supply Well Analytical Results

		Sample Name	ILI-001[a]	ILI-003[a]	ILI-004		ILI-006	ILI-008	ILI-009		ILI-012	ILI-013	ILI-023[a]	ILI-030	ILI-031
		Well Category	1	1	1		1	1	5		1	1	1	1	1
Analyte	EPA LHA	Units	11/4/2020	11/5/2020	11/4/2020	11/4/2020	11/4/2020	11/4/2020	11/4/2020	11/4/2020	11/4/2020	11/4/2020	11/5/2020	11/4/2020	11/4/2020
Perfluorohexanesulfonic acid (PFHxS)	-	ppt	21	<1.9	18	19	15	0.86 J	30	29	19	30	<1.9	<1.9	<1.9
Perfluorohexanoic acid (PFHxA)	-	ppt	3.9	<1.9	2.9	3.3	4.0	<1.9	1.4 J	1.4 J	3.1	4.5	<1.9	<1.9	<1.9
Perfluoroheptanoic acid (PFHpA)	-	ppt	0.67 J	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	0.57 J	<1.9	<1.9	<1.9
Perfluorononanoic acid (PFNA)	-	ppt	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
Perfluorobutanesulfonic acid (PFBS)	-	ppt	6.1	<1.9	4.8	4.7	5.2	<1.9	6.6	6.7	4.9	8.0	<1.9	<1.9	<1.9
Perfluorodecanoic acid (PFDA)	-	ppt	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
Perfluoroundecanoic acid (PFUnA)	-	ppt	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
Perfluorododecanoic acid (PFDoA)	-	ppt	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
Perfluorotridecanoic acid (PFTrDA)	-	ppt	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
Perfluorotetradecanoic acid (PFTeA)	-	ppt	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	-	ppt	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	-	ppt	<1.9	<1.9	<1.9	<1.9	<1.9	<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)	-	ppt	<1.9	<1.9	<1.9	<1.9	<1.9	<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)	-	ppt	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	-	ppt	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
Hexafluoropropylene oxide dimer acid (HFPO-DA)	-	ppt	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
Perfluorooctanesulfonic acid (PFOS)	70†	ppt	15	<1.9	16	16	10	<1.9	18	18	16	25	<1.9	<1.9	<1.9
Perfluorooctanoic acid (PFOA)		ppt	0.51 J	<1.9	0.69 J	0.74 J	0.60 J	<1.9	<1.9	<1.9	0.69 J	0.98 J	<1.9	<1.9	<1.9
LHA Combined (PFOS + PFOA)	70†	ppt	16 J	n/a	17 J	17 J	11 J	n/a	18 ‡	18 ‡	17 J	26 J	n/a	n/a	n/a

NOTES:
Sample III-904 and sample III-909 are field duplicate samples of III-004 and of III-009, respectively.
The reported units, ppt, are equivalent to nanograms per liter.
At the time of the sampling event, the DEC action limit was the sum of EPA LHA level is 70 ppt for PFOS and PFOA
EPA LHA level is 70 ppt for PFOS and PFOA is included for reference.
[a] Samples collected post-treatment.
‡ Minimum concentration, the LHA combined concentration includes one or more result that is not detected greater than the MDL.
< Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control (QC) failures.
J Estimated concentration, detected greater than the method detection limit (MDL) and less than the RL. Flag applied by the laboratory.
J* Estimated concentration due to quality control failures. 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.
DEC = Alaska Department of Environmental Conservation; DOT&PF = Alaska Department of Transportation & Public Facilities; EPA = Environmental Protection Agency; LHA = Lifetime Health Advisory; ppt = parts per trillion

Table 3 - June 2021 Annual Water Supply Well Analytical Results

		Sample ID	ILI-001		ILI-007	ILI-013
			ILI-001	ILI-901		
Analyte	EPA LHA	Units	6/1/2021		6/1/2021	6/2/2021
Perfluorohexanesulfonic acid (PFHxS)	-	ppt	20 J*	20 J*	0.62 J	27 J*
Perfluorohexanoic acid (PFHxA)	-	ppt	7.3 J*	6.9 J*	<1.9	4.6 J*
Perfluoroheptanoic acid (PFHpA)	-	ppt	0.92 J*	0.89 J*	<1.9	0.63 J*
Perfluorononanoic acid (PFNA)	-	ppt	<1.8 J*	<1.8 J*	0.38 J	<1.9 J*
Perfluorobutanesulfonic acid (PFBS)	-	ppt	5.4 J*	5.3 J*	<1.9	7.3 J*
Perfluorodecanoic acid (PFDA)	-	ppt	<1.8 J*	<1.8 J*	<1.9	<1.9 J*
Perfluoroundecanoic acid (PFUnA)	-	ppt	<1.8 J*	<1.8 J*	<1.9	<1.9 J*
Perfluorododecanoic acid (PFDoA)	-	ppt	<1.8 J*	<1.8 J*	<1.9	<1.9 J*
Perfluorotridecanoic acid (PFTrDA)	-	ppt	<1.8 J*	<1.8 J*	<1.9	<1.9 J*
Perfluorotetradecanoic acid (PFTeA)	-	ppt	<1.8 J*	<1.8 J*	<1.9	<1.9 J*
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	-	ppt	<4.6 J*	<4.6 J*	<4.8	<4.7 J*
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	-	ppt	<4.6 J*	<4.6 J*	<4.8	<4.7 J*
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	-	ppt	<1.8 J*	<1.8 J*	<1.9	<1.9 J*
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	-	ppt	<1.8 J*	<1.8 J*	<1.9	<1.9 J*
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	-	ppt	<1.8 J*	<1.8 J*	<1.9	<1.9 J*
Hexafluoropropylene oxide dimer acid (HFPO-DA)	-	ppt	<3.7 J*	<3.7 J*	<3.8	<3.7 J*
Perfluorooctanesulfonic acid (PFOS)	70†	ppt	17 J*	17 J*	<1.9	29 J*
Perfluorooctanoic acid (PFOA)		ppt	1.3 J*	1.2 J*	<1.9	1.3 J*
LHA Combined (PFOS + PFOA)	70†	ppt	18 J*	18 J*	n/a	30 J*

Notes:

Results reported from Eurofins/TestAmerica, Inc. work order 320-74692-1.

Sample *ILI-901* is a field-duplicate of sample *ILI-001* .

The reported units, ppt, are equivalent to nanograms per liter.

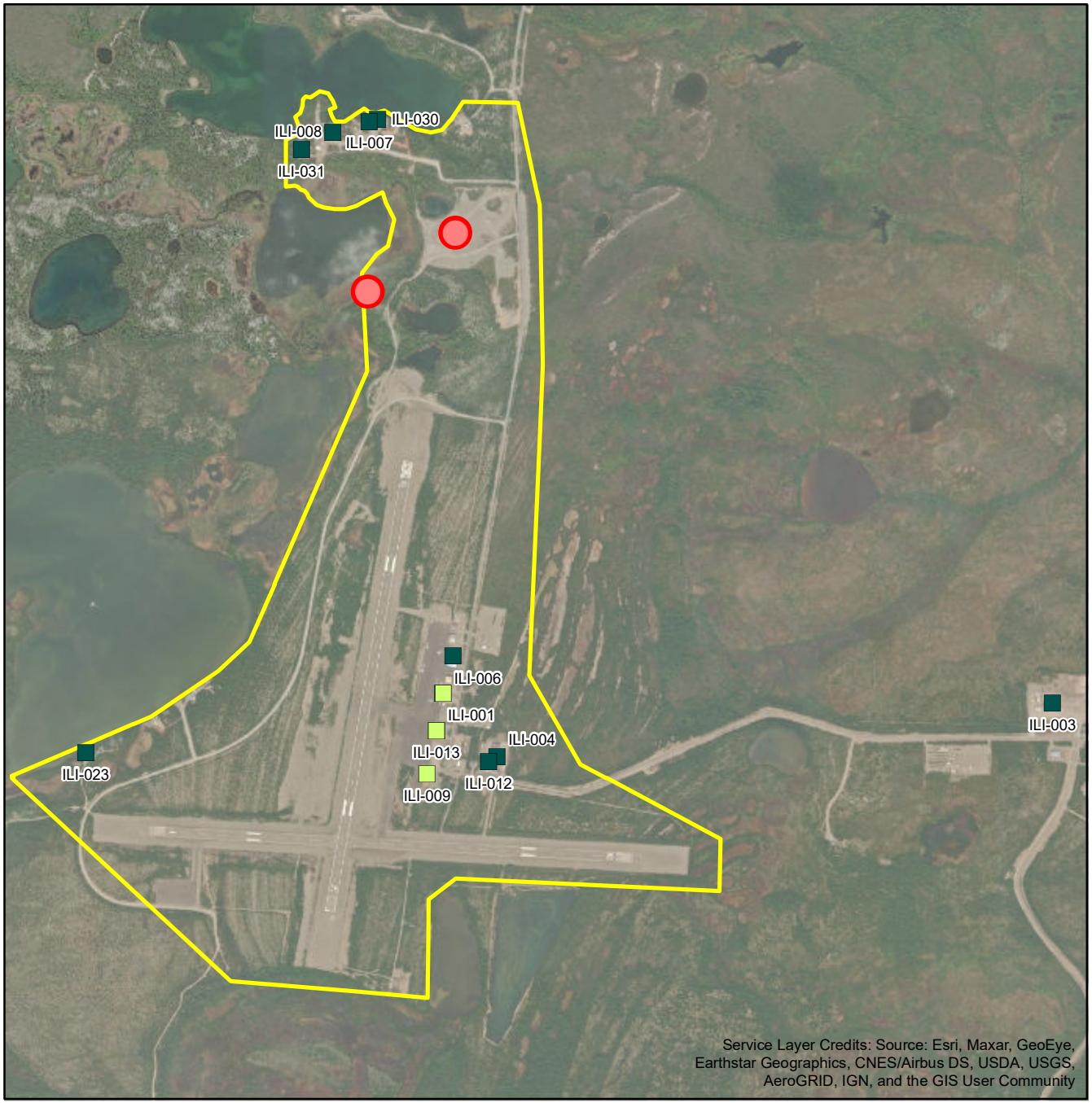
† EPA LHA level is 70 ppt for PFOS and PFOA

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

J Estimated concentration, detected greater than the 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.

EPA = Environmental Protection Agency; LHA = Lifetime Health Advisory; n/a = not applicable; ppt = parts per trillion



LEGEND

Sum of PFOS and PFOA:

- ≤ 17 parts per trillion (ppt)
- 18 to 69 ppt
- ≥ 70 ppt (over EPA advisory)
- Well Search Area
- Past Aqueous Film Forming Foam (AFFF) Use

N

0 0.25 0.5

Miles

Iliamna Airport
Iliamna, Alaska

UPDATED HIGHEST WATER SUPPLY WELL ANALYTICAL RESULTS JUNE 2021

May 2022 105201-004

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Figure 1

APPENDIX A: ANALYTICAL REPORTS AND ASSOCIATED LDRCS

Appendix A

Analytical Reports and Associated LDRCs

CONTENTS

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-62008-1
Laboratory Sample Delivery Group: Iliamna
Client Project/Site: PFAS, Alaska Drinking Water

For:
Alaska Department of Env. Conservation
Post Office Box 1542
Haines, Alaska 99827

Attn: Anne Marie Palmieri

M. Elaine Walker

Authorized for release by:
6/29/2020 3:25:21 PM

Elaine Walker, Project Manager II
(253)248-4972
elaine.walker@testamericainc.com

Table of Contents

Definitions/Glossary

Client: Alaska Department of Env. Conservation
Project/Site: PFAS, Alaska Drinking Water

Job ID: 320-62008-1
SDG: Iliamna

Qualifiers

LCMS

Qualifier	Qualifier Description
E	Result exceeded calibration range.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	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: Alaska Department of Env. Conservation
Project/Site: PFAS, Alaska Drinking Water

Job ID: 320-62008-1
SDG: Iliamna

Job ID: 320-62008-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative
320-62008-1

Receipt
Twelve samples were received on 6/19/2020 9:40 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 0.8º C.

Receipt Exceptions

Sample FRB (320-62008-10) indicates "NO PRESERATIVE; DUMPED TRIZMA OUT" on the COC. This sample was received as unpreserved.

LCMS
Method 537.1 DW: Several analytes in the following laboratory control sample duplicate / laboratory control sample duplicate (LCS/LCSD) are reported with E flags: (LCS 320-388624/2-A) and (LCSD 320-388624/3-A). The method requires the LCS/LCSD fortification levels be rotated between low, mid and high levels from batch to batch. The fortification level for these LCS/LCSD are at the upper level of the calibration resulting in the flagged data and not due to being out of control.

Method 537.1 DW: The following sample arrived unpreserved without Trizma: FRB (320-62008-10). The client stated that the Trizma preservative was dumped out.1.25 g of Trizma was added into the sample to preserve it at a pH of 7.2.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Alaska Department of Env. Conservation
Project/Site: PFAS, Alaska Drinking Water

Job ID: 320-62008-1
SDG: Iliamna

Client Sample ID: IL-001-DW — Lab Sample ID: 320-62008-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.0021		0.0018	0.00046	ug/L	1		537.1 DW	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.0039		0.0018	0.00046	ug/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.012		0.0018	0.00046	ug/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.0067		0.0018	0.00046	ug/L	1		537.1 DW	Total/NA

Client Sample ID: IL-002-DW — Lab Sample ID: 320-62008-2

No Detections.

Client Sample ID: IL-003-DW — Lab Sample ID: 320-62008-3

No Detections.

Client Sample ID: IL-004-DW — Lab Sample ID: 320-62008-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.0035		0.0018	0.00046	ug/L	1		537.1 DW	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.00050	J	0.0018	0.00046	ug/L	1		537.1 DW	Total/NA
Perfluorooctanoic acid (PFOA)	0.00066	J	0.0018	0.00046	ug/L	1		537.1 DW	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.0054		0.0018	0.00046	ug/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.020		0.0018	0.00046	ug/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.020		0.0018	0.00046	ug/L	1		537.1 DW	Total/NA

Client Sample ID: IL-005-DW — Lab Sample ID: 320-62008-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.0033		0.0018	0.00044	ug/L	1		537.1 DW	Total/NA
Perfluorooctanoic acid (PFOA)	0.00081	J	0.0018	0.00044	ug/L	1		537.1 DW	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.0055		0.0018	0.00044	ug/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.021		0.0018	0.00044	ug/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.020		0.0018	0.00044	ug/L	1		537.1 DW	Total/NA

Client Sample ID: IL-006-DW — Lab Sample ID: 320-62008-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.0049		0.0018	0.00044	ug/L	1		537.1 DW	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.00060	J	0.0018	0.00044	ug/L	1		537.1 DW	Total/NA
Perfluorooctanoic acid (PFOA)	0.00066	J	0.0018	0.00044	ug/L	1		537.1 DW	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.0059		0.0018	0.00044	ug/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.017		0.0018	0.00044	ug/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.013		0.0018	0.00044	ug/L	1		537.1 DW	Total/NA

Client Sample ID: IL-007-DW — Lab Sample ID: 320-62008-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	0.00048	J	0.0019	0.00047	ug/L	1		537.1 DW	Total/NA

Client Sample ID: IL-008-DW — Lab Sample ID: 320-62008-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.00086	J	0.0018	0.00046	ug/L	1		537.1 DW	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Alaska Department of Env. Conservation
Project/Site: PFAS, Alaska Drinking Water

Job ID: 320-62008-1
SDG: Iliamna

Client Sample ID: IL-009-DW — Lab Sample ID: 320-62008-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.0047		0.0019	0.00047	ug/L	1		537.1 DW	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.00088	J	0.0019	0.00047	ug/L	1		537.1 DW	Total/NA
Perfluorooctanoic acid (PFOA)	0.0018	J	0.0019	0.00047	ug/L	1		537.1 DW	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.017		0.0019	0.00047	ug/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.092		0.0019	0.00047	ug/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.042		0.0019	0.00047	ug/L	1		537.1 DW	Total/NA

Client Sample ID: FRB — Lab Sample ID: 320-62008-10

No Detections.

Client Sample ID: IL-010-DW — Lab Sample ID: 320-62008-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.00045	J	0.0017	0.00043	ug/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.00045	J	0.0017	0.00043	ug/L	1		537.1 DW	Total/NA

Client Sample ID: IL-011-DW — Lab Sample ID: 320-62008-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.00048	J	0.0018	0.00046	ug/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.00050	J	0.0018	0.00046	ug/L	1		537.1 DW	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: IL-001-DW

Date Collected: 06/16/20 12:41
Date Received: 06/19/20 09:40

Lab Sample ID: 320-62008-1

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)	**0.0021**		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:01	1
Perfluoroheptanoic acid (PFHpA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:01	1
Perfluorooctanoic acid (PFOA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:01	1
Perfluorononanoic acid (PFNA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:01	1
Perfluorodecanoic acid (PFDA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:01	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:01	1
Perfluorododecanoic acid (PFDoA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:01	1
Perfluorotridecanoic acid (PFTriA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:01	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:01	1
Perfluorobutanesulfonic acid (PFBS)	**0.0039**		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:01	1
Perfluorohexanesulfonic acid (PFHxS)	**0.012**		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:01	1
Perfluorooctanesulfonic acid (PFOS)	**0.0067**		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:01	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:01	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:01	1
F-53B Major	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:01	1
F-53B Minor	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:01	1
HFPO-DA (GenX)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:01	1
DONA	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*85*		*70 - 130*	*06/22/20 20:18*	*06/23/20 11:01*	*1*
13C2 PFDA	*81*		*70 - 130*	*06/22/20 20:18*	*06/23/20 11:01*	*1*
d5-NEtFOSAA	*87*		*70 - 130*	*06/22/20 20:18*	*06/23/20 11:01*	*1*
13C3 HFPO-DA	*78*		*70 - 130*	*06/22/20 20:18*	*06/23/20 11:01*	*1*

Client Sample ID: IL-002-DW

Date Collected: 06/16/20 12:59
Date Received: 06/19/20 09:40

Lab Sample ID: 320-62008-2

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		0.0018	0.00045	ug/L		06/22/20 20:18	06/23/20 11:08	1
Perfluoroheptanoic acid (PFHpA)	ND		0.0018	0.00045	ug/L		06/22/20 20:18	06/23/20 11:08	1
Perfluorooctanoic acid (PFOA)	ND		0.0018	0.00045	ug/L		06/22/20 20:18	06/23/20 11:08	1
Perfluorononanoic acid (PFNA)	ND		0.0018	0.00045	ug/L		06/22/20 20:18	06/23/20 11:08	1
Perfluorodecanoic acid (PFDA)	ND		0.0018	0.00045	ug/L		06/22/20 20:18	06/23/20 11:08	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0018	0.00045	ug/L		06/22/20 20:18	06/23/20 11:08	1
Perfluorododecanoic acid (PFDoA)	ND		0.0018	0.00045	ug/L		06/22/20 20:18	06/23/20 11:08	1
Perfluorotridecanoic acid (PFTriA)	ND		0.0018	0.00045	ug/L		06/22/20 20:18	06/23/20 11:08	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0018	0.00045	ug/L		06/22/20 20:18	06/23/20 11:08	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.0018	0.00045	ug/L		06/22/20 20:18	06/23/20 11:08	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.0018	0.00045	ug/L		06/22/20 20:18	06/23/20 11:08	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.0018	0.00045	ug/L		06/22/20 20:18	06/23/20 11:08	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.0018	0.00045	ug/L		06/22/20 20:18	06/23/20 11:08	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.0018	0.00045	ug/L		06/22/20 20:18	06/23/20 11:08	1

Client Sample ID: IL-002-DW
Lab Sample ID: 320-62008-2
Date Collected: 06/16/20 12:59
Matrix: Water
Date Received: 06/19/20 09:40

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
F-53B Major	ND		0.0018	0.00045	ug/L		06/22/20 20:18	06/23/20 11:08	1
F-53B Minor	ND		0.0018	0.00045	ug/L		06/22/20 20:18	06/23/20 11:08	1
HFPO-DA (GenX)	ND		0.0018	0.00045	ug/L		06/22/20 20:18	06/23/20 11:08	1
DONA	ND		0.0018	0.00045	ug/L		06/22/20 20:18	06/23/20 11:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*82*		*70 - 130*	*06/22/20 20:18*	*06/23/20 11:08*	*1*
13C2 PFDA	*87*		*70 - 130*	*06/22/20 20:18*	*06/23/20 11:08*	*1*
d5-NEtFOSAA	*84*		*70 - 130*	*06/22/20 20:18*	*06/23/20 11:08*	*1*
13C3 HFPO-DA	*70*		*70 - 130*	*06/22/20 20:18*	*06/23/20 11:08*	*1*

Client Sample ID: IL-003-DW
Lab Sample ID: 320-62008-3
Date Collected: 06/16/20 13:42
Matrix: Water
Date Received: 06/19/20 09:40

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		0.0018	0.00045	ug/L		06/22/20 20:18	06/23/20 11:16	1
Perfluoroheptanoic acid (PFHpA)	ND		0.0018	0.00045	ug/L		06/22/20 20:18	06/23/20 11:16	1
Perfluorooctanoic acid (PFOA)	ND		0.0018	0.00045	ug/L		06/22/20 20:18	06/23/20 11:16	1
Perfluorononanoic acid (PFNA)	ND		0.0018	0.00045	ug/L		06/22/20 20:18	06/23/20 11:16	1
Perfluorodecanoic acid (PFDA)	ND		0.0018	0.00045	ug/L		06/22/20 20:18	06/23/20 11:16	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0018	0.00045	ug/L		06/22/20 20:18	06/23/20 11:16	1
Perfluorododecanoic acid (PFDoA)	ND		0.0018	0.00045	ug/L		06/22/20 20:18	06/23/20 11:16	1
Perfluorotridecanoic acid (PFTriA)	ND		0.0018	0.00045	ug/L		06/22/20 20:18	06/23/20 11:16	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0018	0.00045	ug/L		06/22/20 20:18	06/23/20 11:16	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.0018	0.00045	ug/L		06/22/20 20:18	06/23/20 11:16	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.0018	0.00045	ug/L		06/22/20 20:18	06/23/20 11:16	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.0018	0.00045	ug/L		06/22/20 20:18	06/23/20 11:16	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.0018	0.00045	ug/L		06/22/20 20:18	06/23/20 11:16	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.0018	0.00045	ug/L		06/22/20 20:18	06/23/20 11:16	1
F-53B Major	ND		0.0018	0.00045	ug/L		06/22/20 20:18	06/23/20 11:16	1
F-53B Minor	ND		0.0018	0.00045	ug/L		06/22/20 20:18	06/23/20 11:16	1
HFPO-DA (GenX)	ND		0.0018	0.00045	ug/L		06/22/20 20:18	06/23/20 11:16	1
DONA	ND		0.0018	0.00045	ug/L		06/22/20 20:18	06/23/20 11:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*91*		*70 - 130*	*06/22/20 20:18*	*06/23/20 11:16*	*1*
13C2 PFDA	*91*		*70 - 130*	*06/22/20 20:18*	*06/23/20 11:16*	*1*
d5-NEtFOSAA	*86*		*70 - 130*	*06/22/20 20:18*	*06/23/20 11:16*	*1*
13C3 HFPO-DA	*81*		*70 - 130*	*06/22/20 20:18*	*06/23/20 11:16*	*1*

Client Sample ID: IL-004-DW
Lab Sample ID: 320-62008-4
Date Collected: 06/16/20 14:14
Matrix: Water
Date Received: 06/19/20 09:40

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**0.0035**		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:24	1

Client Sample ID: IL-004-DW

Date Collected: 06/16/20 14:14
Date Received: 06/19/20 09:40

Lab Sample ID: 320-62008-4

Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	**0.00050**	**J**	0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:24	1
Perfluorooctanoic acid (PFOA)	**0.00066**	**J**	0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:24	1
Perfluorononanoic acid (PFNA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:24	1
Perfluorodecanoic acid (PFDA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:24	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:24	1
Perfluorododecanoic acid (PFDoA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:24	1
Perfluorotridecanoic acid (PFTriA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:24	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:24	1
Perfluorobutanesulfonic acid (PFBS)	**0.0054**		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:24	1
Perfluorohexanesulfonic acid (PFHxS)	**0.020**		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:24	1
Perfluorooctanesulfonic acid (PFOS)	**0.020**		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:24	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:24	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:24	1
F-53B Major	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:24	1
F-53B Minor	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:24	1
HFPO-DA (GenX)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:24	1
DONA	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*94*		*70 - 130*	*06/22/20 20:18*	*06/23/20 11:24*	*1*
13C2 PFDA	*90*		*70 - 130*	*06/22/20 20:18*	*06/23/20 11:24*	*1*
d5-NEtFOSAA	*91*		*70 - 130*	*06/22/20 20:18*	*06/23/20 11:24*	*1*
13C3 HFPO-DA	*83*		*70 - 130*	*06/22/20 20:18*	*06/23/20 11:24*	*1*

Client Sample ID: IL-005-DW

Date Collected: 06/16/20 14:15
Date Received: 06/19/20 09:40

Lab Sample ID: 320-62008-5

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)	**0.0033**		0.0018	0.00044	ug/L		06/22/20 20:18	06/23/20 11:31	1
Perfluoroheptanoic acid (PFHpA)	ND		0.0018	0.00044	ug/L		06/22/20 20:18	06/23/20 11:31	1
Perfluorooctanoic acid (PFOA)	**0.00081**	**J**	0.0018	0.00044	ug/L		06/22/20 20:18	06/23/20 11:31	1
Perfluorononanoic acid (PFNA)	ND		0.0018	0.00044	ug/L		06/22/20 20:18	06/23/20 11:31	1
Perfluorodecanoic acid (PFDA)	ND		0.0018	0.00044	ug/L		06/22/20 20:18	06/23/20 11:31	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0018	0.00044	ug/L		06/22/20 20:18	06/23/20 11:31	1
Perfluorododecanoic acid (PFDoA)	ND		0.0018	0.00044	ug/L		06/22/20 20:18	06/23/20 11:31	1
Perfluorotridecanoic acid (PFTriA)	ND		0.0018	0.00044	ug/L		06/22/20 20:18	06/23/20 11:31	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0018	0.00044	ug/L		06/22/20 20:18	06/23/20 11:31	1
Perfluorobutanesulfonic acid (PFBS)	**0.0055**		0.0018	0.00044	ug/L		06/22/20 20:18	06/23/20 11:31	1
Perfluorohexanesulfonic acid (PFHxS)	**0.021**		0.0018	0.00044	ug/L		06/22/20 20:18	06/23/20 11:31	1
Perfluorooctanesulfonic acid (PFOS)	**0.020**		0.0018	0.00044	ug/L		06/22/20 20:18	06/23/20 11:31	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.0018	0.00044	ug/L		06/22/20 20:18	06/23/20 11:31	1

Client Sample ID: IL-005-DW

Date Collected: 06/16/20 14:15
Date Received: 06/19/20 09:40

Lab Sample ID: 320-62008-5

Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.0018	0.00044	ug/L		06/22/20 20:18	06/23/20 11:31	1
F-53B Major	ND		0.0018	0.00044	ug/L		06/22/20 20:18	06/23/20 11:31	1
F-53B Minor	ND		0.0018	0.00044	ug/L		06/22/20 20:18	06/23/20 11:31	1
HFPO-DA (GenX)	ND		0.0018	0.00044	ug/L		06/22/20 20:18	06/23/20 11:31	1
DONA	ND		0.0018	0.00044	ug/L		06/22/20 20:18	06/23/20 11:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*93*		*70 - 130*	*06/22/20 20:18*	*06/23/20 11:31*	*1*
13C2 PFDA	*86*		*70 - 130*	*06/22/20 20:18*	*06/23/20 11:31*	*1*
d5-NEtFOSAA	*99*		*70 - 130*	*06/22/20 20:18*	*06/23/20 11:31*	*1*
13C3 HFPO-DA	*82*		*70 - 130*	*06/22/20 20:18*	*06/23/20 11:31*	*1*

Client Sample ID: IL-006-DW

Date Collected: 06/16/20 14:43
Date Received: 06/19/20 09:40

Lab Sample ID: 320-62008-6

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)	**0.0049**		0.0018	0.00044	ug/L		06/22/20 20:18	06/23/20 11:39	1
Perfluoroheptanoic acid (PFHpA)	**0.00060**	**J**	0.0018	0.00044	ug/L		06/22/20 20:18	06/23/20 11:39	1
Perfluorooctanoic acid (PFOA)	**0.00066**	**J**	0.0018	0.00044	ug/L		06/22/20 20:18	06/23/20 11:39	1
Perfluorononanoic acid (PFNA)	ND		0.0018	0.00044	ug/L		06/22/20 20:18	06/23/20 11:39	1
Perfluorodecanoic acid (PFDA)	ND		0.0018	0.00044	ug/L		06/22/20 20:18	06/23/20 11:39	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0018	0.00044	ug/L		06/22/20 20:18	06/23/20 11:39	1
Perfluorododecanoic acid (PFDoA)	ND		0.0018	0.00044	ug/L		06/22/20 20:18	06/23/20 11:39	1
Perfluorotridecanoic acid (PFTriA)	ND		0.0018	0.00044	ug/L		06/22/20 20:18	06/23/20 11:39	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0018	0.00044	ug/L		06/22/20 20:18	06/23/20 11:39	1
Perfluorobutanesulfonic acid (PFBS)	**0.0059**		0.0018	0.00044	ug/L		06/22/20 20:18	06/23/20 11:39	1
Perfluorohexanesulfonic acid (PFHxS)	**0.017**		0.0018	0.00044	ug/L		06/22/20 20:18	06/23/20 11:39	1
Perfluorooctanesulfonic acid (PFOS)	**0.013**		0.0018	0.00044	ug/L		06/22/20 20:18	06/23/20 11:39	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.0018	0.00044	ug/L		06/22/20 20:18	06/23/20 11:39	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.0018	0.00044	ug/L		06/22/20 20:18	06/23/20 11:39	1
F-53B Major	ND		0.0018	0.00044	ug/L		06/22/20 20:18	06/23/20 11:39	1
F-53B Minor	ND		0.0018	0.00044	ug/L		06/22/20 20:18	06/23/20 11:39	1
HFPO-DA (GenX)	ND		0.0018	0.00044	ug/L		06/22/20 20:18	06/23/20 11:39	1
DONA	ND		0.0018	0.00044	ug/L		06/22/20 20:18	06/23/20 11:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*93*		*70 - 130*	*06/22/20 20:18*	*06/23/20 11:39*	*1*
13C2 PFDA	*91*		*70 - 130*	*06/22/20 20:18*	*06/23/20 11:39*	*1*
d5-NEtFOSAA	*90*		*70 - 130*	*06/22/20 20:18*	*06/23/20 11:39*	*1*
13C3 HFPO-DA	*87*		*70 - 130*	*06/22/20 20:18*	*06/23/20 11:39*	*1*

Client Sample ID: IL-007-DW

Date Collected: 06/16/20 14:56
Date Received: 06/19/20 09:40

Lab Sample ID: 320-62008-7
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		0.0019	0.00047	ug/L		06/22/20 20:18	06/23/20 11:47	1
Perfluoroheptanoic acid (PFHpA)	ND		0.0019	0.00047	ug/L		06/22/20 20:18	06/23/20 11:47	1
Perfluorooctanoic acid (PFOA)	ND		0.0019	0.00047	ug/L		06/22/20 20:18	06/23/20 11:47	1
Perfluorononanoic acid (PFNA)	ND		0.0019	0.00047	ug/L		06/22/20 20:18	06/23/20 11:47	1
Perfluorodecanoic acid (PFDA)	ND		0.0019	0.00047	ug/L		06/22/20 20:18	06/23/20 11:47	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0019	0.00047	ug/L		06/22/20 20:18	06/23/20 11:47	1
Perfluorododecanoic acid (PFDoA)	ND		0.0019	0.00047	ug/L		06/22/20 20:18	06/23/20 11:47	1
Perfluorotridecanoic acid (PFTriA)	ND		0.0019	0.00047	ug/L		06/22/20 20:18	06/23/20 11:47	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0019	0.00047	ug/L		06/22/20 20:18	06/23/20 11:47	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.0019	0.00047	ug/L		06/22/20 20:18	06/23/20 11:47	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.0019	0.00047	ug/L		06/22/20 20:18	06/23/20 11:47	1
Perfluorooctanesulfonic acid (PFOS)	**0.00048**	**J**	0.0019	0.00047	ug/L		06/22/20 20:18	06/23/20 11:47	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.0019	0.00047	ug/L		06/22/20 20:18	06/23/20 11:47	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.0019	0.00047	ug/L		06/22/20 20:18	06/23/20 11:47	1
F-53B Major	ND		0.0019	0.00047	ug/L		06/22/20 20:18	06/23/20 11:47	1
F-53B Minor	ND		0.0019	0.00047	ug/L		06/22/20 20:18	06/23/20 11:47	1
HFPO-DA (GenX)	ND		0.0019	0.00047	ug/L		06/22/20 20:18	06/23/20 11:47	1
DONA	ND		0.0019	0.00047	ug/L		06/22/20 20:18	06/23/20 11:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*90*		*70 - 130*	*06/22/20 20:18*	*06/23/20 11:47*	*1*
13C2 PFDA	*89*		*70 - 130*	*06/22/20 20:18*	*06/23/20 11:47*	*1*
d5-NEtFOSAA	*94*		*70 - 130*	*06/22/20 20:18*	*06/23/20 11:47*	*1*
13C3 HFPO-DA	*80*		*70 - 130*	*06/22/20 20:18*	*06/23/20 11:47*	*1*

Client Sample ID: IL-008-DW

Date Collected: 06/16/20 15:10
Date Received: 06/19/20 09:40

Lab Sample ID: 320-62008-8
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		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:54	1
Perfluoroheptanoic acid (PFHpA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:54	1
Perfluorooctanoic acid (PFOA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:54	1
Perfluorononanoic acid (PFNA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:54	1
Perfluorodecanoic acid (PFDA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:54	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:54	1
Perfluorododecanoic acid (PFDoA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:54	1
Perfluorotridecanoic acid (PFTriA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:54	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:54	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:54	1
Perfluorohexanesulfonic acid (PFHxS)	**0.00086**	**J**	0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:54	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:54	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:54	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:54	1
F-53B Major	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:54	1

Client Sample ID: IL-008-DW

Lab Sample ID: 320-62008-8

Date Collected: 06/16/20 15:10
Date Received: 06/19/20 09:40

Matrix: Water

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
F-53B Minor	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:54	1
HFPO-DA (GenX)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:54	1
DONA	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 11:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*92*		*70 - 130*	*06/22/20 20:18*	*06/23/20 11:54*	*1*
13C2 PFDA	*88*		*70 - 130*	*06/22/20 20:18*	*06/23/20 11:54*	*1*
d5-NEtFOSAA	*90*		*70 - 130*	*06/22/20 20:18*	*06/23/20 11:54*	*1*
13C3 HFPO-DA	*81*		*70 - 130*	*06/22/20 20:18*	*06/23/20 11:54*	*1*

Client Sample ID: IL-009-DW

Lab Sample ID: 320-62008-9

Date Collected: 06/16/20 15:49
Date Received: 06/19/20 09:40

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)	**0.0047**		0.0019	0.00047	ug/L		06/22/20 20:18	06/23/20 12:02	1
Perfluoroheptanoic acid (PFHpA)	**0.00088**	**J**	0.0019	0.00047	ug/L		06/22/20 20:18	06/23/20 12:02	1
Perfluorooctanoic acid (PFOA)	**0.0018**	**J**	0.0019	0.00047	ug/L		06/22/20 20:18	06/23/20 12:02	1
Perfluorononanoic acid (PFNA)	ND		0.0019	0.00047	ug/L		06/22/20 20:18	06/23/20 12:02	1
Perfluorodecanoic acid (PFDA)	ND		0.0019	0.00047	ug/L		06/22/20 20:18	06/23/20 12:02	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0019	0.00047	ug/L		06/22/20 20:18	06/23/20 12:02	1
Perfluorododecanoic acid (PFDoA)	ND		0.0019	0.00047	ug/L		06/22/20 20:18	06/23/20 12:02	1
Perfluorotridecanoic acid (PFTriA)	ND		0.0019	0.00047	ug/L		06/22/20 20:18	06/23/20 12:02	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0019	0.00047	ug/L		06/22/20 20:18	06/23/20 12:02	1
Perfluorobutanesulfonic acid (PFBS)	**0.017**		0.0019	0.00047	ug/L		06/22/20 20:18	06/23/20 12:02	1
Perfluorohexanesulfonic acid (PFHxS)	**0.092**		0.0019	0.00047	ug/L		06/22/20 20:18	06/23/20 12:02	1
Perfluorooctanesulfonic acid (PFOS)	**0.042**		0.0019	0.00047	ug/L		06/22/20 20:18	06/23/20 12:02	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.0019	0.00047	ug/L		06/22/20 20:18	06/23/20 12:02	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.0019	0.00047	ug/L		06/22/20 20:18	06/23/20 12:02	1
F-53B Major	ND		0.0019	0.00047	ug/L		06/22/20 20:18	06/23/20 12:02	1
F-53B Minor	ND		0.0019	0.00047	ug/L		06/22/20 20:18	06/23/20 12:02	1
HFPO-DA (GenX)	ND		0.0019	0.00047	ug/L		06/22/20 20:18	06/23/20 12:02	1
DONA	ND		0.0019	0.00047	ug/L		06/22/20 20:18	06/23/20 12:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*89*		*70 - 130*	*06/22/20 20:18*	*06/23/20 12:02*	*1*
13C2 PFDA	*83*		*70 - 130*	*06/22/20 20:18*	*06/23/20 12:02*	*1*
d5-NEtFOSAA	*96*		*70 - 130*	*06/22/20 20:18*	*06/23/20 12:02*	*1*
13C3 HFPO-DA	*79*		*70 - 130*	*06/22/20 20:18*	*06/23/20 12:02*	*1*

Client Sample ID: FRB

Lab Sample ID: 320-62008-10

Date Collected: 06/16/20 16:20
Date Received: 06/19/20 09:40

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		0.0019	0.00046	ug/L		06/23/20 11:02	06/24/20 14:08	1
Perfluoroheptanoic acid (PFHpA)	ND		0.0019	0.00046	ug/L		06/23/20 11:02	06/24/20 14:08	1
Perfluorooctanoic acid (PFOA)	ND		0.0019	0.00046	ug/L		06/23/20 11:02	06/24/20 14:08	1
Perfluorononanoic acid (PFNA)	ND		0.0019	0.00046	ug/L		06/23/20 11:02	06/24/20 14:08	1
Perfluorodecanoic acid (PFDA)	ND		0.0019	0.00046	ug/L		06/23/20 11:02	06/24/20 14:08	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0019	0.00046	ug/L		06/23/20 11:02	06/24/20 14:08	1
Perfluorododecanoic acid (PFDoA)	ND		0.0019	0.00046	ug/L		06/23/20 11:02	06/24/20 14:08	1
Perfluorotridecanoic acid (PFTriA)	ND		0.0019	0.00046	ug/L		06/23/20 11:02	06/24/20 14:08	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0019	0.00046	ug/L		06/23/20 11:02	06/24/20 14:08	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.0019	0.00046	ug/L		06/23/20 11:02	06/24/20 14:08	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.0019	0.00046	ug/L		06/23/20 11:02	06/24/20 14:08	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.0019	0.00046	ug/L		06/23/20 11:02	06/24/20 14:08	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.0019	0.00046	ug/L		06/23/20 11:02	06/24/20 14:08	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.0019	0.00046	ug/L		06/23/20 11:02	06/24/20 14:08	1
F-53B Major	ND		0.0019	0.00046	ug/L		06/23/20 11:02	06/24/20 14:08	1
F-53B Minor	ND		0.0019	0.00046	ug/L		06/23/20 11:02	06/24/20 14:08	1
HFPO-DA (GenX)	ND		0.0019	0.00046	ug/L		06/23/20 11:02	06/24/20 14:08	1
DONA	ND		0.0019	0.00046	ug/L		06/23/20 11:02	06/24/20 14:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*87*		*70 - 130*	*06/23/20 11:02*	*06/24/20 14:08*	*1*
13C2 PFDA	*87*		*70 - 130*	*06/23/20 11:02*	*06/24/20 14:08*	*1*
d5-NEtFOSAA	*94*		*70 - 130*	*06/23/20 11:02*	*06/24/20 14:08*	*1*
13C3 HFPO-DA	*83*		*70 - 130*	*06/23/20 11:02*	*06/24/20 14:08*	*1*

Client Sample ID: IL-010-DW

Lab Sample ID: 320-62008-11

Date Collected: 06/17/20 10:22
Date Received: 06/19/20 09:40

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		0.0017	0.00043	ug/L		06/22/20 20:18	06/23/20 12:33	1
Perfluoroheptanoic acid (PFHpA)	ND		0.0017	0.00043	ug/L		06/22/20 20:18	06/23/20 12:33	1
Perfluorooctanoic acid (PFOA)	ND		0.0017	0.00043	ug/L		06/22/20 20:18	06/23/20 12:33	1
Perfluorononanoic acid (PFNA)	ND		0.0017	0.00043	ug/L		06/22/20 20:18	06/23/20 12:33	1
Perfluorodecanoic acid (PFDA)	ND		0.0017	0.00043	ug/L		06/22/20 20:18	06/23/20 12:33	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0017	0.00043	ug/L		06/22/20 20:18	06/23/20 12:33	1
Perfluorododecanoic acid (PFDoA)	ND		0.0017	0.00043	ug/L		06/22/20 20:18	06/23/20 12:33	1
Perfluorotridecanoic acid (PFTriA)	ND		0.0017	0.00043	ug/L		06/22/20 20:18	06/23/20 12:33	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0017	0.00043	ug/L		06/22/20 20:18	06/23/20 12:33	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.0017	0.00043	ug/L		06/22/20 20:18	06/23/20 12:33	1
Perfluorohexanesulfonic acid (PFHxS)	**0.00045**	**J**	0.0017	0.00043	ug/L		06/22/20 20:18	06/23/20 12:33	1
Perfluorooctanesulfonic acid (PFOS)	**0.00045**	**J**	0.0017	0.00043	ug/L		06/22/20 20:18	06/23/20 12:33	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.0017	0.00043	ug/L		06/22/20 20:18	06/23/20 12:33	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.0017	0.00043	ug/L		06/22/20 20:18	06/23/20 12:33	1
F-53B Major	ND		0.0017	0.00043	ug/L		06/22/20 20:18	06/23/20 12:33	1

Client Sample ID: IL-010-DW

Lab Sample ID: 320-62008-11
Date Collected: 06/17/20 10:22
Matrix: Water
Date Received: 06/19/20 09:40

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
F-53B Minor	ND		0.0017	0.00043	ug/L		06/22/20 20:18	06/23/20 12:33	1
HFPO-DA (GenX)	ND		0.0017	0.00043	ug/L		06/22/20 20:18	06/23/20 12:33	1
DONA	ND		0.0017	0.00043	ug/L		06/22/20 20:18	06/23/20 12:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*93*		*70 - 130*	*06/22/20 20:18*	*06/23/20 12:33*	*1*
13C2 PFDA	*90*		*70 - 130*	*06/22/20 20:18*	*06/23/20 12:33*	*1*
d5-NEtFOSAA	*93*		*70 - 130*	*06/22/20 20:18*	*06/23/20 12:33*	*1*
13C3 HFPO-DA	*82*		*70 - 130*	*06/22/20 20:18*	*06/23/20 12:33*	*1*

Client Sample ID: IL-011-DW

Lab Sample ID: 320-62008-12
Date Collected: 06/17/20 10:23
Matrix: Water
Date Received: 06/19/20 09:40

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 12:41	1
Perfluoroheptanoic acid (PFHpA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 12:41	1
Perfluorooctanoic acid (PFOA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 12:41	1
Perfluorononanoic acid (PFNA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 12:41	1
Perfluorodecanoic acid (PFDA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 12:41	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 12:41	1
Perfluorododecanoic acid (PFDoA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 12:41	1
Perfluorotridecanoic acid (PFTriA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 12:41	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 12:41	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 12:41	1
Perfluorohexanesulfonic acid (PFHxS)	**0.00048**	**J**	0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 12:41	1
Perfluorooctanesulfonic acid (PFOS)	**0.00050**	**J**	0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 12:41	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 12:41	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 12:41	1
F-53B Major	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 12:41	1
F-53B Minor	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 12:41	1
HFPO-DA (GenX)	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 12:41	1
DONA	ND		0.0018	0.00046	ug/L		06/22/20 20:18	06/23/20 12:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*91*		*70 - 130*	*06/22/20 20:18*	*06/23/20 12:41*	*1*
13C2 PFDA	*92*		*70 - 130*	*06/22/20 20:18*	*06/23/20 12:41*	*1*
d5-NEtFOSAA	*91*		*70 - 130*	*06/22/20 20:18*	*06/23/20 12:41*	*1*
13C3 HFPO-DA	*83*		*70 - 130*	*06/22/20 20:18*	*06/23/20 12:41*	*1*

Surrogate Summary

Client: Alaska Department of Env. Conservation
Project/Site: PFAS, Alaska Drinking Water

Job ID: 320-62008-1
SDG: Iliamna

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)
320-62008-1	IL-001-DW	85	81	87	78
320-62008-2	IL-002-DW	82	87	84	70
320-62008-3	IL-003-DW	91	91	86	81
320-62008-4	IL-004-DW	94	90	91	83
320-62008-5	IL-005-DW	93	86	99	82
320-62008-6	IL-006-DW	93	91	90	87
320-62008-7	IL-007-DW	90	89	94	80
320-62008-8	IL-008-DW	92	88	90	81
320-62008-9	IL-009-DW	89	83	96	79
320-62008-10	FRB	87	87	94	83
320-62008-11	IL-010-DW	93	90	93	82
320-62008-12	IL-011-DW	91	92	91	83
LCS 320-388624/2-A	Lab Control Sample	81	79	86	78
LCSD 320-388624/3-A	Lab Control Sample Dup	88	83	89	84
LLCS 320-388469/2-A	Lab Control Sample	90	91	92	82
LLCSD 320-388469/3-A	Lab Control Sample Dup	87	87	92	81
MB 320-388469/1-A	Method Blank	95	87	90	81
MB 320-388624/1-A	Method Blank	84	83	89	82

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 320-388469/1-A
Matrix: Water
Analysis Batch: 388570

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 388469

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		0.0020	0.00050	ug/L		06/22/20 20:18	06/23/20 10:53	1
Perfluoroheptanoic acid (PFHpA)	ND		0.0020	0.00050	ug/L		06/22/20 20:18	06/23/20 10:53	1
Perfluorooctanoic acid (PFOA)	ND		0.0020	0.00050	ug/L		06/22/20 20:18	06/23/20 10:53	1
Perfluorononanoic acid (PFNA)	ND		0.0020	0.00050	ug/L		06/22/20 20:18	06/23/20 10:53	1
Perfluorodecanoic acid (PFDA)	ND		0.0020	0.00050	ug/L		06/22/20 20:18	06/23/20 10:53	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0020	0.00050	ug/L		06/22/20 20:18	06/23/20 10:53	1
Perfluorododecanoic acid (PFDoA)	ND		0.0020	0.00050	ug/L		06/22/20 20:18	06/23/20 10:53	1
Perfluorotridecanoic acid (PFTriA)	ND		0.0020	0.00050	ug/L		06/22/20 20:18	06/23/20 10:53	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0020	0.00050	ug/L		06/22/20 20:18	06/23/20 10:53	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.0020	0.00050	ug/L		06/22/20 20:18	06/23/20 10:53	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.0020	0.00050	ug/L		06/22/20 20:18	06/23/20 10:53	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.0020	0.00050	ug/L		06/22/20 20:18	06/23/20 10:53	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.0020	0.00050	ug/L		06/22/20 20:18	06/23/20 10:53	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.0020	0.00050	ug/L		06/22/20 20:18	06/23/20 10:53	1
F-53B Major	ND		0.0020	0.00050	ug/L		06/22/20 20:18	06/23/20 10:53	1
F-53B Minor	ND		0.0020	0.00050	ug/L		06/22/20 20:18	06/23/20 10:53	1
HFPO-DA (GenX)	ND		0.0020	0.00050	ug/L		06/22/20 20:18	06/23/20 10:53	1
DONA	ND		0.0020	0.00050	ug/L		06/22/20 20:18	06/23/20 10:53	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*95*		*70 - 130*	*06/22/20 20:18*	*06/23/20 10:53*	*1*
13C2 PFDA	*87*		*70 - 130*	*06/22/20 20:18*	*06/23/20 10:53*	*1*
d5-NEtFOSAA	*90*		*70 - 130*	*06/22/20 20:18*	*06/23/20 10:53*	*1*
13C3 HFPO-DA	*81*		*70 - 130*	*06/22/20 20:18*	*06/23/20 10:53*	*1*

Lab Sample ID: LLCS 320-388469/2-A
Matrix: Water
Analysis Batch: 388573

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 388469

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid (PFHxA)	0.00400	0.00368		ug/L		92	50 - 150
Perfluoroheptanoic acid (PFHpA)	0.00400	0.00424		ug/L		106	50 - 150
Perfluorooctanoic acid (PFOA)	0.00400	0.00373		ug/L		93	50 - 150
Perfluorononanoic acid (PFNA)	0.00400	0.00386		ug/L		97	50 - 150
Perfluorodecanoic acid (PFDA)	0.00400	0.00386		ug/L		96	50 - 150
Perfluoroundecanoic acid (PFUnA)	0.00400	0.00396		ug/L		99	50 - 150
Perfluorododecanoic acid (PFDoA)	0.00400	0.00363		ug/L		91	50 - 150
Perfluorotridecanoic acid (PFTriA)	0.00400	0.00373		ug/L		93	50 - 150
Perfluorotetradecanoic acid (PFTeA)	0.00400	0.00349		ug/L		87	50 - 150
Perfluorobutanesulfonic acid (PFBS)	0.00354	0.00377		ug/L		107	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	0.00364	0.00374		ug/L		103	50 - 150

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: LLCS 320-388469/2-A
Matrix: Water
Analysis Batch: 388573

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 388469

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Perfluorooctanesulfonic acid (PFOS)			0.00371	0.00388		ug/L		105	50 - 150		
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			0.00400	0.00415		ug/L		104	50 - 150		
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			0.00400	0.00406		ug/L		102	50 - 150		
F-53B Major			0.00373	0.00402		ug/L		108	50 - 150		
F-53B Minor			0.00377	0.00386		ug/L		103	50 - 150		
HFPO-DA (GenX)			0.00400	0.00318		ug/L		79	50 - 150		
DONA			0.00377	0.00343		ug/L		91	50 - 150		

Surrogate	*LLCS %Recovery*	*LLCS Qualifier*	*Limits*
13C2 PFHxA	*90*		*70 - 130*
13C2 PFDA	*91*		*70 - 130*
d5-NEtFOSAA	*92*		*70 - 130*
13C3 HFPO-DA	*82*		*70 - 130*

Lab Sample ID: LLCSD 320-388469/3-A
Matrix: Water
Analysis Batch: 388573

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 388469

Analyte			Spike Added	LLCSD Result	LLCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)			0.00400	0.00356		ug/L		89	50 - 150	3	50
Perfluoroheptanoic acid (PFHpA)			0.00400	0.00381		ug/L		95	50 - 150	11	50
Perfluorooctanoic acid (PFOA)			0.00400	0.00368		ug/L		92	50 - 150	1	50
Perfluorononanoic acid (PFNA)			0.00400	0.00358		ug/L		89	50 - 150	8	50
Perfluorodecanoic acid (PFDA)			0.00400	0.00396		ug/L		99	50 - 150	3	50
Perfluoroundecanoic acid (PFUnA)			0.00400	0.00385		ug/L		96	50 - 150	3	50
Perfluorododecanoic acid (PFDoA)			0.00400	0.00345		ug/L		86	50 - 150	5	50
Perfluorotridecanoic acid (PFTriA)			0.00400	0.00355		ug/L		89	50 - 150	5	50
Perfluorotetradecanoic acid (PFTeA)			0.00400	0.00338		ug/L		84	50 - 150	3	50
Perfluorobutanesulfonic acid (PFBS)			0.00354	0.00356		ug/L		101	50 - 150	6	50
Perfluorohexanesulfonic acid (PFHxS)			0.00364	0.00366		ug/L		101	50 - 150	2	50
Perfluorooctanesulfonic acid (PFOS)			0.00371	0.00361		ug/L		97	50 - 150	7	50
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			0.00400	0.00395		ug/L		99	50 - 150	5	50
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			0.00400	0.00424		ug/L		106	50 - 150	4	50
F-53B Major			0.00373	0.00383		ug/L		103	50 - 150	5	50
F-53B Minor			0.00377	0.00396		ug/L		105	50 - 150	2	50
HFPO-DA (GenX)			0.00400	0.00318		ug/L		79	50 - 150	0.07	50
DONA			0.00377	0.00339		ug/L		90	50 - 150	1	50

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: LLCSD 320-388469/3-A
Matrix: Water
Analysis Batch: 388573

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 388469

Surrogate	LLCSD %Recovery	LLCSD Qualifier	Limits
13C2 PFHxA	87		70 - 130
13C2 PFDA	87		70 - 130
d5-NEtFOSAA	92		70 - 130
13C3 HFPO-DA	81		70 - 130

Lab Sample ID: MB 320-388624/1-A
Matrix: Water
Analysis Batch: 389040

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 388624

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		0.0020	0.00050	ug/L		06/23/20 11:02	06/24/20 14:01	1
Perfluoroheptanoic acid (PFHpA)	ND		0.0020	0.00050	ug/L		06/23/20 11:02	06/24/20 14:01	1
Perfluorooctanoic acid (PFOA)	ND		0.0020	0.00050	ug/L		06/23/20 11:02	06/24/20 14:01	1
Perfluorononanoic acid (PFNA)	ND		0.0020	0.00050	ug/L		06/23/20 11:02	06/24/20 14:01	1
Perfluorodecanoic acid (PFDA)	ND		0.0020	0.00050	ug/L		06/23/20 11:02	06/24/20 14:01	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0020	0.00050	ug/L		06/23/20 11:02	06/24/20 14:01	1
Perfluorododecanoic acid (PFDoA)	ND		0.0020	0.00050	ug/L		06/23/20 11:02	06/24/20 14:01	1
Perfluorotridecanoic acid (PFTriA)	ND		0.0020	0.00050	ug/L		06/23/20 11:02	06/24/20 14:01	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0020	0.00050	ug/L		06/23/20 11:02	06/24/20 14:01	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.0020	0.00050	ug/L		06/23/20 11:02	06/24/20 14:01	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.0020	0.00050	ug/L		06/23/20 11:02	06/24/20 14:01	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.0020	0.00050	ug/L		06/23/20 11:02	06/24/20 14:01	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.0020	0.00050	ug/L		06/23/20 11:02	06/24/20 14:01	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.0020	0.00050	ug/L		06/23/20 11:02	06/24/20 14:01	1
F-53B Major	ND		0.0020	0.00050	ug/L		06/23/20 11:02	06/24/20 14:01	1
F-53B Minor	ND		0.0020	0.00050	ug/L		06/23/20 11:02	06/24/20 14:01	1
HFPO-DA (GenX)	ND		0.0020	0.00050	ug/L		06/23/20 11:02	06/24/20 14:01	1
DONA	ND		0.0020	0.00050	ug/L		06/23/20 11:02	06/24/20 14:01	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	84		70 - 130	06/23/20 11:02	06/24/20 14:01	1
13C2 PFDA	83		70 - 130	06/23/20 11:02	06/24/20 14:01	1
d5-NEtFOSAA	89		70 - 130	06/23/20 11:02	06/24/20 14:01	1
13C3 HFPO-DA	82		70 - 130	06/23/20 11:02	06/24/20 14:01	1

Lab Sample ID: LCS 320-388624/2-A
Matrix: Water
Analysis Batch: 389040

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 388624

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid (PFHxA)	0.200	0.161		ug/L		81	70 - 130
Perfluoroheptanoic acid (PFHpA)	0.200	0.191		ug/L		96	70 - 130
Perfluorooctanoic acid (PFOA)	0.200	0.176		ug/L		88	70 - 130
Perfluorononanoic acid (PFNA)	0.200	0.173		ug/L		87	70 - 130
Perfluorodecanoic acid (PFDA)	0.200	0.179		ug/L		89	70 - 130
Perfluoroundecanoic acid (PFUnA)	0.200	0.165		ug/L		82	70 - 130

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: LCS 320-388624/2-A
Matrix: Water
Analysis Batch: 389040

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 388624

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Perfluorododecanoic acid (PFDoA)			0.200	0.164		ug/L		82	70 - 130		
Perfluorotridecanoic acid (PFTriA)			0.200	0.167		ug/L		84	70 - 130		
Perfluorotetradecanoic acid (PFTeA)			0.200	0.160		ug/L		80	70 - 130		
Perfluorobutanesulfonic acid (PFBS)			0.177	0.177	E	ug/L		100	70 - 130		
Perfluorohexanesulfonic acid (PFHxS)			0.182	0.207	E	ug/L		114	70 - 130		
Perfluorooctanesulfonic acid (PFOS)			0.186	0.186	E	ug/L		100	70 - 130		
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			0.200	0.196		ug/L		98	70 - 130		
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			0.200	0.189		ug/L		95	70 - 130		
F-53B Major			0.186	0.194	E	ug/L		104	70 - 130		
F-53B Minor			0.188	0.197	E	ug/L		105	70 - 130		
HFPO-DA (GenX)			0.200	0.160		ug/L		80	70 - 130		
DONA			0.188	0.155		ug/L		82	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*81*		*70 - 130*
13C2 PFDA	*79*		*70 - 130*
d5-NEtFOSAA	*86*		*70 - 130*
13C3 HFPO-DA	*78*		*70 - 130*

Lab Sample ID: LCSD 320-388624/3-A
Matrix: Water
Analysis Batch: 389040

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 388624

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)			0.200	0.170		ug/L		85	70 - 130	6	30
Perfluoroheptanoic acid (PFHpA)			0.200	0.191		ug/L		95	70 - 130	0	30
Perfluorooctanoic acid (PFOA)			0.200	0.182		ug/L		91	70 - 130	3	30
Perfluorononanoic acid (PFNA)			0.200	0.177		ug/L		89	70 - 130	2	30
Perfluorodecanoic acid (PFDA)			0.200	0.192		ug/L		96	70 - 130	7	30
Perfluoroundecanoic acid (PFUnA)			0.200	0.174		ug/L		87	70 - 130	6	30
Perfluorododecanoic acid (PFDoA)			0.200	0.168		ug/L		84	70 - 130	3	30
Perfluorotridecanoic acid (PFTriA)			0.200	0.164		ug/L		82	70 - 130	2	30
Perfluorotetradecanoic acid (PFTeA)			0.200	0.159		ug/L		80	70 - 130	1	30
Perfluorobutanesulfonic acid (PFBS)			0.177	0.183	E	ug/L		104	70 - 130	3	30
Perfluorohexanesulfonic acid (PFHxS)			0.182	0.210	E	ug/L		115	70 - 130	1	30
Perfluorooctanesulfonic acid (PFOS)			0.186	0.191	E	ug/L		103	70 - 130	3	30

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: LCSD 320-388624/3-A
Matrix: Water
Analysis Batch: 389040

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 388624

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			0.200	0.204	E	ug/L		102	70 - 130	4	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			0.200	0.194		ug/L		97	70 - 130	2	30
F-53B Major			0.186	0.204	E	ug/L		110	70 - 130	5	30
F-53B Minor			0.188	0.197	E	ug/L		104	70 - 130	0	30
HFPO-DA (GenX)			0.200	0.169		ug/L		84	70 - 130	5	30
DONA			0.188	0.156		ug/L		83	70 - 130	1	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*88*		*70 - 130*
13C2 PFDA	*83*		*70 - 130*
d5-NEtFOSAA	*89*		*70 - 130*
13C3 HFPO-DA	*84*		*70 - 130*

LCMS

Prep Batch: 388469

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-62008-1	IL-001-DW	Total/NA	Water	537.1 DW	
320-62008-2	IL-002-DW	Total/NA	Water	537.1 DW	
320-62008-3	IL-003-DW	Total/NA	Water	537.1 DW	
320-62008-4	IL-004-DW	Total/NA	Water	537.1 DW	
320-62008-5	IL-005-DW	Total/NA	Water	537.1 DW	
320-62008-6	IL-006-DW	Total/NA	Water	537.1 DW	
320-62008-7	IL-007-DW	Total/NA	Water	537.1 DW	
320-62008-8	IL-008-DW	Total/NA	Water	537.1 DW	
320-62008-9	IL-009-DW	Total/NA	Water	537.1 DW	
320-62008-11	IL-010-DW	Total/NA	Water	537.1 DW	
320-62008-12	IL-011-DW	Total/NA	Water	537.1 DW	
MB 320-388469/1-A	Method Blank	Total/NA	Water	537.1 DW	
LLCS 320-388469/2-A	Lab Control Sample	Total/NA	Water	537.1 DW	
LLCSD 320-388469/3-A	Lab Control Sample Dup	Total/NA	Water	537.1 DW	

Analysis Batch: 388570

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-62008-1	IL-001-DW	Total/NA	Water	537.1 DW	388469
320-62008-2	IL-002-DW	Total/NA	Water	537.1 DW	388469
320-62008-3	IL-003-DW	Total/NA	Water	537.1 DW	388469
320-62008-4	IL-004-DW	Total/NA	Water	537.1 DW	388469
320-62008-5	IL-005-DW	Total/NA	Water	537.1 DW	388469
320-62008-6	IL-006-DW	Total/NA	Water	537.1 DW	388469
320-62008-7	IL-007-DW	Total/NA	Water	537.1 DW	388469
320-62008-8	IL-008-DW	Total/NA	Water	537.1 DW	388469
320-62008-9	IL-009-DW	Total/NA	Water	537.1 DW	388469
MB 320-388469/1-A	Method Blank	Total/NA	Water	537.1 DW	388469

Analysis Batch: 388573

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-62008-11	IL-010-DW	Total/NA	Water	537.1 DW	388469
320-62008-12	IL-011-DW	Total/NA	Water	537.1 DW	388469
LLCS 320-388469/2-A	Lab Control Sample	Total/NA	Water	537.1 DW	388469
LLCSD 320-388469/3-A	Lab Control Sample Dup	Total/NA	Water	537.1 DW	388469

Prep Batch: 388624

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-62008-10	FRB	Total/NA	Water	537.1 DW	
MB 320-388624/1-A	Method Blank	Total/NA	Water	537.1 DW	
LCS 320-388624/2-A	Lab Control Sample	Total/NA	Water	537.1 DW	
LCSD 320-388624/3-A	Lab Control Sample Dup	Total/NA	Water	537.1 DW	

Analysis Batch: 389040

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-62008-10	FRB	Total/NA	Water	537.1 DW	388624
MB 320-388624/1-A	Method Blank	Total/NA	Water	537.1 DW	388624
LCS 320-388624/2-A	Lab Control Sample	Total/NA	Water	537.1 DW	388624
LCSD 320-388624/3-A	Lab Control Sample Dup	Total/NA	Water	537.1 DW	388624

Lab Chronicle

Client: Alaska Department of Env. Conservation
Project/Site: PFAS, Alaska Drinking Water

Job ID: 320-62008-1
SDG: Iliamna

Client Sample ID: IL-001-DW
Date Collected: 06/16/20 12:41
Date Received: 06/19/20 09:40

Lab Sample ID: 320-62008-1
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			271.5 mL	1.00 mL	388469	06/22/20 20:18	JER	TAL SAC
Total/NA	Analysis	537.1 DW		1			388570	06/23/20 11:01	JRB	TAL SAC

Client Sample ID: IL-002-DW
Date Collected: 06/16/20 12:59
Date Received: 06/19/20 09:40

Lab Sample ID: 320-62008-2
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			280.3 mL	1.00 mL	388469	06/22/20 20:18	JER	TAL SAC
Total/NA	Analysis	537.1 DW		1			388570	06/23/20 11:08	JRB	TAL SAC

Client Sample ID: IL-003-DW
Date Collected: 06/16/20 13:42
Date Received: 06/19/20 09:40

Lab Sample ID: 320-62008-3
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			277.9 mL	1.00 mL	388469	06/22/20 20:18	JER	TAL SAC
Total/NA	Analysis	537.1 DW		1			388570	06/23/20 11:16	JRB	TAL SAC

Client Sample ID: IL-004-DW
Date Collected: 06/16/20 14:14
Date Received: 06/19/20 09:40

Lab Sample ID: 320-62008-4
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			274.5 mL	1.00 mL	388469	06/22/20 20:18	JER	TAL SAC
Total/NA	Analysis	537.1 DW		1			388570	06/23/20 11:24	JRB	TAL SAC

Client Sample ID: IL-005-DW
Date Collected: 06/16/20 14:15
Date Received: 06/19/20 09:40

Lab Sample ID: 320-62008-5
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			285.7 mL	1.00 mL	388469	06/22/20 20:18	JER	TAL SAC
Total/NA	Analysis	537.1 DW		1			388570	06/23/20 11:31	JRB	TAL SAC

Client Sample ID: IL-006-DW
Date Collected: 06/16/20 14:43
Date Received: 06/19/20 09:40

Lab Sample ID: 320-62008-6
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			283.8 mL	1.00 mL	388469	06/22/20 20:18	JER	TAL SAC
Total/NA	Analysis	537.1 DW		1			388570	06/23/20 11:39	JRB	TAL SAC

Lab Chronicle

Client: Alaska Department of Env. Conservation
Project/Site: PFAS, Alaska Drinking Water

Job ID: 320-62008-1
SDG: Iliamna

Client Sample ID: IL-007-DW
Date Collected: 06/16/20 14:56
Date Received: 06/19/20 09:40

Lab Sample ID: 320-62008-7
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			267.3 mL	1.00 mL	388469	06/22/20 20:18	JER	TAL SAC
Total/NA	Analysis	537.1 DW		1			388570	06/23/20 11:47	JRB	TAL SAC

Client Sample ID: IL-008-DW
Date Collected: 06/16/20 15:10
Date Received: 06/19/20 09:40

Lab Sample ID: 320-62008-8
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			274.1 mL	1.00 mL	388469	06/22/20 20:18	JER	TAL SAC
Total/NA	Analysis	537.1 DW		1			388570	06/23/20 11:54	JRB	TAL SAC

Client Sample ID: IL-009-DW
Date Collected: 06/16/20 15:49
Date Received: 06/19/20 09:40

Lab Sample ID: 320-62008-9
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			268.4 mL	1.00 mL	388469	06/22/20 20:18	JER	TAL SAC
Total/NA	Analysis	537.1 DW		1			388570	06/23/20 12:02	JRB	TAL SAC

Client Sample ID: FRB
Date Collected: 06/16/20 16:20
Date Received: 06/19/20 09:40

Lab Sample ID: 320-62008-10
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			269 mL	1.00 mL	388624	06/23/20 11:02	SAD	TAL SAC
Total/NA	Analysis	537.1 DW		1			389040	06/24/20 14:08	SK	TAL SAC

Client Sample ID: IL-010-DW
Date Collected: 06/17/20 10:22
Date Received: 06/19/20 09:40

Lab Sample ID: 320-62008-11
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			290 mL	1.00 mL	388469	06/22/20 20:18	JER	TAL SAC
Total/NA	Analysis	537.1 DW		1			388573	06/23/20 12:33	JRB	TAL SAC

Client Sample ID: IL-011-DW
Date Collected: 06/17/20 10:23
Date Received: 06/19/20 09:40

Lab Sample ID: 320-62008-12
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			274.1 mL	1.00 mL	388469	06/22/20 20:18	JER	TAL SAC
Total/NA	Analysis	537.1 DW		1			388573	06/23/20 12:41	JRB	TAL SAC

Laboratory References:
TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: Alaska Department of Env. Conservation
Project/Site: PFAS, Alaska Drinking Water

Job ID: 320-62008-1
SDG: Iliamna

Laboratory: Eurofins TestAmerica, Sacramento

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
537.1 DW	537.1 DW	Water	DONA
537.1 DW	537.1 DW	Water	F-53B Major
537.1 DW	537.1 DW	Water	F-53B Minor
537.1 DW	537.1 DW	Water	HFPO-DA (GenX)
537.1 DW	537.1 DW	Water	N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)
537.1 DW	537.1 DW	Water	N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)
537.1 DW	537.1 DW	Water	Perfluorobutanesulfonic acid (PFBS)
537.1 DW	537.1 DW	Water	Perfluorodecanoic acid (PFDA)
537.1 DW	537.1 DW	Water	Perfluorododecanoic acid (PFDoA)
537.1 DW	537.1 DW	Water	Perfluoroheptanoic acid (PFHpA)
537.1 DW	537.1 DW	Water	Perfluorohexanesulfonic acid (PFHxS)
537.1 DW	537.1 DW	Water	Perfluorohexanoic acid (PFHxA)
537.1 DW	537.1 DW	Water	Perfluorononanoic acid (PFNA)
537.1 DW	537.1 DW	Water	Perfluorooctanesulfonic acid (PFOS)
537.1 DW	537.1 DW	Water	Perfluorooctanoic acid (PFOA)
537.1 DW	537.1 DW	Water	Perfluorotetradecanoic acid (PFTeA)
537.1 DW	537.1 DW	Water	Perfluorotridecanoic acid (PFTriA)
537.1 DW	537.1 DW	Water	Perfluoroundecanoic acid (PFUnA)

Method Summary

Client: Alaska Department of Env. Conservation
Project/Site: PFAS, Alaska Drinking Water

Job ID: 320-62008-1
SDG: Iliamna

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: Alaska Department of Env. Conservation
Project/Site: PFAS, Alaska Drinking Water

Job ID: 320-62008-1
SDG: Iliamna

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-62008-1	IL-001-DW	Water	06/16/20 12:41	06/19/20 09:40	
320-62008-2	IL-002-DW	Water	06/16/20 12:59	06/19/20 09:40	
320-62008-3	IL-003-DW	Water	06/16/20 13:42	06/19/20 09:40	
320-62008-4	IL-004-DW	Water	06/16/20 14:14	06/19/20 09:40	
320-62008-5	IL-005-DW	Water	06/16/20 14:15	06/19/20 09:40	
320-62008-6	IL-006-DW	Water	06/16/20 14:43	06/19/20 09:40	
320-62008-7	IL-007-DW	Water	06/16/20 14:56	06/19/20 09:40	
320-62008-8	IL-008-DW	Water	06/16/20 15:10	06/19/20 09:40	
320-62008-9	IL-009-DW	Water	06/16/20 15:49	06/19/20 09:40	
320-62008-10	FRB	Water	06/16/20 16:20	06/19/20 09:40	
320-62008-11	IL-010-DW	Water	06/17/20 10:22	06/19/20 09:40	
320-62008-12	IL-011-DW	Water	06/17/20 10:23	06/19/20 09:40	

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Phone (916) 373-5600 Fax (916) 372-1059

Chain of Custody Record

eurofins

Client Information	Sampler: WILLIAM SCHMALTZ, RANDY QUINTY	Lab PM: Walker, Elaine M	Carrier Tracking No(s):	COC No: 320-32380-7850.1
Client Contact: Anne Marie Palmieri	Phone: 907-269-7527	E-Mail: elaine.walker@testamericainc.com		Page 1 of 2
Company: Alaska Department of Env. Conservation				Job #:
Address: Post Office Box 1542	Due Date Requested:			
City: Haines	TAT Requested (days): 10 Business Days			
State, Zip: AK, 99827				
Phone: 907-766-3184(Tel)	PO #: Purchase Order Requested			
Email: annemarie.palmieri@alaska.gov	WO #:			
Project Name: PFAS, Alaska Drinking Water	Project #: 32015376			
Site: ILIAMNA	SSOW#:			

Analysis Requested

320-62008 Chain of Custody

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	537.1_DW - EPA 537.1 List (18 Analytes)	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
IL-001-DW	6/16/2020	12:41	G	Water	N	N	X		1.25 G TRIZMA CRYSTAL pH 7
IL-002-DW	6/16/2020	12:59	G	Water			X		
IL-003-DW	6/16/2020	13:42	G	Water			X		
IL-004-DW	6/16/2020	14:14	G	Water			X		
IL-005-DW	6/16/2020	14:15	G	Water			X		
IL-006-DW	6/16/2020	14:43	G	Water			X		
IL-007-DW	6/16/2020	14:56	G	Water			X		
IL-008-DW	6/16/2020	15:10	G	Water			X		
IL-009-DW	6/16/2020	15:49	G	Water			X		
FRB	6/16/2020	16:20	G	Water			X		NO PRESERVATIVE; DUMPED TRIZMA OUT
				Water					

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☑ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify) II

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
RGuest	6/17/2020, 1:00 pm	ADEC		06/19/20 940	eta sac

Custody Seals Intact: Δ Yes Δ No

Custody Seal No.: 1030767 1030766

Cooler Temperature(s) °C and Other Remarks: 0.8

Ver: 01/16/2019

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Phone (916) 373-5600 Fax (916) 372-1059

Chain of Custody Record

eurofins

Client Information	Sampler: WILLIAM SCHMALTZ, RANDY GUNTER	Lab PM: Walker, Elaine M	Carrier Tracking No(s):	COC No: 320-32380-7850.1
Client Contact: Anne Marie Palmieri	Phone: 907-269-7527	E-Mail: elaine.walker@testamericainc.com		Page: Page 2 of 2
Company: Alaska Department of Env. Conservation				Job #:

Address: Post Office Box 1542	Due Date Requested:
City: Anchorage	TAT Requested (days): 10 Business Days
State, Zip: AK, 99827	
Phone: 907-766-3184(Tel)	PO #: Purchase Order Requested
Email: annemarie.palmieri@alaska.gov	WO #:
Project Name: PFAS, Alaska Drinking Water	Project #: 32015376
Site: ILIAMNA	SSOW#:

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	537.1_DW - EPA 537.1 List (18 Analytes)	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
IL-010-DW	6/17/2020	10:22	G	Water	N	N	X		1.25 G TRIZMA CRYSTAL pH 7 ↓
IL-011-DW	6/17/2020	10:23	G	Water	N	N	X		
				Water					
				Water					
				Water					

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☑ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify) II

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by: RGunter	Date/Time: 6/17/2020, 1:00 PM	Company: ADEC	Received by:	Date/Time: 06/19/20 940	Company: eta SAC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ☐ Yes ☐ No
Custody Seal No.: 1030767 1030766
Cooler Temperature(s) °C and Other Remarks: 0.8

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Alaska Department of Env. Conservation

Job Number: 320-62008-1
SDG Number: Iliamna

Login Number: 62008
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	1030767/1030766
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:

Ashley Jaramillo

Title:

Senior Chemist

Date:

July 7, 2020

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins TestAmerica, Sacramento

Laboratory Report Number:

320-62008-1

Laboratory Report Date:

June 29, 2020

CS Site Name:

N/A

ADEC File Number:

N/A

Hazard Identification Number:

N/A

320-62008-1

Laboratory Report Date:

June 29, 2020

CS Site Name:

N/A

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:

   Eurofins TestAmerica performed PFAS analysis for 18 analytes by 537.1 DW. Eurofins TestAmerica is a DEC CS approved laboratory for PFAS by Method 537 and only for PFOS and PFOA.

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

   Yes☐ No☐ N/A☒ Comments:

   Samples were not transferred or sub-contracted to another network or an alternate laboratory.

2. Chain of Custody (CoC)

   a. CoC information completed, signed, and dated (including released/received by)?

   Yes☒ No☐ N/A☐ Comments:

   b. Correct analyses requested?

   Yes☒ No☐ N/A☐ Comments:

3. Laboratory Sample Receipt Documentation

   a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

   Yes☒ No☐ N/A☐ Comments:

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

   Yes☒ No☐ N/A☐ Comments:

   The laboratory noted that the COC stated that there was "no preservative, dumped Trizma out" for sample FRB. This sample was unpreserved. The laboratory added 1.25 grams of Trizma to preserve the sample at a pH of 7.2.

320-62008-1

Laboratory Report Date:

June 29, 2020

CS Site Name:

N/A

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

Yes☒ No☐ N/A☐ Comments:

The laboratory noted 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:

No discrepancies were noted by the laboratory at sample login.

e. Data quality or usability affected?

Comments:

Data quality and/or usability 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:

Sample FRB (320-62008-10) indicates "NO PRESERATIVE; DUMPED TRIZMA OUT" on the COC. This sample was received as unpreserved. See Section 3b, above.

Method 537.1 DW: The following sample arrived unpreserved without Trizma: FRB (320-62008-10). The client stated that the Trizma preservative was dumped out.1.25 g of Trizma was added into the sample to preserve it at a pH of 7.2. See Section 3b, above.

Method 537.1 DW: Several analytes in the following laboratory control sample duplicate/laboratory control sample duplicate (LCS/LCSD) are reported with E flags: (LCS 320-388624/2-A) and (LCSD 320-388624/3-A). The method requires the LCS/LCSD fortification levels be rotated between low, mid and high levels from batch to batch. The fortification level for these LCS/LCSD are at the upper level of the calibration resulting in the flagged data and not due to being out of control.

320-62008-1

Laboratory Report Date:

June 29, 2020

CS Site Name:

N/A

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:

Case narrative does not discuss effect on data quality, it only discusses discrepancies and what was done in light of them. Any notable data quality issues mentioned in the case narrative are discussed above in 4b or elsewhere within this DEC checklist.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes☒ No☐ N/A☐ Comments:

b. All applicable holding times met?

Yes☒ No☐ N/A☐ Comments:

c. All soils reported on a dry weight basis?

Yes☐ No☐ N/A☒ Comments:

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:

Analytical sensitivity was evaluated to verify that LODs met the applicable DEC action level for non-detect results, as appropriate. All LODs for non-detect results met applicable action levels.

e. Data quality or usability affected?

Data quality and/or usability not affected. See above.

320-62008-1

Laboratory Report Date:

June 29, 2020

CS Site Name:

N/A

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes☒ No☐ N/A☐ Comments:

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

Yes☒ No☐ N/A☐ Comments:

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

Comments:

Not applicable. No analytes were detected in the method blank samples.

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

Yes☐ No☐ N/A☒ Comments:

No analytes were detected in the method blank samples.

v. Data quality or usability affected?

Comments:

Data quality and/or usability not affected. See above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes☒ No☐ N/A☐ Comments:

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

Yes☐ No☐ N/A☒ Comments:

No metal or inorganic analyses were requested as a part of this work order.

320-62008-1

Laboratory Report Date:

June 29, 2020

CS Site Name:

N/A

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes☒ No☐ N/A☐ Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes☒ No☐ N/A☐ Comments:

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

Comments:

Not applicable. All %Rs and RPDs were within acceptable limits.

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

Yes☐ No☐ N/A☒ Comments:

Data qualification not required, see above.

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

Comments:

Data quality and/or usability was not affected. See above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Note: Leave blank if not required for project

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes☐ No☒ N/A☐ Comments:

No MS/MSD samples were reported with this work order. See the LCS/LCSD section for accuracy and precision information.

320-62008-1

Laboratory Report Date:

June 29, 2020

CS Site Name:

N/A

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

Yes☐ No☐ N/A☒ Comments:

No metals or inorganic methods were requested as a part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes☐ No☐ N/A☒ Comments:

No MS/MSD samples were reported with 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:

No MS/MSD samples were reported with this work order.

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

Comments:

Not applicable, no MS/MSD samples were reported with 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:

No MS/MSD samples were reported with this work order.

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

Comments:

Data quality and/or usability not affected, see above.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes☒ No☐ N/A☐ Comments:

320-62008-1

Laboratory Report Date:

June 29, 2020

CS Site Name:

N/A

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 samples had failed surrogate/IDA recoveries.

iv. Data quality or usability affected?

Comments:

Data quality and/or usability 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 as a part of this work order.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes☐ No☐ N/A☒ Comments:

Volatile analyses were not requested as a part of this work order.

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

Yes☐ No☐ N/A☒ Comments:

Volatile analyses were not requested as a part of this work order.

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

Comments:

Not applicable, volatile analyses were not requested as a part of this work order.

320-62008-1

Laboratory Report Date:

June 29, 2020

CS Site Name:

N/A

v. Data quality or usability affected?

Comments:

Data quality and/or usability 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:

Samples *IL-011-DW* and *IL-005DW* are the field duplicate samples for *IL-010-DW* and *IL-004-DW*, respectively.

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:

Data quality and/or usability not affected. See above.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes☐ No☒ N/A☐ Comments:

Samples were collected with non-reusable equipment. An equipment blank is not required. However, sample *FRB* is a field blank sample which is discussed in this section.

320-62008-1

Laboratory Report Date:

June 29, 2020

CS Site Name:

N/A

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:

Not applicable. No analytes were detected in the field blank sample.

iii. Data quality or usability affected?

Comments:

Data quality and/or usability not affected, see above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes☒ No☐ N/A☐ Comments:

See 4b for additional flags for LCS and LCSD results exceeding calibration range.

Additionally, sample *IL-009* was collected using a bailer and was not sufficiently purged prior to sample collection. Consequently, the results for this sample are considered estimated and have been flagged 'J*'.

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-66626-1
Client Project/Site: Iliamna DOT+PF

For:
Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

Attn: Ashley Jaramillo

Authorized for release by:
11/17/2020 2:11:11 PM

David Alltucker, Project Manager I
(916)374-4383
David.Alltucker@Eurofinset.com

Table of Contents

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: Iliamna DOT+PF

Job ID: 320-66626-1

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: 320-66626-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative
320-66626-1

Receipt
The samples were received on 11/11/2020 12:45 PM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.0º 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 320-431073.

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: Iliamna DOT+PF

Job ID: 320-66626-1

Client Sample ID: ILI-004 — Lab Sample ID: 320-66626-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	3.3		1.9	0.49	ng/L	1		537.1 DW	Total/NA
Perfluorooctanoic acid (PFOA)	0.74	J	1.9	0.49	ng/L	1		537.1 DW	Total/NA
Perfluorobutanesulfonic acid (PFBS)	4.7		1.9	0.49	ng/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	19		1.9	0.49	ng/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	16		1.9	0.49	ng/L	1		537.1 DW	Total/NA

Client Sample ID: ILI-904 — Lab Sample ID: 320-66626-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	2.9		1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorooctanoic acid (PFOA)	0.69	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorobutanesulfonic acid (PFBS)	4.8		1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	18		1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	16		1.9	0.48	ng/L	1		537.1 DW	Total/NA

Client Sample ID: ILI-012 — Lab Sample ID: 320-66626-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	3.1		1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorooctanoic acid (PFOA)	0.69	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorobutanesulfonic acid (PFBS)	4.9		1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	19		1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	16		1.9	0.48	ng/L	1		537.1 DW	Total/NA

Client Sample ID: ILI-008 — Lab Sample ID: 320-66626-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.86	J	1.9	0.47	ng/L	1		537.1 DW	Total/NA

Client Sample ID: ILI-009 — Lab Sample ID: 320-66626-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.4	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorobutanesulfonic acid (PFBS)	6.7		1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	29		1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	18		1.9	0.48	ng/L	1		537.1 DW	Total/NA

Client Sample ID: ILI-909 — Lab Sample ID: 320-66626-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.4	J	1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluorobutanesulfonic acid (PFBS)	6.6		1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	30		1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	18		1.9	0.47	ng/L	1		537.1 DW	Total/NA

Client Sample ID: ILI-031 — Lab Sample ID: 320-66626-7

No Detections.

Client Sample ID: ILI-030 — Lab Sample ID: 320-66626-8

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: Iliamna DOT+PF

Job ID: 320-66626-1

Client Sample ID: ILI-013 — Lab Sample ID: 320-66626-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	4.5		1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.57	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorooctanoic acid (PFOA)	0.98	J	1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorobutanesulfonic acid (PFBS)	8.0		1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	30		1.9	0.48	ng/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	25		1.9	0.48	ng/L	1		537.1 DW	Total/NA

Client Sample ID: ILI-006 — Lab Sample ID: 320-66626-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	4.0		1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluorooctanoic acid (PFOA)	0.60	J	1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluorobutanesulfonic acid (PFBS)	5.2		1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	15		1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	10		1.9	0.47	ng/L	1		537.1 DW	Total/NA

Client Sample ID: ILI-001 — Lab Sample ID: 320-66626-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	3.9		1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.67	J	1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluorooctanoic acid (PFOA)	0.51	J	1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluorobutanesulfonic acid (PFBS)	6.1		1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	21		1.9	0.47	ng/L	1		537.1 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	15		1.9	0.47	ng/L	1		537.1 DW	Total/NA

Client Sample ID: ILI-023 — Lab Sample ID: 320-66626-12

No Detections.

Client Sample ID: ILI-003 — Lab Sample ID: 320-66626-13

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: ILI-004
Date Collected: 11/04/20 10:42
Date Received: 11/11/20 12:45

Lab Sample ID: 320-66626-1
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	0.49	ng/L		11/12/20 13:06	11/13/20 16:20	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.49	ng/L		11/12/20 13:06	11/13/20 16:20	1
Perfluorooctanoic acid (PFOA)	**0.74**	**J**	1.9	0.49	ng/L		11/12/20 13:06	11/13/20 16:20	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.49	ng/L		11/12/20 13:06	11/13/20 16:20	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.49	ng/L		11/12/20 13:06	11/13/20 16:20	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.49	ng/L		11/12/20 13:06	11/13/20 16:20	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.49	ng/L		11/12/20 13:06	11/13/20 16:20	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.49	ng/L		11/12/20 13:06	11/13/20 16:20	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.49	ng/L		11/12/20 13:06	11/13/20 16:20	1
Perfluorobutanesulfonic acid (PFBS)	**4.7**		1.9	0.49	ng/L		11/12/20 13:06	11/13/20 16:20	1
Perfluorohexanesulfonic acid (PFHxS)	**19**		1.9	0.49	ng/L		11/12/20 13:06	11/13/20 16:20	1
Perfluorooctanesulfonic acid (PFOS)	**16**		1.9	0.49	ng/L		11/12/20 13:06	11/13/20 16:20	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.49	ng/L		11/12/20 13:06	11/13/20 16:20	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.49	ng/L		11/12/20 13:06	11/13/20 16:20	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.49	ng/L		11/12/20 13:06	11/13/20 16:20	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.49	ng/L		11/12/20 13:06	11/13/20 16:20	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.49	ng/L		11/12/20 13:06	11/13/20 16:20	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.49	ng/L		11/12/20 13:06	11/13/20 16:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*87*		*70 - 130*	*11/12/20 13:06*	*11/13/20 16:20*	*1*
13C2 PFDA	*87*		*70 - 130*	*11/12/20 13:06*	*11/13/20 16:20*	*1*
d5-NEtFOSAA	*87*		*70 - 130*	*11/12/20 13:06*	*11/13/20 16:20*	*1*
13C3 HFPO-DA	*86*		*70 - 130*	*11/12/20 13:06*	*11/13/20 16:20*	*1*

Client Sample ID: ILI-904
Date Collected: 11/04/20 10:32
Date Received: 11/11/20 12:45

Lab Sample ID: 320-66626-2
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)	**2.9**		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:28	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:28	1
Perfluorooctanoic acid (PFOA)	**0.69**	**J**	1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:28	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:28	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:28	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:28	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:28	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:28	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:28	1
Perfluorobutanesulfonic acid (PFBS)	**4.8**		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:28	1
Perfluorohexanesulfonic acid (PFHxS)	**18**		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:28	1
Perfluorooctanesulfonic acid (PFOS)	**16**		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:28	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:28	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:28	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:28	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:28	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:28	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*84*		*70 - 130*	*11/12/20 13:06*	*11/13/20 16:28*	*1*
13C2 PFDA	*87*		*70 - 130*	*11/12/20 13:06*	*11/13/20 16:28*	*1*
d5-NEtFOSAA	*84*		*70 - 130*	*11/12/20 13:06*	*11/13/20 16:28*	*1*
13C3 HFPO-DA	*78*		*70 - 130*	*11/12/20 13:06*	*11/13/20 16:28*	*1*

Client Sample ID: ILI-012
Date Collected: 11/04/20 11:33
Date Received: 11/11/20 12:45

Lab Sample ID: 320-66626-3
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)	**3.1**		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:36	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:36	1
Perfluorooctanoic acid (PFOA)	**0.69**	**J**	1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:36	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:36	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:36	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:36	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:36	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:36	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:36	1
Perfluorobutanesulfonic acid (PFBS)	**4.9**		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:36	1
Perfluorohexanesulfonic acid (PFHxS)	**19**		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:36	1
Perfluorooctanesulfonic acid (PFOS)	**16**		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:36	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:36	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:36	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:36	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:36	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:36	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*86*		*70 - 130*	*11/12/20 13:06*	*11/13/20 16:36*	*1*
13C2 PFDA	*80*		*70 - 130*	*11/12/20 13:06*	*11/13/20 16:36*	*1*
d5-NEtFOSAA	*78*		*70 - 130*	*11/12/20 13:06*	*11/13/20 16:36*	*1*
13C3 HFPO-DA	*82*		*70 - 130*	*11/12/20 13:06*	*11/13/20 16:36*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Iliamna DOT+PF

Job ID: 320-66626-1

Client Sample ID: ILI-008
Date Collected: 11/04/20 15:07
Date Received: 11/11/20 12:45

Lab Sample ID: 320-66626-4
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		11/12/20 13:06	11/13/20 16:43	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 16:43	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 16:43	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 16:43	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 16:43	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 16:43	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 16:43	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 16:43	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 16:43	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 16:43	1
Perfluorohexanesulfonic acid (PFHxS)	**0.86**	**J**	1.9	0.47	ng/L		11/12/20 13:06	11/13/20 16:43	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 16:43	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 16:43	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 16:43	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 16:43	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 16:43	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 16:43	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 16:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*83*		*70 - 130*	*11/12/20 13:06*	*11/13/20 16:43*	*1*
13C2 PFDA	*83*		*70 - 130*	*11/12/20 13:06*	*11/13/20 16:43*	*1*
d5-NEtFOSAA	*83*		*70 - 130*	*11/12/20 13:06*	*11/13/20 16:43*	*1*
13C3 HFPO-DA	*78*		*70 - 130*	*11/12/20 13:06*	*11/13/20 16:43*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Iliamna DOT+PF

Job ID: 320-66626-1

Client Sample ID: ILI-009
Date Collected: 11/04/20 13:31
Date Received: 11/11/20 12:45

Lab Sample ID: 320-66626-5
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)	**1.4**	**J**	1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:51	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:51	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:51	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:51	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:51	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:51	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:51	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:51	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:51	1
Perfluorobutanesulfonic acid (PFBS)	**6.7**		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:51	1
Perfluorohexanesulfonic acid (PFHxS)	**29**		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:51	1
Perfluorooctanesulfonic acid (PFOS)	**18**		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:51	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:51	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:51	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:51	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:51	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:51	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 16:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*87*		*70 - 130*	*11/12/20 13:06*	*11/13/20 16:51*	*1*
13C2 PFDA	*83*		*70 - 130*	*11/12/20 13:06*	*11/13/20 16:51*	*1*
d5-NEtFOSAA	*80*		*70 - 130*	*11/12/20 13:06*	*11/13/20 16:51*	*1*
13C3 HFPO-DA	*80*		*70 - 130*	*11/12/20 13:06*	*11/13/20 16:51*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Iliamna DOT+PF

Job ID: 320-66626-1

Client Sample ID: ILI-909
Date Collected: 11/04/20 13:21
Date Received: 11/11/20 12:45

Lab Sample ID: 320-66626-6
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)	**1.4**	**J**	1.9	0.47	ng/L		11/12/20 13:06	11/13/20 16:59	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 16:59	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 16:59	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 16:59	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 16:59	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 16:59	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 16:59	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 16:59	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 16:59	1
Perfluorobutanesulfonic acid (PFBS)	**6.6**		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 16:59	1
Perfluorohexanesulfonic acid (PFHxS)	**30**		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 16:59	1
Perfluorooctanesulfonic acid (PFOS)	**18**		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 16:59	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 16:59	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 16:59	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 16:59	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 16:59	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 16:59	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 16:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*83*		*70 - 130*	*11/12/20 13:06*	*11/13/20 16:59*	*1*
13C2 PFDA	*82*		*70 - 130*	*11/12/20 13:06*	*11/13/20 16:59*	*1*
d5-NEtFOSAA	*84*		*70 - 130*	*11/12/20 13:06*	*11/13/20 16:59*	*1*
13C3 HFPO-DA	*78*		*70 - 130*	*11/12/20 13:06*	*11/13/20 16:59*	*1*

Client Sample ID: ILI-031
Date Collected: 11/04/20 15:49
Date Received: 11/11/20 12:45

Lab Sample ID: 320-66626-7
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		1.9	0.46	ng/L		11/12/20 13:06	11/13/20 17:07	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.46	ng/L		11/12/20 13:06	11/13/20 17:07	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.46	ng/L		11/12/20 13:06	11/13/20 17:07	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.46	ng/L		11/12/20 13:06	11/13/20 17:07	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.46	ng/L		11/12/20 13:06	11/13/20 17:07	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.46	ng/L		11/12/20 13:06	11/13/20 17:07	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.46	ng/L		11/12/20 13:06	11/13/20 17:07	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.46	ng/L		11/12/20 13:06	11/13/20 17:07	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.46	ng/L		11/12/20 13:06	11/13/20 17:07	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.46	ng/L		11/12/20 13:06	11/13/20 17:07	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.46	ng/L		11/12/20 13:06	11/13/20 17:07	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.46	ng/L		11/12/20 13:06	11/13/20 17:07	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.46	ng/L		11/12/20 13:06	11/13/20 17:07	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.46	ng/L		11/12/20 13:06	11/13/20 17:07	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.46	ng/L		11/12/20 13:06	11/13/20 17:07	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.46	ng/L		11/12/20 13:06	11/13/20 17:07	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.46	ng/L		11/12/20 13:06	11/13/20 17:07	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.46	ng/L		11/12/20 13:06	11/13/20 17:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*84*		*70 - 130*	*11/12/20 13:06*	*11/13/20 17:07*	*1*
13C2 PFDA	*83*		*70 - 130*	*11/12/20 13:06*	*11/13/20 17:07*	*1*
d5-NEtFOSAA	*83*		*70 - 130*	*11/12/20 13:06*	*11/13/20 17:07*	*1*
13C3 HFPO-DA	*81*		*70 - 130*	*11/12/20 13:06*	*11/13/20 17:07*	*1*

Client Sample ID: ILI-030
Date Collected: 11/04/20 16:32
Date Received: 11/11/20 12:45

Lab Sample ID: 320-66626-8
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		11/12/20 13:06	11/13/20 17:53	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 17:53	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 17:53	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 17:53	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 17:53	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 17:53	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 17:53	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 17:53	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 17:53	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 17:53	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 17:53	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 17:53	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 17:53	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 17:53	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 17:53	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 17:53	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 17:53	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 17:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*80*		*70 - 130*	*11/12/20 13:06*	*11/13/20 17:53*	*1*
13C2 PFDA	*85*		*70 - 130*	*11/12/20 13:06*	*11/13/20 17:53*	*1*
d5-NEtFOSAA	*79*		*70 - 130*	*11/12/20 13:06*	*11/13/20 17:53*	*1*
13C3 HFPO-DA	*77*		*70 - 130*	*11/12/20 13:06*	*11/13/20 17:53*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Iliamna DOT+PF

Job ID: 320-66626-1

Client Sample ID: ILI-013
Date Collected: 11/04/20 16:51
Date Received: 11/11/20 12:45

Lab Sample ID: 320-66626-9
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)	**4.5**		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 18:00	1
Perfluoroheptanoic acid (PFHpA)	**0.57**	**J**	1.9	0.48	ng/L		11/12/20 13:06	11/13/20 18:00	1
Perfluorooctanoic acid (PFOA)	**0.98**	**J**	1.9	0.48	ng/L		11/12/20 13:06	11/13/20 18:00	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 18:00	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 18:00	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 18:00	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 18:00	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 18:00	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 18:00	1
Perfluorobutanesulfonic acid (PFBS)	**8.0**		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 18:00	1
Perfluorohexanesulfonic acid (PFHxS)	**30**		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 18:00	1
Perfluorooctanesulfonic acid (PFOS)	**25**		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 18:00	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 18:00	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 18:00	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 18:00	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 18:00	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 18:00	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 18:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*85*		*70 - 130*	*11/12/20 13:06*	*11/13/20 18:00*	*1*
13C2 PFDA	*86*		*70 - 130*	*11/12/20 13:06*	*11/13/20 18:00*	*1*
d5-NEtFOSAA	*83*		*70 - 130*	*11/12/20 13:06*	*11/13/20 18:00*	*1*
13C3 HFPO-DA	*81*		*70 - 130*	*11/12/20 13:06*	*11/13/20 18:00*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Iliamna DOT+PF

Job ID: 320-66626-1

Client Sample ID: ILI-006
Date Collected: 11/04/20 15:18
Date Received: 11/11/20 12:45

Lab Sample ID: 320-66626-10
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)	**4.0**		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 18:08	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 18:08	1
Perfluorooctanoic acid (PFOA)	**0.60**	**J**	1.9	0.47	ng/L		11/12/20 13:06	11/13/20 18:08	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 18:08	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 18:08	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 18:08	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 18:08	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 18:08	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 18:08	1
Perfluorobutanesulfonic acid (PFBS)	**5.2**		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 18:08	1
Perfluorohexanesulfonic acid (PFHxS)	**15**		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 18:08	1
Perfluorooctanesulfonic acid (PFOS)	**10**		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 18:08	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 18:08	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 18:08	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 18:08	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 18:08	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 18:08	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 18:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*86*		*70 - 130*	*11/12/20 13:06*	*11/13/20 18:08*	*1*
13C2 PFDA	*85*		*70 - 130*	*11/12/20 13:06*	*11/13/20 18:08*	*1*
d5-NEtFOSAA	*80*		*70 - 130*	*11/12/20 13:06*	*11/13/20 18:08*	*1*
13C3 HFPO-DA	*80*		*70 - 130*	*11/12/20 13:06*	*11/13/20 18:08*	*1*

Client Sample ID: ILI-001
Date Collected: 11/04/20 14:28
Date Received: 11/11/20 12:45

Lab Sample ID: 320-66626-11
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)	**3.9**		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 18:16	1
Perfluoroheptanoic acid (PFHpA)	**0.67**	**J**	1.9	0.47	ng/L		11/12/20 13:06	11/13/20 18:16	1
Perfluorooctanoic acid (PFOA)	**0.51**	**J**	1.9	0.47	ng/L		11/12/20 13:06	11/13/20 18:16	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 18:16	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 18:16	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 18:16	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 18:16	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 18:16	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 18:16	1
Perfluorobutanesulfonic acid (PFBS)	**6.1**		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 18:16	1
Perfluorohexanesulfonic acid (PFHxS)	**21**		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 18:16	1
Perfluorooctanesulfonic acid (PFOS)	**15**		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 18:16	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 18:16	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 18:16	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 18:16	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 18:16	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 18:16	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.47	ng/L		11/12/20 13:06	11/13/20 18:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*86*		*70 - 130*	*11/12/20 13:06*	*11/13/20 18:16*	*1*
13C2 PFDA	*85*		*70 - 130*	*11/12/20 13:06*	*11/13/20 18:16*	*1*
d5-NEtFOSAA	*84*		*70 - 130*	*11/12/20 13:06*	*11/13/20 18:16*	*1*
13C3 HFPO-DA	*81*		*70 - 130*	*11/12/20 13:06*	*11/13/20 18:16*	*1*

Client Sample ID: ILI-023
Date Collected: 11/05/20 12:31
Date Received: 11/11/20 12:45

Lab Sample ID: 320-66626-12
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		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 18:24	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 18:24	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 18:24	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 18:24	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 18:24	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 18:24	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 18:24	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 18:24	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 18:24	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 18:24	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 18:24	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 18:24	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 18:24	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 18:24	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 18:24	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 18:24	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 18:24	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.48	ng/L		11/12/20 13:06	11/13/20 18:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*88*		*70 - 130*	*11/12/20 13:06*	*11/13/20 18:24*	*1*
13C2 PFDA	*86*		*70 - 130*	*11/12/20 13:06*	*11/13/20 18:24*	*1*
d5-NEtFOSAA	*84*		*70 - 130*	*11/12/20 13:06*	*11/13/20 18:24*	*1*
13C3 HFPO-DA	*80*		*70 - 130*	*11/12/20 13:06*	*11/13/20 18:24*	*1*

Client Sample ID: ILI-003
Date Collected: 11/05/20 14:20
Date Received: 11/11/20 12:45

Lab Sample ID: 320-66626-13
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	0.46	ng/L		11/12/20 13:06	11/13/20 18:31	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.46	ng/L		11/12/20 13:06	11/13/20 18:31	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.46	ng/L		11/12/20 13:06	11/13/20 18:31	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.46	ng/L		11/12/20 13:06	11/13/20 18:31	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.46	ng/L		11/12/20 13:06	11/13/20 18:31	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.46	ng/L		11/12/20 13:06	11/13/20 18:31	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.46	ng/L		11/12/20 13:06	11/13/20 18:31	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	0.46	ng/L		11/12/20 13:06	11/13/20 18:31	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.46	ng/L		11/12/20 13:06	11/13/20 18:31	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.46	ng/L		11/12/20 13:06	11/13/20 18:31	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.46	ng/L		11/12/20 13:06	11/13/20 18:31	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.46	ng/L		11/12/20 13:06	11/13/20 18:31	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.46	ng/L		11/12/20 13:06	11/13/20 18:31	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.46	ng/L		11/12/20 13:06	11/13/20 18:31	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		1.9	0.46	ng/L		11/12/20 13:06	11/13/20 18:31	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		1.9	0.46	ng/L		11/12/20 13:06	11/13/20 18:31	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.9	0.46	ng/L		11/12/20 13:06	11/13/20 18:31	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.46	ng/L		11/12/20 13:06	11/13/20 18:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*83*		*70 - 130*	*11/12/20 13:06*	*11/13/20 18:31*	*1*
13C2 PFDA	*82*		*70 - 130*	*11/12/20 13:06*	*11/13/20 18:31*	*1*
d5-NEtFOSAA	*84*		*70 - 130*	*11/12/20 13:06*	*11/13/20 18:31*	*1*
13C3 HFPO-DA	*79*		*70 - 130*	*11/12/20 13:06*	*11/13/20 18:31*	*1*

Surrogate Summary

Client: Shannon & Wilson, Inc
Project/Site: Iliamna DOT+PF

Job ID: 320-66626-1

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)
320-66626-1	ILI-004	87	87	87	86
320-66626-2	ILI-904	84	87	84	78
320-66626-3	ILI-012	86	80	78	82
320-66626-4	ILI-008	83	83	83	78
320-66626-5	ILI-009	87	83	80	80
320-66626-6	ILI-909	83	82	84	78
320-66626-7	ILI-031	84	83	83	81
320-66626-8	ILI-030	80	85	79	77
320-66626-9	ILI-013	85	86	83	81
320-66626-10	ILI-006	86	85	80	80
320-66626-11	ILI-001	86	85	84	81
320-66626-12	ILI-023	88	86	84	80
320-66626-13	ILI-003	83	82	84	79
LCS 320-431073/2-A	Lab Control Sample	80	82	80	78
LCSD 320-431073/3-A	Lab Control Sample Dup	83	81	85	83
MB 320-431073/1-A	Method Blank	85	83	79	81

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 320-431073/1-A
Matrix: Water
Analysis Batch: 431387

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 431073

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.50	ng/L		11/12/20 13:06	11/13/20 16:13	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.50	ng/L		11/12/20 13:06	11/13/20 16:13	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.50	ng/L		11/12/20 13:06	11/13/20 16:13	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.50	ng/L		11/12/20 13:06	11/13/20 16:13	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.50	ng/L		11/12/20 13:06	11/13/20 16:13	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.50	ng/L		11/12/20 13:06	11/13/20 16:13	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.50	ng/L		11/12/20 13:06	11/13/20 16:13	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	0.50	ng/L		11/12/20 13:06	11/13/20 16:13	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.50	ng/L		11/12/20 13:06	11/13/20 16:13	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.50	ng/L		11/12/20 13:06	11/13/20 16:13	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.50	ng/L		11/12/20 13:06	11/13/20 16:13	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.50	ng/L		11/12/20 13:06	11/13/20 16:13	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.0	0.50	ng/L		11/12/20 13:06	11/13/20 16:13	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.0	0.50	ng/L		11/12/20 13:06	11/13/20 16:13	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	ND		2.0	0.50	ng/L		11/12/20 13:06	11/13/20 16:13	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	ND		2.0	0.50	ng/L		11/12/20 13:06	11/13/20 16:13	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		2.0	0.50	ng/L		11/12/20 13:06	11/13/20 16:13	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.50	ng/L		11/12/20 13:06	11/13/20 16:13	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*85*		*70 - 130*	*11/12/20 13:06*	*11/13/20 16:13*	*1*
13C2 PFDA	*83*		*70 - 130*	*11/12/20 13:06*	*11/13/20 16:13*	*1*
d5-NEtFOSAA	*79*		*70 - 130*	*11/12/20 13:06*	*11/13/20 16:13*	*1*
13C3 HFPO-DA	*81*		*70 - 130*	*11/12/20 13:06*	*11/13/20 16:13*	*1*

Lab Sample ID: LCS 320-431073/2-A
Matrix: Water
Analysis Batch: 431387

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 431073

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid (PFHxA)	160	148		ng/L		93	70 - 130
Perfluoroheptanoic acid (PFHpA)	160	154		ng/L		96	70 - 130
Perfluorooctanoic acid (PFOA)	160	151		ng/L		94	70 - 130
Perfluorononanoic acid (PFNA)	160	152		ng/L		95	70 - 130
Perfluorodecanoic acid (PFDA)	160	159		ng/L		100	70 - 130
Perfluoroundecanoic acid (PFUnA)	160	149		ng/L		93	70 - 130
Perfluorododecanoic acid (PFDoA)	160	150		ng/L		94	70 - 130
Perfluorotridecanoic acid (PFTriA)	160	157		ng/L		98	70 - 130
Perfluorotetradecanoic acid (PFTeA)	160	161		ng/L		101	70 - 130
Perfluorobutanesulfonic acid (PFBS)	141	146		ng/L		103	70 - 130

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: LCS 320-431073/2-A
Matrix: Water
Analysis Batch: 431387

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 431073

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanesulfonic acid (PFHxS)	146	160		ng/L		110	70 - 130
Perfluorooctanesulfonic acid (PFOS)	148	144		ng/L		97	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	160	150		ng/L		94	70 - 130
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	160	150		ng/L		94	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	149	160		ng/L		108	70 - 130
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF	151	157		ng/L		104	70 - 130
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	160	148		ng/L		92	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	151	139		ng/L		93	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*80*		*70 - 130*
13C2 PFDA	*82*		*70 - 130*
d5-NEtFOSAA	*80*		*70 - 130*
13C3 HFPO-DA	*78*		*70 - 130*

Lab Sample ID: LCSD 320-431073/3-A
Matrix: Water
Analysis Batch: 431387

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 431073

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	160	152		ng/L		95	70 - 130	3	30
Perfluoroheptanoic acid (PFHpA)	160	164		ng/L		103	70 - 130	6	30
Perfluorooctanoic acid (PFOA)	160	158		ng/L		98	70 - 130	4	30
Perfluorononanoic acid (PFNA)	160	156		ng/L		97	70 - 130	2	30
Perfluorodecanoic acid (PFDA)	160	160		ng/L		100	70 - 130	1	30
Perfluoroundecanoic acid (PFUnA)	160	150		ng/L		94	70 - 130	1	30
Perfluorododecanoic acid (PFDoA)	160	151		ng/L		95	70 - 130	1	30
Perfluorotridecanoic acid (PFTriA)	160	151		ng/L		95	70 - 130	3	30
Perfluorotetradecanoic acid (PFTeA)	160	147		ng/L		92	70 - 130	9	30
Perfluorobutanesulfonic acid (PFBS)	141	144		ng/L		102	70 - 130	1	30
Perfluorohexanesulfonic acid (PFHxS)	146	157		ng/L		108	70 - 130	2	30
Perfluorooctanesulfonic acid (PFOS)	148	145		ng/L		98	70 - 130	1	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	160	158		ng/L		98	70 - 130	5	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	160	158		ng/L		99	70 - 130	6	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3O	149	161		ng/L		108	70 - 130	0	30

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: LCSD 320-431073/3-A
Matrix: Water
Analysis Batch: 431387

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 431073

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	157		ng/L		104	70 - 130	0	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			160	158		ng/L		99	70 - 130	7	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			151	144		ng/L		96	70 - 130	3	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*83*		*70 - 130*
13C2 PFDA	*81*		*70 - 130*
d5-NEtFOSAA	*85*		*70 - 130*
13C3 HFPO-DA	*83*		*70 - 130*

QC Association Summary

Client: Shannon & Wilson, Inc
Project/Site: Iliamna DOT+PF

Job ID: 320-66626-1

LCMS

Prep Batch: 431073

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-66626-1	ILI-004	Total/NA	Water	537.1 DW	
320-66626-2	ILI-904	Total/NA	Water	537.1 DW	
320-66626-3	ILI-012	Total/NA	Water	537.1 DW	
320-66626-4	ILI-008	Total/NA	Water	537.1 DW	
320-66626-5	ILI-009	Total/NA	Water	537.1 DW	
320-66626-6	ILI-909	Total/NA	Water	537.1 DW	
320-66626-7	ILI-031	Total/NA	Water	537.1 DW	
320-66626-8	ILI-030	Total/NA	Water	537.1 DW	
320-66626-9	ILI-013	Total/NA	Water	537.1 DW	
320-66626-10	ILI-006	Total/NA	Water	537.1 DW	
320-66626-11	ILI-001	Total/NA	Water	537.1 DW	
320-66626-12	ILI-023	Total/NA	Water	537.1 DW	
320-66626-13	ILI-003	Total/NA	Water	537.1 DW	
MB 320-431073/1-A	Method Blank	Total/NA	Water	537.1 DW	
LCS 320-431073/2-A	Lab Control Sample	Total/NA	Water	537.1 DW	
LCSD 320-431073/3-A	Lab Control Sample Dup	Total/NA	Water	537.1 DW	

Analysis Batch: 431387

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-66626-1	ILI-004	Total/NA	Water	537.1 DW	431073
320-66626-2	ILI-904	Total/NA	Water	537.1 DW	431073
320-66626-3	ILI-012	Total/NA	Water	537.1 DW	431073
320-66626-4	ILI-008	Total/NA	Water	537.1 DW	431073
320-66626-5	ILI-009	Total/NA	Water	537.1 DW	431073
320-66626-6	ILI-909	Total/NA	Water	537.1 DW	431073
320-66626-7	ILI-031	Total/NA	Water	537.1 DW	431073
MB 320-431073/1-A	Method Blank	Total/NA	Water	537.1 DW	431073
LCS 320-431073/2-A	Lab Control Sample	Total/NA	Water	537.1 DW	431073
LCSD 320-431073/3-A	Lab Control Sample Dup	Total/NA	Water	537.1 DW	431073

Analysis Batch: 431389

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-66626-8	ILI-030	Total/NA	Water	537.1 DW	431073
320-66626-9	ILI-013	Total/NA	Water	537.1 DW	431073
320-66626-10	ILI-006	Total/NA	Water	537.1 DW	431073
320-66626-11	ILI-001	Total/NA	Water	537.1 DW	431073
320-66626-12	ILI-023	Total/NA	Water	537.1 DW	431073
320-66626-13	ILI-003	Total/NA	Water	537.1 DW	431073

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: Iliamna DOT+PF

Job ID: 320-66626-1

Client Sample ID: ILI-004
Date Collected: 11/04/20 10:42
Date Received: 11/11/20 12:45

Lab Sample ID: 320-66626-1
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			257.3 mL	1.00 mL	431073	11/12/20 13:06	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			431387	11/13/20 16:20	SK	TAL SAC

Client Sample ID: ILI-904
Date Collected: 11/04/20 10:32
Date Received: 11/11/20 12:45

Lab Sample ID: 320-66626-2
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			262.2 mL	1.00 mL	431073	11/12/20 13:06	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			431387	11/13/20 16:28	SK	TAL SAC

Client Sample ID: ILI-012
Date Collected: 11/04/20 11:33
Date Received: 11/11/20 12:45

Lab Sample ID: 320-66626-3
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			262.7 mL	1.00 mL	431073	11/12/20 13:06	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			431387	11/13/20 16:36	SK	TAL SAC

Client Sample ID: ILI-008
Date Collected: 11/04/20 15:07
Date Received: 11/11/20 12:45

Lab Sample ID: 320-66626-4
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			267.1 mL	1.00 mL	431073	11/12/20 13:06	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			431387	11/13/20 16:43	SK	TAL SAC

Client Sample ID: ILI-009
Date Collected: 11/04/20 13:31
Date Received: 11/11/20 12:45

Lab Sample ID: 320-66626-5
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			258.2 mL	1.00 mL	431073	11/12/20 13:06	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			431387	11/13/20 16:51	SK	TAL SAC

Client Sample ID: ILI-909
Date Collected: 11/04/20 13:21
Date Received: 11/11/20 12:45

Lab Sample ID: 320-66626-6
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			263.2 mL	1.00 mL	431073	11/12/20 13:06	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			431387	11/13/20 16:59	SK	TAL SAC

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: Iliamna DOT+PF

Job ID: 320-66626-1

Client Sample ID: ILI-031
Date Collected: 11/04/20 15:49
Date Received: 11/11/20 12:45

Lab Sample ID: 320-66626-7
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			269.2 mL	1.00 mL	431073	11/12/20 13:06	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			431387	11/13/20 17:07	SK	TAL SAC

Client Sample ID: ILI-030
Date Collected: 11/04/20 16:32
Date Received: 11/11/20 12:45

Lab Sample ID: 320-66626-8
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			262.4 mL	1.00 mL	431073	11/12/20 13:06	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			431389	11/13/20 17:53	SK	TAL SAC

Client Sample ID: ILI-013
Date Collected: 11/04/20 16:51
Date Received: 11/11/20 12:45

Lab Sample ID: 320-66626-9
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			259.2 mL	1.00 mL	431073	11/12/20 13:06	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			431389	11/13/20 18:00	SK	TAL SAC

Client Sample ID: ILI-006
Date Collected: 11/04/20 15:18
Date Received: 11/11/20 12:45

Lab Sample ID: 320-66626-10
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			264.5 mL	1.00 mL	431073	11/12/20 13:06	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			431389	11/13/20 18:08	SK	TAL SAC

Client Sample ID: ILI-001
Date Collected: 11/04/20 14:28
Date Received: 11/11/20 12:45

Lab Sample ID: 320-66626-11
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			263.7 mL	1.00 mL	431073	11/12/20 13:06	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			431389	11/13/20 18:16	SK	TAL SAC

Client Sample ID: ILI-023
Date Collected: 11/05/20 12:31
Date Received: 11/11/20 12:45

Lab Sample ID: 320-66626-12
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			261.2 mL	1.00 mL	431073	11/12/20 13:06	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			431389	11/13/20 18:24	SK	TAL SAC

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: Iliamna DOT+PF

Job ID: 320-66626-1

Client Sample ID: ILI-003
Date Collected: 11/05/20 14:20
Date Received: 11/11/20 12:45

Lab Sample ID: 320-66626-13
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			269.2 mL	1.00 mL	431073	11/12/20 13:06	EH	TAL SAC
Total/NA	Analysis	537.1 DW		1			431389	11/13/20 18:31	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: Iliamna DOT+PF

Job ID: 320-66626-1

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: Iliamna DOT+PF

Job ID: 320-66626-1

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: Iliamna DOT+PF

Job ID: 320-66626-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-66626-1	ILI-004	Water	11/04/20 10:42	11/11/20 12:45	
320-66626-2	ILI-904	Water	11/04/20 10:32	11/11/20 12:45	
320-66626-3	ILI-012	Water	11/04/20 11:33	11/11/20 12:45	
320-66626-4	ILI-008	Water	11/04/20 15:07	11/11/20 12:45	
320-66626-5	ILI-009	Water	11/04/20 13:31	11/11/20 12:45	
320-66626-6	ILI-909	Water	11/04/20 13:21	11/11/20 12:45	
320-66626-7	ILI-031	Water	11/04/20 15:49	11/11/20 12:45	
320-66626-8	ILI-030	Water	11/04/20 16:32	11/11/20 12:45	
320-66626-9	ILI-013	Water	11/04/20 16:51	11/11/20 12:45	
320-66626-10	ILI-006	Water	11/04/20 15:18	11/11/20 12:45	
320-66626-11	ILI-001	Water	11/04/20 14:28	11/11/20 12:45	
320-66626-12	ILI-023	Water	11/05/20 12:31	11/11/20 12:45	
320-66626-13	ILI-003	Water	11/05/20 14:20	11/11/20 12:45	

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: DAVID 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 (537.1) + TRIZMA	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
ILI-004		1042	11/4/20	X	2	Groundwater/Drinking Water
ILI-904		1032				
ILI-012		1133				
ILI-008		1507				
ILI-009		1331				
ILI-909		1321				
ILI-031		1549				
ILI-030		1632				
ILI-013		1651				
ILI-006		1518				

320-66626 Chain of Custody

Project Information	
Number:	105201-003
Name:	Iliamna DOT+PF
Contact:	AMJ
Ongoing Project?	Yes [ ] No [X]
Sampler:	RLW, SMH

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

Notes:

PFAS x18 Analytes

Reliquished By: 1.	Reliquished By: 2.	Reliquished By: 3.
Signature: Time: 1230	Signature: Time:	Signature: Time:
Printed Name: Rachel Willis Date: 11/10/20	Printed Name: Date:	Printed Name: Date:
Company: Shannon+Wilson, Inc	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time: 1243	Signature: Time:	Signature: Time:
Printed Name: Jennifer Darlington Date: 10 Nov 20	Printed Name: Date:	Printed Name: Date:
Company: ETAW Sac	Company:	Company:

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

4.0°c

No. 36164

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: DAVID 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 (537.1) +TRIZMA	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
ILI-001		1428	11/4/20	X	2	Groundwater/Drinking water
ILI-023		1231	11/5/20	1	1	1
ILI-003		1420	11/5/20	1	1	1

Project Information

Number: 105201-003
Name: Iliamna DOT+PF
Contact: AMJ
Ongoing Project? Yes [ ] No [X]
Sampler: RLW, SMH

Sample Receipt

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

Notes:

PFAS x18 Analytes

Relinquished By: 1.
Signature: Rachel Wills Time: 1230
Printed Name: Rachel Wills Date: 11/10/20
Company: Shannon-Wilson, Inc

Relinquished By: 2.
Signature: Time:
Printed Name: Date:
Company:

Relinquished By: 3.
Signature: Time:
Printed Name: Date:
Company:

Received By: 1.
Signature: Time: 1245
Printed Name: Jennifer Darlington Date: 11/10/20
Company: GTA W Sac

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

4.0°c

No. 36170

11/17/2020

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-66626-1

Login Number: 66626
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	1094975
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:

Ashley Jaramillo

Title:

Senior Chemist

Date:

November 19, 2020

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins TestAmerica, Sacramento

Laboratory Report Number:

320-66626-1

Laboratory Report Date:

November 17, 2020

CS Site Name:

ADOT&PF Iliamna Airport Sitewide PFAS

ADEC File Number:

2560.38.013

Hazard Identification Number:

27265

320-66626-1

Laboratory Report Date:

November 17, 2020

CS Site Name:

ADOT&PF Iliamna Airport Sitewide PFAS

Note: Any N/A or No box checked must have an explanation in the comments box.

1. Laboratory

   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

   Yes☐ No☒ N/A☐ Comments:

   Eurofins TestAmerica performed PFAS analysis for 18 analytes by 537.1 DW. Eurofins TestAmerica is a DEC CS approved laboratory (17-020) for PFAS by Method 537.

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

   Yes☐ No☐ N/A☒ Comments:

   Samples were not transferred or sub-contracted to another network or an alternate laboratory.

2. Chain of Custody (CoC)

   a. CoC information completed, signed, and dated (including released/received by)?

   Yes☒ No☐ N/A☐ Comments:

   b. Correct analyses requested?

   Yes☒ No☐ N/A☐ Comments:

3. Laboratory Sample Receipt Documentation

   a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

   Yes☒ No☐ N/A☐ Comments:

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

   Yes☒ No☐ N/A☐ Comments:

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

Yes☒ No☐ N/A☐ Comments:

The laboratory noted 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:

No discrepancies were observed by the laboratory at sample login.

e. Data quality or usability affected?

Comments:

Data quality and/or usability 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:

Method 537.1 DW: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-431073.

c. Were all corrective actions documented?

Yes☐ No☐ N/A☒ Comments:

No corrective action required.

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

Comments:

Case narrative does not discuss effect on data quality, it only discusses discrepancies and what was done in light of them. Any notable data quality issues mentioned in the case narrative are discussed above in 4b or elsewhere within this DEC checklist.

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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:

Analytical sensitivity was evaluated to verify that LODs met the applicable DEC action level for non-detect results, as appropriate. All LODs for non-detect results met applicable action levels.

e. Data quality or usability affected?

Data quality and/or usability 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:

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

Comments:

Not applicable. No analytes were detected in the method blank samples.

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

Yes☐ No☐ N/A☒ Comments:

No analytes were detected in the method blank samples.

v. Data quality or usability affected?

Comments:

Data quality and/or usability not affected. See above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes☒ No☐ N/A☐ Comments:

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

Yes☐ No☐ N/A☒ Comments:

No metal or inorganic analyses were requested as a part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes☒ No☐ N/A☐ Comments:

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:

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ADOT&PF Iliamna Airport Sitewide PFAS

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

Comments:

Not applicable. All %Rs and RPDs were within acceptable limits.

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

Yes☐ No☐ N/A☒ Comments:

Data qualification not required, see above.

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

Comments:

Data quality and/or usability was not affected. See above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Note: Leave blank if not required for project

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes☐ No☒ N/A☐ Comments:

No MS/MSD samples were reported with this work order. See the LCS/LCSD section for accuracy and precision information.

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

Yes☐ No☐ N/A☒ Comments:

No metals or inorganic methods were requested as a part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes☐ No☐ N/A☒ Comments:

No MS/MSD samples were reported with 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:

No MS/MSD samples were reported with this work order.

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

Comments:

Not applicable, no MS/MSD samples were reported with 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:

No MS/MSD samples were reported with this work order.

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

Comments:

Data quality and/or usability 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 samples had failed surrogate/IDA recoveries.

iv. Data quality or usability affected?

Comments:

Data quality and/or usability not affected, see above.

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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 as a part of this work order.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes☐ No☐ N/A☒ Comments:

Volatile analyses were not requested as a part of this work order.

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

Yes☐ No☐ N/A☒ Comments:

Volatile analyses were not requested as a part of this work order.

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

Comments:

Not applicable, volatile analyses were not requested as a part of this work order.

v. Data quality or usability affected?

Comments:

Data quality and/or usability 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:

Samples *ILI-904* and *ILI-909* are the field duplicate samples for *ILI-004* and *ILI-009*, respectively.

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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:

Data quality and/or usability not affected. See above.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes☐ No☐ N/A☒ Comments:

Samples were collected with non-reusable equipment. An equipment blank is not required.

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

Yes☐ No☐ N/A☒ Comments:

See above.

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

Comments:

Not applicable. See above.

iii. Data quality or usability affected?

Comments:

Not applicable. See above.

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7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

   a. Defined and appropriate?

      Yes☐ No☐ N/A☒ Comments:

No other flags needed.

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-74692-1
Client Project/Site: DOT+PF PFAS:ILI

For:
Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

Attn: Ashley Jaramillo

Authorized for release by:
6/21/2021 10:29:10 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+PF PFAS:ILI

Job ID: 320-74692-1

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: 320-74692-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative
320-74692-1

Receipt
The samples were received on 6/8/2021 3:13 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.0º C.

LCMS
No analytical or quality issues were noted, other than those described 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 320-497551.

Method 3535: The following samples were preserved with trizma: ILI-901 (320-74692-1), ILI-001 (320-74692-2), ILI-007 (320-74692-3) and ILI-013 (320-74692-4). Thus, the MB, LCS and LCSD also contained 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: DOT+PF PFAS:ILI

Job ID: 320-74692-1

Client Sample ID: ILI-901 — Lab Sample ID: 320-74692-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	7.3		1.8	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.92	J	1.8	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1.3	J	1.8	0.78	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	5.4		1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	20		1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	17		1.8	0.49	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: ILI-001 — Lab Sample ID: 320-74692-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	6.9		1.8	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.89	J	1.8	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1.2	J	1.8	0.78	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	5.3		1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	20		1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	17		1.8	0.50	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: ILI-007 — Lab Sample ID: 320-74692-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorononanoic acid (PFNA)	0.38	J	1.9	0.26	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.62	J	1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: ILI-013 — Lab Sample ID: 320-74692-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	4.6		1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.63	J	1.9	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1.3	J	1.9	0.79	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	7.3		1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	27		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

This Detection Summary does not include radiochemical test results.

Client: Shannon & Wilson, Inc
Project/Site: DOT+PF PFAS:ILI

Job ID: 320-74692-1

Client Sample ID: ILI-901
Date Collected: 06/01/21 14:52
Date Received: 06/08/21 15:13

Lab Sample ID: 320-74692-1
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)	**7.3**		1.8	0.53	ng/L		06/11/21 04:23	06/17/21 05:06	1
Perfluoroheptanoic acid (PFHpA)	**0.92**	**J**	1.8	0.23	ng/L		06/11/21 04:23	06/17/21 05:06	1
Perfluorooctanoic acid (PFOA)	**1.3**	**J**	1.8	0.78	ng/L		06/11/21 04:23	06/17/21 05:06	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		06/11/21 04:23	06/17/21 05:06	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		06/11/21 04:23	06/17/21 05:06	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		06/11/21 04:23	06/17/21 05:06	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		06/11/21 04:23	06/17/21 05:06	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		06/11/21 04:23	06/17/21 05:06	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		06/11/21 04:23	06/17/21 05:06	1
Perfluorobutanesulfonic acid (PFBS)	**5.4**		1.8	0.18	ng/L		06/11/21 04:23	06/17/21 05:06	1
Perfluorohexanesulfonic acid (PFHxS)	**20**		1.8	0.52	ng/L		06/11/21 04:23	06/17/21 05:06	1
Perfluorooctanesulfonic acid (PFOS)	**17**		1.8	0.49	ng/L		06/11/21 04:23	06/17/21 05:06	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		06/11/21 04:23	06/17/21 05:06	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		06/11/21 04:23	06/17/21 05:06	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		06/11/21 04:23	06/17/21 05:06	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		06/11/21 04:23	06/17/21 05:06	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		06/11/21 04:23	06/17/21 05:06	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		06/11/21 04:23	06/17/21 05:06	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*98*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:06*	*1*
13C4 PFHpA	*91*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:06*	*1*
13C4 PFOA	*99*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:06*	*1*
13C5 PFNA	*95*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:06*	*1*
13C2 PFDA	*103*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:06*	*1*
13C2 PFUnA	*98*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:06*	*1*
13C2 PFDoA	*99*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:06*	*1*
13C2 PFTeDA	*98*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:06*	*1*
13C3 PFBS	*101*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:06*	*1*
18O2 PFHxS	*92*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:06*	*1*
13C4 PFOS	*86*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:06*	*1*
d3-NMeFOSAA	*93*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:06*	*1*
d5-NEtFOSAA	*96*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:06*	*1*
13C3 HFPO-DA	*93*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:06*	*1*

Client: Shannon & Wilson, Inc
Project/Site: DOT+PF PFAS:ILI

Job ID: 320-74692-1

Client Sample ID: ILI-001
Date Collected: 06/01/21 15:02
Date Received: 06/08/21 15:13

Lab Sample ID: 320-74692-2
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)	**6.9**		1.8	0.53	ng/L		06/11/21 04:23	06/17/21 05:15	1
Perfluoroheptanoic acid (PFHpA)	**0.89**	**J**	1.8	0.23	ng/L		06/11/21 04:23	06/17/21 05:15	1
Perfluorooctanoic acid (PFOA)	**1.2**	**J**	1.8	0.78	ng/L		06/11/21 04:23	06/17/21 05:15	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		06/11/21 04:23	06/17/21 05:15	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.29	ng/L		06/11/21 04:23	06/17/21 05:15	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		06/11/21 04:23	06/17/21 05:15	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		06/11/21 04:23	06/17/21 05:15	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		06/11/21 04:23	06/17/21 05:15	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		06/11/21 04:23	06/17/21 05:15	1
Perfluorobutanesulfonic acid (PFBS)	**5.3**		1.8	0.18	ng/L		06/11/21 04:23	06/17/21 05:15	1
Perfluorohexanesulfonic acid (PFHxS)	**20**		1.8	0.52	ng/L		06/11/21 04:23	06/17/21 05:15	1
Perfluorooctanesulfonic acid (PFOS)	**17**		1.8	0.50	ng/L		06/11/21 04:23	06/17/21 05:15	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		06/11/21 04:23	06/17/21 05:15	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		06/11/21 04:23	06/17/21 05:15	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		06/11/21 04:23	06/17/21 05:15	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		06/11/21 04:23	06/17/21 05:15	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		06/11/21 04:23	06/17/21 05:15	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		06/11/21 04:23	06/17/21 05:15	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*113*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:15*	*1*
13C4 PFHpA	*96*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:15*	*1*
13C4 PFOA	*105*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:15*	*1*
13C5 PFNA	*110*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:15*	*1*
13C2 PFDA	*108*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:15*	*1*
13C2 PFUnA	*104*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:15*	*1*
13C2 PFDoA	*100*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:15*	*1*
13C2 PFTeDA	*98*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:15*	*1*
13C3 PFBS	*111*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:15*	*1*
18O2 PFHxS	*105*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:15*	*1*
13C4 PFOS	*94*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:15*	*1*
d3-NMeFOSAA	*93*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:15*	*1*
d5-NEtFOSAA	*101*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:15*	*1*
13C3 HFPO-DA	*101*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:15*	*1*

Client: Shannon & Wilson, Inc
Project/Site: DOT+PF PFAS:ILI

Job ID: 320-74692-1

Client Sample ID: ILI-007
Date Collected: 06/01/21 14:15
Date Received: 06/08/21 15:13

Lab Sample ID: 320-74692-3
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		1.9	0.55	ng/L		06/11/21 04:23	06/17/21 05:25	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		06/11/21 04:23	06/17/21 05:25	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.81	ng/L		06/11/21 04:23	06/17/21 05:25	1
Perfluorononanoic acid (PFNA)	**0.38**	**J**	1.9	0.26	ng/L		06/11/21 04:23	06/17/21 05:25	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		06/11/21 04:23	06/17/21 05:25	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		06/11/21 04:23	06/17/21 05:25	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		06/11/21 04:23	06/17/21 05:25	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		06/11/21 04:23	06/17/21 05:25	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		06/11/21 04:23	06/17/21 05:25	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		06/11/21 04:23	06/17/21 05:25	1
Perfluorohexanesulfonic acid (PFHxS)	**0.62**	**J**	1.9	0.54	ng/L		06/11/21 04:23	06/17/21 05:25	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		06/11/21 04:23	06/17/21 05:25	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.1	ng/L		06/11/21 04:23	06/17/21 05:25	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		06/11/21 04:23	06/17/21 05:25	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		06/11/21 04:23	06/17/21 05:25	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		06/11/21 04:23	06/17/21 05:25	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		06/11/21 04:23	06/17/21 05:25	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		06/11/21 04:23	06/17/21 05:25	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*101*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:25*	*1*
13C4 PFHpA	*94*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:25*	*1*
13C4 PFOA	*103*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:25*	*1*
13C5 PFNA	*103*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:25*	*1*
13C2 PFDA	*104*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:25*	*1*
13C2 PFUnA	*104*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:25*	*1*
13C2 PFDoA	*104*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:25*	*1*
13C2 PFTeDA	*93*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:25*	*1*
13C3 PFBS	*108*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:25*	*1*
18O2 PFHxS	*97*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:25*	*1*
13C4 PFOS	*90*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:25*	*1*
d3-NMeFOSAA	*88*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:25*	*1*
d5-NEtFOSAA	*95*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:25*	*1*
13C3 HFPO-DA	*97*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:25*	*1*

Client: Shannon & Wilson, Inc
Project/Site: DOT+PF PFAS:ILI

Job ID: 320-74692-1

Client Sample ID: ILI-013
Date Collected: 06/02/21 10:08
Date Received: 06/08/21 15:13

Lab Sample ID: 320-74692-4
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)	**4.6**		1.9	0.54	ng/L		06/11/21 04:23	06/17/21 05:34	1
Perfluoroheptanoic acid (PFHpA)	**0.63**	**J**	1.9	0.23	ng/L		06/11/21 04:23	06/17/21 05:34	1
Perfluorooctanoic acid (PFOA)	**1.3**	**J**	1.9	0.79	ng/L		06/11/21 04:23	06/17/21 05:34	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		06/11/21 04:23	06/17/21 05:34	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		06/11/21 04:23	06/17/21 05:34	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		06/11/21 04:23	06/17/21 05:34	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		06/11/21 04:23	06/17/21 05:34	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		06/11/21 04:23	06/17/21 05:34	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		06/11/21 04:23	06/17/21 05:34	1
Perfluorobutanesulfonic acid (PFBS)	**7.3**		1.9	0.19	ng/L		06/11/21 04:23	06/17/21 05:34	1
Perfluorohexanesulfonic acid (PFHxS)	**27**		1.9	0.53	ng/L		06/11/21 04:23	06/17/21 05:34	1
Perfluorooctanesulfonic acid (PFOS)	**29**		1.9	0.51	ng/L		06/11/21 04:23	06/17/21 05:34	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		06/11/21 04:23	06/17/21 05:34	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		06/11/21 04:23	06/17/21 05:34	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		06/11/21 04:23	06/17/21 05:34	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		06/11/21 04:23	06/17/21 05:34	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		06/11/21 04:23	06/17/21 05:34	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		06/11/21 04:23	06/17/21 05:34	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*104*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:34*	*1*
13C4 PFHpA	*94*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:34*	*1*
13C4 PFOA	*102*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:34*	*1*
13C5 PFNA	*97*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:34*	*1*
13C2 PFDA	*102*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:34*	*1*
13C2 PFUnA	*96*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:34*	*1*
13C2 PFDoA	*93*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:34*	*1*
13C2 PFTeDA	*97*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:34*	*1*
13C3 PFBS	*112*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:34*	*1*
18O2 PFHxS	*102*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:34*	*1*
13C4 PFOS	*89*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:34*	*1*
d3-NMeFOSAA	*96*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:34*	*1*
d5-NEtFOSAA	*91*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:34*	*1*
13C3 HFPO-DA	*96*		*50 - 150*	*06/11/21 04:23*	*06/17/21 05:34*	*1*

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: DOT+PF PFAS:ILI

Job ID: 320-74692-1

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)
320-74692-1	ILI-901	98	91	99	95	103	98	99	98
320-74692-2	ILI-001	113	96	105	110	108	104	100	98
320-74692-3	ILI-007	101	94	103	103	104	104	104	93
320-74692-4	ILI-013	104	94	102	97	102	96	93	97
LCS 320-497551/2-A	Lab Control Sample	105	96	102	105	100	105	102	95
LCSD 320-497551/3-A	Lab Control Sample Dup	100	98	101	98	98	97	96	92
MB 320-497551/1-A	Method Blank	99	92	97	96	102	97	98	90

		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)
320-74692-1	ILI-901	101	92	86	93	96	93
320-74692-2	ILI-001	111	105	94	93	101	101
320-74692-3	ILI-007	108	97	90	88	95	97
320-74692-4	ILI-013	112	102	89	96	91	96
LCS 320-497551/2-A	Lab Control Sample	115	102	90	95	95	105
LCSD 320-497551/3-A	Lab Control Sample Dup	109	99	87	97	90	101
MB 320-497551/1-A	Method Blank	110	98	88	99	94	93

Surrogate Legend

PFHxA = 13C2 PFHxA
C4PFHA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
C3PFBS = 13C3 PFBS
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
HFPODA = 13C3 HFPO-DA

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Lab Sample ID: MB 320-497551/1-A
Matrix: Water
Analysis Batch: 499040

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 497551

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		06/11/21 04:23	06/17/21 04:38	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		06/11/21 04:23	06/17/21 04:38	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		06/11/21 04:23	06/17/21 04:38	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		06/11/21 04:23	06/17/21 04:38	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		06/11/21 04:23	06/17/21 04:38	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		06/11/21 04:23	06/17/21 04:38	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		06/11/21 04:23	06/17/21 04:38	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		06/11/21 04:23	06/17/21 04:38	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		06/11/21 04:23	06/17/21 04:38	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		06/11/21 04:23	06/17/21 04:38	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		06/11/21 04:23	06/17/21 04:38	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		06/11/21 04:23	06/17/21 04:38	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		06/11/21 04:23	06/17/21 04:38	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		06/11/21 04:23	06/17/21 04:38	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		06/11/21 04:23	06/17/21 04:38	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		06/11/21 04:23	06/17/21 04:38	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		06/11/21 04:23	06/17/21 04:38	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		06/11/21 04:23	06/17/21 04:38	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*99*		*50 - 150*	*06/11/21 04:23*	*06/17/21 04:38*	*1*
13C4 PFHpA	*92*		*50 - 150*	*06/11/21 04:23*	*06/17/21 04:38*	*1*
13C4 PFOA	*97*		*50 - 150*	*06/11/21 04:23*	*06/17/21 04:38*	*1*
13C5 PFNA	*96*		*50 - 150*	*06/11/21 04:23*	*06/17/21 04:38*	*1*
13C2 PFDA	*102*		*50 - 150*	*06/11/21 04:23*	*06/17/21 04:38*	*1*
13C2 PFUnA	*97*		*50 - 150*	*06/11/21 04:23*	*06/17/21 04:38*	*1*
13C2 PFDoA	*98*		*50 - 150*	*06/11/21 04:23*	*06/17/21 04:38*	*1*
13C2 PFTeDA	*90*		*50 - 150*	*06/11/21 04:23*	*06/17/21 04:38*	*1*
13C3 PFBS	*110*		*50 - 150*	*06/11/21 04:23*	*06/17/21 04:38*	*1*
18O2 PFHxS	*98*		*50 - 150*	*06/11/21 04:23*	*06/17/21 04:38*	*1*
13C4 PFOS	*88*		*50 - 150*	*06/11/21 04:23*	*06/17/21 04:38*	*1*
d3-NMeFOSAA	*99*		*50 - 150*	*06/11/21 04:23*	*06/17/21 04:38*	*1*
d5-NEtFOSAA	*94*		*50 - 150*	*06/11/21 04:23*	*06/17/21 04:38*	*1*
13C3 HFPO-DA	*93*		*50 - 150*	*06/11/21 04:23*	*06/17/21 04:38*	*1*

Lab Sample ID: LCS 320-497551/2-A
Matrix: Water
Analysis Batch: 499040

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 497551

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid (PFHxA)	40.0	36.4		ng/L		91	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	42.3		ng/L		106	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	41.6		ng/L		104	71 - 133
Perfluorononanoic acid (PFNA)	40.0	38.6		ng/L		96	69 - 130

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCS 320-497551/2-A
Matrix: Water
Analysis Batch: 499040

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 497551

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorodecanoic acid (PFDA)	40.0	43.6		ng/L		109	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	39.0		ng/L		98	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	39.8		ng/L		99	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	41.7		ng/L		104	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	39.2		ng/L		98	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.4	31.2		ng/L		88	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	35.8		ng/L		98	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.1	42.0		ng/L		113	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	43.0		ng/L		107	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	44.0		ng/L		110	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	42.1		ng/L		113	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	38.3		ng/L		96	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	44.9		ng/L		119	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	44.9		ng/L		119	81 - 141

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*105*		*50 - 150*
13C4 PFHpA	*96*		*50 - 150*
13C4 PFOA	*102*		*50 - 150*
13C5 PFNA	*105*		*50 - 150*
13C2 PFDA	*100*		*50 - 150*
13C2 PFUnA	*105*		*50 - 150*
13C2 PFDoA	*102*		*50 - 150*
13C2 PFTeDA	*95*		*50 - 150*
13C3 PFBS	*115*		*50 - 150*
18O2 PFHxS	*102*		*50 - 150*
13C4 PFOS	*90*		*50 - 150*
d3-NMeFOSAA	*95*		*50 - 150*
d5-NEtFOSAA	*95*		*50 - 150*
13C3 HFPO-DA	*105*		*50 - 150*

Lab Sample ID: LCSD 320-497551/3-A
Matrix: Water
Analysis Batch: 499040

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 497551

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	38.3		ng/L		96	72 - 129	5	30
Perfluoroheptanoic acid (PFHpA)	40.0	41.5		ng/L		104	72 - 130	2	30
Perfluorooctanoic acid (PFOA)	40.0	39.0		ng/L		98	71 - 133	6	30

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCSD 320-497551/3-A
Matrix: Water
Analysis Batch: 499040

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 497551

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)			40.0	39.6		ng/L		99	69 - 130	3	30
Perfluorodecanoic acid (PFDA)			40.0	41.9		ng/L		105	71 - 129	4	30
Perfluoroundecanoic acid (PFUnA)			40.0	39.5		ng/L		99	69 - 133	1	30
Perfluorododecanoic acid (PFDoA)			40.0	41.4		ng/L		104	72 - 134	4	30
Perfluorotridecanoic acid (PFTriA)			40.0	43.2		ng/L		108	65 - 144	4	30
Perfluorotetradecanoic acid (PFTeA)			40.0	40.3		ng/L		101	71 - 132	3	30
Perfluorobutanesulfonic acid (PFBS)			35.4	30.7		ng/L		87	72 - 130	2	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	34.9		ng/L		96	68 - 131	3	30
Perfluorooctanesulfonic acid (PFOS)			37.1	42.1		ng/L		113	65 - 140	0	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			40.0	39.3		ng/L		98	65 - 136	9	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	42.7		ng/L		107	61 - 135	3	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid			37.3	40.6		ng/L		109	77 - 137	3	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			40.0	38.7		ng/L		97	72 - 132	1	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid			37.7	44.1		ng/L		117	76 - 136	2	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.7	44.7		ng/L		119	81 - 141	1	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*100*		*50 - 150*
13C4 PFHpA	*98*		*50 - 150*
13C4 PFOA	*101*		*50 - 150*
13C5 PFNA	*98*		*50 - 150*
13C2 PFDA	*98*		*50 - 150*
13C2 PFUnA	*97*		*50 - 150*
13C2 PFDoA	*96*		*50 - 150*
13C2 PFTeDA	*92*		*50 - 150*
13C3 PFBS	*109*		*50 - 150*
18O2 PFHxS	*99*		*50 - 150*
13C4 PFOS	*87*		*50 - 150*
d3-NMeFOSAA	*97*		*50 - 150*
d5-NEtFOSAA	*90*		*50 - 150*
13C3 HFPO-DA	*101*		*50 - 150*

QC Association Summary

Client: Shannon & Wilson, Inc
Project/Site: DOT+PF PFAS:ILI

Job ID: 320-74692-1

LCMS

Prep Batch: 497551

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-74692-1	ILI-901	Total/NA	Water	3535	
320-74692-2	ILI-001	Total/NA	Water	3535	
320-74692-3	ILI-007	Total/NA	Water	3535	
320-74692-4	ILI-013	Total/NA	Water	3535	
MB 320-497551/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-497551/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-497551/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 499040

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-74692-1	ILI-901	Total/NA	Water	EPA 537(Mod)	497551
320-74692-2	ILI-001	Total/NA	Water	EPA 537(Mod)	497551
320-74692-3	ILI-007	Total/NA	Water	EPA 537(Mod)	497551
320-74692-4	ILI-013	Total/NA	Water	EPA 537(Mod)	497551
MB 320-497551/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	497551
LCS 320-497551/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	497551
LCSD 320-497551/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	497551

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: DOT+PF PFAS:ILI

Job ID: 320-74692-1

Client Sample ID: ILI-901
Date Collected: 06/01/21 14:52
Date Received: 06/08/21 15:13

Lab Sample ID: 320-74692-1
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			273.2 mL	10.00 mL	497551	06/11/21 04:23	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			499040	06/17/21 05:06	D1R	TAL SAC

Client Sample ID: ILI-001
Date Collected: 06/01/21 15:02
Date Received: 06/08/21 15:13

Lab Sample ID: 320-74692-2
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			271.6 mL	10.00 mL	497551	06/11/21 04:23	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			499040	06/17/21 05:15	D1R	TAL SAC

Client Sample ID: ILI-007
Date Collected: 06/01/21 14:15
Date Received: 06/08/21 15:13

Lab Sample ID: 320-74692-3
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			263 mL	10.00 mL	497551	06/11/21 04:23	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			499040	06/17/21 05:25	D1R	TAL SAC

Client Sample ID: ILI-013
Date Collected: 06/02/21 10:08
Date Received: 06/08/21 15:13

Lab Sample ID: 320-74692-4
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			267.3 mL	10.00 mL	497551	06/11/21 04:23	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			499040	06/17/21 05:34	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+PF PFAS:ILI

Job ID: 320-74692-1

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+PF PFAS:ILI

Job ID: 320-74692-1

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+PF PFAS:ILI

Job ID: 320-74692-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-74692-1	ILI-901	Water	06/01/21 14:52	06/08/21 15:13	
320-74692-2	ILI-001	Water	06/01/21 15:02	06/08/21 15:13	
320-74692-3	ILI-007	Water	06/01/21 14:15	06/08/21 15:13	
320-74692-4	ILI-013	Water	06/02/21 10:08	06/08/21 15:13	

CHAIN-OF-CUSTODY RECORD

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

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 16	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
ILI-901		1452	6/1/21	X	2	groundwater
ILI-001		1502	6/1/21	X	2	
ILI-007		1415	6/1/21	X	2	
ILI-013		1008	6/2/21	X	2	

320-74692 Chain of Custody

Project Information	
Number:	105201
Name:	DOT+PF PFAs : ILI
Contact:	AMJ
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:

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Time: 1000	Signature: Time:	Signature: Time:
Printed Name: A. Masteo Date: 6/3/21	Printed Name: Date:	Printed Name: Date:
Company: Shannon + Wilson, Inc.	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time: 1615	Signature: Time:	Signature: Time:
Printed Name: David Ther Date: 6/8/21	Printed Name: Date:	Printed Name: Date:
Company: EDA	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. 36420

6/21/2021

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-74692-1

Login Number: 74692
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	1029700/1029701
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:

Ashley Jaramillo

Title:

Senior Chemist

Date:

June 22, 2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins TestAmerica (TestAmerica)

Laboratory Report Number:

320-74692-1

Laboratory Report Date:

June 21, 2021

CS Site Name:

ADOT&PF Iliamna Airport Sitewide PFAS

ADEC File Number:

2560.38.13 (informational)

Hazard Identification Number:

320-74692-1

Laboratory Report Date:

June 21, 2021

CS Site Name:

ADOT&PF Iliamna Airport Sitewide PFAS

Note: Any N/A or No box checked must have an explanation in the comments box.

1. Laboratory

   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

   Yes☒ No☐ N/A☐ Comments:

   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:

   Samples were not transferred or sub-contracted to a network or alternate laboratory.

2. Chain of Custody (CoC)

   a. CoC information completed, signed, and dated (including released/received by)?

   Yes☒ No☐ N/A☐ Comments:

   b. Correct analyses requested?

   Yes☒ No☐ N/A☐ Comments:

3. Laboratory Sample Receipt Documentation

   a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

   Yes☒ No☐ N/A☐ Comments:

   The temperature of the cooler at sample receipt was 2.0º C.

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

   Yes☒ No☐ N/A☐ Comments:

   Samples were properly preserved with Trizma.

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

Yes☒ No☐ N/A☐ Comments:

The laboratory noted 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:

No sample discrepancies were observed by the laboratory at sample login.

e. Data quality or usability affected?

Comments:

Not applicable, see above.

4. Case Narrative

a. Present and understandable?

Yes☒ No☐ N/A☐ Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

Yes☒ No☐ N/A☐ Comments:

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-497551. See section 6.c for further details.

The following samples were preserved with Trizma: *ILI-901, ILI-001, ILI-007*, and *ILI-013*. Thus, the method blank (MB), laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) also contained Trizma. Data quality and/or usability not affected.

c. Were all corrective actions documented?

Yes☐ No☐ N/A☒ Comments:

No corrective actions required.

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

Comments:

The laboratory does not note an effect on the data quality or usability in the case narrative. Please review the following sections for our assessment of the data.

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:

Soils were not requested as a part of this sample data group (SDG).

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?

Not applicable, see above.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes☒ No☐ N/A☐ Comments:

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CS Site Name:

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

Yes☒ No☐ N/A☐ Comments:

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

Comments:

Not applicable, no analytes were detected in the method blank sample associated with this SDG.

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

Yes☐ No☐ N/A☒ Comments:

See above.

v. Data quality or usability affected?

Comments:

Not applicable, see above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes☒ No☐ N/A☐ Comments:

A LCS and LCSD were reported for PFAS analysis by EPA 537.1(Mod).

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

Yes☐ No☐ N/A☒ Comments:

Metals/Inorganics analyses were not requested as a part of this SDG.

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:

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

Comments:

Not applicable, LCS/LCSD precision and accuracy results were all within acceptable quality control criteria.

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

Yes☐ No☐ N/A☒ Comments:

No flagging required, see above.

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

Comments:

Not applicable, see above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Note: Leave blank if not required for project

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes☐ No☒ N/A☐ Comments:

Insufficient sample volume was available to perform a MS/MSD associated with preparation batch 320-497551. Batch precision and accuracy were evaluated using the LCS/LCSD.

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

Yes☐ No☐ N/A☒ Comments:

Metals/Inorganics analyses were not requested as a part of this SDG.

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CS Site Name:

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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:

See above.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes☐ No☐ N/A☒ Comments:

See above.

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

Comments:

Not applicable, insufficient sample volume was available to perform a MS/MSD associated with preparation batch 320-497551. Batch precision and accuracy were evaluated using the LCS/LCSD.

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

Yes☐ No☐ N/A☒ Comments:

See above.

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

Comments:

Not applicable, see above.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes☒ No☐ N/A☐ Comments:

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:

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June 21, 2021

CS Site Name:

ADOT&PF Iliamna Airport Sitewide 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:

No sample results had failed IDA recoveries, data flagging not required.

iv. Data quality or usability affected?

Comments:

Not applicable, see above.

e. Trip Blanks

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes☐ No☐ N/A☒ Comments:

No trip blank sample included. PFAS is not a volatile analysis and does not required a trip blank sample.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes☐ No☐ N/A☒ Comments:

See above.

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

Yes☐ No☐ N/A☒ Comments:

See above.

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

Comments:

Not applicable, see above.

v. Data quality or usability affected?

Comments:

Not applicable, see above.

320-74692-1

Laboratory Report Date:

June 21, 2021

CS Site Name:

ADOT&PF Iliamna Airport Sitewide PFAS

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes☒ No☐ N/A☐ Comments:

Sample *ILI-901* is the field duplicate sample for *ILI-001.*

ii. Submitted blind to lab?

Yes☒ No☐ N/A☐ Comments:

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

RPD (%) = 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:

Not applicable, see above.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes☐ No☐ N/A☒ Comments:

Samples were collected using single use equipment. Equipment blanks not required.

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

Yes☐ No☐ N/A☒ Comments:

See above.

320-74692-1

Laboratory Report Date:

June 21, 2021

CS Site Name:

ADOT&PF Iliamna Airport Sitewide PFAS

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

Comments:

Not applicable, see above.

iii. Data quality or usability affected?

Comments:

Not applicable, see above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes☒ No☐ N/A☐ Comments:

During collection of sample field duplicate pair ILI-001/ILI-901 and ILI-013, water quality parameters did not stabilize. As a result, we consider the results of these sample to be estimates, with no direction of bias and have been flagged J* in the analytical results table.

APPENDIX B: FIELD LOGS

Appendix B

Field Logs

CONTENTS

KMJ

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Private Well Inventory Survey Form

Date: 11/4/20 Parcel ID#: IL I-001

Physical Address: — Portage Rd.

Name (Owner): Iliamna Air Taxi

Name (Occupant): Nancy La Porte (Co-owner)

Mailing Address (Owner): see email

Mailing Address (Occupant): same

Owner Email: iliamnaair@arctic.net Occupant Email: same

Owner Phone: 907-571-1248 Occupant Phone: same

Preferred method of contact (circle): (Email) Phone

Number of people residing at this location:

Adults (18 and over) 15-20

Teenagers (13 to 17) various

Children (12 and under) Various

Years at this residence: ~1980 Full-Time ☒ Seasonal ☐

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1) From where do you obtain your drinking water?
   a) Residential (private) well ☒ b) Community well ☐
   c) Bottled water ☒ d) Other ☐ _____

2) If you have a private well, please answer the following questions:
   a) Where is the well located on the property? mid-bldg. (unseen)
   b) Is the well in use? Yes ☒ No ☐

3) If no, is the well usable, unusable, or properly abandoned?
   Usable ☐ Unusable ☐ Abandoned ☐ Method _____
   If yes, please check all that apply regarding the usage of your well water:
   ☒ Drinking
   ☐ Cooking food preparation
   ☐ Other _____
   ☐ Vegetable/grain Gardening
   -Size of Garden_____ sq.feet/acres
   -Average watering frequency using well water? (daily, weekly, etc.) _____

   a) When was the well installed? unknown
   b) What is the well depth? unknown
   c) What is the well diameter? unknown
   d) What is the well type? ☐ Dug Well ☒ Drilled ☐ Driven ☐ Unknown
   e) Do you have any treatment on your well (e.g. water softener)? Please describe. 1-Filter (not observed)

4) Sample Permission
   Does the Shannon & Wilson, Inc. have permission to sample your private well? ☒ Yes ☐ No

Verbal Agreement — Signature

11/4/20 — Date

*Shares well water with hangar next door (north - also Iliamna Air Taxi). - SWID 022

RW

SHANNON & WILSON, INC.

RESIDENTIAL WELL SAMPLING LOG

Co-owner Nancy La Porte →

Address — Portage Rd.
Owner/Occupant Iliamna Air Taxi
Mailing Address iliamnair@gretic.net
Telephone 907.571.1248

Project Number 105201
Project Name Iliamna Airport
Date 11/4/20
Time 1345
Sampling Personnel SMH

Purge Location Mens bathroom sink

Sample Location same as purge location, after filter per co-owner

Sample No. ILI-001 Time 1428

Duplicate — Time —

Pumping Start Time 1350
Pumping End Time 1428
Gallons per minute ~3
Purge Volume (gal.) ~110

Bottled Water purchased occasionally
Total Depth of Well (ft.) unknown
Laboratory Test America
Analysis PFAS (~~WS-LC-0025~~) 537.1

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 0.5]	Conductivity (µS/cm) [± 3%]	pH (std. units) [± 0.1]	Water Clarity (visual)
1353	9.3	85.7	4.26	clear
1358	8.8	84.5	5.10	"
1401	8.3	83.5	5.57	"
1404	7.9	82.4	5.88	"
1407	8.0	82.7	6.00	"
1410	7.8	81.9	6.17	"
1413	7.6	81.2	6.28	"
1416	7.7	81.6	6.42	"
1419	7.7	81.4	6.43	"
1422	7.7	81.6	6.49	"

Notes: same sample location as DEC sample (per Nancy).

Alternate Water: —

Shares well water with hangar next door (to the north) also Iliamna Air Taxi (SWID 022)

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Private Well Inventory Survey Form

Date: 11/5/20 Parcel ID#: 003

Physical Address: —

Name (Owner): IDC Store - Kirsty Coghill (Manager)

Name (Occupant): —

Mailing Address (Owner): see email

Mailing Address (Occupant): —

Owner Email: idcstore@iliamnacorp.com Occupant Email: —

Owner Phone: 907 571 2031 Occupant Phone: —

Preferred method of contact (circle): Email Phone

Number of people residing at this location: Various (grocery & gas-store)

Adults (18 and over) various

Teenagers (13 to 17)

Children (12 and under)

Years at this residence: _____ Full-Time ☒ Seasonal ☐

---

1) From where do you obtain your drinking water?
   a) Residential (private) well ☒ b) Community well ☐
   c) Bottled water ☐ d) Other ☐ _____

2) If you have a private well, please answer the following questions:
   a) Where is the well located on the property? outside (East side of bldg.)
   b) Is the well in use? Yes ☒ No ☐

3) If no, is the well usable, unusable, or properly abandoned?
   Usable ☐ Unusable ☐ Abandoned ☐ Method _____

   If yes, please check all that apply regarding the usage of your well water:
   ☒ Drinking
   ☒ Cooking food preparation
   ☐ Other _____
   ☐ Vegetable/grain Gardening
   -Size of Garden_____ sq.feet/acres
   -Average watering frequency using well water? (daily, weekly, etc.) _____

   a) When was the well installed? unknown
   b) What is the well depth? unknown
   c) What is the well diameter? unknown
   d) What is the well type? ☐ Dug Well ☐ Driven ☒ Drilled ☐ Unknown
   e) Do you have any treatment on your well (e.g. water softener)? Please describe. Filter (large diameter) in utility/pressure tank room, entry through door off of kitchen.

4) Sample Permission
   Does the Shannon & Wilson, Inc. have permission to sample your private well? ☒ Yes ☐ No

Verbally Authorized — Signature

11/5/20 — Date

SHANNON & WILSON, INC.

RESIDENTIAL WELL SAMPLING LOG

Kirsty - manager

Address: unknown
Owner/Occupant: IDC Store - Kirsty Coghill
Mailing Address: — idcstore@iliamnacorp.com
Telephone: 907-571-2031 (Kirsty)

Project Number: 105201
Project Name: Iliamna DOT+PF
Date: 11/5/20
Time: 1345
Sampling Personnel: RLW / SMH

Purge Location: Utility Sink inside store, near bathroom.

Sample Location: from pressure tank (PT) (before treatment)

Sample No.: ILI-003 Time: 1420

Duplicate: — Time: —

Pumping Start Time: 1346
Pumping End Time: 1420
Gallons per minute: 3
Purge Volume (gal.): ~100

Bottled Water: —
Total Depth of Well (ft.): unknown
Laboratory: Test America
Analysis: PFAS ~~(WS-LC-0025)~~ 537.1

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 0.5]	Conductivity (µS/cm) [± 3%]	pH (std. units) [± 0.1]	Water Clarity (visual)
1349	8.7	100.3	5.76	clear
1352	8.7	100.5	6.50	clear
1355	8.8	100.8	6.89	clear
1358	7.5	98.0	7.03	clear
1401	7.7	98.4	7.16	clear
1404	6.7	96.2	7.24	clear
1407	5.5	93.5	7.28	clear
1410	5.3	92.6	7.31	clear
1413	5.6	93.5	7.31	clear
1416	5.6	93.1	7.31	clear

Notes: DEC sample came after the filter

Alternate Water: ~~—~~

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SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Private Well Inventory Survey Form

Date: 11/4/20 Parcel ID#: IL-004

Physical Address: 101 Airport Rd

Name (Owner): ADOT + PF Clint Anelon (Airport Manager)

Name (Occupant): "

Mailing Address (Owner): PO BOX 187 99606

Mailing Address (Occupant): —

Owner Email: ← Occupant Email: clint.anelon@alaska.gov

Owner Phone: ← Occupant Phone: 907-571-1261

Preferred method of contact (circle): Email (Phone) results via email

Number of people residing at this location:
Adults (18 and over) 3
Teenagers (13 to 17) _____
Children (12 and under) _____

Years at this residence: Building 10 yrs old Full-Time ☒ Seasonal ☐

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1) From where do you obtain your drinking water?
   a) Residential (private) well ☒ b) Community well ☐
   c) Bottled water ☐ d) Other ☐ _____

2) If you have a private well, please answer the following questions:
   a) Where is the well located on the property? SE corner outside/blue box
   b) Is the well in use? Yes ☒ No ☐ Artesian in spring

3) If no, is the well usable, unusable, or properly abandoned? Springtime high water level
   Usable ☐ Unusable ☐ Abandoned ☐ Method _____
   If yes, please check all that apply regarding the usage of your well water:
   ☒ Drinking
   ☒ Cooking food preparation
   ☐ Other truck washing
   ☐ Vegetable/grain Gardening
   -Size of Garden _____ sq.feet/acres
   -Average watering frequency using well water? (daily, weekly, etc.) _____

   a) When was the well installed? 10 yrs old
   b) What is the well depth? 35-40' "not very deep"
   c) What is the well diameter? standard
   d) What is the well type? ☐ Dug Well ☐ Driven ☒ Drilled ☐ Unknown
   e) Do you have any treatment on your well (e.g. water softener)? Please describe. NONE

4) Sample Permission
   Does the Shannon & Wilson, Inc. have permission to sample your private well? ☒ Yes ☐ No

Authorized verbally — Signature

11/4/20 — Date

5m4

SHANNON & WILSON, INC.

RESIDENTIAL WELL SAMPLING LOG

Address 101 Airport Rd
Owner/Occupant DOT+PF
Mailing Address PO Box 187
Telephone 907-571-1261

Project Number 105201
Project Name Iliamna
Date 11/4/20
Time 1015
Sampling Personnel RLW

Purge Location Kitchen sink

Sample Location Kitchen sink

Sample No. ILI-004 Time 1042

Duplicate ILI-904 Time 1032

Pumping Start Time 1018
Pumping End Time 1039
Gallons per minute ~1 gal
Purge Volume (gal.) ~21

Bottled Water —
Total Depth of Well (ft.) 35-40'
Laboratory Test America
Analysis PFAS (~~WS-LC-0025~~) 537.1 M

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 0.5]	Conductivity (µS/cm) [± 3%]	pH (std. units) [± 0.1]	Water Clarity (visual)
1021	10.6	96.1	6.07	clear
1024	12.3	98.6	8.04	clear
1027	9.5	91.6	8.31	clear
1030	9.0	91.1	8.39	clear
1033	8.2	89.2	8.41	clear
1036	8.0	88.7	8.45	clear
1039	8.4	89.8	8.47	clear
1042	SAMPLE			

Notes: * In spring, well is artisian well *

Alternate Water:

RW

Technical land(?) owner is DE Southfork (Aspen 746-1880)

SHANNON & WILSON, INC.

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Private Well Inventory Survey Form

Date: 11/4/20 Parcel ID#: 006

Physical Address: 101 Airport Rd. (ACE & Everts Air Cargo)

Name (Owner): Andrew Dennert (cell: 571-7402)

Name (Occupant): —

Mailing Address (Owner): see email

Mailing Address (Occupant): —

Owner Email: iliamnaservices@gmail Occupant Email: —

Owner Phone: 907.571-5002 Occupant Phone: —

Preferred method of contact (circle): Email Phone

Number of people residing at this location:

Adults (18 and over) ≥1

Teenagers (13 to 17) /

Children (12 and under)

Years at this residence: 1 Full-Time ☒ Seasonal ☐

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1) From where do you obtain your drinking water?
   a) Residential (private) well ☒ b) Community well ☐
   c) Bottled water ☒ d) Other ☐ _____

2) If you have a private well, please answer the following questions:
   a) Where is the well located on the property? SE corner
   b) Is the well in use? Yes ☒ No ☐

3) If no, is the well usable, unusable, or properly abandoned?
   Usable ☐ Unusable ☐ Abandoned ☐ Method _____
   If yes, please check all that apply regarding the usage of your well water:
   ☒ Drinking
   ☐ Cooking food preparation
   ☐ Other washing cars
   ☐ Vegetable/grain Gardening
   -Size of Garden _____ sq.feet/acres
   -Average watering frequency using well water? (daily, weekly, etc.) _____

   a) When was the well installed? 2006
   b) What is the well depth? Unknown
   c) What is the well diameter? 6"
   d) What is the well type? ☐ Dug Well ☐ Driven ☒ Drilled ☐ Unknown
   e) Do you have any treatment on your well (e.g. water softener)? Please describe. no

4) Sample Permission
   Does the Shannon & Wilson, Inc. have permission to sample your private well? ☒ Yes ☐ No

Verbal Agreement — Signature

11/4/20 — Date

RW

SHANNON & WILSON, INC.

RESIDENTIAL WELL SAMPLING LOG

Address: ACE / Events Air Cargo
Owner/Occupant: Andrew Dennert
Mailing Address: iliamnaservices@gmail.com
Telephone: 907·571·7403 (cell) 907·571·5002

Project Number: 105201
Project Name: Iliamna Airport
Date: 11/4/20
Time: 1440
Sampling Personnel: SmH

Purge Location: Bathroom sink

Sample Location: Same as purge location; no treatment per Andrew.

Sample No.: ILI-006 Time: 1518

Duplicate: — Time: —

Pumping Start Time: 1445
Pumping End Time: 1518
Gallons per minute: ~3
Purge Volume (gal.): ~100

Bottled Water: purchase occasionally
Total Depth of Well (ft.): unknown
Laboratory: Test America
Analysis: PFAS (~~WS-LC-0025~~) 537.1

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 0.5]	Conductivity (µS/cm) [± 3%]	pH (std. units) [± 0.1]	Water Clarity (visual)
1448	10.0	100.5	6.50	clear
1457	17.8	115.1	6.73	"
1500	17.9	115.1	6.94	"
1503	13.0	102.0	7.07	"
1506	7.8	88.6	7.25	"
1510	7.9	89.0	7.34	"
1513	8.2	89.7	7.39	"
1516	8.3	89.4	7.41	"
1518	sample			

Notes: sampled @ same location as DEC, per occupant

Alternate Water: ~

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Has outdoor spigot we can sample, spigot currently frozen

Private Well Inventory Survey Form

Date: 11/5/20 Parcel ID#: ILI-007

Physical Address: Mile 1 E. Wind Lake Rd.

Name (Owner): Clint Anelon

Name (Occupant): —

Mailing Address (Owner): Po Box 115 99606

Mailing Address (Occupant): —

Owner Email: Clint.anelon@alaska.gov Occupant Email: —

Owner Phone: Cell 907-571-7171 Occupant Phone: —

Preferred method of contact (circle): Email (Phone)

Number of people residing at this location:
Adults (18 and over) 2
Teenagers (13 to 17) 1
Children (12 and under) 3
7

Years at this residence: 6 Full-Time ☒ Seasonal ☐

---

1) From where do you obtain your drinking water?
   a) Residential (private) well ☒ b) Community well ☐
   c) Bottled water ☐ d) Other ☐ _____

2) If you have a private well, please answer the following questions:
   a) Where is the well located on the property? Under deck
   b) Is the well in use? Yes ☒ No ☐

3) If no, is the well usable, unusable, or properly abandoned?
   Usable ☐ Unusable ☐ Abandoned ☐ Method _____

   If yes, please check all that apply regarding the usage of your well water:
   ☒ Drinking
   ☒ Cooking food preparation
   ☐ Other _____
   ☒ Vegetable/grain Gardening
   -Size of Garden "small" sq.feet/acres
   -Average watering frequency using well water? (daily, weekly, etc.) daily

   a) When was the well installed? Unknown
   b) What is the well depth? Unknown
   c) What is the well diameter? 6"
   d) What is the well type? ☐ Dug Well ☐ Driven ☒ Drilled ☐ Unknown
   e) Do you have any treatment on your well (e.g. water softener)? Please describe. none

4) Sample Permission
   Does the Shannon & Wilson, Inc. have permission to sample your private well? ☒ Yes ☐ No

Verbally agreed — Signature

11/5/20 — Date

SmH

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Private Well Inventory Survey Form

Date: 11/4/20 Parcel ID#: ILI-008

Physical Address: #1 E WIND LAKE

Name (Owner): JOHN BAECHLER

Name (Occupant): "

Mailing Address (Owner): PO Box 110 Iliamna AK 99606

Mailing Address (Occupant): —

Owner Email: jjbobe@yahoo.com Occupant Email: —

Owner Phone: 907-571-1525 Occupant Phone: —

Preferred method of contact (circle): (Email) (Phone)

Number of people residing at this location:

Adults (18 and over) 1

Teenagers (13 to 17) —

Children (12 and under) —

Years at this residence: 40 Full-Time ☒ Seasonal ☐

---

1) From where do you obtain your drinking water?
   a) Residential (private) well ☒ b) Community well ☐
   c) Bottled water ☐ d) Other ☐ _____

2) If you have a private well, please answer the following questions:
   a) Where is the well located on the property? Back near lake
   b) Is the well in use? Yes ☒ No ☐

3) If no, is the well usable, unusable, or properly abandoned?
   Usable ☐ Unusable ☐ Abandoned ☐ Method _____
   If yes, please check all that apply regarding the usage of your well water:
   ☒ Drinking
   ☒ Cooking food preparation
   ☐ Other _____
   ☒ Vegetable/grain Gardening
   -Size of Garden _____ sq.feet/acres
   -Average watering frequency using well water? (daily, weekly, etc.) _____

   a) When was the well installed? 1981
   b) What is the well depth? 190
   c) What is the well diameter? 6"
   d) What is the well type? ☐ Dug Well ☐ Driven ☒ Drilled ☐ Unknown
   e) Do you have any treatment on your well (e.g. water softener)? Please describe. —

4) Sample Permission
   Does the Shannon & Wilson, Inc. have permission to sample your private well? ☒ Yes ☐ No

verbally agreed
Signature

11/4/20
Date

SMH

SHANNON & WILSON, INC.

RESIDENTIAL WELL SAMPLING LOG

Address: 41 East Wind Lake Rd
Owner/Occupant: John Baechler
Mailing Address: PO Box 110 Iliamna AK 99606
Telephone: 907-571-1525

Project Number: 105201
Project Name: Iliamna DOT+PF
Date: 11/4/20
Time: 1420
Sampling Personnel: RLW

Purge Location: Kitchen sink

Sample Location: Kitchen sink; pre treatment

Sample No.: IL1-008 Time: 1507

Duplicate: — Time: —

Pumping Start Time: 1435
Pumping End Time: 1507
Gallons per minute: 1.0
Purge Volume (gal.): ~32

Bottled Water: —
Total Depth of Well (ft.): 190
Laboratory: Test America
Analysis: ~~PFAS (WS-LC-0025)~~ 537.1

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 0.5]	Conductivity (µS/cm) [± 3%]	pH (std. units) [± 0.1]	Water Clarity (visual)
1438	7.1	71.0	5.10	clear
1443	6.6	68.0	6.38	clear
1447	6.6	68.0	6.92	clear
1450	6.1	67.2	7.10	clear
1454	6.1	67.2	7.26	clear
1458	6.1	67.0	7.40	clear
1501	6.0	66.9	7.42	clear
1504	6.0	66.9	7.46	clear
1507	SAMPLE			

Notes: Has had wells tested in past "Artisnal quality". No treatment
owns 11 wells in Iliamna

Alternate Water: /

5 of 4

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Private Well Inventory Survey Form

Date: 11/4/20 Parcel ID#: ILI - 009

Physical Address: Unknown - End of Iliamna Village Road (Abandoned Hotel)

Name (Owner): John Baechler

Name (Occupant): unoccupied

Mailing Address (Owner): PO Box 110 99606

Mailing Address (Occupant): —

Owner Email: jjbobe@yahoo.com Occupant Email: —

Owner Phone: 907-571-1525 Occupant Phone: —

Preferred method of contact (circle): (Email) (Phone)

Number of people residing at this location:

Adults (18 and over) unocc

Teenagers (13 to 17) —

Children (12 and under) —

Years at this residence: — Full-Time ☐ Seasonal ☐

---

1) From where do you obtain your drinking water? not connected
   a) Residential (private) well ☐ b) Community well ☐
   c) Bottled water ☐ d) Other ☐ _____

2) If you have a private well, please answer the following questions:
   a) Where is the well located on the property? along airport side. well head visible from road.
   b) Is the well in use? Yes ☐ No ☒

3) If no, is the well usable, unusable, or properly abandoned?
   Usable ☐ Unusable ☐ Abandoned ☒ Method Pump installed, but disconnected.
   If yes, please check all that apply regarding the usage of your well water: Associated building to be torn down.
   ☐ Drinking
   ☐ Cooking food preparation
   ☐ Other _____
   ☐ Vegetable/grain Gardening
   -Size of Garden_____ sq.feet/acres
   -Average watering frequency using well water? (daily, weekly, etc.) _____

   a) When was the well installed? unknown
   b) What is the well depth? ~60'
   c) What is the well diameter? 6"
   d) What is the well type? ☐ Dug Well ☐ Driven ☐ Drilled ☒ Unknown
   e) Do you have any treatment on your well (e.g. water softener)? Please describe. none

4) Sample Permission
   Does the Shannon & Wilson, Inc. have permission to sample your private well? ☒ Yes ☐ No

verbally approved — Signature

11/4/20 — Date

SMH

SHANNON & WILSON, INC.

RESIDENTIAL WELL SAMPLING LOG

End of Iliamna Village Rd.

Address: Abandoned Hotel
Owner/Occupant: unoccupied/John Baechler
Mailing Address: PO Box 110 99606
Telephone: 907-571-1525

Project Number: 105201
Project Name: Iliamna DOT+PF
Date: 11/4/20
Time: 1200
Sampling Personnel: RLW, SMH

Purge Location: Well head - outside (no monument cap)

Sample Location: Well head.

Sample No.: ILI-009 Time: 1331

Duplicate: ILI-909 Time: 1321

Pumping Start Time: 1214
Pumping End Time: 1331
Gallons per minute: 0.2
Purge Volume (gal.): ~15
per pump tubing: 70 ft

Bottled Water:
Total Depth of Well (ft.): ~60
Laboratory: Test America
Analysis: PFAS (~~WS-LC-0025~~) 537.1

FIELD PARAMETERS [stabilization criteria] YSI D

Time	Temp. (°C) [± 0.5]	Conductivity (µS/cm) [± 3%]	pH (std. units) [± 0.1]	Water Clarity (visual)
1218	4.6	56.6	4.24	clear
1221	5.1	57.6	4.48	clear
1224	5.2	58.0	4.78	clear
1228	5.4	57.3	5.79	clear
1231	5.4	57.1	6.00	clear
1234	5.3	57.0	6.42	clear
1237	5.2	57.2	6.74	clear
1240	5.3	57.3	7.08	clear
1244	5.3	57.2	7.42	clear
1248	5.3	58.3	7.67	clear
1251	5.3	59.3	7.83	clear
1254	5.4	60.7	7.96	clear
1258	5.1	61.4	8.11	clear
1304	5.1	63.8	8.30	clear
1307	5.1	64.6	8.36	clear
1310	5.0	64.9	8.46	clear
1313	5.1	65.9	8.52	clear
1316	5.2	66.7	8.58	clear
1319	5.3	67.5	8.64	clear
1322	5.4	68.0	8.69	clear

Notes: brown sediment @ purge start (sample + purge @ 6" dia well (1.5 gpl per foot) 43' 9"

Alternate Water:

1325	5.4	68.1	8.72	clear
1328	5.4	68.3	8.76	clear
1331	SAMPLE			

SMH

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Private Well Inventory Survey Form

Date: 11/4/20 Parcel ID#: ILI - 012

Physical Address: unknown

Name (Owner): DOT + PF (older maintenance shop w/ garage door access from Iliamna village Rd)

Name (Occupant): "

Mailing Address (Owner): PO Box 187

Mailing Address (Occupant): Clint Anelon (Airport Manager)

Owner Email: — Occupant Email: clint.anelon@alaska.gov

Owner Phone: — Occupant Phone: 907-571-1261

Preferred method of contact (circle): Email (Phone) email Results

Number of people residing at this location:
Adults (18 and over) 3
Teenagers (13 to 17) —
Children (12 and under) —

Years at this residence: Unknown Full-Time ☒ Seasonal ☐

---

1) From where do you obtain your drinking water?
   a) Residential (private) well ☒ b) Community well ☐
   c) Bottled water ☐ d) Other ☐ _____

2) If you have a private well, please answer the following questions:
   a) Where is the well located on the property? Near newer well (20 ft S)
   b) Is the well in use? Yes ☒ No ☐

3) If no, is the well usable, unusable, or properly abandoned?
   Usable ☐ Unusable ☐ Abandoned ☐ Method _____
   If yes, please check all that apply regarding the usage of your well water:
   ☐ Drinking maybe ?
   ☐ Cooking food preparation
   ☒ Other Washing vehicles, bathroom hand washing
   ☐ Vegetable/grain Gardening
   -Size of Garden_____ sq.feet/acres
   -Average watering frequency using well water? (daily, weekly, etc.) _____
   a) When was the well installed? unknown
   b) What is the well depth? unknown
   c) What is the well diameter? 6"
   d) What is the well type? ☐ Dug Well ☐ Driven ☐ Drilled ☒ Unknown
   e) Do you have any treatment on your well (e.g. water softener)? Please describe. None

4) Sample Permission
   Does the Shannon & Wilson, Inc. have permission to sample your private well? ☒ Yes ☐ No

AUTHORIZED VERBALLY — 11/4/20

Signature Date

SMH

SHANNON & WILSON, INC.

RESIDENTIAL WELL SAMPLING LOG

Address DOT+PF Shop w/ access from Iliamna Village Rd
Owner/Occupant DOT+PF (old Shop)
Mailing Address PO Box 187
Telephone 907-571-1261

Project Number 105201
Project Name Iliamna DOT+PF
Date 11/4/20
Time 1100
Sampling Personnel RLW

Purge Location Bathroom Sink

Sample Location Bathroom Sink; pre treatment

Sample No. ILI-012 Time 1133

Duplicate — Time —

Pumping Start Time 1101
Pumping End Time 1133
Gallons per minute 1
Purge Volume (gal.) ~32

Bottled Water —
Total Depth of Well (ft.) unknown
Laboratory Test America
Analysis PFAS (~~WS-LC-0025~~) 537.1 M

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 0.5]	Conductivity (µS/cm) [± 3%]	pH (std. units) [± 0.1]	Water Clarity (visual)
1102	8.7	92.7	5.73	clear
1105	9.2	94.4	6.25	clear
1109	10.0	96.4	6.70	clear
1112	7.6	90.5	7.89	clear
1115	9.9	95.9	7.44	clear
1118	10.1	96.4	7.37	clear
1121	6.5	89.2	7.96	clear
1124	8.8	93.8	7.65	clear
1127	8.9	94.2	7.61	clear
1130	8.9	93.9	7.62	clear
1133	SAMPLE			

Notes: minimal iron staining on fixtures, well adjacent to IL-004.

Alternate Water: /

RW

SHANNON & WILSON, INC.

RESIDENTIAL WELL SAMPLING LOG

Address: IDC – weather Service ; LPA office
Project Number: 105201

Bldg owner < Owner/Occupant: Steve Reimers
Project Name: Iliamna Airport

Mailing Address: stevereimers@iliamnacorp.com
Date: 11/4/20

manager Tref – Telephone: 907-571-7006
Time: 1545

Sampling Personnel: SMH

Purge Location: Downstairs womens bathroom sink

sampled alone

Sample Location: Same as purge location ; treatment unknown.

Sample No.: ILI-013
Time: 1651

Duplicate: —
Time: —

Pumping Start Time: 1609
Pumping End Time: 1651
Gallons per minute: ~4-5
Purge Volume (gal.): ~200

Bottled Water: —
Total Depth of Well (ft.): unknown
Laboratory: *Test America*
Analysis: *~~PFAS (WS-LC-0025)~~* 537.1

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 0.5]	Conductivity (μS/cm) [± 3%]	pH (std. units) [± 0.1]	Water Clarity (visual)
1609	start			
1612	10.8	88.9	4.97	clear
1615	11.5	89.9	5.63	"
1618	9.9	86.1	6.17	"
1621	7.3	81.4	6.59	"
1624	7.7	79.3	6.83	"
1627	7.2	77.8	7.18	"
1630	7.1	76.1	7.40	"
1633	7.0	75.8	7.41	"
1636	6.9	75.9	7.75	"
1639	6.9	74.5	7.82	"
1642	6.8	73.8	7.97	"
1645	6.8	73.0	7.98	"
1648	6.8	73.3	7.96	"
1651	sample			

Notes: Access gained by employee (Flora). Spoke to Kristy Coghill (IDC store), to obtain mailing address for results.

Alternate Water: —

- Questionnaire not completed
- Treatment unknown
- well location unknown (could here pump turning on somewhere in Bldg.)

- Most northern Hangar newly built
- Associated with a church

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Private Well Inventory Survey Form

Date: 11/5/20 Parcel ID#: 014

Physical Address: Portage Rd.

Name (Owner): pastor Mike Clark & Janette Clark

Name (Occupant): —

Mailing Address (Owner): see email

Mailing Address (Occupant): —

Owner Email: clark2Alaska@yahoo.com Occupant Email: —

Owner Phone: 571.6476 Occupant Phone: —

Preferred method of contact (circle): Email Phone

Number of people residing at this location: N/A

new hangar just completed

Adults (18 and over) _____

Teenagers (13 to 17) N/A

Children (12 and under) _____

Years at this residence: _____ Full-Time ☒ Seasonal ☐

---

1) From where do you obtain your drinking water?
   a) Residential (private) well ☒ b) Community well ☐
   c) Bottled water ☐ d) Other ☐ _____

2) If you have a private well, please answer the following questions:
   a) Where is the well located on the property? north side of bldg.
   b) Is the well in use? Yes ☐ No ☒

3) If no, is the well usable, unusable, or properly abandoned?
   Usable ☐ Unusable ☒ Abandoned ☐ Method _____
   If yes, please check all that apply regarding the usage of your well water:
   ☒ Drinking
   ☐ Cooking food preparation
   ☐ Other _____
   ☐ Vegetable/grain Gardening
   -Size of Garden_____ sq.feet/acres
   -Average watering frequency using well water? (daily, weekly, etc.) _____

   a) When was the well installed? <10 yrs. unknown
   b) What is the well depth? _____
   c) What is the well diameter? _____
   d) What is the well type? ☐ Dug Well ☐ Driven ☐ Drilled ☐ Unknown
   e) Do you have any treatment on your well (e.g. water softener)? Please describe. no

4) Sample Permission N/A
   Does the Shannon & Wilson, Inc. have permission to sample your private well? ☐ Yes ☐ No

N/A
Signature

11/5/20
Date

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

"Tan Bldg." unlocked all the time. Permission to sample alone.

Private Well Inventory Survey Form

Date: 11/5/20 Parcel ID#: 015

Physical Address: n/a

Name (Owner): ~~AGT~~, Brandon Wassillie

Name (Occupant): Pebble Partnership

Mailing Address (Owner): see email

Mailing Address (Occupant): —

Owner Email: brandonwassillie@pebblepartnership.com Occupant Email: —

Owner Phone: 571-7212 Occupant Phone: —

Preferred method of contact (circle): Email Phone

Number of people residing at this location:

Adults (18 and over) _____

Teenagers (13 to 17) _____

Children (12 and under) _____

Years at this residence: _____ Full-Time ☒ Seasonal ☐

---

1) From where do you obtain your drinking water?
   a) Residential (private) well ☐ b) Community well ☐
   c) Bottled water ☐ d) Other ☐ _____

2) If you have a private well, please answer the following questions:
   a) Where is the well located on the property? south west corner of tan bldg.
   b) Is the well in use? Yes ☐ No ☐ currently disconnected. Summer use only?

3) If no, is the well usable, unusable, or properly abandoned?
   Usable ☐ Unusable ☐ Abandoned ☐ Method _____

   If yes, please check all that apply regarding the usage of your well water:
   - ☒ Drinking
   - ☐ Cooking food preparation
   - ☐ Other _____
   - ☐ Vegetable/grain Gardening
     -Size of Garden_____ sq.feet/acres
     -Average watering frequency using well water? (daily, weekly, etc.) _____

   a) When was the well installed? _____
   b) What is the well depth? unknown
   c) What is the well diameter? _____
   d) What is the well type? ☐ Dug Well ☐ Driven ☒ Drilled ☐ Unknown
   e) Do you have any treatment on your well (e.g. water softener)? Please describe. none

4) Sample Permission
   Does the Shannon & Wilson, Inc. have permission to sample your private well? ☒ Yes ☐ No

Verbal Agreement from Brandon — Signature

11/5/20 — Date

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Private Well Inventory Survey Form

Date: 11/5/20 Parcel ID#: ILI - 016

Physical Address: Unknown

Name (Owner): Don Henry

Name (Occupant): (no building yet, eventually will have non-aircraft building)

Mailing Address (Owner): _____

Mailing Address (Occupant): _____

Owner Email: 907-745-6578 Occupant Email: –

Owner Phone: – Occupant Phone: –

Preferred method of contact (circle): Email (Phone)

Number of people residing at this location:
Adults (18 and over) _____
Teenagers (13 to 17) –
Children (12 and under) –

Years at this residence: _____ Full-Time ☒ Seasonal ☐

---

1) From where do you obtain your drinking water?
   a) Residential (private) well ☒ b) Community well ☐
   c) Bottled water ☐ d) Other ☐ _____

2) If you have a private well, please answer the following questions:
   a) Where is the well located on the property? tire around casing. Road side
   b) Is the well in use? Yes ☐ No ☒

3) If no, is the well usable, unusable, or properly abandoned?
   Usable ☐ Unusable ☐ Abandoned ☐ Method _____
   If yes, please check all that apply regarding the usage of your well water:
   ☒ Drinking
   ☐ Cooking food preparation
   ☐ Other kitchen, showers, no aircraft
   ☐ Vegetable/grain Gardening
   -Size of Garden_____ sq.feet/acres
   -Average watering frequency using well water? (daily, weekly, etc.) _____

   a) When was the well installed? ~4yrs ago
   b) What is the well depth? 315
   c) What is the well diameter? 6" casing down to 60'
   d) What is the well type? ☐ Dug Well ☐ Driven ☒ Drilled ☐ Unknown
   e) Do you have any treatment on your well (e.g. water softener)? Please describe. none

4) Sample Permission
   Does the Shannon & Wilson, Inc. have permission to sample your private well? ☒ Yes ☐ No

_____ _____
Signature Date

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Private Well Inventory Survey Form

Date: 11/5/20 Parcel ID#: 017

Physical Address: Corner of Portage & Iliamna Village Rd.

Name (Owner): Brandon Wassillie (Pebble Partnership)

Name (Occupant): → see email

Mailing Address (Owner): see email

Mailing Address (Occupant): —

Owner Email: brandonwassillie@pebblepartnership.com Occupant Email: —

Owner Phone: 907-571-7212 Occupant Phone: —

Preferred method of contact (circle): Email (Phone)

Number of people residing at this location: seasonal use only - Not available to sample

Adults (18 and over) ____

Teenagers (13 to 17) N/A

Children (12 and under) ____

Years at this residence: ____ Full-Time ☐ Seasonal ☒

---

1) From where do you obtain your drinking water?
   a) Residential (private) well ☐ b) Community well ☐
   c) Bottled water ☐ d) Other ☐ ____

2) If you have a private well, please answer the following questions:
   a) Where is the well located on the property? ____
   b) Is the well in use? Yes ☐ No ☒

3) If no, is the well usable, unusable, or properly abandoned?
   Usable ☒ Unusable ☐ Abandoned ☐ Method ____

in summer

If yes, please check all that apply regarding the usage of your well water:

☐ Drinking
☐ Cooking food preparation
☑ Other showers

☐ Vegetable/grain Gardening
-Size of Garden____ sq.feet/acres
-Average watering frequency using well water? (daily, weekly, etc.) ____

a) When was the well installed? unknown
b) What is the well depth? unknown
c) What is the well diameter? ____
d) What is the well type? ☐ Dug Well ☐ Driven ☐ Drilled ☒ Unknown
e) Do you have any treatment on your well (e.g. water softener)? Please describe. ____

4) Sample Permission
   Does the Shannon & Wilson, Inc. have permission to sample your private well? ☐ Yes ☐ No

Signature ____ Date ____

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Private Well Inventory Survey Form

Date: 11/5/20 Parcel ID#: 023

Physical Address: Lot 12 A Pike Lake Rd.

Name (Owner): *Charlie Morey (Iliamna Air Taxi employee)

Name (Occupant): *Iliamna Air Taxi

Mailing Address (Owner): see email

Mailing Address (Occupant): —

Owner Email: cmorey93@gmail Occupant Email: —

Owner Phone: 907·744·5261 Occupant Phone: —

Preferred method of contact (circle): Email Phone

Number of people residing at this location:
Adults (18 and over) 1
Teenagers (13 to 17) /
Children (12 and under) /

Years at this residence: 3-4 Full-Time ☒ Seasonal ☐

---

1) From where do you obtain your drinking water?
   a) Residential (private) well ☒ b) Community well ☐
   c) Bottled water ☐ d) Other ☐ _____

2) If you have a private well, please answer the following questions:
   a) Where is the well located on the property? north west corner of bldg.
   b) Is the well in use? Yes ☒ No ☐

3) If no, is the well usable, unusable, or properly abandoned?
   Usable ☐ Unusable ☐ Abandoned ☐ Method _____

   If yes, please check all that apply regarding the usage of your well water:
   - ☒ Drinking
   - ☒ Cooking food preparation
   - ☐ Other _____
   - ☒ Vegetable/grain Gardening
     -Size of Garden 12 × 12 sq.feet/acres
     -Average watering frequency using well water? (daily, weekly, etc.) every other

   a) When was the well installed? 17 yrs. ago
   b) What is the well depth? 10 - 12'
   c) What is the well diameter? 6"
   d) What is the well type? ☐ Dug Well ☐ Driven ☒ Drilled ☐ Unknown
   e) Do you have any treatment on your well (e.g. water softener)? Please describe. 2 - sediment; 1 green taste filter (see photo)

4) Sample Permission
   Does the Shannon & Wilson, Inc. have permission to sample your private well? ☒ Yes ☐ No

Verbal Agreement — Signature

11/5/20 — Date

*Likely DEC Sample IL-002. DEC sampled after filter

SHANNON & WILSON, INC.

RESIDENTIAL WELL SAMPLING LOG

Address Lot 12A Pike Lake Rd. Project Number (Iliamna) ~~101582~~
Owner/Occupant Charlie Morey Project Name ~~King Salmon~~ Airport PFAS
Mailing Address email cmorey93@gmail.com Date 11/5/20
Telephone 907-744-5261 Time 1145
Sampling Personnel RLW, SMH

Purge Location Kitchen sink

Sample Location Kitchen sink, POST-FILTERS
2 sediment filters, 1 taste/odor filter

Sample No. ILI-023 Time 1231

Duplicate — Time —

Pumping Start Time 1152
Pumping End Time 1231
Gallons per minute 3
Purge Volume (gal.) ~117

Total Depth of Well (ft.) 10-12 ft
Laboratory *Test America*
Analysis ~~x6-PFAS (WS-LC-0025)~~ 537.1

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 0.5]	Conductivity (µS/cm) [± 3%]	pH (std. units) [± 0.1]	Water Clarity (visual)
1155	8.0	81.2	4.78	clear
1158	6.8	79.1	5.46	clear
1201	6.7	79.2	6.00	clear
1204	6.8	79.1	6.27	clear
1207	6.9	79.0	6.43	clear
1210	6.9	79.0	6.59	clear
1213	6.9	79.0	6.70	clear
1216	6.9	78.8	6.79	clear
1219	6.9	78.7	6.87	clear
1222	6.9	78.9	6.96	clear
1225	6.9	78.7	7.02	clear
1228	6.9	78.9	7.06	clear
1231	SAMPLE			

Notes: Someone came earlier this year to collect sample
Could be DEC sample -002.

smb

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Private Well Inventory Survey Form

Date: 11/4/20 Parcel ID#: ILI-030 / WAS DEC Sample IL-010

Physical Address: E. Wind Lake

Name (Owner): Alice + Thomas Hedlund

Name (Occupant): —

Mailing Address (Owner): PO 186 99606

Mailing Address (Occupant): —

Owner Email: 907-571-1216 Occupant Email: —

Owner Phone: — Occupant Phone: —

Preferred method of contact (circle): Email (Phone)

Number of people residing at this location:

Adults (18 and over) 2

Teenagers (13 to 17) —

Children (12 and under) —

Years at this residence: 40 Full-Time ☒ Seasonal ☐

---

1) From where do you obtain your drinking water?
   a) Residential (private) well ☒ b) Community well ☐
   c) Bottled water ☐ d) Other ☐ _____

2) If you have a private well, please answer the following questions:
   a) Where is the well located on the property? S of house
   b) Is the well in use? Yes ☒ No ☐

3) If no, is the well usable, unusable, or properly abandoned?
   Usable ☐ Unusable ☐ Abandoned ☐ Method _____

   If yes, please check all that apply regarding the usage of your well water:
   - ☒ Drinking
   - ☒ Cooking food preparation
   - ☐ Other _____
   - ☒ Vegetable/grain Gardening
     -Size of Garden "small" sq.feet/acres
     -Average watering frequency using well water? (daily, weekly, etc.) daily

   a) When was the well installed? ~ 5yrs
   b) What is the well depth? ~220 ft (200' to bedrock, then 20 more ft)
   c) What is the well diameter? 6"
   d) What is the well type? ☐ Dug Well ☐ Driven ☒ Drilled ☐ Unknown
   e) Do you have any treatment on your well (e.g. water softener)? Please describe. None

4) Sample Permission
   Does the Shannon & Wilson, Inc. have permission to sample your private well? ☒ Yes ☐ No

Verbally agree — Signature

11/4/20 — Date

* Guest house/rental is on same well as -030. Main house used to be plumbed to Clint's house, now connection is turned off (but still available for future use).

JMH

SHANNON & WILSON, INC.

RESIDENTIAL WELL SAMPLING LOG

Address E. Wind Lake
Owner/Occupant Thomas + Alice Hedlund
Mailing Address PO Box 186 Iliamna 99606
Telephone 907-571-1216

Project Number 105201
Project Name Iliamna DOT+PF
Date 11/4/20
Time 1600
Sampling Personnel RLW

Purge Location Kitchen sink

Sample Location Kitchen sink; pre treatment

Sample No. ILI-030 Time 1632

Duplicate — Time —

Pumping Start Time 1604
Pumping End Time 1632
Gallons per minute ~1 gpm
Purge Volume (gal.) ~28

Bottled Water —
Total Depth of Well (ft.) ~100
Laboratory Test America
Analysis PFAS (~~WS-LC-0025~~) 537.1

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 0.5]	Conductivity (µS/cm) [± 3%]	pH (std. units) [± 0.1]	Water Clarity (visual)
1608	8.6	54.2	5.51	clear
1611	7.1	51.7	7.31	clear
1614	7.2	51.7	8.51	clear
1617	6.9	51.1	8.79	clear
1620	6.6	50.5	8.86	clear
1623	6.5	50.0	8.91	clear
1626	6.7	50.1	8.93	clear
1629	6.6	50.1	8.95	clear
1632	SAMPLE			

Notes: Originally structure plumbed into Clint's well. Now house is on own well. 200 ft (@ 20 ft into bedrock)

Alternate Water: —

SMH

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Private Well Inventory Survey Form

Date: 11/4/20 Parcel ID#: ILI-031

Physical Address: 304 E Wind Lake

Name (Owner): Lary + Emma Hill

Name (Occupant): —

Mailing Address (Owner): PO Box 247 99606

Mailing Address (Occupant): —

Owner Email: lary j hill @ hotmail.com Occupant Email: —

Owner Phone: 571-1268 Occupant Phone: —

Preferred method of contact (circle): Email (Phone)

Number of people residing at this location:
Adults (18 and over) 2
Teenagers (13 to 17) —
Children (12 and under) —

Years at this residence: ~20 Full-Time ☒ Seasonal ☐

---

1) From where do you obtain your drinking water?
   a) Residential (private) well ☒ b) Community well ☐
   c) Bottled water ☐ d) Other ☐ _____

2) If you have a private well, please answer the following questions:
   a) Where is the well located on the property? W side of house
   b) Is the well in use? Yes ☒ No ☐

3) If no, is the well usable, unusable, or properly abandoned?
   Usable ☒ Unusable ☐ Abandoned ☐ Method _____
   If yes, please check all that apply regarding the usage of your well water:
   ☒ Drinking
   ☒ Cooking food preparation
   ☐ Other _____
   ☐ Vegetable/grain Gardening
   -Size of Garden_____ sq.feet/acres
   -Average watering frequency using well water? (daily, weekly, etc.) _____

   a) When was the well installed? ~1990
   b) What is the well depth? ~104 ft
   c) What is the well diameter? 6"
   d) What is the well type? ☐ Dug Well ☐ Driven ☒ Drilled ☐ Unknown
   e) Do you have any treatment on your well (e.g. water softener)? Please describe. NONE

4) Sample Permission
   Does the Shannon & Wilson, Inc. have permission to sample your private well? ☒ Yes ☐ No

verbally agreed — Signature

11/4/20 — Date

3 of 4

SHANNON & WILSON, INC.

RESIDENTIAL WELL SAMPLING LOG

Address 304 E Wind Lake
Owner/Occupant Lary + Emma Hill
Mailing Address PO Box 247 99606
Telephone 907-571-1268

Project Number 105201
Project Name Iliamna DOT-PF
Date 11/4/20
Time 1515
Sampling Personnel RWO

Purge Location Kitchen Sink

Sample Location Kitchen sink; pre-treatment

Sample No. ILI-031 Time 1549

Duplicate — Time —

Pumping Start Time 1525
Pumping End Time 1549
Gallons per minute ~1
Purge Volume (gal.) ~24

Bottled Water —
Total Depth of Well (ft.) ~104 ft
Laboratory Test America
Analysis PFAS (~~WS-LC-0025~~) 537.1

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 0.5]	Conductivity (µS/cm) [± 3%]	pH (std. units) [± 0.1]	Water Clarity (visual)
1528	7.4	64.3	6.76	clear
1531	5.0	62.0	7.80	clear
1534	6.1	62.4	8.31	clear
1537	5.3	61.6	8.54	clear
1540	5.5	61.8	8.60	clear
1543	5.4	61.8	8.62	clear
1546	5.2	61.6	8.64	clear
1549	SAMPLE			

Notes: Asked about Agent Orange Spraying
• Had knowledge of past AFFF use. (1940-1950's) a dump fire from WWII drum storage area
Alternate Water:

CHAIN-OF-CUSTODY RECORD

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

Laboratory TEST AMERICA
Attn: DAVID ALLTUCKER

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

Analytical Methods (include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	PFAS (537.1) + TAILMA							Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
ILI-004		1042	11/4/20	X							2	Groundwater/Drinking Water
ILI-904		1032	"	"							"	"
ILI-012		1133	"	"							"	"
ILI-008		1507	"	"							"	"
ILI-009		1331	"	"							"	"
ILI-909		1321	"	"							"	"
ILI-031		1549	"	"							"	"
ILI-030		1632	"	"							"	"
ILI-013		1651	"	"							"	"
ILI-006		1518	"	"							"	"

Project Information	
Number:	105201-007
Name:	Iliamna DOT+PF
Contact:	AMJ
Ongoing Project?	Yes ☐ No ☒
Sampler:	RLW, SMH

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

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Rachel Willis Time: 1230	Signature: Time:	Signature: Time:
Printed Name: Rachel Willis Date: 11/10/20	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:
Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Company:	Company:	Company:

Notes:

PFAS x18 Analytes

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

No. 36164

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: DAVID 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 (537.1) + TRIZMA							Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
ILI-001		1428	11/4/20	X							2	Groundwater / Drinking water
ILI-023		1231	11/5/20	1							1	1
ILI-003		1420	11/5/20	1							1	1

Project Information

Number:	105201-003
Name:	Iliamna DOT+PF
Contact:	AMJ
Ongoing Project?	Yes ☐ No ☒
Sampler:	RLW, SMH

Sample Receipt

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

Notes:

PFAS x18 Analytes

Reliquished By: 1.	Reliquished By: 2.	Reliquished By: 3.
Signature: Rachel Wills Time: 1230	Signature: Time:	Signature: Time:
Printed Name: Rachel Wills Date: 11/10/20	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:
Printed Name: Date:	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. 36170

FIELD ACTIVITIES DAILY LOG

Date 11/3/20
Sheet 1 of 1
Project No. 105201

Project Name: Iliamna Airport
Field activity subject: Private Well Search
Description of daily activities and events: Travel Day

0630 Arrive at office (SMH/RLW)
load truck, drive to airport

Phone calls to C.B.D. and S.A. (Steve Adamczack). S.A. drops off YSIs at airport (0730)

0800 Flight (FAI to ANC)
0900 Arrive @ ANC
RLW collect baggage
0930 SMH taxi to First Care for COVID-19 test and return
1130 RLW/SMH Uber to Iliamna Air Taxi

1230 Flight (ANC to ILI)

1445 Arrive @ Marks Lodge
Prep: Gear, Samples, well search Map/Spreadsheet

1530 Speak to client (phone) DOT: Clint and Dean

1600 Prep for 11/4/20

1700 Done

1900 – 2000 Discuss locations (extent (6) with Mark – he has contact information and well info.

Visitors on site: —

Changes from plans/specifications and other special orders and important decisions:
—

Weather conditions: sunny, windy, ~ 10°F

Important telephone calls: —

Personnel on site: SMH / RLW

Signature: [signature] Date: 11/3/20

FIELD ACTIVITIES DAILY LOG

Date 11/4/20
Sheet 1 of 1
Project No. 105201

Project Name: Iliamna Airport
Field activity subject: Private well Search & Site Recon.
Description of daily activities and events: see above

0730 Start. Van Battery dead, charge battery.
0800 RLW Calibrate YSIs
Pack gear.
0900 Leave Marks Lodge.
0930 Meet Dean and Clint at DOT Bldg.
1000 RLW sample DOT Bldgs.
SMH conduct Limited site Recon w/ Dean
1130 RLW/SMH sample abandoned well (Sample ILI-009)
-1330
RLW sampling Extent 1
1345 ILI-001 (ILI Air Taxi)
1440 ILI-006 (Everts)
1545 ILI-013 (IDC Bldg. - Weather Station)
RLW/SMH Tag Extent 8 and 9
1800 Return to Lodge
unpack
paperwork
1900 discuss locations w/ Mack
Done

Visitors on site: —

Changes from plans/specifications and other special orders and important decisions:
—

Weather conditions: Wind (~30 mph)

Important telephone calls: —

Personnel on site: SMH / RLW

Signature:

Date: 11/4/20

FIELD ACTIVITIES DAILY LOG

Date 11/4/20
Sheet 1 of
Project No. 105201

Project Name: Iliamna DOT + PF
Field activity subject: ILI well search
Description of daily activities and events:

800 - Verify calibration on YSI B + D. Prep gear
900 - Jump dead van battery
930 - Arrive @ DOT+PF garage to meet Dean + Clint. RLW sampled DOT+PF well in main maintenance station off Airport Rd. Called Alice + Thomas Hedlund to schedule sample.
1100 - RLW sampled well plumbed to older DOT+PF garage w/ doors/access off Iliamna Village Rd.
1200 - RLW + SMH sample abandoned building/well adjacent to airport (ILI-009)
1400 - RLW sample Residents at E. Wind Lake Rd. (John Baechler, Emma + Lary Hill, Hedlunds). RLW called Clint for sample. Clint arrived to show well location and attempt to turn spigot on. Clint did not want us sampling inside, ok to sample from spigot.
- Lary Hill mentioned AFFF use in 1940-1950 on other side of the lake
1645 - RLW done sampling at E. Wind Lake Rd. Meet up w/ SMH to sample/Tag houses.
1700 - 1745 Tag houses w/ SMH.
1800 - Return to BnB.
1900 - Complete Paperwork. Done for Day

Visitors on site:
Changes from plans/specifications and other special orders and important decisions:
Weather conditions: 10°F 20-30 mph wind, Partly Cloudy
Important telephone calls:
Personnel on site: RLW, SMH
Signature: Date: 11/4/20

FIELD ACTIVITIES DAILY LOG

Date 11/5/20
Sheet ____ of ____
Project No. ____

Project Name: Iliamna DOT+PF
Field activity subject: Well Search
Description of daily activities and events:

800 - Calibrate YSI B+D. Prep gear.
845 - Begin calling residents. Mark provides contact info for multiple properties on airport hangar.
1030 - Depart for DOT-PF station. RLW completes well survey w/ Clint
1100 - Check well status at Pebble building next to tank farm. Well was disconnected.
1115 - GPS labeled remaining airport structures
1145 - RLW + SMH stop @ ILI Air Taxi : to find resident of Pike Lake cabin. Sampled Pike Lake Cabin (cherbe).
1245 - RLW + SMH completed sampling. Continue to tag buildings.
1340 - Arrive @ IDC store for sample. Collected sample from PT. DEC sample was collected post-treatment.
1530 - Arrive back at bnb. Unpack.
Complete paperwork.
1700 - Done w/ paperwork
- Pack gear for trip.

Visitors on site:

Changes from plans/specifications and other special orders and important decisions:

Weather conditions: 15-20°F, breezy, Snow storm @ 1400.

Important telephone calls:

Personnel on site: RLW, SMH
Signature: [signature] [signature] Date: 11/5/20

RW

SHANNON & WILSON
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

PRE-SAMPLING COVID-19 QUESTIONNAIRE

In accordance with Shannon & Wilson, Inc. (Shannon & Wilson) *COVID-19 Safety Plan for Residential Water Well Sampling*, this questionnaire will be completed to document responses from business owners/residential occupants during the initial scheduling of the sampling appointments, and prior to entering the premises.

Date/Time: 11/4/20 Water Supply Well ID: ILI-001

Name: Iliamna Air Taxi (owner / occupant)

Physical Address: N/A

Mailing Address: iliamnaair@arctic.net

Questions		Yes	No
1.	Are you or anyone in the home/business currently feeling sick?	☐	☒
2.	Has anyone in the household/business or recent guest experienced symptoms of COVID-19?	☐	☒
3.	Have you been in contact with anyone who has been diagnosed with COVID-19 or experiencing symptoms of COVID-19 in the last 14 days?	☐	☒
4.	Has anyone in the household or recent guest traveled outside of Alaska within the last 14 days, or are fulfilling a mandated quarantine?	☐	☒

Business Location

If the answer is "yes" to one of these questions, sampling at a residence will not occur inside the home. If sampling is to occur on that day, it must be conducted from an outside spigot. If an outside spigot is not available for sampling at the residence, a sample will not be collected at that time. Sampling may occur after a 14-day period has passed and the answers to the questions are no longer "yes".

For businesses open to the general public, Shannon & Wilson field staff will follow the COVID-19 safety practices of the business as well as Shannon & Wilson's *COVID-19 Safety Plan*. If the answer is "yes" to the first two questions, attempts will be made to obtain the sample from an outside spigot. If an outside spigot is not available for sampling the business, Shannon & Wilson field staff will use professional judgement to assess if a sample can be collected with minimal risk to their health and that of the business staff. Otherwise, a sample will not be collected at that time. Sampling may occur after a 14-day period has passed and the answers to the questions are no longer "yes".

2355 Hill Road ▪ Fairbanks, Alaska 99709-5326 ▪ 907 479-0600 ▪ Fax 907 479-5691
▪ www.shannonwilson.com ▪

RW2

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GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

PRE-SAMPLING COVID-19 QUESTIONNAIRE

In accordance with Shannon & Wilson, Inc. (Shannon & Wilson) *COVID-19 Safety Plan for Residential Water Well Sampling*, this questionnaire will be completed to document responses from business owners/residential occupants during the initial scheduling of the sampling appointments, and prior to entering the premises.

Date/Time: 11/4/20 1500 Water Supply Well ID: 006

Name: Andrew Dennert (owner / occupant)

Physical Address: 101 Airport Rd. ACE ; Everts Air Cargo

Mailing Address: iliamna services @ gmail. com

Questions		Yes	No
1.	Are you or anyone in the home/business currently feeling sick?	☐	☒
2.	Has anyone in the household/business or recent guest experienced symptoms of COVID-19?	☐	☒
3.	Have you been in contact with anyone who has been diagnosed with COVID-19 or experiencing symptoms of COVID-19 in the last 14 days?	☐	☒
4.	Has anyone in the household or recent guest traveled outside of Alaska within the last 14 days, or are fulfilling a mandated quarantine?	☐	☒

If the answer is "yes" to one of these questions, sampling at a residence will not occur inside the home. If sampling is to occur on that day, it must be conducted from an outside spigot. If an outside spigot is not available for sampling at the residence, a sample will not be collected at that time. Sampling may occur after a 14-day period has passed and the answers to the questions are no longer "yes".

For businesses open to the general public, Shannon & Wilson field staff will follow the COVID-19 safety practices of the business as well as Shannon & Wilson's *COVID-19 Safety Plan*. If the answer is "yes" to the first two questions, attempts will be made to obtain the sample from an outside spigot. If an outside spigot is not available for sampling the business, Shannon & Wilson field staff will use professional judgement to assess if a sample can be collected with minimal risk to their health and that of the business staff. Otherwise, a sample will not be collected at that time. Sampling may occur after a 14-day period has passed and the answers to the questions are no longer "yes".

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GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

PRE-SAMPLING COVID-19 QUESTIONNAIRE

In accordance with Shannon & Wilson, Inc. (Shannon & Wilson) *COVID-19 Safety Plan for Residential Water Well Sampling*, this questionnaire will be completed to document responses from business owners/residential occupants during the initial scheduling of the sampling appointments, and prior to entering the premises.

Date/Time: 11/5/20 1215 Water Supply Well ID: 023

Name: Charlie Morey (owner / occupant)

Physical Address: LOT 12 A Pike Lake Rd.

Mailing Address: cmorey93@gmail.com

Questions		Yes	No
1.	Are you or anyone in the home/business currently feeling sick?	☐	☒
2.	Has anyone in the household/business or recent guest experienced symptoms of COVID-19?	☐	☒
3.	Have you been in contact with anyone who has been diagnosed with COVID-19 or experiencing symptoms of COVID-19 in the last 14 days?	☐	☒
4.	Has anyone in the household or recent guest traveled outside of Alaska within the last 14 days, or are fulfilling a mandated quarantine?	☐	☒

If the answer is "yes" to one of these questions, sampling at a residence will not occur inside the home. If sampling is to occur on that day, it must be conducted from an outside spigot. If an outside spigot is not available for sampling at the residence, a sample will not be collected at that time. Sampling may occur after a 14-day period has passed and the answers to the questions are no longer "yes".

For businesses open to the general public, Shannon & Wilson field staff will follow the COVID-19 safety practices of the business as well as Shannon & Wilson's *COVID-19 Safety Plan*. If the answer is "yes" to the first two questions, attempts will be made to obtain the sample from an outside spigot. If an outside spigot is not available for sampling the business, Shannon & Wilson field staff will use professional judgement to assess if a sample can be collected with minimal risk to their health and that of the business staff. Otherwise, a sample will not be collected at that time. Sampling may occur after a 14-day period has passed and the answers to the questions are no longer "yes".

2355 Hill Road ▪ Fairbanks, Alaska 99709-5326 ▪ 907 479-0600 ▪ Fax 907 479-5691
▪ www.shannonwilson.com ▪

FIELD ACTIVITIES DAILY LOG

Date 6/1/21
Sheet 1 of 1
Project No. 105201

Project Name: DOT + PF PFAs: Iliamna
Field activity subject: PFAS
Description of daily activities and events: 0300 arrive at STW to pack gear + prep.

~0340 Leave for FAI
0400 Arrive FAI; check in, TSA, etc.
TRAVEL

~1200 Arrive Iliamna. Spoke to Nancy agreed to let me sample from bathroom since anytime until 1630.
Go to lodge, calibrate YSI arrange gear + paper work. Tag properties & call owners. Collect samples from Iliamna air taxi + Clint Anelon's. Spoke to Ross, Rainbow River Lodge - No well.

~1730 Return to lodge; complete paperwork; put away samples

1800 end for day

Visitors on site: —

Changes from plans/specifications and other special orders and important decisions:
—

Weather conditions: Windy.

Important telephone calls: to property owners

Personnel on site: ARM

Signature: [signature] Date: 6/1/2021

FIELD ACTIVITIES DAILY LOG

Date 6/2/2021
Sheet 1 of 1
Project No. 105201

Project Name: DOT + PF PFAS : Iliamna
Field activity subject: PFAS
Description of daily activities and events: Check YSI calibration

0800 Packed gear + prep for day. Checked vm.
0900 headed to LTP Air. Spoke to Faith. Unsure of treatment, or previous samples Mike + Jenette Clark's daughter. Ms into for their property (IL1-014)
Collected samples from Bathroom sink.
Re-check tags. None removed or damaged.
Call owners - no response
≈ 1030 Return to lodge. Pack equip.

1100 end for day

Visitors on site:

Changes from plans/specifications and other special orders and important decisions:

Weather conditions: 70s; sunny.

Important telephone calls: prop. owners

Personnel on site:
Signature: AAM

Date: 6/2/21

FIELD ACTIVITIES DAILY LOG

Date 6/3/21
Sheet 1 of 1
Project No. 105201

Project Name: DOT+PF PFAS II
Field activity subject: PFAS
Description of daily activities and events: 0800 Collect belongings, pack + secure samples. load truck
0915 Recieve Call from Air Taxi Flight is EARLY Need to get to hangar ASAP.
0945 Leave Iliamna
TRAVEL
~1630 arrive FAI. Unpack
1700 End for Day

Visitors on site:

Changes from plans/specifications and other special orders and important decisions:
Flight moved from 1100 to 0945.

Weather conditions: —

Important telephone calls: — see above ↑

Personnel on site:
Signature: ARM Date: 6/3/2021

SHANNON & WILSON, INC.

WATER SUPPLY WELL SAMPLING LOG

Address _____
Owner/Occupant Lake + Pen / Steve Reimers (JDC)
Mailing address —
_____
Telephone multiple; see Database

Project Number ~~102896-006~~ 105201
Project Name ~~FY21 Water Supply Well Sampling - May 2021~~
Date 6/2/2021
Time 0930
Sampling Personnel APM

Sample Location bathroom sink; treatment unknown

Sample Number ILI-013
Duplicate —

Time 1008
Time —

Analysis PFAS

Lab Test America

Purge Volume _____

PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 0.5]	Conductivity (µS/cm) [± 3%]	pH (std. units) [± 0.1]	Water Clarity (visual)
0945	8.9	86.9	8.32	Clear
0948	9.5	83.8	8.59	Clear
0951	7.7	80.7	8.65	Clear
0954	6.8	78.9	8.70	Clear
0957	6.6	78.2	8.71	Clear
1002	6.3	76.5	8.73	Clear
1005	6.1	75.4	8.75	Clear
1008	SAMPLE			

Notes: temp was cycling

SHANNON & WILSON, INC.

PRIVATE WELL SAMPLING LOG

Address
Owner/Occupant Clint Anelon
Mailing address 571-7171
Telephone

Project Number 105201
Project Name DOT PFAS | CLAMNA
Date 6/1/2021
Time 1400
Sampling Personnel Aem

Sample Location Outdoor Spigot No treatment; per owner

Sample Number 007
Duplicate —

Time 1415
Time —

Analysis PFAS

Lab Test America

Purge Volume

PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 0.5]	Conductivity (µS/cm) [± 3%]	pH (std. units) [± 0.1]	Water Clarity (visual)
1355	5.9	43.6	8.60	clear
1359	4.8	42.4	9.11	clear
1402	4.5	42.1	9.18	clear
1406	5.2	42.9	9.20	clear
1409	5.3	43.0	9.20	clear
1412	5.0	42.5	9.20	clear

Notes:

SHANNON & WILSON, INC.

WATER SUPPLY WELL SAMPLING LOG

Address: ilianna air
Owner/Occupant: Nancy LaPorte
Mailing address:
Telephone:

Project Number: ~~102896-006~~ 105201
Project Name: FY21 Water Supply Well Sampling - ~~May~~ June 2021
Date: 6/1/2021
Time: 1430
Sampling Personnel: AKM

Sample Location: Bathroom sink *POST*

Sample Number: ILI-001
Duplicate: ILI-901

Time: 1502
Time: 1452

Analysis: PFAS

Lab: Test America

Purge Volume:

PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 0.5]	Conductivity (µS/cm) [± 3%]	pH (std. units) [± 0.1]	Water Clarity (visual)
1427	10.0	90.4	7.33	clear
1430	7.6	84.6	7.56 X	clear
1433	7.9	85.0	7.65 X	clear
1437	7.5 X	84.7	7.70	clear
1440	9.1 X	88.2	7.69	clear
1443	6.5	82.3	7.73	clear
1446	6.3	81.9	7.73	clear
1453	8.9	87.9	7.69	clear
1456	8.7	87.5	7.70	clear
1459	8.7	87.5	7.70	clear

Notes: bathroom sink temps cycling

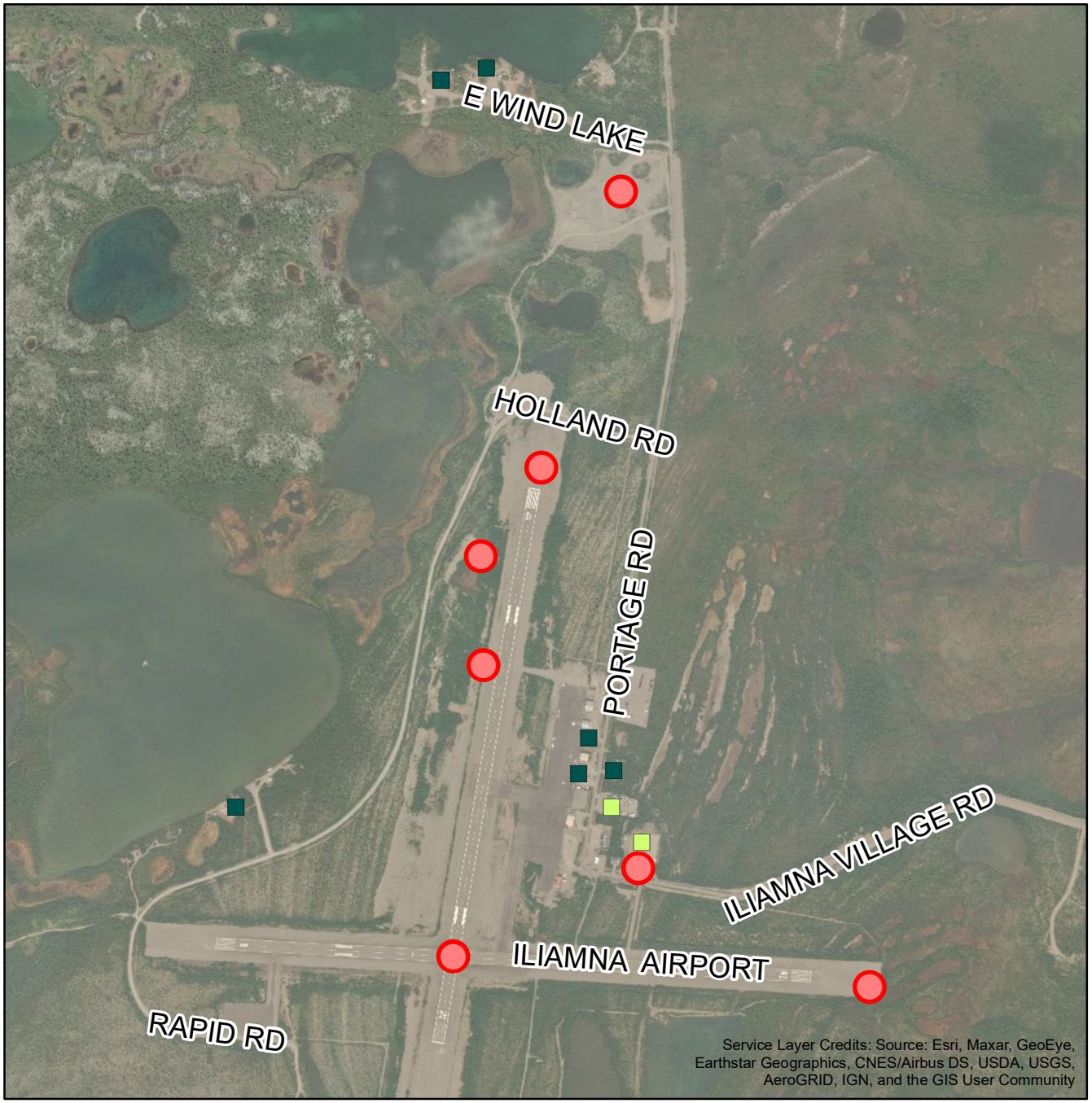
APPENDIX C: PUBLIC INFORMATION

Appendix C

Public Information

CONTENTS

DRAFT



LEGEND

Sum of PFOS and PFOA:

- ≤ 17 parts per trillion (ppt)
- 18 to 69 ppt
- ≥ 70 ppt (over EPA advisory)
- Area of aqueous film forming foam (AFFF) use

0 0.25 0.5

Miles

N

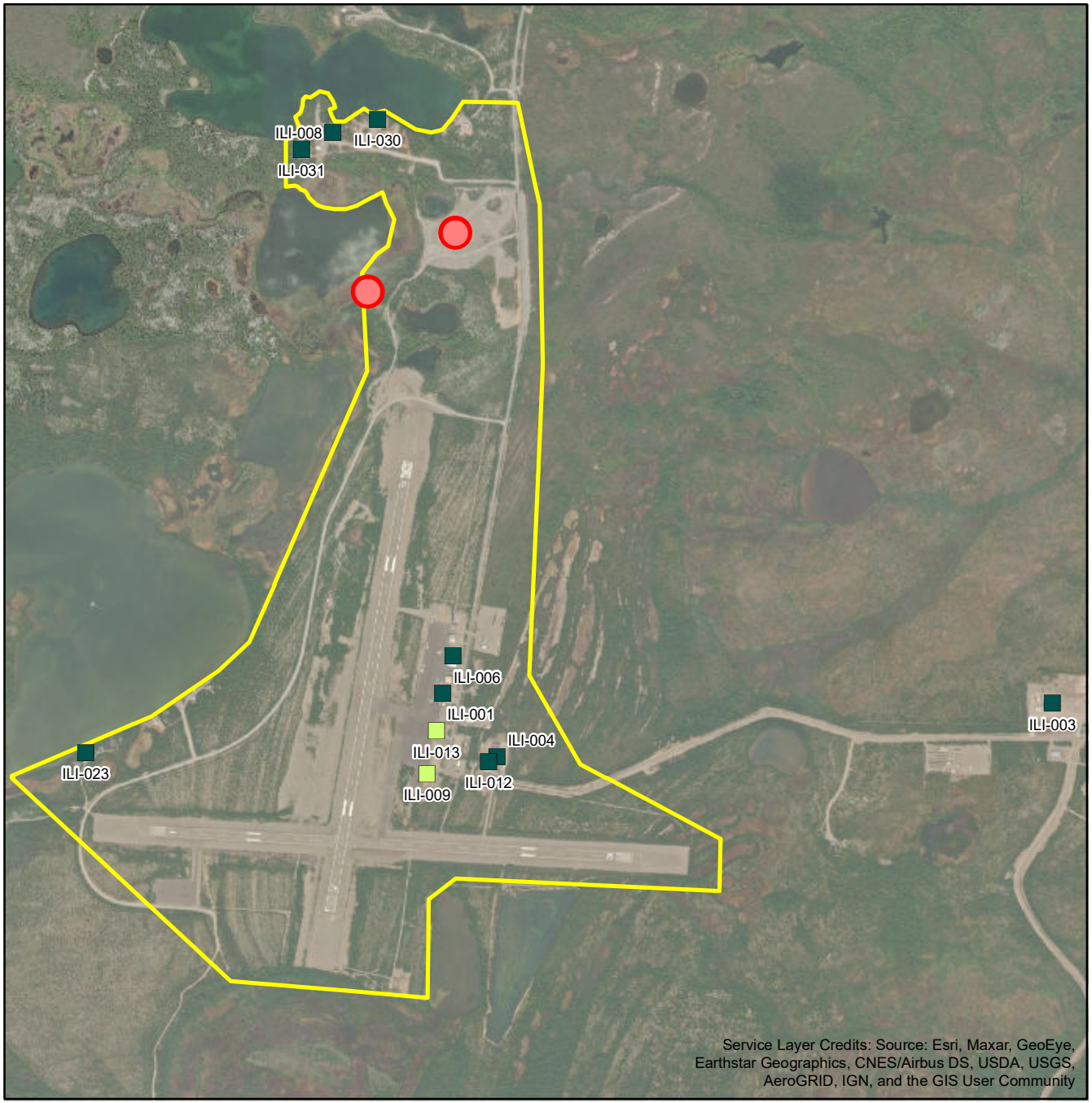
Iliamna Airport
Iliamna, Alaska

DEC SAMPLE LOCATIONS

May 2022 105201-001

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Figure 1



LEGEND

November 2020 Sampling Event

Sum of PFOS and PFOA:

- ≤ 17 parts per trillion (ppt)
- 18 to 69 ppt
- ≥ 70 ppt (over EPA advisory)
- Well Search Area
- Past Aqueous Film Forming Foam (AFFF) Use

N

0 0.25 0.5

Miles

Iliamna Airport
Iliamna, Alaska

INITIAL WELL SEARCH AREA

May 2022 105201-001

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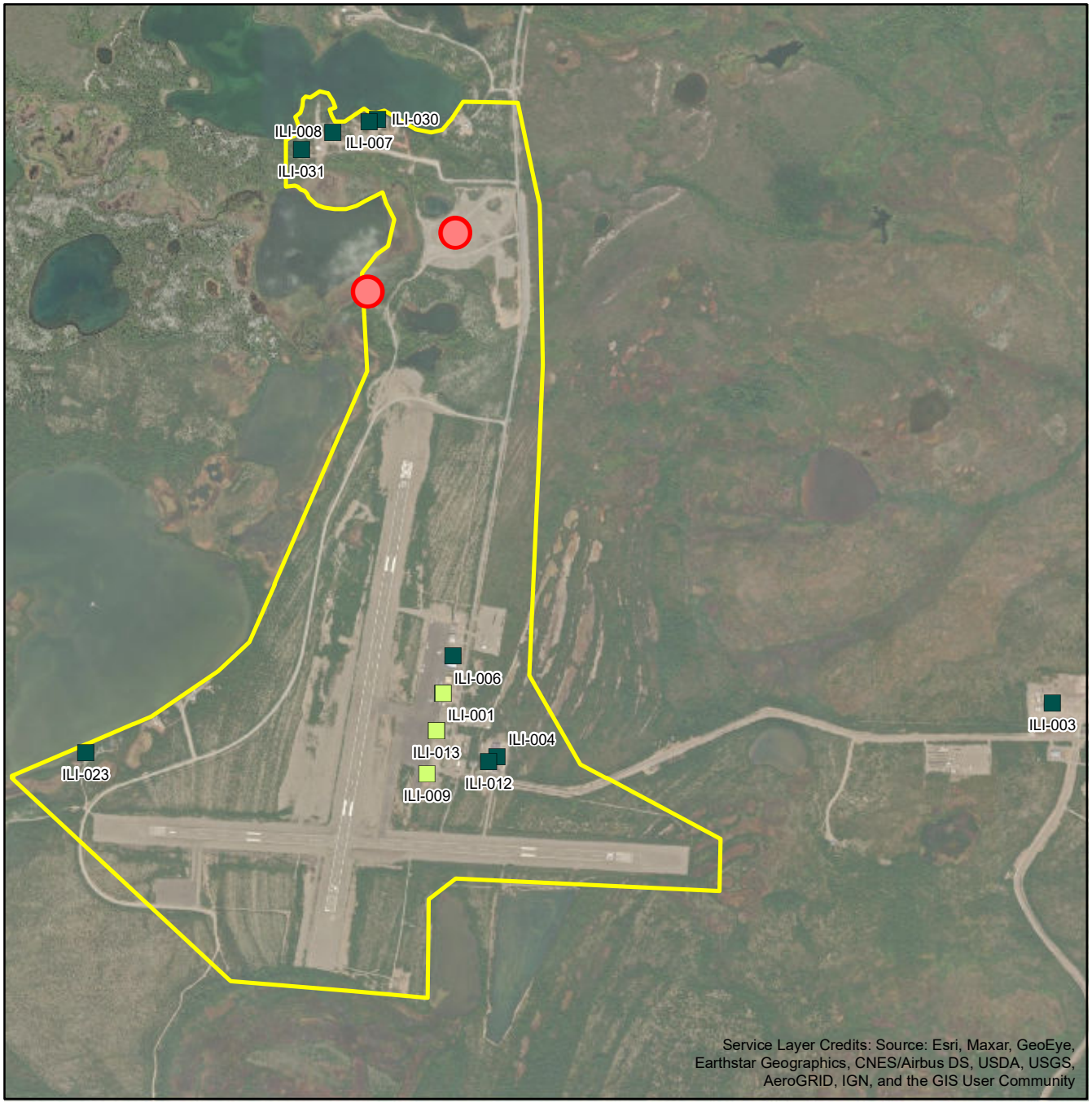
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Figure 1



LEGEND

Sum of PFOS and PFOA:

- ≤ 17 parts per trillion (ppt)
- 18 to 69 ppt
- ≥ 70 ppt (over EPA advisory)
- Well Search Area
- Past Aqueous Film Forming Foam (AFFF) Use

N

0 0.25 0.5

Miles

Iliamna Airport
Iliamna, Alaska

UPDATED HIGHEST WATER SUPPLY WELL ANALYTICAL RESULTS JUNE 2021

May 2022 105201-004

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Figure 1

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Transportation and Public Facilities

DIVISION OF 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 – Iliamna Airport

October 2020

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. PFAS are used in a large number of consumer products ranging from fabric waterproofing compounds, non-stick cookware, stain resistant carpeting, some food packaging and firefighting foams.

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 hired Shannon & Wilson to test water supply wells near the airport for perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA), and other PFAS compounds. Much of the well search area is served by the Nome Joint Utility System and may not have wells.

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, two compounds within the PFAS family.

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.

Website: www.dot.alaska.gov/airportwater/

For questions about well testing:
Shannon & Wilson, Inc.
Ashley Jaramillo, Project Manager
Office Phone: 907-458-3118
Email: amj@shanwil.com

For regulatory questions:
Alaska Dept. of Environmental Conservation
Bill O'Connell, Contaminated Sites Program
Phone: 907-269-3057
Email: bill.oconnell@alaska.gov

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

To file an insurance claim:
Division of Risk Management
Ken Simpson, Claims Administrator
Phone: 907-465-2183
Email: ken.simpson@alaska.gov

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

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

November 25, 2020

Full Name/s
Mailing Address
City, AK xxxxx

RE: RESULTS OF JUNE 2021 PFAS WATER SUPPLY WELL SAMPLING, ILIAMNA AIRPORT

Dear Mr. and Ms. Name,

Thank you for participating in our water supply well sampling program to evaluate the potential presence of per- and polyfluoroalkyl substances (PFAS) in groundwater near the Iliamna Airport. Shannon & Wilson, Inc. collected a water sample on June X, 2021, from your water supply well. Enclosed are the analytical results for the sample from your water supply well. 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 Eurofins 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/greater 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) will provide 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 10 water supply wells near the Iliamna Airport on behalf of DOT&PF. Please see the enclosed PFAS fact sheet for a link to the DOT&PF project website, as requests 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
Title

Enc: Select Pages of Eurofins TestAmerica Laboratory Report No. 320-74692-1
PFAS Fact Sheet - Iliamna Airport

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

APPENDIX D: QUALITY ASSURANCE AND QUALITY CONTROL

Appendix D

Quality Assurance and Quality Control Summary

CONTENTS

CCV	continuing calibration verification
COC	chain-of-custody
°C	degrees Celsius
DQO	data quality objectives
DVPP	Data-Validation Program Plan
GWP	General Work Plan
EPA	U.S. Environmental Protection Agency
IDA	isotope dilution analyte
ILI	Iliamna Airport
LCS	laboratory control samples
LCSD	laboratory control sample duplicate
LHA	Lifetime Health Advisory
LOD	limit of detection
MS	matrix spike sample
MSD	matrix spike duplicate sample
ng/L	nanograms per liter
QA/QC	quality assurance/quality control
RL	reporting limit
RPD	relative percent difference
S&W	Shannon & Wilson, Inc.
SGS	SGS North America
WO	work order
TestAmerica	Eurofins TestAmerica Laboratories, Inc.

APPENDIX D: QUALITY ASSURANCE AND QUALITY CONTROL

D.1 INTRODUCTION

This quality assurance (QA)/quality control (QC) summary outlines the technical review of analytical results generated in support of water supply well sample collection at the Iliamna Airport (ILI) from June 2020 through June 2021. The water supply well events are summarized in Section 3.0. Water supply well analytical results tables are presented after the text. QA/QC assessment for the DEC-collected samples is not included in this section as DEC sample locations could not be confirmed in the field.

Shannon & Wilson reviewed project and QC analytical data to assess whether the data met the designated quality objectives and were acceptable for project use. The project data were reviewed for deviations to the requirements presented in the DOT&PF Statewide PFAS General Work Plan (GWP). The review included evaluation of the following: sample collection and handling, holding times, blanks (to assess contamination), project sample and laboratory quality control sample duplicates (to assess precision), laboratory control samples (LCSs) and sample surrogate recoveries (to assess accuracy), and matrix spike sample (MS) recoveries (to assess matrix effects). Calibration curves and continuing calibration verification (CCV) recoveries were not reviewed unless a QC discrepancy was noted by the laboratory in a case narrative. QC deviations that do not impact data quality (e.g., high LCS recovery associated with non-detect results), are not discussed. Additional details of data quality descriptions are reported in the DEC Laboratory Data Review Checklists (LDRCs), which are included in Appendix A following each corresponding laboratory report.

Water supply well results and reporting limits (RLs) for non-detect results were compared to the U.S. Environmental Protection Agency (EPA) Lifetime Health Advisory (LHA) of 70 nanograms per liter (ng/L) for the sum PFOS and PFOA.

Water supply well data quality is discussed in Section D.2. Applicable data quality indicators are discussed for each method under separate subheadings. Data which did not meet acceptance criteria have been described and the associated samples and data quality implications or qualifications are summarized.

D.1.1 Analytical Methods and Data Quality Objectives

The analytical methods and associated data quality objectives (DQOs) used for this review were established in the GWP and the Data-Validation Program Plan (DVPP). The DQOs represent the minimum acceptable QC limits and goals for analytical measurements and are

used as comparison criteria during data quality review to determine both the quality and usability of the analytical data.

The six DQOs used for this review were accuracy, precision, representativeness, comparability, sensitivity, and completeness.

- Accuracy measures the correctness, or the closeness, between the true value and the quantity detected. It is measured by calculating the percent recovery of known concentrations of spiked compounds that were introduced into the appropriate sample matrix. Surrogate, LCS, and MS sample recoveries were used to measure accuracy for this project. LCS and surrogate recovery criteria are defined in the QSM. ◎ Precision measures the reproducibility of repetitive measurements. It is measured by calculating the relative percent difference (RPD) between duplicate samples. Laboratory duplicate samples, field duplicate samples, MS and matrix spike duplicate sample (MSD) sample pairs, and LCS and laboratory control sample duplicate (LCSD) pairs were used to measure precision for this project. LCS/LCSD precision criteria are defined in the QSM and field duplicate precision criteria are defined in the DEC LDRC (water: ≤30%).
- Representativeness describes the degree to which data accurately and precisely represents site characteristics. This is addressed in more detail in the following section(s).
- Comparability describes whether two data sets can be considered equivalent with respect to the project goal. This is addressed in more detail in the following section(s).
- Sensitivity describes the lowest concentration that the analytical method can reliably quantitate, and is evaluated by verifying that the detected results and/or limits of detection (LODs) meet the project-specific cleanup levels and/or screening levels.
- Completeness describes the amount of valid data obtained from the sampling event(s). It is calculated as the percentage of valid measurements compared to the total number of measurements. The completeness goal for this project was set at 90 percent.

In addition to these criteria for the six DQOs described above, sample collection and handling procedures and blank samples were reviewed to ensure overall data quality. Sample collection forms were reviewed to verify that representative samples were collected. Sample handling was reviewed to assess parameters such as chain-of-custody (COC) documentation, the use of appropriate sample containers and preservatives, shipment cooler temperature, and method-specified sample holding times. Each of these parameters contributes to the general representativeness and comparability of the project data. The combination of evaluations of the above-mentioned parameters will lead to a determination of the overall project data completeness.

D.1.2 Summary of Groundwater Samples

A total of 16 groundwater samples were collected by Shannon & Wilson from water supply wells at and near the ILI from November 2020 through June 2021 (including 2 field duplicates).

Each project and quality control sample was analyzed by Eurofins TestAmerica Laboratory of West Sacramento, California (Eurofins TestAmerica). Eurofins TestAmerica was certified for the analysis of PFAS on February 11, 2021 by compliance with LCMS-MS QSM Version 5.3 Table B-15. The reported analytes were included in the DEC's Contaminated Sites Laboratory Approval 17-020. Prior to February 11, 2021, Eurofins TestAmerica was certified for the analysis of PFOS and PFOA only by Method 537.

Groundwater samples were shipped via Alaska Airlines Goldstreak service from Fairbanks to the laboratory in West Sacramento, California. The laboratory reports were assigned the following work order (WO) numbers:

- WO 320-66626-1 for November 2020
- WO 320-74692-1 for June 2021

The laboratory reports and associated DEC LDRCs are included in Appendix A. Sample data quality is discussed in Section D.2.

D.2 WATER SUPPLY WELL DATA QUALITY REVIEW

This section presents the findings of our data quality review and the resulting data qualifications for water supply well samples. See the associated LDRCs in Appendix A for more detailed data quality descriptions.

D.2.1 Sample Collection

Water supply well sample collection forms were reviewed to ensure that parameters met the stabilization guide identified in the GWP and DEC Field Sampling Guidance. Samples met stabilization criteria with the exception noted below:

- During collection of field-duplicate pair *ILI-001/ILI-901* and *ILI-013*, water quality parameters did not stabilize. As a result, we consider the results of these samples to be estimates, with no direction of bias and have been flagged J* in the analytical results table.

D.2.2 Sample Handling

Evaluation of proper sample handling procedures includes verification of the following: correct COC documentation, appropriate sample containers and preservatives, cooler temperatures maintained within the DEC-recommended temperature range (0 to 6 degrees Celsius [°C]), and sample analyses performed within method-specified holding times.

No sample handling discrepancies were noted upon receipt at the laboratory.

D.2.3 Method Blanks

Method blanks were utilized to detect potential laboratory cross-contamination of project samples. Samples are considered affected if they are detected within ten times the concentration of the detection in the method blank. Samples were analyzed in every batch, as required. No analytes were detected which resulted in the qualification of data. See the associated DEC LDRC checklist for a more detailed discussion.

D.2.4 Laboratory Control Samples

LCS/LCSD samples were prepared by adding spike compounds to blank, PFAS-free samples in order to assess laboratory extraction and instrumentation performance. An LCS/LCSD pair was reported in each WO.

The LCS/LCSD recoveries and/or RPDs were within laboratory and project limits and did not result in qualification of the data.

D.2.5 Matrix Spike Sample and Sample Duplicates

MS samples are prepared by adding spike compounds to project samples to assess potential matrix interference. MS/MSD samples were not performed in any WO due to insufficient sample volumes.

D.2.6 Isotope Dilution Analyte Recovery

Isotope dilution analyte (IDA) compounds were added to project samples by the laboratory prior to analysis, in accordance with method requirements. IDA recoveries were then calculated as percentages and reported by the laboratory as a measure of analytical extraction efficiency. IDA recoveries were inside the established control limits and resulted in no qualification of the data.

D.2.7 Field Duplicates

One field duplicate sample was collected and submitted to the laboratory as a blind sample with each WO. Field duplicate samples were collected at a minimum frequency of 10 percent. Field duplicates met the GWP guidelines of 30% for water samples and are considered comparable, where calculable.

D.2.8 Analytical Sensitivity

Analytical sensitivity was evaluated to verify that the RLs met the applicable regulatory levels for non-detect results. Analytes met the minimum required detection level for each compound for each WO.

D.2.9 Summary of Qualified Results

Overall, the review process deemed the water supply well project data acceptable for use with the minor exceptions noted above resulting in qualification of the data. We did not reject any analytical results due to failures with laboratory QC samples, sample handling, or other issues. A summary of qualified flags can be found in the associated analytical summary tables, as applicable.

D.2.10 Completeness

No data were rejected pursuant to the data quality review, and the data may be used, as qualified, for the purposes of the June 2020 to June 2021 Water Supply Well Monitoring Summary Report.

IMPORTANT INFORMATION

Important Information

About Your Environmental Report

IMPORTANT INFORMATION

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors that were considered in the development of the report have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events and should be consulted to determine if additional tests are necessary.

IMPORTANT INFORMATION

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary, because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a

IMPORTANT INFORMATION

contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports, and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

The preceding paragraphs are based on information provided by the ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland