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REVISED

GENERAL WORK PLAN ADDENDUM
DOT&PF Statewide PFAS
Addendum 004-HOM-01
Initial Site Characterization
HOMER, ALASKA

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Submitted To: Alaska Department of Transportation & Public Facilities
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Subject: DRAFT GENERAL WORK PLAN ADDENDUM, DOT&PF STATEWIDE PFAS
ADDENDUM 004-HOM-01
INITIAL SITE CHARACTERIZATION, HOMER, ALASKA

Shannon & Wilson prepared this Work Plan Addendum (Addendum) on behalf of the Alaska Department of Transportation & Public Facilities (DOT&PF). This Addendum is a supplement to the *DOT&PF Statewide PFAS General Work Plan (GWP)*, approved by the Alaska Department of Environmental Conservation (DEC) in August 2020. The services proposed in this Addendum, 004-HOM-01, describes the DOT&PF planned activities for site characterization associated with per- and polyfluorinated substances (PFAS) for the Homer Airport (HOM).

The scope of services to prepare this Addendum was specified in our proposal dated September 8, 2020 and authorized on October 6, 2020 by DOT&PF under Professional Services Agreement Number 25-19-013 *Per- and Polyfluorinated Substances (PFAS) Related Environmental & Engineering Services*. Additional funding to implement this Addendum will be requested following DEC approval.

This Addendum was prepared and reviewed by:

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ACRONYMS

AAC	Alaska Administrative Code
AFFF	aqueous film forming foam
ARFF	Aircraft Rescue and Fire Fighting
BTEX	benzene, toluene, ethylbenzene, and total xylenes
COPC	contaminant of potential concern
CSM	Conceptual Site Model
CSPP	Construction Safety Phasing Plan
DEC	Alaska Department of Environmental Conservation
°C	degrees Celsius
DOT&PF	Alaska Department of Transportation & Public Facilities
DRO	diesel range organics
DVPP	Data-Validation Program Plan
EPA	U.S. Environmental Protection Agency
FAA	Federal Aviation Administration
GAC	granular activated carbon
GRO	gasoline range organics
GWP	General Work Plan
HDPE	high density polyethylene
HCl	hydrochloric acid
HOM	Homer Airport
IDW	investigative-derived waste
LHA	Lifetime Health Advisory
LOD	limit of detection
mg/kg	milligram per kilogram
mL	milliliter
MS	matrix spike
MSD	matrix spike duplicate
MSGP SWPPP	Multi Sector General Permit Storm Water Pollution Prevention Plan
ng/L	nanograms per liter
oz	ounce
PAH	polycyclic aromatic hydrocarbons
PFAS	per- and polyfluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
PID	photoionization detector
PPE	personal protective equipment
POC	point of contact

ACRONYMS

ppm	parts per million
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
RL	reporting limit
RRO	residual range organics
SAP	sampling and analysis plan
SIM	selective ion monitoring
SSHP	Site Safety and Health Plan
TWP	temporary well point
VOA	volatile organic analysis

1 INTRODUCTION

This Work Plan Addendum (Addendum), 004-HOM-01, is a supplement to the *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 per- and polyfluoroalkyl substances (PFAS) initial site characterization activities at and near the Alaska Department of Transportation & Public Facilities (DOT&PF) owned Homer Airport (HOM) in Homer, Alaska (Figure 1, Exhibit 1-1).

Shannon & Wilson 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 October 2019 *Field Sampling Guidance* document. Additional information and activities required for the site that are not detailed in the GWP and deviations made to the GWP, are described in this Addendum, where applicable.

Exhibit 1-1 below provides site specific information associated with the HOM.

Exhibit 1-1: Airport Information

Airport Name:	Homer Airport
Airport Code:	HOM
DEC File No. / Hazard ID:	Not Applicable
Airport Address:	2320 Kachemak Drive, Homer, Alaska 99603
DOT&PF Region:	Central
DOT&PF Regional POC:	Michael Cook
DOT&PF PFAS POC:	Sammy Cummings
Airport Type:	Current Part 139 Airport
Airport Coordinates (Lat/Long):	59.6449, -151.4858

POC = point of contact

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 HOM is detailed below.

1.1.1 Groundwater and Drinking Water

Groundwater in Homer is derived from the infiltration of rain, snow melt, and surface water bodies. Groundwater depths near Homer vary ranging from just below the ground surface

to more than 3,200 meters below the ground (Waller, 1963). Two aquifers are present in Homer, a bedrock aquifer and an unconfined aquifer within surficial deposits of Quaternary age (Waller, 1968). The unconfined aquifer is bounded on south and east by Kachemak Bay, on the north by bedrock ridges and streams, and on the west by the Cook Inlet. The general flow of groundwater in Homer is to the south towards Kachemak Bay.

Generally, groundwater in Homer is unsuitable for residential and commercial use due to low yields, shallow groundwater, and saltwater in the wells. The City of Homer Department of Public Works provides public drinking water and sewer services to the city of Homer and surrounding area. The drinking water source is the Bridge Creek Reservoir and is the only water source the city provides. City water is available on the HOM and along the downgradient Kachemak Drive. Private wells and water hauling may augment the city supply.

1.1.2 Storm Water Drainage

According to the HOM's Multi Sector General Permit Storm Water Pollution Prevention Plan (MSGP SWPPP), storm water at the HOM is generally directed towards vegetated areas, wetland complexes, Beluga Lake, or to culverts that pass under Kachemak Bay Drive.

1.1.3 Aircraft Rescue and Firefighting

DOT&PF Aircraft Rescue and Firefighting (ARFF) services used aqueous film forming foam (AFFF) for training and systems testing for many years. Part 139 Airports, like the HOM, are required to conduct annual AFFF systems testing to maintain their certification through the Federal Aviation Administration (FAA). Prior to 2019, FAA inspections required the release of AFFF to the ground surface. The FAA would require a small amount of AFFF be discharged so the FAA inspector could visually confirm that foam can be made, and water is used for the remainder of the inspection. AFFF training activities likely occurred twice per year at two AFFF training areas (Figure 2) beginning in the 1970s, and at least once per year at various locations along the HOM runways. There are no known emergency response incidents at the HOM where AFFF was used. The precise timeline and locations of AFFF use are unknown.

1.2 Project Objectives and Scope

DOT&PF requested Shannon & Wilson prepare this Addendum for initial site characterization efforts at the HOM. The scope for this initial site characterization effort includes the following activities:

- Water Supply Well Activities
 - conducting a limited water supply well search to confirm city water is the source of drinking water near and downgradient of the HOM;
 - sampling identified water supply wells for PFAS;
- Site Characterization Activities
 - collecting analytical surface and/or subsurface soil samples from near the HOM runways, potential AFFF releases areas, and/or major drainage ditches;
 - installing and sampling temporary well points (TWPs) to evaluate PFAS concentrations just below the surface of the groundwater;
 - collecting analytical surface water and sediment samples from Lampert Lake and Beluga Lake.

The proposed search areas for the limited water supply well search are presented in Figure 3. The proposed locations for soil, groundwater, surface water, and sediment samples are presented in Figure 4.

The objective of this initial site characterization effort is to understand the extent of PFAS contamination, if present, resulting from the historic use of AFFF by the DOT&PF at the HOM.

2 SITE AND PROJECT DESCRIPTION

The following sections provide a site and project description.

2.1 Site Location and Boundaries

Homer is located on the southern end of the Kenai Peninsula on the north side of Kachemak Bay (Figure 1). The HOM is located at 2320 Kachemak Drive in Homer, Alaska. Figure 2 shows the HOM property boundaries for land owned by the DOT&PF. The geographic coordinates of the HOM terminal are latitude 59.6449, longitude -151.4858.

2.2 Potential Sources of Contamination

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

Specific potential sources of PFAS contamination at the HOM are:

- two fire training areas where AFFF is believed to have been used on an annual basis;

- FAA required AFFF systems testing areas at various, unknown locations along the HOM runways; and
- Drainage ditches.

2.3 Contaminants of Potential Concern and Regulatory Levels

General information regarding contaminants of potential concern (COPCs) and regulatory levels is included in Section 2.2 of the GWP. The primary COPCs for this project are PFAS compounds perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA). DEC's *Field Sampling Guidance* (2019) also identifies gasoline range organics (GRO), diesel range organics (DRO), residual range organics (RRO), benzene, toluene, ethylbenzene, and xylenes (BTEX), and polynuclear aromatic hydrocarbons (PAHs) as COPCs at AFFF training areas. An analytical sample summary is detailed in Exhibit 4-1.

To evaluate analytical data, soil results will be compared to the most conservative of either the migration to groundwater or human health cleanup levels listed in 18 Alaska Administrative Code (AAC) 75.341 *Tables B1 Method Two and B2, Method Two – Under 40 - inch*, as Homer has an annual average precipitation of approximately 24.47 inches per year (Western Region Climate Center database). Groundwater and surface water samples will be compared to Alaska's 18 AAC 75.341 *Table C, Groundwater Human Health Cleanup Level*. Water supply well samples will be compared to the U.S. Environmental Protection Agency (EPA) lifetime health advisory level (LHA) and DEC drinking water action level of 70 nanograms per liter (ng/L) for PFOS, PFOA, or the sum of the two.

