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FINAL

GENERAL WORK PLAN ADDENDUM
DOT&PF Statewide PFAS
Addendum 026-FAI-002
Tall Spruce Monitoring Well Sampling
FAIRBANKS, ALASKA

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Submitted To: Fairbanks International Airport
6450 Airport Way, Suite 1
Fairbanks, Alaska 99709
Attn: Elise Thomas

Subject: FINAL GENERAL WORK PLAN ADDENDUM, DOT&PF STATEWIDE PFAS
ADDENDUM 026-FAI-002
TALL SPRUCE MONITORING WELL SAMPLING , FAIRBANKS, ALASKA

Shannon & Wilson, Inc has prepared this Work Plan Addendum (Addendum) on behalf of the Alaska Department of Transportation & Public Facilities (DOT&PF) Fairbanks International Airport (FAI). This Addendum is a supplement to the *Revision 1 - DOT&PF Statewide PFAS General Work Plan (GWP)*, approved by the Alaska Department of Environmental Conservation in August 2020. The services proposed in this GWP Addendum, 026-FAI-002 describe the DOT&PF FAI's planned activities for sampling of monitoring wells in the Tall Spruce neighborhood. This work is being completed to monitor groundwater associated with the per- and polyfluoroalkyl substances (PFAS) contamination originating from the FAI.

The scope of services outlined in this Addendum was specified in our proposal dated February 8, 2023, and authorized in a notice to proceed issued on June 19, 2023, by DOT&PF under Professional Services Agreement Number 25-19-013 *Per- and Polyfluorinated Substances (PFAS) Related Environmental & Engineering Services*. Funding to implement the scope defined in this document has been authorized by DOT&PF.

This Addendum was prepared by:



Ashley Jaramillo
Senior Chemist, Project Manager

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Important Information

ACRONYMS

AAC	Alaska Administrative Code
AFFF	aqueous film forming foam
COC	contaminant of concern
CSM	Conceptual Site Model
CUC	College Utilities Corporation
DEC	Alaska Department of Environmental Conservation
DoD	U.S. Department of Defense
DOT&PF	Alaska Department of Transportation & Public Facilities
FAI	Fairbanks International Airport
GAC	granular activated carbon
GWP	<i>Revision 1 - DOT&PF Statewide PFAS General Work Plan</i>
IDW	investigative-derived waste
MW	monitoring well
µg/L	micrograms per liter
µg/kg	micrograms per kilogram
ng/L	nanograms per liter
PFAS	per- and polyfluoroalkyl substances
PFBS	perfluorobutanesulfonic acid
PFHpA	perfluoroheptanoic acid
PFHxA	perfluorohexanoic acid
PFHxS	perfluorohexanesulfonic acid
PFNA	perfluorononanoic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
POC	point of contact
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
QSM	Quality Systems Manual
S&W	Shannon & Wilson
SAP	Sampling and Analysis Plan

1 INTRODUCTION

This Work Plan Addendum (Addendum), 026-FAI-002, is a supplement to *Revision 1 - DOT&PF Statewide PFAS General Work Plan (GWP)*, which was approved by the Alaska Department of Environmental Conservation (DEC) on August 10, 2020. In collaboration with the GWP, this Addendum provides guidance for sampling of monitoring wells (MWs) in the Tall Spruce neighborhood on the west side of the Chena River (Figure 1, Exhibit 1-1).

Exhibit 1-1: Airport Information

Airport Name:	Fairbanks International Airport
Airport Code:	FAI
DEC File No. / Hazard ID:	100.38.277 / 26816
Airport Address:	6450 Airport Way, Fairbanks, AK 99709
FAI POC:	Elise Thomas
DOT&PF PFAS POC:	Sammy Cummings
Airport Type:	Current Part 139 Airport
Airport Coordinates (Lat/Long):	64.813025, -147.87316

DEC = Alaska Department of Environmental Conservation, DOT&PF = Alaska Department of Transportation and Public Facilities; FAI= Fairbanks International Airport, PFAS = per- and polyfluoroalkyl substances, POC = point of contact

Shannon & Wilson, Inc. (S&W) has prepared the GWP and this Addendum in accordance with DEC’s March 2017 *Site Characterization Work Plan and Reporting Guidance for Investigation of Contaminated Sites* and DEC’s January 2022 *Field Sampling Guidance* document, with the addition of our Site Safety and Health Plan, Appendix A). Additional information and activities required for the site that are not detailed in the GWP, and deviations made to the GWP for the specific project site, are described in this Addendum, where applicable.

1.1 Background

General background information relating to sites covered under the GWP is included in Section 1.1 of the GWP. Background information specific to the FAI is detailed below.

1.1.1 Site History and Previous Investigations

Water supply well sampling for the presence of PFAS at DOT&PF sites began with the FAI in 2017. Perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) were reported above the respective DEC groundwater cleanup levels in several groundwater MWs on airport property. This led to off-airport water supply well sampling.

Beginning in November 2017, the FAI observed PFOS and PFOA above the applicable action level for drinking water in numerous water supply wells in neighborhoods downgradient of the airport. Two water supply wells, located on the western side of the Chena River on Tall Spruce Road, were identified as having PFAS concentrations above the applicable action level (Figure 2).

Interim alternative water has been provided to the locations with PFAS-impacted water supply wells and those who have potentially PFAS-impacted water supply wells (i.e. close proximity to PFAS-impacted wells).

Quarterly and annual monitoring of water supply wells for PFAS began in February 2018 and continued through February 2019 when FAI made the decision to offer PFAS-impacted water supply well owners a connection to College Utilities Corporation (CUC) water system. Most of the properties with PFAS-impacted water supply wells within the plume area have been connected to the CUC water system, and the wells are no longer in use. Negotiations are ongoing between FAI and the few remaining properties with PFAS-impacted wells regarding CUC service connections.

PFAS site characterization work began in 2018 by FAI term contractors. Exceedances to the applicable DEC soil and groundwater cleanup levels were observed in samples collected from various locations at the airport. The FAI commenced decommissioning the former fire training pit in 2019 and completed the corrective action effort in 2020.

1.1.2 PFAS Regulatory History

PFOS and PFOA are two PFAS commonly found at sites where aqueous film forming foam (AFFF) were used. Due to their persistence, toxicity, and bioaccumulative potential, these compounds are of increasing concern to environmental and health agencies. In May 2016 the U.S. Environmental Protection Agency published a recommended Lifetime Health Advisory level of 70 nanograms per liter (ng/L) for the sum of PFOS and PFOA in drinking water. The DEC Contaminated Sites Program published groundwater-cleanup levels of 400 ng/L for PFOS and PFOA in November 2016. Prior to the publication of these levels, there were no state-level cleanup levels established for PFAS. On October 2, 2019, DEC published a Technical Memorandum amending the April 9, 2019 Technical Memorandum to include additional PFAS analytes to the testing requirements. The action level remains 70 ng/L for the sum of PFOS and PFOA. Current DEC soil cleanup levels are 3.0 micrograms per kilogram ($\mu\text{g}/\text{kg}$) for PFOS and 1.7 $\mu\text{g}/\text{kg}$ for PFOA. A summary of changes to action levels and regulatory requirements is described in Section 1.1 of the GWP.

The current DEC groundwater cleanup levels are summarized in Exhibit 2-1 below. If regulatory changes occur prior to implementation of this Addendum, S&W may need to amend the sampling and analysis plan.

1.1.3 2022 Well Installation and Sampling

In September 2022, 4 MWs were installed in the Tall Spruce neighborhood to monitor PFAS concentrations in groundwater which originate from the FAI plume (Figure 3). MWs were installed as follows:

- MW-TS-1 was installed to a total depth of 20 feet bgs, with a 10-foot screen installed from the terminal depth to 10 feet bgs;
- MW-TS-2 was installed to a total depth of 40 feet bgs, with a 5-foot screen installed from the terminal depth to 35 feet bgs;
- MW-TS-3 was installed to a total depth of 60 feet bgs, with a 5-foot screen installed from the terminal depth to 55 feet bgs; and
- MW-TS-4 was installed to a total depth of 80 feet bgs, with a 5-foot screen installed from the terminal depth to 75 feet bgs.

S&W collected six laboratory analytical soil samples were collected from the boring associated with MW-TS-4 for PFAS analysis. The samples were collected at variable depths below the groundwater table ranging between 13 feet bgs to 78 feet bgs. Soils predominantly consisted of grey, poorly graded sand with gravel and trace silt. None of the soil samples contained detectable concentrations of the target PFAS analytes.

One groundwater sample was collected from each well for PFAS analysis. A field duplicate sample was collected from MW-TS-4. The groundwater samples collected from the monitoring wells all contained detectable concentrations of perfluorobutanesulfonic acid (PFBS), perfluorohexanesulfonic acid (PFHxS), PFOA, and PFOS. Additionally, perfluoroheptanoic acid (PFHpA), perfluorohexanoic acid (PFHxA), and perfluorononanoic acid (PFNA) were detected in most of the wells. None of the detected concentrations exceeded DEC groundwater cleanup levels. The highest observed concentration for the sum of PFOS and PFOA was 5.1 ng/L in MW-TS-4.

1.2 Project Scope and Objectives

DOT&PF requested S&W prepare this Addendum for sampling of MWs in the Tall Spruce neighborhood. This work is being completed to continue monitoring groundwater associated with the PFAS contamination originating from the FAI and evaluate changes to groundwater PFAS concentrations in the Tall Spruce neighborhood. The information will be

used to evaluate the fate and transport of PFAS resulting from the use of AFFF at the FAI. The scope of these activities includes:

- Site Access and Permitting (Section 3.2)
- Groundwater Monitoring (Section 3.1)
- IDW Management (Section 4.7)
- Evaluation and Reporting of the Analytical Data (Section 5.7).

These tasks are described in the noted sections.

2 SITE AND PROJECT DESCRIPTION BOUNDARIES

The following sections provide a site and project description.

2.1 Site Location and Boundaries

The Tall Spruce neighborhood is located in the south-west part of Fairbanks, Alaska, on the west side of the Chena River from FAI. The boundaries of the project are shown on Figure 2.

2.2 Potential Sources of Contamination

General information regarding potential sources of contamination at DOT&PF sites is provided in Section 2.1 of the GWP.

Specific potential sources of contamination at the FAI include:

- Historic use, storage, and management of AFFF

At this time, S&W does not have reason to believe PFAS originated from sources outside of AFFF use.

2.3 Contaminants of Concern and Regulatory Levels

General information regarding contaminants of concern (COCs) and regulatory levels are included in Section 2.2 of the GWP. The COCs for this project are PFAS compounds PFOS and PFOA.

To evaluate analytical data, groundwater samples will be compared to Alaska's 18 Alaska Administrative Code (AAC) 75.341 Table C, Groundwater Cleanup Level.

The current cleanup levels and analytical reporting limits for the site COCs are summarized in Exhibit 2-1, below.

Exhibit 2-1: COCs, Regulatory and Laboratory Reporting Limits

Method	Analyte	Regulatory Water Limit ² (µg/L)
537 (Mod) ¹	PFOS	0.40
	PFOA	0.40

Notes:

- 1 Compliant with the DoD QSM Version 5.3 Table B-15.
- 2 All available PFAS analytes will be requested for analytical reports. However, only PFOS and PFOA have a DEC drinking water action level or cleanup levels and are reported in this table.

COC = contaminant of concern, DEC = Alaska Department of Environmental Conservation, DoD = U.S Department of Defense, mg/kg = milligram per kilogram; µg/L = microgram per liter; PFAS = per- and polyfluoroalkyl substances; PFOA = perfluorooctanoic acid; PFOS = perfluorooctanesulfonic acid; QSM = Quality Systems Manual

2.4 Conceptual Site Model

A conceptual site model (CSM) describes potential pathways between a contaminant source and possible receptors (i.e., people, animals, and plants) and is used to determine who may be at risk of exposure to those contaminants. A DEC *Human Health Conceptual Site Model Graphic Form* and *Human Health Conceptual Site Model Scoping Form* was completed based on the preliminary understanding of site conditions. These forms are included in Appendix B of this Addendum. The CSM was updated in our January 2023 report.

Target PFAS analytes were not detected in subsurface soil samples collected during MW installation. The groundwater samples collected from the MWs show that PFAS are present at trace concentrations below the DEC Groundwater Cleanup Levels and below the current DEC Drinking Water Limits. Note, surface soil and surface water samples were not collected as part of this project, so potential impacts resulting from exposure to surficial media is unknown.

2.5 Project Team

Chris Darrah will be S&W’s Principal-in-Charge and Ashley Jaramillo will serve as the Project Manager. S&W’s project team also includes other State of Alaska Qualified Environmental Professionals to support the various field and reporting tasks required to achieve the project objectives. The project team and their associated responsibilities are summarized in Exhibit 2-2 below.

Exhibit 2-2: Project Team

Affiliation	Responsibility	Representative	Contact Number
DOT&PF	Client – FAI POC	Elise Thomas	(907) 474-2598
	Client – Statewide PFAS POC	Sammy Cummings	(907) 888-5671
DEC	Regulatory agency POC	Robert Burgess	(907) 451-2153
S&W	Principal-in-charge	Chris Darrah	(907) 458-3143
	Project Manager	Ashley Jaramillo	(907) 458-3118
	Statewide PFAS POC	Kristen Freiburger	(907) 458-3146
Eurofins/ TestAmerica, Inc	PFAS analytical laboratory services	David Alltucker	(916) 374-4383

DEC = Alaska Department of Environmental Conservation, DOT&PF= Alaska Department of Transportation & Public Facilities, FAI = Fairbanks International Airport, PFAS = per- and polyfluoroalkyl substances, POC = point of contact, S&W = Shannon & Wilson, Inc.

2.6 Project Schedule and Submittals

Section 2.5 of the GWP provides general information regarding project schedules (i.e. the general order of occurrence of site characterization activities) and associated submittals. The FAI project schedule and submittals are outlined below.

Once DEC approval is received for the proposed scope of services outlined in this Addendum, S&W will coordinate with FAI to schedule field work. Field activities are anticipated to occur during two sampling events in Summer 2023 and Winter 2024. Laboratory analysis will be requested on a standard 14-day turn-around time.

After field work is complete, a summary report will be prepared documenting the results of the sampling events. The report will include summarized field observations, analytical results and discussion of data quality, photo documentation, figures showing sample locations, description of deviations from the approved Addendum, if any, and conclusions and recommendations. The report will also include an updated CSM.

The following is the anticipated schedule for the FAI MW sampling activities in the Tall Spruce neighborhood:

- Work Plan Implementation (field activities) – Summer 2023 & Winter 2024
- Draft Report Submittal - within 60 days of receipt of analytical results
- Final Report Submittal - within 30 days of receiving DEC comments on the Draft Report

3 GROUNDWATER MONITORING FIELD ACTIVITIES

General information regarding field activities is described in Section 3 of the GWP. The following sections describe the field activities to be conducted as a part of MW sampling activities in the Tall Spruce neighborhood. Sampling procedures and analytical methods are described in Section 4, below. A quality assurance project plan (QAPP) is included in Section 5, below. Field personnel will document field activities with notes and photographs using the applicable forms, as detailed in Section 5.2. Analytical laboratories and methods employed as a part of this Addendum are identified in Section 4.3, below. An analytical sample summary is detailed in Exhibit 4-1.

3.1 Site Access and Permitting

The Tall Spruce Subdivision Road, “Tall Spruce Road”, is a publicly dedicated road located outside of a road service area and is therefore privately maintained. S&W will not need to coordinate with private property owners to access the monitoring wells along Tall Spruce Road.

S&W is not aware of other required permits or authorizations for conducting this field effort.

3.2 Groundwater Monitoring

General information regarding groundwater characterization activities is described in Section 3.2.3 of the GWP.

Groundwater characterization activities for the FAI include sample collection from each of the MWs installed in the Tall Spruce neighborhood. Groundwater samples will be submitted for analysis of PFAS, as shown in Exhibit 4-1.

4 SAMPLING AND ANALYSIS PLAN

A general sampling and analysis plan (SAP) describing the methods and procedures for MW sampling activities is included as Section 4 of the GWP. The sampling effort described in this Addendum will be conducted in general accordance with the methods and procedures detailed in the SAP. The following sections contain supplemental information and exceptions to the general SAP.

A DEC-qualified sampler will collect and handle the samples for this project and collect required quality control (QC) samples in accordance with DEC's *Field Sampling Guidance*. Field personnel will document field activities with notes and photographs using the applicable forms, as detailed in Section 5.2, below.

Analytical laboratories and methods employed as a part of this Addendum are identified in Section 4.3. An analytical sample summary is detailed in Exhibit 4-1. Sample containers, preservation methods, and holding times are included in Section 4.4. Sample custody, storage, and transport will be followed as described in Section 4.5. Equipment decontamination procedures are outlined in Section 4.6. Investigative-derived waste management is described in Section 4.7.

4.1 Special Considerations for PFAS

Special considerations for PFAS sampling are described in Section 4.10 of the GWP.

4.2 Analytical Sample Summary

Exhibit 4-1: Analytical Sample Summary¹

	Matrix	PFAS by 537(Mod) ¹
Number of Samples	Groundwater	4 project + 1 field duplicate 1 equipment blank 1 GAC effluent

Notes:

1 Compliant with the DoD QSM Version 5.3 Table B-15.

DoD = U.S. Department of Defense, GAC = granular activated carbon, PFAS = per- and polyfluoroalkyl substances, QSM = Quality Systems Manual.

Additional information regarding QC samples can be found in Section 5.4 and 5.5.

4.3 Analytical Laboratories and Methods

Analytical water samples collected for this project will be submitted to Eurofins Environment Testing Sacramento, California. Based on the DEC Technical Memorandum issued on October 2, 2019, S&W will submit the samples for PFAS analysis and request the laboratory report the full list PFAS compounds defined in the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) Version 5.3 Table B-15

4.4 Sample Containers, Preservation, and Holding Times

General information regarding sample containers, preservation, and holding times is described in Section 4.12 of the GWP.

Exhibit 4-2 summarizes the analytical methods employed for this project.

Exhibit 4-2: Sample Containers, Preservation, and Holding Time Requirements

Analyte	Method	Media	Container and Sample Volume	Preservation	Holding Time
PFAS	537 (Mod) ¹	Water	2 x 250 mL polycarbonate	0 °C to 6 °C	14 days to extraction, analyzed within 40 days of extraction

¹ Compliant with the DoD QSM Version 5.3 Table B-15.

U.S Department of Defense, °C = degrees Celsius, mL = milliliter, PFAS = per- and polyfluoroalkyl substances; QSM = Quality Systems Manual.

4.5 Sample Custody, Storage, and Transport

Sample custody, storage, and transport procedures are described in Section 4.13 of the GWP.

4.6 Equipment Decontamination

Equipment decontamination procedures are described in Section 4.14 of the GWP.

4.7 Investigative-Derived Waste Management

General information regarding investigative-derived waste (IDW) management is included in Section 4.15 of the GWP. IDW for this project consists of purge water and disposable sampling equipment.

Liquids will be treated using three in-line five-gallon granular activated carbon (GAC) filters and discharged to the ground surface at least 100 ft. from drainage ditches or surface water bodies.

Other IDW will primarily consist of disposable sampling equipment (nitrile gloves, pump tubing, etc.). These items will be disposed of at an onsite dumpster and ultimately the Fairbanks North Star Borough Landfill.

5 QUALITY ASSURANCE PROJECT PLAN

This QAPP is intended to guide activities during assessment and review of resulting analytical data set. S&W will be responsible for conducting data reduction, evaluation, and reporting under this QAPP. A general QAPP is provided as Section 5 of the GWP.

Additionally, a Data-Validation Program Plan which describes the procedures for qualifying analytical data in a consistent manner, has been prepared, and is included as Appendix C to the GWP.

The following sections describe specific procedures to be followed for data collected at the FAI, so sampling and documentation are effective, laboratory data are usable, and the information acquired is of high quality and reliable.

5.1 Quality Assurance Objectives

Data quality objectives are detailed in Section 5.1 of the GWP.

Numeric quality assurance (QA) objectives for this project are presented in Exhibit 5-1 below.

Exhibit 5-3: Quality Assurance Objectives for Analytical Samples

Analyte	Method	Matrix	Precision	Accuracy	Completeness
PFAS	537 (Mod) ¹	Water	±30%	(analyte dependent)	85%

Notes:

1 Compliant with the DoD QSM Version 5.3 Table B-15.

DoD = U.S. Department of Defense, PFAS = per- and polyfluoroalkyl substances; QSM = Quality Systems Manual.

5.2 Field Documentation

Field documentation is described in Section 5.2 of the GWP.

5.3 Field Instrument Calibration

Field instrument calibration is discussed in Section 5.3 of the GWP.

5.4 Field Quality Control Samples

Field QC samples are discussed in Section 5.4 of the GWP.

The field QA/QC program for this project includes the collection of the following QA/QC samples as described in the following sections.

5.4.1 Field Duplicate Sample

Field duplicate sample collection procedures and frequency are described in Section 5.4.1 of the GWP.

Refer to Exhibit 4-1 for the number of field duplicates to be collected.

5.4.2 Equipment Blank Samples

Equipment blank sample collection procedures and frequency are described in Section 5.4.4 of the GWP. S&W anticipate will collect one equipment blank sample as a part of this project.

5.4.3 Temperature Blank Samples

Temperature blanks are described in Section 5.4.6 of the GWP.

5.5 Laboratory Quality Control Samples

Laboratory quality control samples are described in Section 5.5 of the GWP.

5.6 Laboratory Data Deliverables

Laboratory data deliverables are described in Section 5.6 of the GWP.

5.7 Data Reduction, Evaluation, and Reporting

Data reduction, evaluation, and reporting are discussed in Section 5.7 of the GWP.

6 REFERENCES

Alaska Department of Environmental Conservation (DEC), 2019a, 18 AAC 75, Oil and Other Hazardous Substances Pollution Control: Juneau, Alaska, Alaska Administrative Code (AAC), Title 18, Chapter 75, January available:
<http://dec.alaska.gov/commish/regulations/>.

Alaska Department of Environmental Conservation (DEC), 2019b, 18 AAC 75.345, Groundwater Cleanup Levels: Juneau, Alaska, Alaska Administrative Code (AAC), Title 18, Chapter 75, Section 341, January, available: <http://dec.alaska.gov/commish/regulations/>.

Alaska Department of Environmental Conservation (DEC), 2019c, 18 AAC 75.341, Soil Cleanup Levels: Juneau, Alaska, Alaska Administrative Code (AAC), Title 18, Chapter 75, Section 341, January, available: <http://dec.alaska.gov/commish/regulations/>.

Alaska Department of Environmental Conservation (DEC), 2022d, Field Sampling Guidance for Contaminated Sites and Leaking Underground Storage Tanks: Juneau, Alaska, DEC Division of Spill Prevention and Response, Contaminated Sites Program, October, available: http://dec.alaska.gov/spar/csp/guidance_forms/csguidance.htm.

Alaska Department of Environmental Conservation (DEC), 2017, Site Characterization Work Plan and Reporting Guidance for Investigation of Contaminated Sites: Juneau, Alaska, DEC Division of Spill Prevention and Response, Contaminated Sites Program, March, available: http://dec.alaska.gov/spar/csp/guidance_forms/csguidance.htm.



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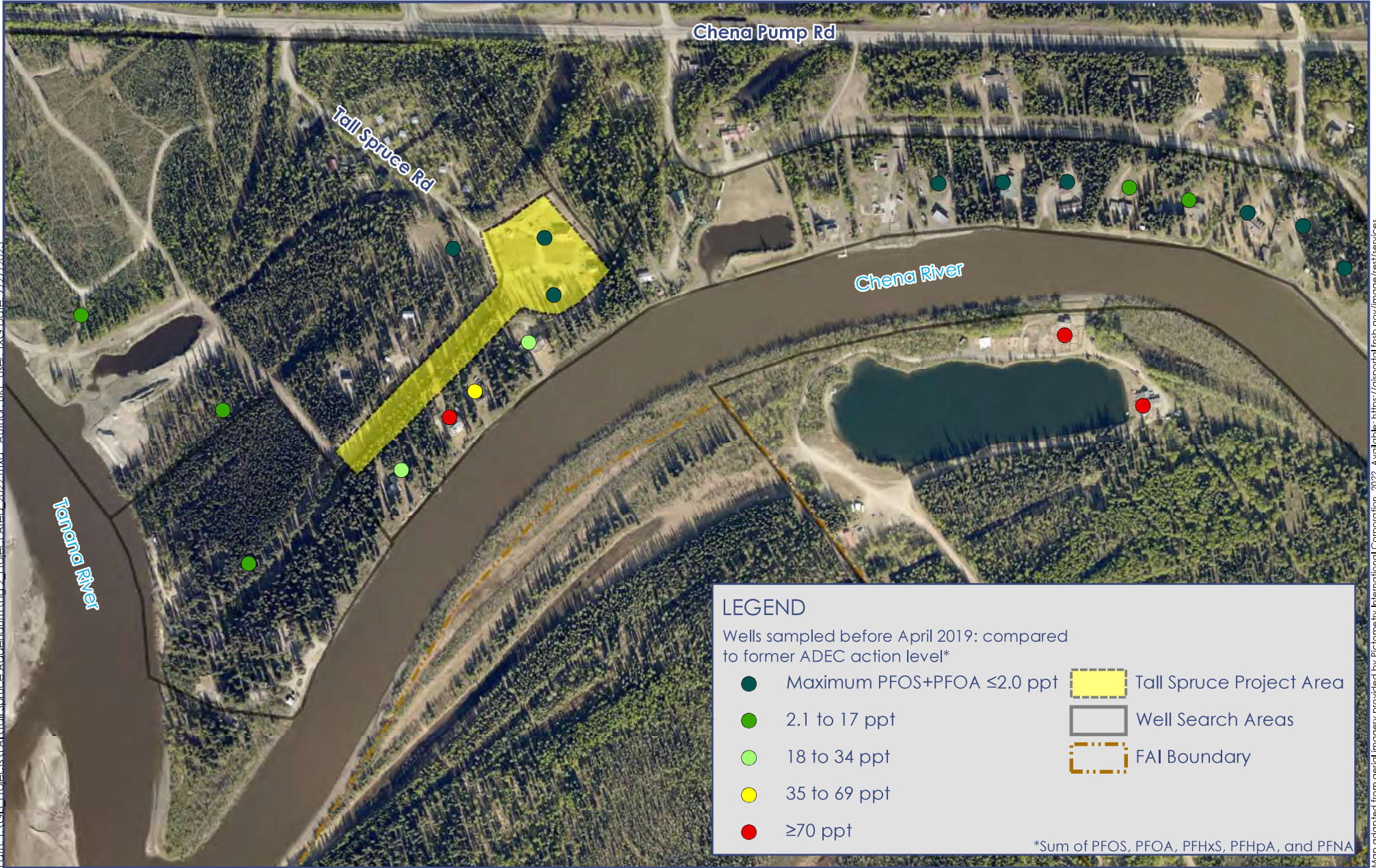
Map adapted from aerial imagery provided by Pictometry International Corporation, 2022. Available: <https://gportal.insb.gov/image/rest/services>.

Notes:

- 1. Boundaries are approximate
- ARFF = Aircraft Rescue and Firefighting



August 2023
FAIRBANKS INTERNATIONAL AIRPORT VICINITY
Figure 1



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Map adapted from aerial imagery provided by Pictometry International Corporation, 2022. Available: <https://gportal.fnsb.gov/image/rest/services>.

Notes:

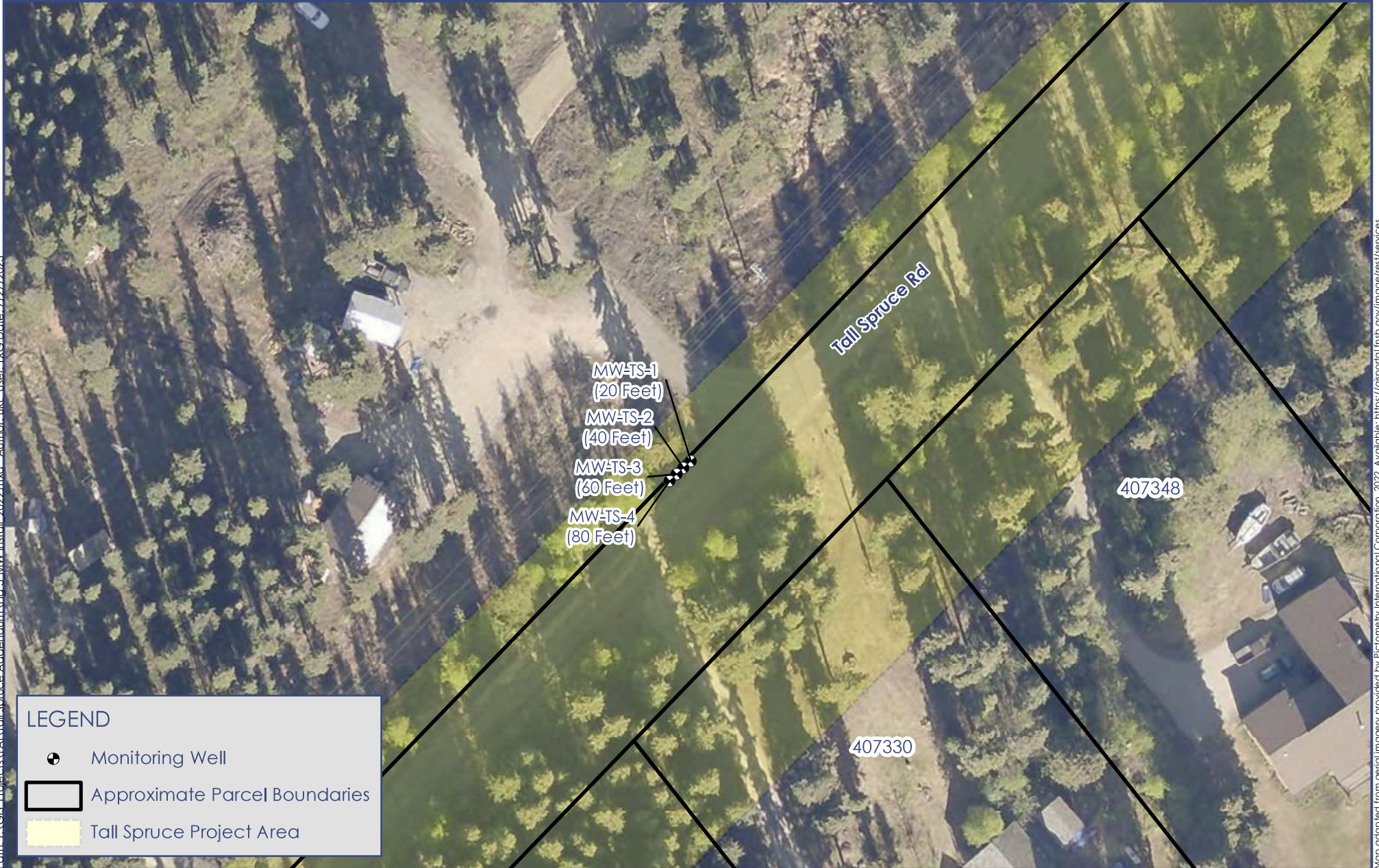
- Boundaries are approximate
FAI = Fairbanks International Airport



August 2023

PROJECT AREA WEST OF THE CHENA RIVER

Figure 2



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Map adapted from aerial imagery provided by Pictometry International Corporation, 2022. Available: <https://gportal.insb.gov/image/rest/services>.



July 2023
MONITORING WELL LOCATIONS
Figure 3

Appendix A

Site Safety and Health Plan

APPENDIX A: SITE SAFETY AND HEALTH PLAN

1.1 Applicability and Purpose

Shannon & Wilson (S&W) prepared this Site Safety and Health Plan (SSHP) for monitoring well (MW) sampling activities in the Tall Spruce neighborhood. The purpose of this SSHP is to protect the health and safety of field personnel from physical and chemical hazards associated with work at this site.

The provisions of this plan apply to S&W personnel who will potentially be exposed to safety and/or health hazards during this investigation. S&W employees are covered under our Corporate Safety and Health Program. General safety and health requirements described in that program will be met. Each S&W employee on the site will complete the personal acknowledgement form documenting they have read and understand this SSHP and agree to abide by its requirements. A copy of this SSHP will be kept on site throughout the duration of the corrective action field effort.

1.2 Site Hazard Analysis

There are two categories of hazards that may occur during the field work: potential chemical exposure hazards and physical hazards associated with MW sampling activities. These hazards are discussed below.

1.2.1 Chemical-Exposure Hazards

Contaminated soil may be encountered during site exploration activities. Per- and polyfluoroalkyl substances (PFAS) are believed to be the primary contaminants of concern and may be encountered in water at unknown concentrations. S&W personnel will implement skin protection when they are to come into contact with potentially contaminated soil or water. Field personnel will wear work gloves or nitrile gloves as needed, and Level D personal protective equipment. Field personnel will not require respiratory protection based on our current understanding of site conditions and scope of services.

1.2.2 Physical Hazards

Primary physical hazards associated with MW sampling activities include: temperature stress; lifting, slipping, tripping, falling; and risk of eye injuries. The best means of protection against accidents related to physical hazards are careful control of equipment activities in the planned work area and use of experienced and safety- and health-trained field personnel.

Field personnel will not enter confined spaces for MW sampling activities, nor will they enter trenches or excavations greater than four feet in depth.

1.2.2.2 Slips, Trips, and Falls

The most common hazards on a job site are typically slips, trips, and falls. These hazards will be reduced through the following practices:

- Personnel will stay alert.
- All access-ways will be kept free of materials, supplies, and obstructions at all times.
- Tools and other materials will be located so as not to cause tripping or other hazards.
- Personnel should be aware of potential tripping hazards associated with vegetation, debris, and uneven ground.
- Personnel should be aware of limitations imposed by work clothing and personal protective equipment (PPE).

The project site may be inherently hazardous due to the potential presence of rain, snow, and ice, which can alter the character of the ground surface. The risk for slips, trips, and falls by site workers is increased due to wet surfaces; therefore, workers will use caution when walking at the site.

1.2.2.3 Insects and Animals

During the summer months mosquitoes and other insects are common, particularly near areas predominantly covered with vegetation. Wearing PPE should be sufficient to protect site workers. The site is located within a residential neighborhood; therefore, animals such as loose dogs and moose may pose a potential hazard. Personnel will remain alert and aware of their surroundings.

1.2.2.4 Temperature Stress

Wearing PPE may put a worker at risk of developing heat stress; however, since the field screening activities will be conducted in Level D PPE the risk of heat stress is considered low. Field personnel will be cautious to hydrate adequately.

1.2.2.2 Lifting Hazards

Moving coolers of analytical samples or other heavy objects presents a lifting hazard. Personnel will use proper lifting techniques and obtain assistance when lifting objects weighing more than 40 pounds.

1.2.2.3 Congested Area

The site may become congested during project activities in and near residential locations. Field personnel will observe the speed and frequency of traffic proximal to the work site. S&W will use appropriate cones, barricades, or signs to secure the work area when required.

1.3 Personnel Responsibilities, Training, and Medical Surveillance

1.3.1 Assignment of Responsibilities

S&W is responsible for understanding and complying with the requirements of this SSHP. Following is a list of responsibilities of all S&W personnel working on the site:

- Review and follow this SSHP.
- Attend and participate in safety meetings.
- Take appropriate action as described in this SSHP regarding accidents, fires, or other emergency situations.
- Take all reasonable precautions to prevent injury to themselves and their fellow workers.
- Perform only those tasks they believe they can do safely, and immediately report any accidents or unsafe conditions to S&W's Project Manager or Office Health and Safety Manager.
- Halt work, by themselves or by others, when they observe an unsafe act or potentially unsafe working condition.
- Report accidents, illnesses, and near-misses to the local contact and to S&W's Fairbanks office Health and Safety Manager.

1.3.2 Personnel Training

S&W personnel performing activities on this site and under this plan have completed the appropriate training requirements specified in 29 CFR 1910.120(e). Each individual has completed an annual eight-hour refresher-training course and/or initial 40-hour training course within the last year.

A personal acknowledgement form will be completed by field personnel prior to commencing field activities. This acknowledgment form will document that they have read and understand this SSHP.

1.3.3 Medical Surveillance Program

All field personnel performing activities on this site covered by this SSHP have undergone baseline and annual physical/medical examinations as part of S&W's Corporate Health and Safety Program. All field personnel are active participants in S&W's Medical Monitoring Program or in a similar program, which complies with 29 CFR 1910.120(f).

1.4 Personal Protective Equipment

PPE will be required during the course of the field work. PPE selection will be based primarily on work-task requirements and potential exposure. Field personnel will use Level D protective equipment during normal work activities. Personnel are trained in the use of PPE that is, or may be, required. All personnel shall wear Level D PPE as a minimum:

- standard work clothes or cotton overalls;
- reflective, high-visibility safety vest;
- safety-toe boots;
- safety glasses;

Disposable nitrile gloves will be worn during any activity that may require dermal contact with potentially contaminated media. Hearing protection will be worn as needed.

1.5 Decontamination Procedures

Equipment decontamination procedures are necessary for any reusable equipment that comes into contact with contaminated soil and/or water. Decontamination procedures are documented within the body of this work plan.

S&W will conduct all MW sampling activities in Level D PPE. For this reason, personnel will not be decontaminated when leaving the work site unless gross visual contamination of protective clothing is present.

When decontamination is necessary, it will consist of the following:

- Personnel shall be instructed in proper decontamination technique. This entails removal of protective equipment in an "inside-out" manner. Removal of contaminants from protective clothing or equipment by blowing, shaking, or other means that may disperse material into the air is prohibited.
- Personnel protective clothing that has been removed shall remain at the decontamination station pending personnel re-donning the clothing. At the conclusion of site work each day, PPE will be placed in trash bags for off-site disposal.

- Personnel will not exit the work site until contaminated clothing and equipment have been removed and employees have washed their hands and face with soap and water. A washtub with soap and water will be available to personnel as they exit the work site.
- Employees will wash their hands and face with soap and water before eating, drinking, smoking, or applying cosmetics. These activities will be restricted to designated rest area(s).
- Decontaminated items will be visually inspected for residual contamination to determine if decontamination procedures are effective.

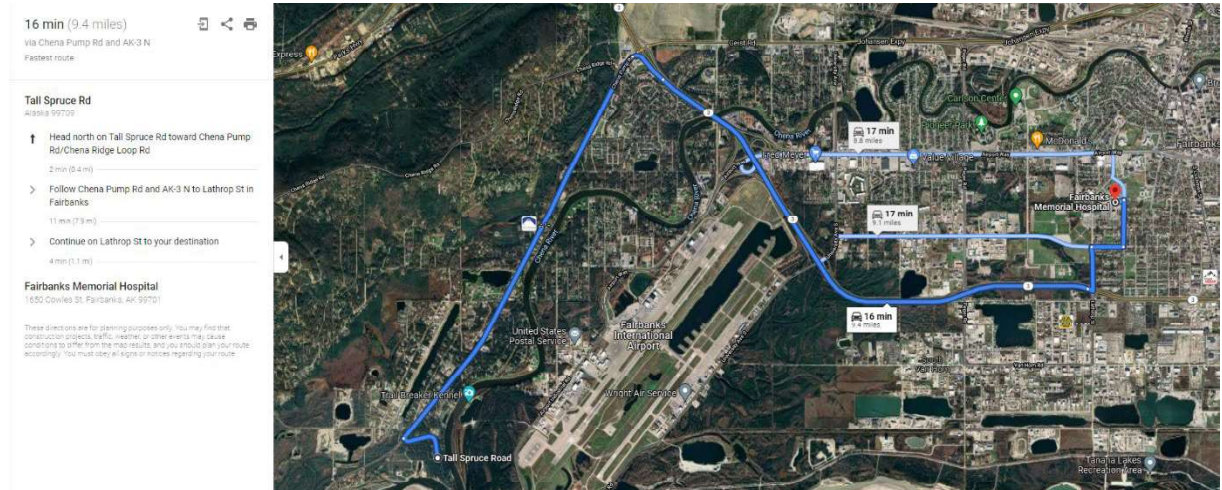
1.6 Accidents and Emergencies

S&W field personnel are current in first aid and cardiopulmonary resuscitation (CPR) training. At a minimum, the following site safety equipment and first aid supplies shall be available in the field:

- PPE and clothing specialized for known site hazards;
- first aid kit;
- portable eye wash; and
- clean water in portable containers.

The primary emphasis of any health and safety plan is accident prevention. If an injury or illness occurs during the course of field work, the severity of the problem will dictate the level of response. Minor injuries or illness will be addressed with basic first aid measures as recommended by a registered nurse through our corporate Medcor service (1-800-775-5866).

More serious injuries may require assistance from the emergency medical staff at Fairbanks Memorial Hospital at 1650 Cowles Street, Fairbanks AK 99701. The telephone number for all emergencies is 911; the telephone number for the hospital is (907) 452-8181. S&W will keep field phones easily accessible in the case of an emergency.

Exhibit A1-1: Directions from Tall Spruce Road to Fairbanks Memorial Hospital

S&W's Corporate Health and Safety Program requires accident reporting when there is a site-related accident, near-miss incident, or medical emergency. If an employee is treated by medical personnel, the medical attendant will complete an Incident Medical Treatment Documentation form. Completion of an Alaska Department of Labor Report of Occupational Injury or Illness is also required within 10 days for any work-related injury or illness.

1.7 General Site Safety Requirements

The following measures are designed to augment the specific health and safety guidelines provided in this plan:

- Field personnel will refrain from smoking, eating, drinking, or chewing tobacco while in work zones or a potentially contaminated area.
- Field personnel should avoid contact with potentially contaminated surfaces such as: walking through puddles or pools of liquid; kneeling on the ground; or leaning, sitting, or placing equipment on contaminated soil or containers.
- Field personnel will be familiar with procedures for initiating an emergency response.
- Hazard assessment is a continual process; personnel must be aware of their surroundings and any chemical/physical hazards present.
- Personnel in the exclusion area shall be the minimum number necessary to perform work tasks in a safe and efficient manner.
- Equipment contacting potentially contaminated soils must be decontaminated or properly discarded before leaving the site.

APPENDIX A: SITE SAFETY AND HEALTH PLAN

Field personnel will be familiar with the physical characteristics of the work site including wind direction, site access, and location of communication devices and safety equipment.

SITE SAFETY AND HEALTH PLAN

PERSONAL ACKNOWLEDGMENT FORM

**TALL SPRUCE MONITORING WELL SAMPLING
FAIRBANKS, AK**

I have reviewed this document and understand its contents and requirements. A copy of the above-referenced document has been made available to me. I agree to abide by the requirements of this Site Safety and Health Plan.

Signature

Name (printed)

Date

Representing

Signature

Name (printed)

Date

Representing

Signature

Name (printed)

Date

Representing

Appendix B

Conceptual Site Model

CONTENTS

- Scoping Form
- Graphic Form

Appendix A - Human Health Conceptual Site Model Scoping Form and Standardized Graphic

Site Name: Fairbanks Int'l Airport Statewide PFAS - Tall Spruce Neighborhood

File Number: 100.38.277 / 26816

Completed by: Shannon & Wilson, Inc.

Introduction

The form should be used to reach agreement with the Alaska Department of Environmental Conservation (DEC) about which exposure pathways should be further investigated during site characterization. From this information, summary text about the CSM and a graphic depicting exposure pathways should be submitted with the site characterization work plan and updated as needed in later reports.

General Instructions: Follow the italicized instructions in each section below.

1. General Information:

Sources *(check potential sources at the site)*

- USTs
- ASTs
- Dispensers/fuel loading racks
- Drums
- Vehicles
- Landfills
- Transformers
- Other: Aqueous Film Forming Foam (AFFF) release upgradient of site

Release Mechanisms *(check potential release mechanisms at the site)*

- Spills
- Leaks
- Direct discharge
- Burning
- Other: Migration from upgradient PFAS contamination at FAI

Impacted Media *(check potentially-impacted media at the site)*

- Surface soil (0-2 feet bgs*)
- Subsurface soil (>2 feet bgs)
- Air
- Sediment
- Groundwater
- Surface water
- Biota
- Other:

Receptors *(check receptors that could be affected by contamination at the site)*

- Residents (adult or child)
- Commercial or industrial worker
- Construction worker
- Subsistence harvester (i.e. gathers wild foods)
- Subsistence consumer (i.e. eats wild foods)
- Site visitor
- Trespasser
- Recreational user
- Farmer
- Other:

* bgs - below ground surface

2. Exposure Pathways: *(The answers to the following questions will identify complete exposure pathways at the site. Check each box where the answer to the question is "yes".)*

a) Direct Contact -

1. Incidental Soil Ingestion

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site-specific basis.)

If the box is checked, label this pathway complete:

Incomplete

Comments:

Soil contamination was not identified in samples collected while installing monitoring wells off Tall Spruce Road; however, PFAS surface soil contamination is present at FAI.

2. Dermal Absorption of Contaminants from Soil

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.)

Can the soil contaminants permeate the skin (see Appendix B in the guidance document)?

If both boxes are checked, label this pathway complete:

Incomplete

Comments:

PFAS contamination was not detected in subsurface soil samples spanning depths between 13 feet below ground surface and 78 feet below ground surface.

b) Ingestion -

1. Ingestion of Groundwater

Have contaminants been detected or are they expected to be detected in the groundwater, or are contaminants expected to migrate to groundwater in the future?

Could the potentially affected groundwater be used as a current or future drinking water source? Please note, only leave the box unchecked if DEC has determined the groundwater is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350.

If both boxes are checked, label this pathway complete:

Complete

Comments:

Samples collected from the four monitoring wells installed off Tall Spruce Road indicate that PFAS are present in groundwater at concentrations below the DEC Groundwater Cleanup Level and the current DEC Drinking Water Limits. However, samples collected from drinking water wells roughly 200 linear feet to the east exhibit PFAS concentrations above the DEC Drinking Water Limits.

2. Ingestion of Surface Water

Have contaminants been detected or are they expected to be detected in surface water, or are contaminants expected to migrate to surface water in the future?

Could potentially affected surface water bodies be used, currently or in the future, as a drinking water source? Consider both public water systems and private use (i.e., during residential, recreational or subsistence activities).

If both boxes are checked, label this pathway complete:

Incomplete

Comments:

Surface water samples were not collected during the installation of the Tall Spruce neighborhood monitoring wells. Contaminants are not expected to be detected or expected to migrate to surface water.

3. Ingestion of Wild and Farmed Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild or farmed foods?

Do the site contaminants have the potential to bioaccumulate (see Appendix C in the guidance document)?

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. soil within the root zone for plants or burrowing depth for animals, in groundwater that could be connected to surface water, etc.)

If all of the boxes are checked, label this pathway complete:

Incomplete

Comments:

Soil within the vadose zone did not contain detectable concentrations of PFAS. Groundwater was encountered at roughly 6.5 feet bgs and contained PFAS concentrations below DEC Groundwater Cleanup Levels and Drinking Water Limits.

c) Inhalation-

1. Inhalation of Outdoor Air

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.)

Are the contaminants in soil volatile (see Appendix D in the guidance document)?

If both boxes are checked, label this pathway complete:

Incomplete

Comments:

2. Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be occupied or placed on the site in an area that could be affected by contaminant vapors? (within 30 horizontal or vertical feet of petroleum contaminated soil or groundwater; within 100 feet of non-petroleum contaminated soil or groundwater; or subject to "preferential pathways," which promote easy airflow like utility conduits or rock fractures)

Are volatile compounds present in soil or groundwater (see Appendix D in the guidance document)?

If both boxes are checked, label this pathway complete:

Incomplete

Comments:

3. Additional Exposure Pathways: *(Although there are no definitive questions provided in this section, these exposure pathways should also be considered at each site. Use the guidelines provided below to determine if further evaluation of each pathway is warranted.)*

Dermal Exposure to Contaminants in Groundwater and Surface Water

Dermal exposure to contaminants in groundwater and surface water may be a complete pathway if:

- Climate permits recreational use of waters for swimming.
- Climate permits exposure to groundwater during activities, such as construction.
- Groundwater or surface water is used for household purposes, such as bathing or cleaning.

Generally, DEC groundwater cleanup levels in 18 AAC 75, Table C, are deemed protective of this pathway because dermal absorption is incorporated into the groundwater exposure equation for residential uses.

Check the box if further evaluation of this pathway is needed:

Comments:

PFAS concentrations observed in samples collected from the new monitoring wells were below the DEC Groundwater Cleanup Levels in 18 AAC 75.345 Table C and the current Drinking Water Limits. This pathway has been marked complete because historical private well samples from the nearby properties 2720 Tall Spruce Rd and 2712 Tall Spruce Rd have exhibited PFAS concentrations above or near the Drinking Water Limit.

Inhalation of Volatile Compounds in Tap Water

Inhalation of volatile compounds in tap water may be a complete pathway if:

- The contaminated water is used for indoor household purposes such as showering, laundering, and dish washing.
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix D in the guidance document.)

DEC groundwater cleanup levels in 18 AAC 75, Table C are protective of this pathway because the inhalation of vapors during normal household activities is incorporated into the groundwater exposure equation.

Check the box if further evaluation of this pathway is needed:

Comments:

Inhalation of Fugitive Dust

Inhalation of fugitive dust may be a complete pathway if:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers (Particulate Matter - PM₁₀). Particles of this size are called respirable particles and can reach the pulmonary parts of the lungs when inhaled.

DEC human health soil cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway because the inhalation of particulates is incorporated into the soil exposure equation.

Check the box if further evaluation of this pathway is needed:

Comments:

Direct Contact with Sediment

This pathway involves people's hands being exposed to sediment, such as during some recreational, subsistence, or industrial activity. People then incidentally ingest sediment from normal hand-to-mouth activities. In addition, dermal absorption of contaminants may be of concern if the the contaminants are able to permeate the skin (see Appendix B in the guidance document). This type of exposure should be investigated if:

- Climate permits recreational activities around sediment.
- The community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

Generally, DEC direct contact soil cleanup levels in 18 AAC 75, Table B1, are assumed to be protective of direct contact with sediment.

Check the box if further evaluation of this pathway is needed:

Comments:

Sediment samples were not collected during the installation of the Tall Spruce monitoring wells. This pathway has been marked complete because more investigation is needed.

4. Other Comments *(Provide other comments as necessary to support the information provided in this form.)*

[Empty rectangular box for providing other comments]

HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: Fairbanks Int'l Airport Statewide PFAS - Tall Spruce Neighborhood
100.38.277 / 26816

Completed By: Shannon & Wilson, Inc.

Date Completed: December 13, 2022

Instructions: Follow the numbered directions below. Do not consider contaminant concentrations or engineering/land use controls when describing pathways.

(1) Media	(2) Transport Mechanisms	
<input type="checkbox"/> Surface Soil (0-2 ft bgs)	<input checked="" type="checkbox"/> Direct release to surface soil <i>check soil</i> <input type="checkbox"/> Migration to subsurface <i>check soil</i> <input type="checkbox"/> Migration to groundwater <i>check groundwater</i> <input type="checkbox"/> Volatilization <i>check air</i> <input type="checkbox"/> Runoff or erosion <i>check surface water</i> <input type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____	
	<input type="checkbox"/> Subsurface Soil (2-15 ft bgs)	<input checked="" type="checkbox"/> Direct release to subsurface soil <i>check soil</i> <input type="checkbox"/> Migration to groundwater <i>check groundwater</i> <input type="checkbox"/> Volatilization <i>check air</i> <input type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____
	<input checked="" type="checkbox"/> Ground-water	<input checked="" type="checkbox"/> Direct release to groundwater <i>check groundwater</i> <input type="checkbox"/> Volatilization <i>check air</i> <input type="checkbox"/> Flow to surface water body <i>check surface water</i> <input checked="" type="checkbox"/> Flow to sediment <i>check sediment</i> <input checked="" type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____
	<input type="checkbox"/> Surface Water	<input checked="" type="checkbox"/> Direct release to surface water <i>check surface water</i> <input type="checkbox"/> Volatilization <i>check air</i> <input type="checkbox"/> Sedimentation <i>check sediment</i> <input type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____
	<input type="checkbox"/> Sediment	<input checked="" type="checkbox"/> Direct release to sediment <i>check sediment</i> <input type="checkbox"/> Resuspension, runoff, or erosion <i>check surface water</i> <input type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____

(3) Exposure Media	(4) Exposure Pathway/Route	(5) Current & Future Receptors						
		Residents (adults or children)	Commercial or Industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or subsistence harvesters	Subsistence consumers	Other
<input type="checkbox"/> soil	<input type="checkbox"/> Incidental Soil Ingestion <input type="checkbox"/> Dermal Absorption of Contaminants from Soil <input type="checkbox"/> Inhalation of Fugitive Dust							
<input checked="" type="checkbox"/> groundwater	<input checked="" type="checkbox"/> Ingestion of Groundwater <input checked="" type="checkbox"/> Dermal Absorption of Contaminants in Groundwater <input type="checkbox"/> Inhalation of Volatile Compounds in Tap Water	C/F	C/F	I	I	I	I	
<input type="checkbox"/> air	<input type="checkbox"/> Inhalation of Outdoor Air <input type="checkbox"/> Inhalation of Indoor Air <input type="checkbox"/> Inhalation of Fugitive Dust							
<input type="checkbox"/> surface water	<input type="checkbox"/> Ingestion of Surface Water <input type="checkbox"/> Dermal Absorption of Contaminants in Surface Water <input type="checkbox"/> Inhalation of Volatile Compounds in Tap Water							
<input checked="" type="checkbox"/> sediment	<input checked="" type="checkbox"/> Direct Contact with Sediment	C/F	C/F	I	C/F	C/F	C/F	
<input checked="" type="checkbox"/> biota	<input checked="" type="checkbox"/> Ingestion of Wild or Farmed Foods	I	I	I	I	I	I	

Important Information

About Your Environmental Report

IMPORTANT INFORMATION

IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL/ENVIRONMENTAL REPORT

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors that were considered in the development of the report have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary, because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports, and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

The preceding paragraphs are based on information provided by the Geoprofessional Business Association (<https://www.geoprofessional.org>)