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

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

Method	Analyte	Soil Limit ^a (mg/kg)	Water Limit ^b (µg/L)	Laboratory LODs/RLs ^c	
				Soil (mg/kg)	Water (µg/L)
PFAS Analytes					
537.1 ^d	PFOS	0.0030	0.40	0.000200	0.00200
	PFOA	0.0017	0.40	0.000500	0.00200
Petroleum Analytes					
AK101	GRO	300	2,200	1.25	50
AK102	DRO	250	1,500	10	300
AK103	RRO	10,000*	1,100	50	250
EPA 8260 (BTEX)	Benzene	0.022	4.6	0.00625	0.2
	Toluene	6.7	1,100	0.0125	0.5
	Ethylbenzene	0.13	15	0.0125	0.5
	Xylenes Total	1.5	190	0.0375	1.5
PAH Analytes					
EPA 8270D-SIM (PAH)	1-Methylnaphthalene	0.41	11	0.0125	0.025
	2-Methylnaphthalene	1.3	36	0.0125	0.025
	Acenaphthene	37	530	0.0125	0.025
	Acenaphthylene	18	260	0.0125	0.025
	Anthracene	390	43	0.0125	0.025
	Benzo(a)anthracene	0.70	0.30	0.0125	0.025
	Benzo[a]pyrene	1.9	0.25	0.0125	0.01
	Benzo[b]fluoranthene	15*	2.5	0.0125	0.025
	Benzo[g,h,i]perylene	2,300*	0.26	0.0125	0.025
	Benzo[k]fluoranthene	150*	0.80	0.0125	0.025
	Chrysene	600	2.0	0.0125	0.025
	Dibenzo[a,h]anthracene	1.5*	0.25	0.0125	0.01
	Fluoranthene	590	260	0.0125	0.025
	Fluorene	36	290	0.0125	0.025
	Indeno [1,2,3-c,d] pyrene	15*	0.19	0.0125	0.025
	Naphthalene	0.38	1.7	0.0100	0.05
	Phenanthrene	39	170	0.0125	0.025
Pyrene	87	120	0.0125	0.025	

Notes:

- a. 18 AAC 75 Table B2. Method Two - Petroleum Hydrocarbon Soil Cleanup Levels – Under 40-Inch Zone or Table B1. Method Two - Soil Cleanup Levels Table. The most stringent between Human Health and Migration to Groundwater cleanup levels are reported. Migration to Groundwater cleanup level reported unless otherwise identified.
- b. 18 AAC 75 Table C. Groundwater Cleanup Levels.
- c. February 2020 LODs from SGS North America, Inc. for petroleum and PAH analyses. February 2020 RLs from Eurofins TestAmerica, Inc. for PFAS analyses.
- d. A full list of PFAS analytes for the analytical method will be requested for analytical reports. However, only PFOS and PFOA have DEC Cleanup Levels and are reported in this table.
- * 18 AAC 75 Table B1 and B2 Human Health cleanup level reported.

BTEX = benzene, toluene, ethylbenzene, and total xylenes; DRO = diesel range organics, EPA = U.S. Environmental Protection Agency, GRO = gasoline range organics, LOD = limit of detection, µg/L = microgram per liter, mg/kg = milligram per kilogram; PAH = polynuclear aromatic hydrocarbons, PFAS = per- and polyfluoroalkyl substances, PFOA = perfluorooctanoic acid, PFOS = perfluorooctanesulfonic acid, RL = reporting limit, RRO = residual range organics, SIM = selective ion monitoring

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 A of this Addendum.

Very little is known about potential PFAS-affected media at and near the HOM. The draft CSM will be revised in the final report following the receipt of analytical data. Potentially affected media include contaminated soil, groundwater, surface water sediment, and biota. Potential human exposure pathways include:

- incidental soil, groundwater, or surface water ingestion;
- dermal absorption of contaminants from soil, groundwater, or surface water;
- ingestion of fugitive dust or groundwater (i.e. water supply wells);
- direct contact with sediment; and
- ingestion of wild or farmed foods.

2.5 Project Team

Chris Darrah will be Shannon & Wilson's Principal-in-Charge and Kristen Freiburger is Project Manager for the DPOT&PF Statewide PFAS contract. Ashley Jaramillo will serve as the Environmental Lead for the HOM site and be Shannon & Wilson's primary point of contact (POC). Shannon & Wilson'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 – Regional POC	Michael Cook	(907) 269-0767
	Client – Statewide PFAS POC	Sammy Cummings	(907) 888-5671
DEC	Regulatory Agency POC	TBD	TBD
Shannon & Wilson	Principal-in-charge	Christopher Darrah	(907) 458-3143
	Project Manager	Kristen Freiburger	(907) 458-3146
	Environmental Lead POC	Ashley Jaramillo	(907) 458-3118
Eurofins/ TestAmerica, Inc.	PFAS analytical laboratory services	David Alltucker	(916) 374-4383
SGS North America, Inc.	Additional analytical laboratory services	Jennifer Dawkins	(907) 474-8656
DRILLER	Soil-boring and monitoring well installations	TBD	TBD
SURVEYOR	Surveyor subcontractor	TBD	TBD

POC = point of contact, TBD = To be determined

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 HOM project schedule and submittals are outlined below.

Once DEC approval is received for the proposed scope of services outlined in this Addendum, Shannon & Wilson will coordinate with DOT&PF staff to collect soil, groundwater, surface water and sediment samples. Field activities are anticipated to occur during one sampling event in Spring 2021. Laboratory analysis will be requested on a standard 14-day turn-around time. After field work is complete, a Site Characterization Report will be prepared documenting the results of the sampling event. 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 HOM initial site characterization activities:

- Work Plan Implementation (field activities) – Spring 2021
- 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 FIELD ACTIVITIES

General information regarding field activities are described in Section 3 of the GWP. The following sections describe the field activities to be conducted as a part of the initial site characterization at the HOM. Sampling procedures and analytical methods are described in Section 4, below. A quality assurance project plan (QAPP) is included in Section 5, below.

This Addendum includes Shannon & Wilson's internal HOM specific Site Safety and Health Plan (SSHP, Appendix B). Shannon and Wilson will also follow their internal *Guidance for Field Work During the COVID-19 Pandemic* (April 2020) and DOT&PF *COVID-19 Management Plan* (April 2020) guidelines for field work conducted during the COVID-19 outbreak.

3.1 Water Supply Well Activities

General water supply well activities are described in Section 3.1 of the GWP. HOM specific water supply well activities are described below.

Available information indicates groundwater is an unlikely drinking water source near the HOM. The primary drinking water source in Homer is believed to be the public drinking water source provided by the City of Homer Public Works Department. Shannon & Wilson will therefore conduct a limited water supply well search in the areas shown in Figure 3. Prior to mobilization, Shannon & Wilson will request records from the City of Homer in order to confirm city water is the source of drinking water at properties near and downgradient of the HOM.

Shannon & Wilson will collect PFAS groundwater samples for any identified water supply well in the search areas (Figure 3). Water supply well sampling procedures are described in Section 4.1, below.

3.2 Site Characterization Activities

General information regarding site characterization activities is included in Section 3.2 of the GWP. HOM specific site characterization activities, including pre-investigation activities, and soil, groundwater, and surface water characterization activities, are described in the following sections.

3.2.1 Pre-investigation Activities

General information regarding pre-investigation tasks are presented in Section 3.2.1 of the GWP. HOM specific pre-investigation activities, including site access and permitting, and utility locates, are outlined in the following sections.

3.2.1.1 Site Access and Permitting

Advancing soil borings and TWP's will require a FAA 7460 permit. Shannon & Wilson will provide DOT&PF the anticipated drill rig mast height and other relevant details. DOT&PF Central Region will coordinate with the FAA to obtain permission to use a drill rig on the HOM. We anticipate the FAA may require runway closure during drilling. Shannon & Wilson and the drilling contractor will follow the 7460 permit stipulations related to working hours, locations, etc., and the HOM Airport Manager will issue applicable notices.

Shannon & Wilson will coordinate with DOT&PF Statewide Aviation to prepare a Construction Safety Phasing Plan (CSPP) covering the site characterization activities described in this Addendum. Prior to accessing secured areas of the airport, Shannon & Wilson and drilling contractor staff will obtain badges, if required by DOT&PF.

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

3.2.1.2 Utility Locates

Utility clearance will be coordinated by contacting the Alaska Digline, Inc. and the HOM airport manager. A map of anticipated drilling locations will be provided to the Alaska Digline and HOM airport manager, no later than 10 days prior to planned activities. Shannon & Wilson assumes the Digline and HOM airport manager will provide information regarding utility locations in the proposed investigation areas and mark utilities that are close to drilling activities.

3.2.2 Soil Characterization Activities

General information regarding soil characterization activities are described in Section 3.2.2 of the GWP. HOM specific soil characterization activities for this project include field screening and sample collection from surface soil and soil borings as described in the following sections. 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 4.10. An analytical sample summary is detailed in Exhibit 4-1.

3.2.2.1 Field Screening

General information regarding field screening is described in Section 3.2.2.1 of the GWP. Field screening procedures are described in Section 4.3, below.

Where volatile (GRO and/or BTEX) samples will be collected (see Exhibit 4-1), Shannon & Wilson will field screen for volatile petroleum compounds using a photoionization detector (PID). Soil borings will be field screened at a frequency of one every five feet, until the groundwater table is encountered. Surface soil and drill cuttings will be containerized if PID readings exceed 20 parts per million (ppm) or visual and olfactory observations suggest the presence of petroleum contamination. Excess soils from borings will be segregated using the following PID reading guidelines:

- PID readings 0 to 20 ppm are considered not contaminated with petroleum contaminants. Soils will be spread in the immediate surrounding of the boring location.
- PID readings greater than 20 ppm are considered potentially contaminated with petroleum contaminants. Soils will be held pending PFAS, petroleum, and PAH results.

Drums will be stored offsite at a storage unit facility in Homer to be identified when approval to transport is requested from DEC pending analytical results. These results will be used to determine waste disposal requirements, as described in Section 4.14.

3.2.2.2 Surface Soil

General information regarding surface soil characterization is included in section 3.2.2.2 of the GWP. Soil sampling procedures are described in Section 4.4, below.

Shannon & Wilson will collect a total of 12 surface soil samples (Figure 4) from along the HOM runway and ten from the soil borings described in Section 3.2.2.3, below. Surface soil samples will be collected just below vegetation, if present, and between 0-6 inches if not present.

3.2.2.3 Soil Borings

General information regarding soil borings is included in Section 3.2.2.4 of the GWP. Soil sampling procedures are described in Section 4.4, below. The drilling subcontractor has not yet been determined for this project.

The drilling subcontractor will advance ten soil borings (Figure 4). The soil boring locations were chosen based on areas of previous AFFF use or storage and at major storm water conveyances at the HOM. These borings will terminate at or just beneath the groundwater

table. Use of a Geoprobe® Model 6712 or 66 series direct push/auger is anticipated for drilling the soil borings. The drilling contractor will use a direct-push sampling system equipped with a two- or three-inch MacroCore® for the soil borings. Upon completion of the soil boring, the drilling contractor will install TWPs as described in Section 3.2.3.1. Shannon & Wilson field staff will log the soil type encountered during drilling and collect two to three analytical soil samples analysis from each boring.

3.2.3 Groundwater Characterization

General information regarding groundwater characterization activities are described in Section 3.2.3 of the GWP. Groundwater characterization activities for the HOM include sample collection from TWPs as described in the following section. 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 4.10, below. An analytical sample summary is detailed in Exhibit 4-1.

3.2.3.1 Temporary Well Points

General information regarding temporary well points is included in Section 3.2.3.1 of the GWP. TWP sampling procedures are described in Section 4.5, below.

The drilling contractor will install TWPs at the ten soil boring locations (Figure 4). The TWPs will consist of pre-screened, disposable 1-inch diameter PVC. The drilling contractor will install TWPs using a direct-push drill rig, so the screened interval intercepts the groundwater table or is set to the desired depth. The depth of groundwater may vary depending on the season, tides, and recent precipitation. Field staff will collect a sample from the uppermost foot of groundwater at each TWP. Depth to water, groundwater parameters and observations, and any other pertinent local conditions will be documented using the applicable field forms. TWP purge water will be disposed of as described in Section 4.14, below.

The TWPs will be removed after sampling. It would not be practical to leave them in the ground for potential future sampling because the sample locations are close to active runways. Following removal, the TWP boreholes will be backfilled with bentonite chips or grout to two feet below the ground surface. The final two feet will be backfilled with sand, pea gravel, topsoil, asphalt cold patch, epoxy, and/or hydraulic cement to match the previous ground surface.

3.2.4 Surface Water Characterization

General information regarding surface water characterization and sediment sample collection activities are described in Section 3.2.4 of the GWP. HOM specific surface water characterization activities are described the following sections. 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 4.10, below. An analytical sample summary is detailed in Exhibit 4-1.

3.2.4.1 Surface Water Sampling

Surface water sampling procedures are described in Section 4.6, below.

Beluga Lake and Lampert Lake are two surface water bodies located adjacent to the HOM. Based on the HOM's MSGP SWPPP, much of the surface water across the HOM is directed towards Beluga Lake, west of the HOM. Lampert Lake is located south of the runway and is considered hydraulically downgradient of the HOM. Shannon & Wilson will collect one surface water sample from Beluga Lake and Lampert Lake as shown on Figure 4.

3.2.4.2 Sediment Sampling

Sediment sampling procedures are described in Section 4.7.

Shannon & Wilson will collect one sediment sample in conjunction with each surface water sample collected from Beluga Lake and Lampert Lake. Sediment samples will be collected near the shore of Beluga Lake in the general area where storm water from the HOM enters the lake and near the surface water sample collection location. Sediment samples will be collected from Lampert Lake near the shore where there appears to be a drainage channel between the lake and the HOM and near the surface water sample collection location.

4 SAMPLING AND ANALYSIS PLAN

A general sampling and analysis plan (SAP) describing the methods and procedures for site characterization 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 4.10. An analytical sample summary is detailed in Exhibit 4-1. Sample containers, preservation methods, and holding times are included in Section 4.11. Sample custody, storage, and transport will be followed as described in Section 4.12. Equipment decontamination procedures are outlined in Section 4.13. Investigative-derived waste management is described in Section 4.14. Deviations to the approved GWP are described in Section 4.15.

4.1 Water Supply Well Sampling

Water supply well sampling procedures are detailed in Section 4.1 of the GWP.

4.2 Methods for Soil Sample Retrieval

General methods for soil sample retrieval are described in Section 4.2 of the GWP. HOM soil samples will be collected using hand tools from surface soil locations and soil borings as described in Section 4.2.1, 4.2.3, and 4.2.3.1 of the GWP.

4.3 Field Screening

Field screening procedures are detailed in Section 4.3 of the GWP.

4.4 Soil Sampling

Soil sample collection procedures are described in Section 4.4 of the GWP.

4.5 Temporary Well Point Groundwater Sampling

Temporary well point installation, water level measurement, development, and sampling procedures are described in Section 4.5 of the GWP.

4.6 Surface Water Sampling

General surface water sampling procedures are described in Section 4.7 of the GWP. Deviations to surface water sampling procedures described in the GWP are described in Section 4.15 below.

4.7 Sediment Sampling

Sediment sampling procedures are detailed in Section 4.8 of the GWP. Sediment samples will be collected using hand tools such a trowel, shovel, or hand auger. Shannon & Wilson anticipate the water depth will be less than two feet. Field staff will remove vegetation or plant matter prior to collecting the sediment samples.

4.8 Special Considerations for PFAS

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

4.9 Analytical Sample Summary

An analytical sample summary is detailed in Exhibit 4-1 below. More information regarding QC samples can be found in Section 5.4 and 5.5.

Exhibit 4-1: Analytical Sample Summary¹

	Matrix	PFAS (EPA 537.1)	BTEX (EPA 8260)	GRO (AK 101)	DRO (AK 102)	RRO (AK 103)	PAH (EPA 8270-SIM)
Number of Samples	Groundwater	10 +1 FD	3 +1 FD	3 +1 FD	3 +1 FD	3 +1 FD	3 +1 FD
	Surface Soil ²	22 +3 FD	3 +1 FD	3 +1 FD	3 +1 FD	3 +1 FD	3 +1 FD
	Soil Borings ³	30 +4 FD	9 +1 FD	9 +1 FD	9 +1 FD	9 +1 FD	9 +1 FD
	Surface Water	4 +1 FD	--	--	--	--	--
	Sediment	2 +1 FD	--	--	--	--	--

Notes:

- 1 In addition to field duplicate samples, QC samples listed in this table include equipment blank, field blank, and trip blank samples. Laboratory QC samples are not included in these totals. A GAC effluent sample will also be collected. Table assumes all potential samples will be collected.
- 2 Surface soil samples will also be collected from soil borings; these numbers are included in the surface soil section.
- 3 Two or three analytical samples will be collected from soil boring, the table represents three analytical samples from each boring. BTEX = benzene, toluene, ethylbenzene, and total xylenes; DRO = diesel range organics; EPA = U.S. Environmental Protection Agency; FD = field duplicate; GRO = gasoline range organics; PAH = polynuclear aromatic hydrocarbons PFAS = per- and polyfluoroalkyl substances; QC = quality control sample; RRO = residual range organics; SIM = selective ion monitoring

4.10 Analytical Laboratories and Methods

The GRO, DRO, RRO, BTEX, and PAH soil and water samples will be submitted to SGS North America, Inc. in Anchorage, Alaska. The PFAS soil, water, and sediment samples will be submitted to Eurofins TestAmerica of Sacramento, California. Based on the DEC Technical Memorandum issued on October 2, 2019, PFAS analysis will report the 18 PFAS compounds defined in the EPA Method 537.1. Other analytical samples will be submitted for the analyses listed in Exhibit 4-1.

4.11 Sample Containers, Preservation, and Holding Times

General information regarding sample containers, preservation, and holding times is described in Section 4.12 of the GWP. This information is provided in Exhibit 4-2, below, for 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	537.1	Drinking Water	2 x 250 mL polycarbonate	Trizma 0 °C to 6 °C	14 days to extraction, analyzed within 40 days of extraction
		Water	2 x 250 mL polycarbonate	0 °C to 6 °C	
		Soil	4-oz polycarbonate	0 °C to 6 °C	
GRO	AK101	Water	3 x 40-mL VOA vials (no headspace)	HCl to <4 0 °C to 6 °C	14 days to extraction, analyzed within 40 days of extraction
		Soil	Pre-weighed 4-oz amber glass jar with septa	25mL MeOH 0 °C to 6 °C	
DRO	AK102	Water	2 x 250-mL amber glass	HCl to <4 0 °C to 6 °C	7 days to extraction, analyzed within 40 days of extraction
		Soil	4-oz amber glass jar	0 °C to 6 °C	14 days to extraction, analyzed within 40 days of extraction
RRO	AK103	Water	2 x 250-mL amber glass	HCl to <4 0 °C to 6 °C	7 days to extraction, analyzed within 40 days of extraction
		Soil	4-oz amber glass jar	0 °C to 6 °C	14 days to extraction, analyzed within 40 days of extraction
BTEX	EPA 8260	Water	3 x 40-mL VOA vials (no headspace)	HCl to <4 0 °C to 6 °C	14 days
		Soil	Pre-weighed 4-oz amber glass jar with septa	25mL MeOH 0 °C to 6 °C	
PAHs	EPA 8270D-SIM	Water	2 x 250-mL amber glass	0 °C to 6 °C	7 days to extraction, analyzed within 40 days of extraction
		Soil	4-oz amber glass jar		14 days to extraction, analyzed within 40 days of extraction

Notes:

BTEX = benzene, toluene, ethylbenzene, and total xylenes; °C = degrees Celsius, DRO = diesel range organics, EPA = U.S. Environmental Protection Agency, GRO = gasoline range organics, HDPE = high density polyethylene, HCl = hydrochloric acid, mL = milliliter, oz = ounce, PAH = polynuclear aromatic hydrocarbons, PFAS = per- and polyfluoroalkyl substances, RRO = residual range organics, SIM = selective ion monitoring, VOA = volatile organic analysis

4.12 Sample Custody, Storage, and Transport

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

4.13 Equipment Decontamination

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

4.14 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 may consist of soil cuttings, TWP development and purge water, decontamination rinsate water, and disposable sampling equipment.

Soil cuttings will be spread in the immediate surroundings of the boring location unless field observations (i.e. visual staining, odor, or PID readings greater than 20 ppm) suggest the presence of contamination. If contaminants are suspected to be present in soil cuttings, the cuttings will be combined and placed in a 55-gallon drum or supersack and temporarily stored at an offsite storage unit facility in Homer to be identified when approval to transport is requested of DEC. The appropriate soil disposal method will be selected following the receipt of analytical results.

Liquids will be treated using three in-line five-gallon granular activated carbon (GAC) filters and discharged to the ground surface at least 100 feet from drainage ditches or surface water bodies. Silty TWP development water will be allowed to settle prior to filtration. An effluent sample will be collected following the completion of the sampling event. Purge water from water supply well samples will be purged to the ground surface, septic system, or municipal sewer system.

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 Homer Transfer Facility.

4.15 Deviations from the General Work Plan

Section 3.1.1 of the GWP describes a door-to-door water supply well search where field staff make a reasonable attempt to speak with each resident in the well search area. Shannon & Wilson plans to conduct a more limited well search in Homer because the primary drinking water source in Homer is thought to be the public drinking supply provided by the City of

Homer Department of Public Works. Shannon & Wilson will request additional records from the City of Homer Department of Public Works in order to confirm municipal water is the source of drinking water at properties near and downgradient of the OME. Shannon & Wilson staff will attempt to visit each property within the search areas where municipal water cannot be confirmed.

Section 4.7 of the GWP states that surface water samples will be collected as close to the center of the water body as possible. Surface water samples will be collected from Beluga Lake near the shore in the general area where storm water from the HOM enters the lake. Surface water samples will be collected from Lampert Lake nearest the shore where there appears to be a drainage channel between the lake and the HOM.

5 QUALITY ASSURANCE PROJECT PLAN

The QAPP is intended to guide activities during assessment and review of resulting data. Shannon & Wilson 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 (DVPP) 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 HOM, 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 QA objectives for this project are presented in Exhibit 5-1 below.

Exhibit 5-1: Quality Assurance Objectives for Analytical Samples

Analyte	Method	Matrix	Precision	Accuracy	Completeness
PFAS	EPA 537.1	Water	±30%	(analyte dependent)	85%
		Soil	±50%	(analyte dependent)	85%
GRO	AK101	Water	±30%	60-120%	85%
		Soil	±50%	60-120%	85%
DRO	AK102	Water	±30%	60-120%	85%
		Soil	±50%	60-120%	85%
RRO	AK103	Water	±30%	60-120%	85%
		Soil	±50%	60-120%	85%
BTEX	8260	Water	±30%	(analyte dependent)	85%
		Soil	±50%	(analyte dependent)	85%
PAHs	8270D-SIM	Water	±30%	(analyte dependent)	85%
		Soil	±50%	(analyte dependent)	85%

BTEX = benzene, toluene, ethylbenzene, and xylenes; COPC = contaminant of potential concern, DRO = diesel range organics, EPA = U.S. Environmental Protection Agency, GRO = gasoline range organics, PAH = polynuclear aromatic hydrocarbons, PFAS = per- and polyfluoroalkyl substances, PFOA = perfluorooctanoic acid PFOS = perfluorooctanesulfonic acid RRO = residual range organics, SIM = selective ion monitoring.

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 quality assurance (QA)/QC program for this project includes the collection of the following QA/QC samples as described below.

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 for each matrix.

5.4.2 Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS) and matrix spike duplicate (MSD) samples are discussed in Section 5.4.2 of the GWP. MS/MSD samples will not be collected for this project. However, the laboratories may report these QC samples collected from projects not associated with this Addendum to meet their reporting requirements.

5.4.3 Trip Blank Samples

Trip blank samples are described in Section 5.4.3 of the GWP.

5.4.4 Equipment Blank Samples

Equipment blank sample collection procedures and frequency are described in Section 5.4.4 of the GWP.

5.4.5 Field Blank Samples

Field blank sample collection procedures are described in Section 5.4.5 of the GWP. Field blank samples are needed for areas with potential for PFAS-containing particulate matter to enter samples (i.e. high-contamination areas, windy/dusty conditions, etc.). Shannon & Wilson will collect two field blank samples, one at each of the two AFFF training areas during the collection of groundwater samples.

5.4.6 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

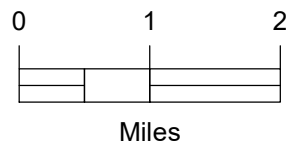
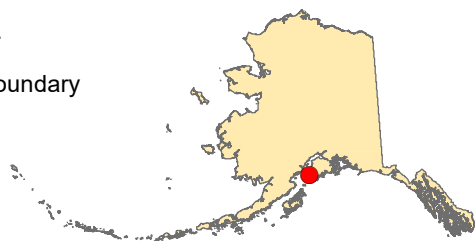
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Service Layer Credits: http://gis.dnr.alaska.gov/terrapixel/cubeserv/OIM_BDL?

LEGEND

— Property Boundary



Homer Airport
Homer, Alaska

SITE VICINITY

March 2021

106031-001

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Figure 1

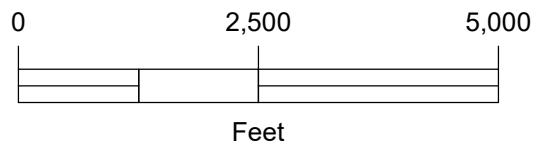
Figure 1



Service Layer Credits: http://gis.dnr.alaska.gov/terrapixel/cubeserv/OIM_BDL?

LEGEND

- * AFFF Training Areas
- Property Boundary



Homer Airport Homer, Alaska	
SITE MAP	
March 2021	106031-001
SHANNON & WILSON, INC. <small>GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS</small>	
Figure 2	

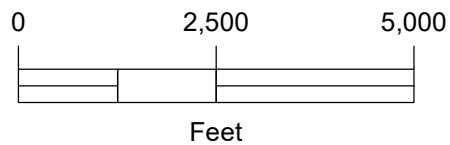
Figure 2



Service Layer Credits: http://gis.dnr.alaska.gov/terrapixel/cubeserv/OIM_BDL?

LEGEND

- Kachemak Bay - Area 1
- Kachemak Bay - Area 2
- FAA Street - Area 3



Homer Airport
Homer, Alaska

WELL SEARCH EXTENT

March 2021

106031-001

SHANNON & WILSON, INC.
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Figure 3

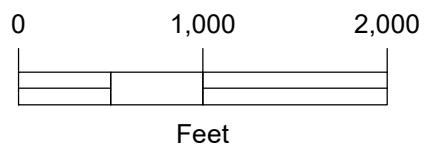
Figure 3



Service Layer Credits: http://gis.dnr.alaska.gov/terrapixel/cubeserv/OIM_BDL?

LEGEND

- Surface Soil Sample
- Surface Water Sample
- Surface Water & Sediment Sample
- ▲ Temporary Well Point/Soil Boring
- * AFFF Training Areas



Homer Airport
Homer, Alaska

SAMPLE LOCATIONS

March 2021

106031-001

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Figure 4

Figure 4

Appendix A

Conceptual Site Model

Scoping and Graphics Forms

CONTENTS

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

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

Site Name:

File Number:

Completed by:

Introduction

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

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

1. General Information:

Sources (*check potential sources at the site*)

- | | |
|--|--|
| <input type="checkbox"/> USTs | <input type="checkbox"/> Vehicles |
| <input type="checkbox"/> ASTs | <input type="checkbox"/> Landfills |
| <input type="checkbox"/> Dispensers/fuel loading racks | <input type="checkbox"/> Transformers |
| <input type="checkbox"/> Drums | <input type="checkbox"/> Other: <input type="text"/> |

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

- | | |
|---------------------------------|--|
| <input type="checkbox"/> Spills | <input type="checkbox"/> Direct discharge |
| <input type="checkbox"/> Leaks | <input type="checkbox"/> Burning |
| | <input type="checkbox"/> Other: <input type="text"/> |

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

- | | |
|--|--|
| <input type="checkbox"/> Surface soil (0-2 feet bgs*) | <input type="checkbox"/> Groundwater |
| <input type="checkbox"/> Subsurface soil (>2 feet bgs) | <input type="checkbox"/> Surface water |
| <input type="checkbox"/> Air | <input type="checkbox"/> Biota |
| <input type="checkbox"/> Sediment | <input type="checkbox"/> Other: <input type="text"/> |

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

- | | |
|--|--|
| <input type="checkbox"/> Residents (adult or child) | <input type="checkbox"/> Site visitor |
| <input type="checkbox"/> Commercial or industrial worker | <input type="checkbox"/> Trespasser |
| <input type="checkbox"/> Construction worker | <input type="checkbox"/> Recreational user |
| <input type="checkbox"/> Subsistence harvester (i.e. gathers wild foods) | <input type="checkbox"/> Farmer |
| <input type="checkbox"/> Subsistence consumer (i.e. eats wild foods) | <input type="checkbox"/> Other: <input type="text"/> |

* 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:

Comments:

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:

Comments:

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:

Comments:

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:

Comments:

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:

Comments:

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:

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:

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:

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:

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

HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: _____

Completed By: _____

Date Completed: _____

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 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 type="checkbox"/> Direct release to subsurface soil <i>check soil</i> <input type="checkbox"/> Migration to groundwater <i>check groundwater</i> <input type="checkbox"/> Volatilization <i>check air</i> <input type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____
<input type="checkbox"/> Ground-water	<input type="checkbox"/> Direct release to groundwater <i>check groundwater</i> <input type="checkbox"/> Volatilization <i>check air</i> <input type="checkbox"/> Flow to surface water body <i>check surface water</i> <input type="checkbox"/> Flow to sediment <i>check sediment</i> <input type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____
<input type="checkbox"/> Surface Water	<input 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 type="checkbox"/> Direct release to sediment <i>check sediment</i> <input type="checkbox"/> Resuspension, runoff, or erosion <i>check surface water</i> <input type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____

(3)
Check all exposure media identified in (2).

Exposure Media

soil

groundwater

air

surface water

sediment

biota

(4)
Check all pathways that could be complete. The pathways identified in this column **must** agree with Sections 2 and 3 of the Human Health CSM Scoping Form.

Exposure Pathway/Route

Incidental Soil Ingestion

Dermal Absorption of Contaminants from Soil

Inhalation of Fugitive Dust

Ingestion of Groundwater

Dermal Absorption of Contaminants in Groundwater

Inhalation of Volatile Compounds in Tap Water

Inhalation of Outdoor Air

Inhalation of Indoor Air

Inhalation of Fugitive Dust

Ingestion of Surface Water

Dermal Absorption of Contaminants in Surface Water

Inhalation of Volatile Compounds in Tap Water

Direct Contact with Sediment

Ingestion of Wild or Farmed Foods

(5)
Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, "C/F" for both current and future receptors, or "I" for insignificant exposure.

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"/> Incidental Soil Ingestion							
<input type="checkbox"/> Dermal Absorption of Contaminants from Soil							
<input type="checkbox"/> Inhalation of Fugitive Dust							
<input type="checkbox"/> Ingestion of Groundwater							
<input type="checkbox"/> Dermal Absorption of Contaminants in Groundwater							
<input type="checkbox"/> Inhalation of Volatile Compounds in Tap Water							
<input type="checkbox"/> Inhalation of Outdoor Air							
<input type="checkbox"/> Inhalation of Indoor Air							
<input type="checkbox"/> Inhalation of Fugitive Dust							
<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 type="checkbox"/> Direct Contact with Sediment							
<input type="checkbox"/> Ingestion of Wild or Farmed Foods							

Appendix B

Site Safety and Health Plan

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SITE SAFETY AND HEALTH PLAN

Shannon & Wilson prepared this Site Safety and Health Plan (SSHP) for the initial site characterization activities at the Homer Airport (HOM). 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. This document complies with DOT&PF's April 8, 2020 COVID-19 Management Plan, enclosed. Our contractors will adopt DOT&PF's Management Plan and follow their own COVID-related safety protocols.

The provisions of this plan apply to Shannon & Wilson personnel who will potentially be exposed to safety and/or health hazards during this investigation. Shannon & Wilson employees are covered under its Corporate Safety and Health Program. General safety and health requirements described in that program will be met. Each Shannon & Wilson 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 sampling operations.

B.1. 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 site characterization activities. These hazards are discussed below.

B.1.1 Chemical-Exposure Hazards

Contaminated soil and water may be encountered during site exploration activities. PFAS are believed to be the primary contaminants of potential concern and may be encountered in soils and water at unknown concentrations.

Shannon & Wilson personnel will implement skin protection when they are to contact 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 the current understanding of site conditions and scope of services.

B.1.2 Physical Hazards

Primary physical hazards associated with site characterization activities include drilling equipment; temperature stress; lifting, slipping, tripping, falling; and risk of eye injuries. In addition, wildlife may be a hazard in forested areas around the airport. 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 site characterization activities, nor will they enter trenches or excavations greater than four feet in depth.

B.1.2.1 Drilling Activities

Drill rigs have lots of moving parts and are very loud. Field personnel will wear proper PPE including appropriate hearing protection. A safe distance will be kept from the drill rig and field personnel will be aware of drill rig operations and crew movements. Practice good housekeeping around the work areas. Know where the drill rig's emergency shut-off switch(es) are located in order to shut the rig down in an emergency situation.

Underground utilities are present at the site. Utility locates will be requested by Shannon & Wilson prior to conducting any ground penetrating work.

B.1.2.2 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. Cold stress or injury due to hypothermia will be guarded against by wearing appropriate clothing, having warm shelter available, scheduling rest periods, adequate hydration, and self-monitoring physical and mental conditions. Sampling will occur during the winter months. Breaks to warm up will be taken, as needed.

B.1.2.3 Lifting Hazards

Moving coolers of soil 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.

B.1.2.4 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 or icy surfaces; therefore, workers will use caution when walking at the site.

B.1.2.5 Insects and Animals

During the summer months in Alaska, mosquitoes and other insects are common in areas predominantly covered with vegetation. Wearing PPE should be sufficient to protect site workers. Animals such as moose and bears are also commonly seen in Alaska. If a large animal approaches the site, workers should keep their distance or seek shelter in their vehicles.

B.1.2.6 Congested Areas

The site investigation may at times require field personnel to work adjacent to or in roadways. Field personnel will observe the speed and frequency of traffic proximal to the work site. Appropriate cones, barricades, or signs to secure the work area will be used when required.

B.1.3 Other Hazards

Employees will not report to work if they are experiencing symptoms of COVID-19. *Guidance for Field Work During the COVID-19 Pandemic* enclosed. Field staff will screen themselves for COVID-19 symptoms included in the attachment prior to traveling to Nome. Single occupancy accommodations will be reserved, if possible. Should staff begin to feel ill after reporting to work, they will immediately report their symptoms and return to their lodging. Individuals with COVID-19 symptoms will quarantine in single-occupancy accommodations and follow direction from local healthcare providers until they are able to travel home. *Guidance for Residential Water Sampling During the COVID-19 Pandemic* when

Samplers will refer to the enclosed *Guidance for Residential Water Sampling During the COVID-19 Pandemic* when conducting residential sampling. It will not be possible to contact each individual resident or business owner prior to beginning the limited water supply well

search. Some residents or business owners may decline access to sample locations due to COVID-19 concerns.

Biological, ionizing radiation, and other hazards are not expected to be present. However, be aware of the surroundings and maintain safe work practices in accordance with Shannon & Wilson's Corporate Health & Safety Plan.

B.2. PERSONAL RESPONSIBILITIES, TRAINING, AND MEDICAL SURVEILLANCE

Below is a summary of the assignment of responsibilities, training requirements, and medical surveillance information for Shannon & Wilson personnel.

B.2.1 Assignment of Responsibilities

Shannon & Wilson is responsible for understanding and complying with the requirements of this SSHP. Following is a list of responsibilities of all Shannon & Wilson 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 Shannon & Wilson'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 Shannon & Wilson's Fairbanks office Health and Safety Manager.

B.2.2 Personal Training

Shannon & Wilson 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.

B.2.3 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 Shannon & Wilson's Corporate Health and Safety Program. All field personnel are active participants in Shannon & Wilson's Medical Monitoring Program or in a similar program, which complies with 29 CFR 1910.120(f).

B.3. 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;
- hearing protection;
- gloves; and,
- hard hat.

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

B.4. DECONTAMINATION PROCEDURES

Equipment decontamination procedures are necessary for any reusable equipment that comes into contact with contaminated soil and/or water. Decontamination procedures will consist of a rinse with non-phosphate-based detergent, a second rinse with plain tap water, and a final rinse with distilled water. Sampling equipment and PPE that is expendable will be disposed of at the site or in a landfill off-site.

Shannon & Wilson will conduct all site characterization 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:

- A decontamination station, just outside the work site, will be placed where personnel routinely enter/exit the work site. When exiting the work site, personnel will remove overboots, chemical resistant boots, coveralls, and outer gloves at the specified decontamination area.
- 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 redonning 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.

B.5. ACCIDENTS AND EMERGENCIES

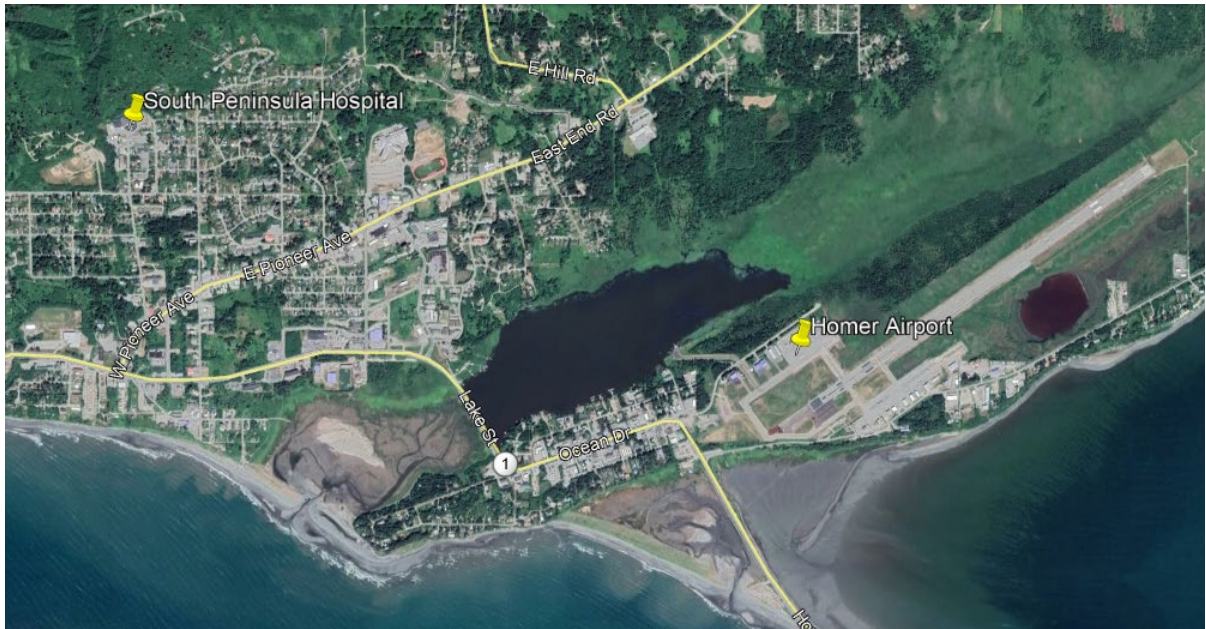
Shannon & Wilson field personnel are current in first aid and cardiopulmonary resuscitation (CPR) training. At a minimum, the following site safety equipment and first aid supplies shall be available in the field:

- PPE and clothing specialized for known site hazards;
- first aid kit, including first aid booklet;
- portable eye wash;
- clean water in portable containers; and
- other decontamination supplies.

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 Shannon & Wilson's corporate Medcor service (1-800-775-5866).

More serious injuries will require assistance from the medical staff at the South Peninsula Hospital, located at the end of Bartlett Street Homer, Alaska. The telephone number for the Hospital is (907) 235-8101. Field phones will be kept easily accessible in the case of an emergency.

Exhibit B-1: Map Showing South Peninsula Hospital.



Shannon & Wilson'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.

B.6. GENERAL SITE SAFETY REQUIREMENTS

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

- 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.

APPENDIX B: SITE SAFETY AND HEALTH PLAN

- The use of contact lenses is prohibited; soft lenses may absorb irritants, and all lenses concentrate irritants.
- Equipment contacting potentially contaminated soil or water must be decontaminated or properly discarded before leaving the site.

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 ACKNOWLEDGEMENT FORM

DOT&PF STATEWIDE GENERAL WORK PLAN
ADDENDUM 004-HOM-01: HOMER INITIAL SITE CHARACTERIZATION

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

Signature

Name (printed)

Date

Representing

COVID-19 Management Plan

Purpose

In response to the Global COVID-19 Pandemic, countries, companies, communities and individuals have been called upon worldwide to make every effort to minimize to the greatest extent possible the risks associated with the transmission and perpetuation of the coronavirus. This document provides guidance to help mitigate the transmission of the coronavirus and provide safe and healthy working environments.

Scope

This document is designed to give clear, concise, consistent direction to essential critical infrastructure personnel working throughout the State of Alaska. Due to the fluidity of the events surrounding this pandemic, this document is considered a “living document” and will be updated as conditions change, and as relevant information is disseminated by local, state and federal agencies.

Roles and Responsibilities

The Management Team is committed to ensuring the health, safety and protection of personnel continuing to work through this pandemic, to their families and to the communities in which they live and work. The following leadership measures have been taken and shall continue throughout the duration of this pandemic:

Senior Management – Senior Management Teams shall continue to monitor the COVID-19 Pandemic situation and changing dynamics. Senior Management Teams shall remain in contact with all applicable local, state and federal leaders and shall ensure that any new directives given by governing bodies are immediately communicated to and implemented by project teams.

Project Management – Project Management Teams shall ensure that all applicable COVID-19 directives from Senior Management are immediately implemented and that all activities are conducted in accordance with the ALARA principle – to ensure that coronavirus transmission risks are As Low As Reasonably Achievable. Project Management Teams are responsible for ensuring that site specific emergency response plans are in place for each location, and that site specific COVID-19 training has been conducted for all field personnel prior to mobilization.

Field Supervisors – Field Supervisors are responsible for ensuring that the procedures contained in this document are available to and are followed by all project related personnel in the field, including workers, vendors, suppliers, client personnel and community members affiliated with or affected by the project. Field Supervisors are responsible for leading daily safety meetings, which shall include daily reminders of and training for COVID-19 precautions and safety measures.

Field Supervisors shall conduct daily health assessments of personnel. If personnel become sick at work the field supervisor shall immediately quarantine the individual and notify the project management team.

Field Personnel – Field personnel are responsible for following the procedures contained in this document; for reporting any unsafe or unsanitary conditions; and for immediately self-reporting and self-quarantining if they have any illness symptoms. Field personnel are responsible for helping to maintain safe, clean and healthy work sites.

COVID-19 General Information

COVID-19

The most recent information regarding the Corona Virus Pandemic provided by the CDC states:

The CDC is responding to a pandemic of respiratory disease spreading from person-to-person caused by a novel (new) coronavirus. The disease has been named “coronavirus disease 2019” (abbreviated “COVID-19”). This situation poses a serious public health risk. The federal government is working closely with state, local, tribal, and territorial partners, as well as public health partners, to respond to this situation. COVID-19 can cause mild to severe illness; most severe illness occurs in older adults.

Symptoms

COVID-19 Symptoms may appear 2-14 days after exposure and have been described by the CDC as but not limited to:

- Fever
- Shortness of breath
- dry cough

Emergency Medical Conditions – Severe symptoms described by the CDC as requiring immediate medical attention include but not limited to:

- Trouble breathing
- Persistent pain or pressure in the chest
- New confusion or inability to arouse
- Bluish lips or face

How The Virus Is Transmitted - The virus is thought to be spread primarily from person-to-person transmission inclusive of the following:

- People who are in close proximity, generally less than 6 feet, with other people who are infected

- Respiratory droplets produced when an infected person coughs or sneezes which can land in the mouths or noses of people who are nearby or possibly be inhaled into the lungs
- Touching a surface or object that has COVID-19 on it and then touching one's own mouth, nose, or possibly the eyes

Other Notes – The following should be considered:

- A person may NOT have a fever and yet still be a carrier of the virus
- People are most contagious when they are symptomatic, for example, experiencing fever, cough, and/or shortness of breath
- Asymptomatic and mildly symptomatic individuals can and also spread COVID-19
- A person without an elevated temperature does not mean he/she has a clean bill of health
- There have been numerous reports of inaccurate temperature readings from the forehead scan type thermometer
- Temperature testing does NOT ensure there is no communicable disease in the workplace and does not prevent the spread of disease
- Many cases are referred to as asymptomatic, which means that some individuals report no symptoms at all, but can still be carriers of the virus and can infect others

Screening – Management Teams shall maintain contact with local, state and federal agencies regarding the rapidly changing COVID-19 screening protocols and COVID-19 testing locations. The following are mandates that are currently in place in the State of Alaska:

- Employees who have travelled from outside the state of Alaska shall not be allowed to report to work prior to a 14-day quarantine period in accordance with DHSS guidelines.
- After the 14-day quarantine period, and prior to being deployed to remote job sites, personnel shall be screened per CDC and state guidelines. (See Wellness Screening Form, Appendix A.) Screening of individuals shall consist of:
 - Screening questions focusing on recent travel locations, known contact with persons known or suspected to have COVID-19, and current symptoms (i.e. fever, dry cough, difficulty in breathing, and/or fatigue)
 - Temperature screen for 100. F or greater to be taken on the same day of travel
- Personnel who do not pass the screening criteria shall not be allowed to mobilize to the jobsite and shall remain in quarantine until the employee is clear from any symptoms and/or has been deemed safe to return to work by a medical professional or qualified member of the Management Team
- Site Supervisors shall remain diligence in making sure that personnel are healthy and fit for work and shall remove, quarantine and report any employee who exhibits the above symptoms.

Emergency Response

Management Teams shall ensure that Emergency Response Plans are in place prior to mobilizing crews to new locations or allowing crews to continue working in existing locations. The Emergency response plans shall be site specific for each project location and shall include the following at a minimum:

- Project name and physical location of the work sites
- Emergency contact list of all project personnel, up to the executive management level responsible for the project
- Quarantine plans and locations for taking care of sick personnel
- Emergency and non-emergency transport plans to remove sick personnel from jobsites
- Locations of emergency medical supplies and PPE for the project
- Reporting matrix with contact information to report infected personnel
- Names, phone numbers and physical addresses of Designated Site Supervisors responsible for monitoring conditions and activating emergency response
- Names, addresses and phone numbers of the following entities:
 - Hospitals
 - Medical clinics
 - Emergency response shelters
 - Police
 - Fire
 - Ambulance
 - Airlines for evacuation if remote
 - Local supply companies (if any)

Social Distancing

In accordance with CDC, WHO and other local, state and federal guidelines and recommendations, Management Teams shall implement Social Distancing procedures to help limit or minimize contact between personnel and other people to help stop the transmission of the coronavirus. Social Distancing procedures shall include the following at a minimum and shall be updated as conditions, guidelines and recommendations change:

- Avoid gatherings of any size both internal and external to operations
- Perform meetings online or via conference call whenever possible
- Discontinue contact greetings such as hugs and handshakes
- Avoid physical contact and practice social distancing, including keeping at least 6 feet of separation from others when possible
- Discontinue collection of handwritten or iPad signatures for safety meetings and instead have the on-site supervisor document meetings and attendance
- Do not congregate in lunch or break room areas

- Have staggered break and lunch times when possible to prevent multiple personnel from being in the same location at the same time
- Limit the number of personnel in a single vehicle to avoid physical contact
- Provide single status rooms
- Allow only essential critical infrastructure personnel and stake holders on locations
- Require all non-essential personnel to work from home when feasible
- Limit face-to-face interactions as much as possible
- Limit trips to populated areas to essential travel for necessities only

Prior To Mobilization

Project Management Teams shall assist with minimizing impacts to communities and limiting interactions with others to the extent possible throughout the duration of all projects. Prior to mobilization, project teams shall ensure that every practical effort has been made to provide for the following:

- That personnel are healthy and ready for work
- All necessary housing and transportation have been arranged
- Availability and/or delivery of Food (or food service)
- Project materials and supplies have been obtained or located
- Acquisition of all required PPE, First-Aid response kits and consumables

Crews shall not mobilize to remote locations until all supplies necessary to safely execute the project have been located, and adequate housing and transportation to provide safe working and living conditions have been obtained.

Project Management Teams shall coordinate with local community leaders and governing entities prior to mobilization. Discuss site-specific plans, and any local/community considerations.

Mobilization/Transportation

Understanding that many remote locations require multiple transportation methods, the following precautions shall be taken to help minimize COVID-19 transmission risks during mobilization and transportation:

- Personnel must pass the health screening process prior to mobilization
- Modes of transportation must be approved by the Project Management Team
- All transportation vehicles, including marine vessels and aircraft shall be cleaned and sanitized in accordance with CDC guidelines prior to each transport
- Transportation methods shall allow adequate space between personnel and overcrowding of transportation methods shall be prohibited
- All vehicles, vessels and aircraft shall contain first-aid kits and PPE to assist if an employee becomes ill during transit

Sanitizing/Housekeeping

The CDC recommends the following cleaning and sanitizing measures in the workplace and at home:

- Cleaning refers to the removal of germs, dirt, and impurities from surfaces. Cleaning does not kill germs, but by removing them, it lowers their numbers and the risk of spreading infection. Clean soiled surfaces before disinfecting.
- Disinfecting refers to using chemicals to kill germs on surfaces. This process does not necessarily clean dirty surfaces or remove germs, but by killing germs on a surface *after* cleaning, it can further lower the risk of spreading infection.
 - A simple disinfecting solution of 1/3 cup of bleach to one gallon of water will kill the coronavirus
 - Isopropyl alcohol 70% or greater will kill the coronavirus
 - Other disinfectants registered with the EPA are also effective
- Ensure that all surfaces and common shared surfaces are cleaned and disinfected daily, including cell phones, computers, table-tops, desktops, doorknobs, copy machine buttons, touch screens, phone receivers, key boards, light switches, faucets handles, hand and power tools, construction equipment, vehicles, break rooms, restrooms, living quarters and all other work and residential areas.
- Ensure that clothing and bedding are laundered in the hottest water possible.
- Empty trash daily and have a separate closed trash receptacle for disposal of potentially contaminated waste, such as PPE, tissues, food waste, paper towels, disposable plates, cups and utensils
- Clean and disinfect trash cans
- Clean and disinfect surfaces of service and fleet vehicles prior to use, including steering wheels, gear shifters, instrument panels, door handles, control knobs and switches and use aerosol sanitizers inside of closed cabs

Personal Hygiene

Personal Hygiene is crucial to stopping the spread of COVID-19. (See Appendix B) In order to help stop the spread of germs at work it is critical that personnel practice the following:

- Frequent hand washing for 20 seconds with soap and water, or utilizing hand sanitizer (See Appendix C)
- Cover nose and mouth when coughing or sneezing with arm or tissue, dispose of tissue after use and wash hands after coughing or sneezing
- If possible, do not share tools. Disinfect tools between use by separate employees
- Do not share personal protection equipment (PPE)
- Sanitize reusable PPE per manufacturer's recommendation prior to each use
- Ensure used PPE is disposed of properly and ensure that proper decontamination methods are used when in contact with known COVID-19 contaminated areas

- Utilize disposable gloves where appropriate and wash hands after removing gloves
- Disinfect reusable supplies and equipment
- Utilize disposable hand towels and no-touch trash receptacles
- Request frequent cleaning and sanitation of portable toilets
- Avoid cleaning techniques – such as using pressurized air or water sprays that may result in the generation of bio-aerosols
- Ensure that cleaning and sanitizing supplies are available to employees so that they may clean their work surfaces in their workspaces daily
- Provide reminders and time to the employees to clean their workspaces
- Avoid touching face, especially eyes, nose and mouth

Self-Quarantine If Sick

It is critical that individuals NOT report to work while they are experiencing illness symptoms such as fever, cough, shortness of breath, sore throat, runny/stuffy nose, body aches, chills, or fatigue – Personnel shall inform their supervisor immediately, self-quarantine, stay isolated from others and should seek medical attention if they develop these symptoms!

If an employee becomes sick at work the Site Supervisor shall:

- Isolate and return infected personnel home as quickly as possible
- Notify the Project Management Team immediately upon discovering symptoms
- Limit interaction to one person for taking care of personnel who are quarantined
- Follow CDC guidelines and seek medical help to care for individuals in quarantine

OSHA Guidance

Current OSHA guidance can be found here: <https://www.osha.gov/SLTC/covid-19/>

See Appendix D for OSHA Alert Poster.

Don't Be Fools! Follow The Rules!

Appendix A – Wellness Screening Form

Wellness Screening for Remote Work Location Deployment

In addition to the screening measures listed in the form below, the Management Team will closely monitor Center for Disease Control (CDC) guidance on the best practices for prevention and response during this rapidly changing pandemic situation.

Conducting temperature checks on employees prior to deployment to a jobsite is a decision that we does not take lightly. During this pandemic, because of concerns for the health and safety of our workers and the public, it will be our policy to conduct such screenings.

Fairbanks Memorial Hospital
Coronavirus Hotline
(907) 458-2888

Employee Name: _____

Date/Time of screen: _____

1. Have you traveled within the previous 14 days? NO YES

○ If yes, where? _____

2. Temperature recorded (°F): _____ (if ≥ 100.4 , verify temp. with second screen)

3. Do you have or have you recently had any of the following symptoms (circle):

- Fever
- Dry cough
- Difficulty in breathing ** Symptoms may appear 2-14 days after exposure.
- Fatigue

Employees who meet any one of the following criteria will not be mobilized to the jobsite without a medical examination and clearance:

- Traveled to countries labeled by CDC as Level 3 Travel Health Notice
- Known contact with a person known or suspected to have COVID 19
- Screening temperature of 100.4 or higher
- Visible or self-reported symptoms of COVID-19

Although these screenings are being conducted in good faith over concerns for employee and public health related to remote job sites, each employee should know the following:

1. A person may NOT have a fever and yet still be a carrier of the virus.
2. A person without an elevated temperature does not mean he/she has a clean bill of health.
3. Temperature testing does NOT ensure there is no communicable disease in the workplace. It does not prevent the spread of disease. It is simply one precautionary screen that can help inform whether or not an employee should deploy to remote site work.

Temperature Screener Signature: _____

Appendix B – Personal Hygiene Poster

STOP THE SPREAD OF GERMS AT WORK



● **COVER YOUR MOUTH AND NOSE WHEN YOU SNEEZE OR COUGH.**

Cough or sneeze into a tissue and then throw it away; use your arm or sleeve to cover if you do not have a tissue.

● **CLEAN YOUR HANDS OFTEN.**

Wash your hands with soap and water, vigorously rubbing together front and back for 20 seconds. Or use alcohol-based hand sanitizers, rubbing hands until they are dry.



● **CLEAN SHARED SURFACES AND EQUIPMENT OFTEN.**

Use disinfectants to clean commonly touched items such as doorknobs, faucet handles, copy machines, coffee pot handles, desktops, handrails, microwave buttons, keyboards, and elevator buttons. Germs travel fast with multiple hands touching shared surfaces.

● **AVOID TOUCHING YOUR EYES, NOSE OR MOUTH.**

Germs need an entry point, and the average adult touches his or her face once every three or four minutes. Keep hand sanitizer at your desk to use after meetings or before grabbing one of those doughnuts from the breakroom.



● **STAY HOME WHEN YOU ARE SICK AND CHECK WITH A HEALTH CARE PROVIDER WHEN NEEDED.**

When you are sick or have flu symptoms, stay home, get plenty of rest and check with a health care provider as needed.



Appendix C – Hand Washing Poster



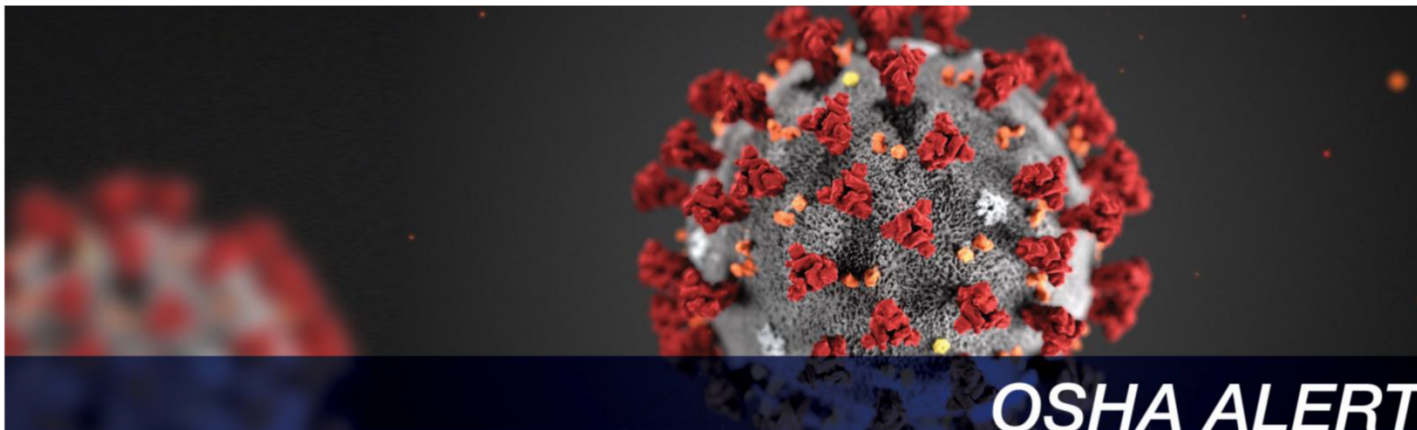
KEEP
CALM
AND
WASH
YOUR
HANDS



U.S. Department of
Health and Human Services
Centers for Disease
Control and Prevention

CS243041B

Appendix D – OSHA Alert Poster



Prevent Worker Exposure to Coronavirus (COVID-19)

The novel coronavirus (officially called COVID-19) is believed to spread from person-to-person, primarily through respiratory droplets produced when an infected person coughs or sneezes. The virus is also believed to spread by people touching a surface or object and then touching one's mouth, nose, or possibly the eyes.

Employers and workers should follow these general practices to help prevent exposure to coronavirus:

- Frequently wash your hands with soap and water for at least 20 seconds.
- If soap and running water are not available, use an alcohol-based hand rub that contains at least 60% alcohol.
- Avoid touching your eyes, nose, or mouth with unwashed hands.
- Avoid close contact with people who are sick.

Employers of workers with potential occupational exposures to coronavirus should follow these practices:

- Assess the hazards to which workers may be exposed.
- Evaluate the risk of exposure.
- Select, implement, and ensure workers use controls to prevent exposure, including physical barriers to control the spread of the virus; social distancing; and appropriate personal protective equipment, hygiene, and cleaning supplies.

For the latest information on the symptoms, prevention, and treatment of coronavirus, visit the [Centers for Disease Control and Prevention coronavirus webpage](#).

For interim guidance and other resources on protecting workers from coronavirus, visit OSHA's [COVID-19 webpage](#).

OSHA issues alerts to draw attention to worker safety and health issues and solutions.

GUIDANCE FOR FIELD WORK DURING THE COVID-19 PANDEMIC

The purpose of this document is to provide guidance to individuals conducting field work during the outbreak of the coronavirus disease (COVID-19). COVID-19 is a respiratory illness spread by person-to-person contact. In order to slow and prevent the spread of COVID-19, Shannon & Wilson project managers (PM)s and staff shall stay informed with local, state and federal agencies regarding the rapidly changing COVID-19 health mandates, and screening protocols. Field personnel shall adhere to the guidelines provided by the Center for Disease Control (CDC). Shannon & Wilson staff shall also adhere to client safety and COVID-19 requirements.

Symptoms of COVID-19 include:

- Fever,
- Cough,
- Shortness of breath,
- Trouble breathing,
- Persistent pain or pressure in the chest,
- New confusion or inability to arouse, and
- Bluish lips or face.

If field personnel experience any of these symptoms or are feeling sick, they should immediately report their symptoms to the (PM) or their supervisor.

Field personnel should check their internal temperature prior to departing to the work site. If a member of the field personnel's household is sick, field personnel should inform the PM or their supervisor.

Field personnel should not report to work if they are ill.

The following practices should be followed as applicable:

- Travel to and from the work site in separate vehicles.
- Wipe down surfaces with sanitizing wipes prior to touching them.
- Maintain a social distance of 6 feet apart, if possible. When not possible, wear a mask. Acceptable masks include manufactured particulate masks, hand-sewn ("homemade") cloth masks, or other styles that cover the wearer's mouth and nose.

- Air purifying respirators with HEPA filter cartridges may be used if the employee has received medical clearance to do so and uses a properly fitted respirator.
- Avoid touching face, especially mouth, nose and eyes.
- Cover sneezes or coughs.
- Assign separate tasks to avoid sharing tools.
- Wash hands with soap and water for at least 20 seconds, when possible.
- Use hand sanitizer with at least 60% alcohol when soap and water are not available.
- Wear disposable gloves, and dispose of them in a trash receptacle after use.
- Stay informed, monitor local conditions, and stay up to date on policy changes enacted by the local, state and federal government.

Additional Information

Additional information regarding what to do if you are experiencing symptoms you suspect are related to COVID-19 can be found on the following websites:

<https://www.cdc.gov/coronavirus/2019-ncov/if-you-are-sick/index.html>

Alaska Department of Health and Social Services COVID-19 website:

<http://dhss.alaska.gov/dph/Epi/id/Pages/COVID-19/default.aspx>.

Alaska Office of the Governor website: <https://gov.alaska.gov/>.

For current information related to COVID-19 in Alaska you can dial 211 or 1-800-478-2221 from 7am to 8 pm 7 days a week.



PROPER DISINFECTION OF VEHICLES, SHARED EQUIPMENT, AND COMMON SURFACES

- Create a cleaning/disinfecting plan including:
 - What is being cleaned;
 - When cleaning is to occur;
 - Who is responsible for cleaning what; and
 - How to do it.
- Cleaning (dirt and dust removal by wiping or vacuuming) followed by disinfection must always be performed before and after each day and again if there are known or suspected infectious materials, such as if an employee has a highly contagious infection (e.g. COVID-19). All surfaces must be coated with a disinfectant product, remain wet for at least 5 minutes and allowed to air dry.



Disinfection is to be done using cleaning wipes, spray, or fresh bleach solution. All surfaces must be coated with the product and allowed to air dry. Bleach solution is made by combining ¼ cup bleach with 1 ¼ gallons of water (<https://www.cdc.gov/disasters/bleach.html>). Any solution less than 10% may not be an effective disinfectant.

Bleach solutions must be freshly made immediately prior to decontamination and must be discarded after use. Solutions older than 24 hours may not be effective.

<https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2>

- Assign one individual to clean each piece of equipment (or a defined set of pieces) upon arrival each day and on a regular basis during the day, including sinks, copiers, tables, interior and exterior door handles, door-push panels, coffee pots, microwave control panel and door, refrigerator handle, light switches, etc.

- Post signs in common areas reminding everyone to keep them clean.
- Truck users should be responsible for cleaning trucks before and after each day.
- Stock trucks with gloves, wipes, sanitizer, and disinfectant spray.
- Use wipes for localized surficial cleaning while in transit, such as after getting gas or food.
- Consider purchasing redundant pieces of equipment that might limit shared usage (field tools, common-area tools such as staplers, etc.).
- Please reference the *COVID-19 Best Practice Guidelines* for site-specific health & safety plans. The language for both these forms should be added to the JHA section of your SSHSP. Instruct all field staff and/or subcontractors to review at the beginning of each shift.

COVID-19 compared to other common conditions

SYMPTOM	COVID-19	COMMON COLD	FLU	ALLERGIES
Fever	Common	Rare	Common	Sometimes
Dry cough	Common	Mild	Common	Sometimes
Shortness of breath	Common	No	No	Common
Headaches	Sometimes	Rare	Common	Sometimes
Aches and pains	Sometimes	Common	Common	No
Sore throat	Sometimes	Common	Common	No
Fatigue	Sometimes	Sometimes	Common	Sometimes
Diarrhea	Rare	No	Sometimes*	No
Runny nose	Rare	Common	Sometimes	Common
Sneezing	No	Common	No	Common

*Sometimes for children

Sources: CDC, WHO, American College of Allergy, Asthma and Immunology

BUSINESS INSIDER

GUIDANCE FOR RESIDENTIAL WATER SAMPLING DURING THE COVID-19 PANDEMIC

This document provides guidance to Shannon & Wilson, Inc. employees conducting residential water sampling during the outbreak of the coronavirus disease (COVID-19). COVID-19 is a respiratory illness primarily spread by person-to-person contact and airborne particulate matter. Residential sampling requires special considerations due to the nature of the work, where Shannon & Wilson sampling staff enter people's properties and homes in order to collect a water sample. During these sampling events, staff may enter a property owner's or occupant's self-isolation area and may be in close proximity to those persons. In order to slow the spread of COVID-19, Shannon & Wilson has implemented practices to protect both staff and the resident. Shannon & Wilson project managers (PMs) and staff shall stay informed with local, state and federal COVID-19 health mandates as well as client-specified requirements and guidelines. Shannon & Wilson field personnel shall adhere to these guidelines.

Shannon & Wilson project staff will work closely with our clients prior to the planned sampling event to determine if a project should be considered essential work. For field work where travel to communities other than Fairbanks occurs, PMs and project staff will check for local health mandates or recommendations to ensure the community is open to outside essential-business travel before scheduling the sampling event. PMs and staff should also verify the availability of, and additional precautions required by, hotels and other businesses we may rely on during our travels (i.e. restaurants, grocery stores, car rental facilities, hardware stores, etc.).

Prior to scheduling travel, PMs or field staff will contact local government or tribal leadership to assist in determining whether members of the community would be willing to allow staff into their homes to collect samples during this time. Shannon & Wilson staff will not travel to rural communities until we receive permission from the local and/or tribal government. PMs will document the permission and save to the project file.

Where possible, staff will contact individual residents prior to the planned sampling event to determine if they are agreeable to staff entering their premises during the COVID-19 outbreak. Staff are not permitted to collect samples where either the owner or occupant refuses access. During the initial conversation, staff will ask a series of questions to determine if the environment is safe for our staff to enter. Where contact information is not available, staff will publicize the sampling event prior to arrival using available avenues.



Notification tools may include public notices, radio and other news outlets, email list serves, social media posts, and speaking with key community members.

Below is a list of questions staff will ask residents during the initial scheduling of the sampling appointment, and prior to entering the premises.

- Are you feeling sick?
- Has anyone in the household or recent guests experienced symptoms of COVID-19?
- Has anyone in the household or recent guests traveled outside of Alaska within the last 14 days, or are fulfilling a mandated quarantine?
- Have you been in contact with anyone who has been diagnosed with COVID-19 or experiencing symptoms of COVID-19 within the last 14 days?

If the answer is “yes” to any of these questions, sampling at that 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, a sample will not be collected at that time. Sampling may also occur after a 14-day period has passed and the answer to the questions are no longer “yes”.

While in the community, staff will minimize our exposure and contact, limiting activities to essential business and the outdoors. As a result, we will not hold or join public meetings.

Below are guidelines for traveling to other communities and sampling residential water wells.

- Follow Shannon & Wilson’s *COVID-19 Best Practices and Guidelines and Proper Disinfection of Vehicles, Shared Equipment, and Common Surfaces* plans.
- Follow local, state, federal and client COVID-19 screening guidelines prior to traveling. DO NOT travel if you don’t meet the screening criteria.
- Follow airline-specified requirements for travel.
- While in the field, check body temperature daily before reporting to work. If you have an elevated temperature (greater than 100.4 °F), contact your supervisor or project PM immediately.
- Do not enter occupant property without consent. Let occupant know it is ok to not give permission.



- Wear mask or cloth covering at all times while on occupants' premises and during travel. The sampler will also have a respirator available to wear and use their discretion on when to use it, such as if they are indoors for five minutes or more with someone not wearing a face covering. Prior to wearing the respirator inside the building, the sampler will explain this option to the resident to ease potential fears.
- Cold knocking may be necessary (i.e., initial well searches, no contact information for new occupants, etc.), and require our staff to visit a property without the occupants prior knowledge. Staff will knock on the door, and then back up a minimum of 6 feet from the door. Staff will be wearing a mask and gloves to knock on doors.
- Initial conversations are to be held outside. During this time the sampler will discuss safety for both occupant and sampler. Ask where the nearest sampling point is and explain that for everyone's well-being it is best staff only go a necessary minimal distance into the home.
- The sampler will purge well and sample from an outside spigot, where possible. Inside samples should only be collected where an outside spigot is not available. Field staff will minimize their time spent indoors.
- Request the occupant wear a mask while staff is on the premises. If the occupant refuses, the continuation for sampling at that residence will be at the discretion of the sampling staff. It is likely our staff will not collect a sample in these situations. Staff will arrive at the site with individually pre-packaged masks for residents to wear if they do not already have one.
- Wear nitrile gloves at all times while on the premises. A new pair of gloves should be put on prior to initiating any contact with a residence.
- Ask that occupants stay at least 6 feet away at a minimum. If a resident does not maintain 6 feet distance, our staff have the discretion to leave the premises and not collect a sample at that time.
- Avoid any person to person contact and maintain 6 feet distance from people.
- Ask residents the questions on the questionnaire, don't pass them the paper and ask them fill it out. Staff will not share pens or pass paperwork back and forth during the appointment. However, we will provide copies of paper documents to residents for their reference, where necessary (fact sheets, project contact information, etc.). We will not accept back any paperwork once it has been handled by a resident.



- Wipe down surfaces with a disinfectant prior to and after touching them.
- Only take minimum required sampling equipment into the residence. This will reduce the amount of equipment required to be disinfected and disinfectant supplies.
- Disinfect equipment between residences.
- Don't throw nitrile glove or other refuse in the resident's trash. Keep a closed trash collection point with the sampling equipment and regularly dispose of contents at an approved site such as a dumpster or landfill.

This document is supplemental to our site specific health and safety plan (SSHSP). The guidelines and emergency response plan in the SSHSP should be followed as well as the guidelines outlined in this document.

Additional Information

Additional information regarding what to do if you are experiencing symptoms you suspect are related to COVID-19 can be found on the following websites:

<https://www.cdc.gov/coronavirus/2019-ncov/if-you-are-sick/index.html>

Alaska Department of Health and Social Services COVID-19 website:

<http://dhss.alaska.gov/dph/Epi/id/Pages/COVID-19/default.aspx>.

Alaska Office of the Governor website: <https://gov.alaska.gov/>.

Current information related to COVID-19 in Alaska is available by phone at 211 or 1-800-478-2221 from 7am to 8 pm 7 days a week.

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 ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland