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TECHNICAL MEMORANDUM

18 September 2023
File No. 0204475-001

TO: Washington State Department of Ecology
John F. Rapp, L.H.G.

FROM: Haley & Aldrich, Inc.
Heather Good, L.H.G., Associate Hydrogeologist
Mike Ehlebracht, L.H.G., Principal Geochemist

SUBJECT: Remedial Investigation Work Plan Revisions, Whidbey Marine & Auto Supply Site
1695 East Main Street, Freeland, Washington

This memorandum (memo) outlines Haley & Aldrich, Inc.'s (Haley & Aldrich's) recommended revisions to Haley & Aldrich's May 2022 Remedial Investigation (RI) Work Plan for the Whidbey Marine & Auto Supply Site (Site; Facility Site ID No. 17222251, Cleanup Site ID No. 5610)¹. The May 2022 RI Work Plan with the revisions outlined in this memo and the attached Quality Assurance Project Plan (QAPP), Health and Safety Plan (HASP), and Inadvertent Discovery Plan (IDP) provide the basis for RI activities that Haley & Aldrich will perform at the Site on behalf of the Washington State Department of Ecology (Ecology) under Ecology Contract No. C2300127. The scope of work (SOW) outlined herein may change based on results of an initial baseline sampling event, utility or property access constraints, right-of-way permit requirements or restrictions, inadvertent discovery of cultural resources, or additional investigative work.

The following RI activities will be conducted in accordance with the sampling and analysis plan (SAP) included as Appendix A to the May 2022 RI Work Plan and the attached QAPP, HASP, and IDP. The results of these investigations will inform the development of a remedial investigation report and subsequent feasibility study.

Well Condition Survey and Gauging

A well condition survey and water level gauging event was conducted on 20 July 2023, to evaluate the condition of and static water level conditions in each of the 18 existing Site monitoring wells (see Figure 1). Observations and measurements collected during that event are summarized in the attached

¹ Haley & Aldrich. 2022. Remedial investigation work plan, Whidbey Marine & Auto Supply. Prepared for Washington State Department of Ecology. Hart Crowser, a division of Haley & Aldrich, Inc. Seattle, Washington. May.

groundwater gauging form. Based on the observed well conditions, none of the wells need to be excluded from or repaired before future redevelopment or sampling. Each well had a cap in good working order and there was no apparent damage to the casings. In general, minor equipment replacement and well maintenance is recommended, including replacing missing locks and well cap bolts, removing tubing present in the wells that may have been associated with former bladder pump usage, and removing accumulated soil from the well monuments. These issues will be addressed as part of well redevelopment activities to be conducted as part of the baseline sampling event.

One existing well, MW-14D, was missing a lid but was covered with spray foam insulation. A replacement lid will be requested from the drilling contractor during the new well installation. New same-keyed locks will be applied to each well cap following the new well installation and a key will be provided to the Ecology site manager.

Baseline Sampling Event

Haley & Aldrich will redevelop, measure static water levels, and sample 13 of the existing groundwater monitoring wells as identified in Table 1 and shown in Figure 1. This subset of the existing wells was selected for inclusion in the baseline sampling event based on two criteria: 1) the well is completed in the Sea Level Aquifer (deep well) and is located in an inferred downgradient direction from a previous exceedance(s); or 2) the well is completed in either the perched groundwater water-bearing zone (shallow well) or Sea Level Aquifer and exhibited a previous exceedance, as summarized in Table 1². Previous exceedances are defined by one or more chemical of concern (COC) concentrations greater than a preliminary cleanup level (CUL)³ detected during one or more of the four most recent sampling events. Inferred groundwater flow directions, COCs, preliminary CULs, and previous sampling results are provided in the May 2022 RI Work Plan and the 2017 SoundEarth Strategies, Inc. Preliminary Planning Assessment report⁴.

One groundwater sample will be collected from each of the 13 wells during the baseline sampling event and one field duplicate sample will be collected. The samples will be analyzed on a standard turnaround time for the analytes summarized in Table 1. Collectively, the baseline sampling event and the initial sampling of newly installed groundwater monitoring wells, discussed in the next section, will constitute the first quarterly sampling event.

The results of the baseline sampling event will be evaluated to determine which wells to sample during the quarterly monitoring events and for any changes to this SOW prior to conducting the additional investigative work discussed below.

² A description of the Site hydrogeology, including characterization of the perched groundwater water-bearing zone and the Sea Level Aquifer, is included in the May 2022 RI Work Plan.

³ Preliminary CULs are presented in the May 2022 RI Work Plan and are based on Model Toxics Control Act Method A values.

⁴ SoundEarth Strategies, Inc. 2017. Preliminary planning assessment, former Whidbey Marine & Auto Supply. SoundEarth Strategies, Inc. Seattle, Washington. 23 October.

Additional Investigative Work

Haley & Aldrich will complete four temporary borings to 130 feet below ground surface (bgs) and five borings to 150 feet bgs that will be completed as new monitoring wells screened in the Sea Level Aquifer (deep wells). Proposed boring and new monitoring well locations are shown in Figure 1 and a rationale for selection of each of location is summarized in Table 1. A rationale for modification of the proposed investigation locations presented in the May 2022 RI Work Plan is summarized in Table 2. Soil and grab groundwater samples will be collected from each boring and new monitoring well and analyzed on a standard turnaround time for the analytes summarized in Table 1. Three soil duplicate samples (one from the temporary boring locations and two from the new monitoring well locations) and two grab groundwater duplicate samples (one from the temporary borings locations and one from the new monitoring well locations) will also be collected and analyzed.

The newly installed monitoring wells will be developed, and an initial sampling event will be conducted. The initial sampling event will include measurement of static water levels and collection of one groundwater sample from each of the five new monitoring wells. One field duplicate sample will also be collected. The samples will be analyzed on a standard turnaround time for the analytes summarized in Table 1. Collectively, the baseline and initial sampling events will constitute the first quarterly sampling event.

Quarterly Monitoring

Following completion of the additional investigative work discussed above, Haley & Aldrich will conduct three more quarterly groundwater monitoring events including measurement of static water levels and collection of one groundwater sample from each of the five new monitoring wells installed during the additional investigative work and up to 10 of the existing monitoring wells. One field duplicate sample will also be collected during each quarterly event. The samples will be analyzed on a standard turnaround time for the analytes summarized in Table 1.

Haley & Aldrich will evaluate results from the baseline sampling event and additional investigative work to determine which wells to include in these events. Haley & Aldrich will make a recommendation to the Ecology site manager and will obtain their approval before finalizing the selection of wells.

Attachments:

Table 1 - Proposed Soil and Groundwater Sampling and Analysis Plan

Table 2 - Rationale for Modifications to Proposed Additional Investigation Locations

Figure 1 - Site Plan and Proposed Investigation Locations

Groundwater Gauging Form

Quality Assurance Project Plan

Health and Safety Plan

Inadvertent Discovery Plan

https://haleyaldrich.sharepoint.com/sites/WashingtonStateDepartmentofEcology261/Shared Documents/0204475.Whidbey Marine Auto Supply Site/Deliverables/RI Work Plan Memo/Final/2023_0918_HAI_RIWP_Memo_F.docx

TABLES

TABLE 1
PROPOSED SOIL AND GROUNDWATER SAMPLING AND ANALYSIS PLAN
WHIDBEY MARINE AND AUTO SUPPLY SITE
FREELAND, WASHINGTON

Event	Existing Monitoring Well ID/Temporary Location ID	Location Type ^a	Rationale ^b	Proposed Total Exploration Depth (ft bgs) ^c	Sample Matrix	Approximate Sample Depth or Screened Interval Depth for Water Samples (ft bgs) ^{c,d}	Proposed Analyses ^e									
							TPH	VOCs	EDB, EDC, MTBE	PAHs	Lead and Arsenic ^f	VPH/EPH ^g	TOC ^g	TSS	BTEX	Geochemical Parameters ^h
Baseline Sampling	MW-2S	Existing Shallow Monitoring Well	Shallow well with previous exceedance.	--	Water (well sample)	50 to 60	X	X	X	X	X	--	X	X	--	X
	MW-4S	Existing Shallow Monitoring Well	Shallow well with previous exceedance.	--	Water (well sample)	46 to 56	X	X	X	X	X	--	X	X	--	X
	MW-6S	Existing Shallow Monitoring Well	Shallow well with previous exceedance.	--	Water (well sample)	51 to 61	X	X	X	X	X	--	X	X	--	X
	MW-7S	Existing Shallow Monitoring Well	Shallow well with previous exceedance.	--	Water (well sample)	49 to 59	X	X	X	X	X	--	X	X	--	X
	MW-8S	Existing Shallow Monitoring Well	Shallow well with previous exceedance.	--	Water (well sample)	51 to 61	X	X	X	X	X	--	X	X	--	X
	MW-9D	Existing Deep Monitoring Well	Deep well with previous exceedance.	--	Water (well sample)	100 to 110	X	X	X	X	X	--	X	X	--	X
	MW-12D	Existing Deep Monitoring Well	Deep well with previous exceedance.	--	Water (well sample)	100 to 110	X	X	X	X	X	--	X	X	--	X
	MW-13D	Existing Deep Monitoring Well	Deep well with previous exceedance.	--	Water (well sample)	98 to 108	X	X	X	X	X	--	X	X	--	X
	MW-14D	Existing Deep Monitoring Well	Deep well located downgradient of previous exceedance.	--	Water (well sample)	99 to 109	X	X	X	X	X	--	X	X	--	X
	MW-15D	Existing Deep Monitoring Well	Deep well located downgradient of previous exceedance.	--	Water (well sample)	101 to 111	X	X	X	X	X	--	X	X	--	X
	MW-16D	Existing Deep Monitoring Well	Deep well located downgradient of previous exceedance.	--	Water (well sample)	100 to 110	X	X	X	X	X	--	X	X	--	X
MW-17D	Existing Deep Monitoring Well	Deep well with previous exceedance.	--	Water (well sample)	100 to 115	X	X	X	X	X	--	X	X	--	X	
MW-18D	Existing Deep Monitoring Well	Deep well located downgradient of previous exceedance.	--	Water (well sample)	100 to 115	X	X	X	X	X	--	X	X	--	X	
Additional Investigative Work	1	Proposed Temporary Boring	To evaluate vertical and lateral extent to the east of previously identified soil and perched groundwater WBZ impacts.	130	Soil	15 to 20 (unsaturated source zone)	X	X	X	X	X	TBD	TBD	--	--	--
					Soil	25 to 30 (unsaturated source zone)	X	X	X	X	X	TBD	TBD	--	--	--
					Soil	<50 (capillary zone of perched WBZ)	X	X	X	X	X	TBD	TBD	--	--	--
					Soil	50 (top of perched WBZ)	X	X	X	X	X	TBD	TBD	--	--	--
					Water (grab)	50 to 60 (perched WBZ)	X	--	--	--	--	--	--	X	X	--
					Soil	100 (top of Sea Level Aquifer)	X	X	X	X	X	TBD	TBD	--	--	--
	2	Proposed Temporary Boring	To evaluate current COC concentrations in soil and the perched groundwater WBZ in the former UST release area where the highest soil COC concentrations have previously been detected.	130	Soil	15 to 20 (unsaturated source zone)	X	X	X	X	X	TBD	TBD	--	--	--
					Soil	25 to 30 (unsaturated source zone)	X	X	X	X	X	TBD	TBD	--	--	--
					Soil	<50 (capillary zone of perched WBZ)	X	X	X	X	X	TBD	TBD	--	--	--
					Soil	50 (top of perched WBZ)	X	X	X	X	X	TBD	TBD	--	--	--
					Water (grab)	50 to 60 (perched WBZ)	X	--	--	--	--	--	--	X	X	--
					Soil	100 (top of Sea Level Aquifer)	X	X	X	X	X	TBD	TBD	--	--	--
	3	Proposed Temporary Boring	To evaluate vertical and lateral extent to the north of previously identified soil and perched groundwater WBZ impacts.	130	Soil	15 to 20 (unsaturated source zone)	X	X	X	X	X	TBD	TBD	--	--	--
					Soil	25 to 30 (unsaturated source zone)	X	X	X	X	X	TBD	TBD	--	--	--
					Soil	<50 (capillary zone of perched WBZ)	X	X	X	X	X	TBD	TBD	--	--	--
					Soil	50 (top of perched WBZ)	X	X	X	X	X	TBD	TBD	--	--	--
					Water (grab)	50 to 60 (perched WBZ)	X	--	--	--	--	--	--	X	X	--
					Soil	100 (top of Sea Level Aquifer)	X	X	X	X	X	TBD	TBD	--	--	--
	4	Proposed Temporary Boring	To evaluate the extent of LNAPL previously observed in monitoring well MW-9D and the extent of the perched groundwater WBZ in this area.	130	Soil	15 to 20 (unsaturated source zone)	X	X	X	X	X	TBD	TBD	--	--	--
					Soil	25 to 30 (unsaturated source zone)	X	X	X	X	X	TBD	TBD	--	--	--
					Soil	<50 (capillary zone of perched WBZ)	X	X	X	X	X	TBD	TBD	--	--	--
					Soil	50 (top of perched WBZ)	X	X	X	X	X	TBD	TBD	--	--	--
					Water (grab)	50 to 60 (perched WBZ)	X	--	--	--	--	--	--	X	X	--
					Soil	100 (top of Sea Level Aquifer)	X	X	X	X	X	TBD	TBD	--	--	--
	5	Proposed Deep Monitoring Well	To evaluate COC concentrations in Sea Level Aquifer groundwater downgradient of previously identified shallow and deep groundwater impacts.	150	Soil	15 to 20 (unsaturated source zone)	X	X	X	X	X	TBD	TBD	--	--	--
					Soil	25 to 30 (unsaturated source zone)	X	X	X	X	X	TBD	TBD	--	--	--
					Soil	<50 (capillary zone of perched WBZ)	X	X	X	X	X	TBD	TBD	--	--	--
Soil					50 (top of perched WBZ)	X	X	X	X	X	TBD	TBD	--	--	--	
Water (grab)					50 to 60 (perched WBZ)	X	--	--	--	--	--	--	X	X	--	
Soil					100 (top of Sea Level Aquifer)	X	X	X	X	X	TBD	TBD	--	--	--	
Water (well sample)					100 to 110 (Sea Level Aquifer)	X	X	X	X	X	--	X	X	--	X	

TABLE 1
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FREELAND, WASHINGTON

Event	Existing Monitoring Well ID/Temporary Location ID	Location Type ^a	Rationale ^b	Proposed Total Exploration Depth (ft bgs) ^c	Sample Matrix	Approximate Sample Depth or Screened Interval Depth for Water Samples (ft bgs) ^{c,d}	Proposed Analyses ^e									
							TPH	VOCs	EDB, EDC, MTBE	PAHs	Lead and Arsenic ^f	VPH/EPH ^g	TOC ^g	TSS	BTEX	Geochemical Parameters ^h
Additional Investigative Work	6	Proposed Deep Monitoring Well	To evaluate COC concentrations in Sea Level Aquifer groundwater downgradient of previously identified shallow and deep groundwater impacts.	150	Soil	15 to 20 (unsaturated source zone)	X	X	X	X	X	TBD	TBD	--	--	--
					Soil	25 to 30 (unsaturated source zone)	X	X	X	X	X	TBD	TBD	--	--	--
					Soil	<50 (capillary zone of perched WBZ)	X	X	X	X	X	TBD	TBD	--	--	--
					Soil	50 (top of perched WBZ)	X	X	X	X	X	TBD	TBD	--	--	--
					Water (grab)	50 to 60 (perched WBZ)	X	--	--	--	--	--	--	X	X	--
					Soil	100 (top of Sea Level Aquifer)	X	X	X	X	X	TBD	TBD	--	--	--
					Water (well sample)	100 to 110 (Sea Level Aquifer)	X	X	X	X	X	--	X	X	--	X
	7	Proposed Deep Monitoring Well	To evaluate COC concentrations in Sea Level Aquifer groundwater downgradient of previously identified shallow and deep groundwater impacts.	150	Soil	15 to 20 (unsaturated source zone)	X	X	X	X	X	TBD	TBD	--	--	--
					Soil	25 to 30 (unsaturated source zone)	X	X	X	X	X	TBD	TBD	--	--	--
					Soil	<50 (capillary zone of perched WBZ)	X	X	X	X	X	TBD	TBD	--	--	--
					Soil	50 (top of perched WBZ)	X	X	X	X	X	TBD	TBD	--	--	--
					Water (grab)	50 to 60 (perched WBZ)	X	--	--	--	--	--	--	X	X	--
					Soil	100 (top of Sea Level Aquifer)	X	X	X	X	X	TBD	TBD	--	--	--
					Water (well sample)	100 to 110 (Sea Level Aquifer)	X	X	X	X	X	--	X	X	--	X
	8	Proposed Deep Monitoring Well	To evaluate COC concentrations in Sea Level Aquifer groundwater downgradient of previously identified shallow and deep groundwater impacts.	150	Soil	15 to 20 (unsaturated source zone)	X	X	X	X	X	TBD	TBD	--	--	--
					Soil	25 to 30 (unsaturated source zone)	X	X	X	X	X	TBD	TBD	--	--	--
					Soil	<50 (capillary zone of perched WBZ)	X	X	X	X	X	TBD	TBD	--	--	--
					Soil	50 (top of perched WBZ)	X	X	X	X	X	TBD	TBD	--	--	--
					Water (grab)	50 to 60 (perched WBZ)	X	--	--	--	--	--	--	X	X	--
					Soil	100 (top of Sea Level Aquifer)	X	X	X	X	X	TBD	TBD	--	--	--
					Water (well sample)	100 to 110 (Sea Level Aquifer)	X	X	X	X	X	--	X	X	--	X
	9	Proposed Deep Monitoring Well	To evaluate COC concentrations in Sea Level Aquifer groundwater downgradient of previously identified shallow and deep groundwater impacts.	150	Soil	15 to 20 (unsaturated source zone)	X	X	X	X	X	TBD	TBD	--	--	--
					Soil	25 to 30 (unsaturated source zone)	X	X	X	X	X	TBD	TBD	--	--	--
					Soil	<50 (capillary zone of perched WBZ)	X	X	X	X	X	TBD	TBD	--	--	--
					Soil	50 (top of perched WBZ)	X	X	X	X	X	TBD	TBD	--	--	--
					Water (grab)	50 to 60 (perched WBZ)	X	--	--	--	--	--	--	X	X	--
					Soil	100 (top of Sea Level Aquifer)	X	X	X	X	X	TBD	TBD	--	--	--
					Water (well sample)	100 to 110 (Sea Level Aquifer)	X	X	X	X	X	--	X	X	--	X
Quarterly Monitoring	5	Proposed Deep Monitoring Well	To evaluate potential seasonal variations in groundwater quality and flow directions.	--	Water (well sample)	100 to 110 (Sea Level Aquifer)	X	X	X	X	X	--	--	X	--	--
	6	Proposed Deep Monitoring Well	To evaluate potential seasonal variations in groundwater quality and flow directions.	--	Water (well sample)	100 to 110 (Sea Level Aquifer)	X	X	X	X	X	--	--	X	--	--
	7	Proposed Deep Monitoring Well	To evaluate potential seasonal variations in groundwater quality and flow directions.	--	Water (well sample)	100 to 110 (Sea Level Aquifer)	X	X	X	X	X	--	--	X	--	--
	8	Proposed Deep Monitoring Well	To evaluate potential seasonal variations in groundwater quality and flow directions.	--	Water (well sample)	100 to 110 (Sea Level Aquifer)	X	X	X	X	X	--	--	X	--	--
	9	Proposed Deep Monitoring Well	To evaluate potential seasonal variations in groundwater quality and flow directions.	--	Water (well sample)	100 to 110 (Sea Level Aquifer)	X	X	X	X	X	--	--	X	--	--
	TBD	Existing Monitoring Wells	Up to 10 existing monitoring wells will be selected for sampling based on the baseline and additional investigative work sampling results to evaluate potential seasonal variations in groundwater quality and flow directions.	--	Water (well sample)	Various	X	X	X	X	X	--	--	X	--	--

Notes:

- = not applicable.
- ^a Deep wells (D) are those screened in the Sea Level Aquifer. Shallow wells (S) are those screened in the perched WBZ. New monitoring wells will be screened in the Sea Level Aquifer (deep wells).
- ^b Previous exceedances are groundwater samples collected during the last four sampling events that exhibited one or more chemical of concern concentrations greater than preliminary cleanup levels based on Model Toxics Control Act Method A values. Soil and perched WBZ groundwater (if present) samples will also be collected from new deep monitoring well installation locations to evaluate potential presence of impacts.
- ^c The average top of casing elevation for existing, flush-mounted monitoring wells is 116 feet (North American Vertical Datum of 1988). The study area is level; therefore, for purposes of determining elevation of proposed sampling or screen interval depths, depth below 116 feet could be used as an approximation.
- ^d Three soil duplicate samples (one from the temporary boring locations and two from the new monitoring well locations) and two grab groundwater duplicate samples (one from the temporary borings locations and one from the new monitoring well locations) will also be collected and analyzed. Up to four additional soil samples may be collected and analyzed based on field screening observations. One field duplicate water sample (well sample) will also be collected during the baseline, additional investigative work, and each of the quarterly monitoring events.
- ^e Soil samples to be analyzed for volatile organic compounds will be collected by EPA Method 5035A. Groundwater samples to be analyzed for dissolved metals will be field-filtered.
- ^f Total lead and arsenic analysis of soil samples and total and dissolved lead and arsenic analysis of groundwater samples collected from monitoring wells by EPA Method 6020B.
- ^g 15 of the soil samples to be collected from temporary borings and proposed deep groundwater monitoring well installations will be selected for VPH/EPH and TOC analysis based on detected TPH concentrations.
- ^h Analysis of geochemical parameters, including anions (nitrate, nitrite, chloride, and sulfate) by EPA Method 300.0; ammonia by Standard Method 4500NH3; alkalinity by Standard Method 2320B; sulfide by Standard Method 4500S2; methane, ethene, and ethane by EPA Method 8260D; dissolved ferrous iron by field Hach test kit; and dissolved ferrous manganese by EPA Method 6020B.
- BTEX = benzene, ethylbenzene, toluene, and xylenes analysis by EPA Method 8260D.
- COC = chemical of concern.
- EDB, EDC, MTBE = 1-2-dibromoethane, 1-2-dichloroethane, and methyl tert-butyl ether analysis by EPA Method 8260D.
- EPA = United States Environmental Protection Agency.
- ft bgs = feet below ground surface.
- LNAPL = light non-aqueous phase liquid.
- PAHs = polycyclic aromatic hydrocarbons analysis by EPA Method 8270E.
- ROW = right-of-way.
- TBD = to be determined.
- TOC = total organic carbon analysis by Standard Method 5310/EPA Method 9060.
- TPH = total petroleum hydrocarbons analysis by Northwest Total Petroleum Hydrocarbons Gasoline Range Organics and Diesel Range Organics methods (NWTPH-Gx and NWTPH-Dx).
- TSS = total suspended solids analysis by Standard Method 2540D.
- UST = underground storage tank.
- VOCs = volatile organic compounds analysis (full list) by EPA Method 8260D.
- VPH/EPH = volatile petroleum hydrocarbons and extractable petroleum hydrocarbons analysis by Northwest Total Petroleum Hydrocarbons methods NWTPH-VPH and NWTPH-EPH.
- WBZ = water-bearing zone.

TABLE 2
RATIONALE FOR MODIFICATIONS TO PROPOSED INVESTIGATION LOCATIONS
 WHIDBEY MARINE AND AUTO SUPPLY SITE
 FREELAND, WASHINGTON

Original Temporary Location ID from May 2022 RI Work Plan ^a	New Temporary Location ID	Location Modified from May 2022 RI Work Plan? ^a	Parcel No. for New Location	Proposed Location Type ^b	Rationale for Modification
1	1	No	029-R22911-093-1210	Temporary Boring	--
2	2	Yes	029-R22911-076-1270	Temporary Boring	Location shifted into former UST release area where the highest soil COC concentrations have previously been detected to evaluate current COC concentrations in soil and the perched groundwater WBZ.
3	3	No	029-R22911-076-1270	Temporary Boring	--
4	4	Yes	029-R22911-071-1190	Temporary Boring	Original borings 4 and 5 were proposed to evaluate the extent of LNAPL previously observed in monitoring well MW-9D and the extent of the perched groundwater WBZ in that area. Those two borings were combined into one new boring location (4).
5	--	Yes	--	Temporary Boring	
6	5	Yes	029-R22911-059-1250	Deep Monitoring Well	Location shifted slightly south from the East Main Street ROW onto parcel number R22911-059-1250 to avoid need for ROW permit and traffic controls during well installation and to remove traffic safety concerns.
7	--	Yes	--	Deep Monitoring Well	Location removed in favor of focusing on Sea Level Aquifer conditions further downgradient.
8 ^d	6	Yes	029-R22911-059-1250	Deep Monitoring Well	Location shifted slightly south to edge of the parking lot to mitigate traffic disruptions.
9	7	Yes	029-R22911-059-1250	Deep Monitoring Well	The owner of parcel number R22911-056-1130 denied access; therefore, shifted location to R22911-059-1250.
10	8	No	South Harbor Ave ROW	Deep Monitoring Well	--
11	9	Yes	029-R22911-057-1000	Deep Monitoring Well	Location shifted slightly north to edge of the parking lot to mitigate traffic disruptions.
12 ^c	--	Yes	--	Deep Monitoring Well	Location no longer needed with the other proposed changes.
Contingency Borings	--	Yes	--	Temporary Boring	Contingency borings are not included. The need for further investigation will be evaluated following completion of this RI.

Notes:

-- = not applicable.

^a H&A. 2022. Remedial investigation work plan, Whidbey Marine & Auto Supply. Prepared for Washington State Department of Ecology. Hart Crowser, a division of Haley & Aldrich, Inc. Seattle, Washington. May.

^b New monitoring wells will be screened in the Sea Level Aquifer (deep wells).

^c In Figures 2 to 4 of the May 2022 RI Work Plan, two borings were labeled as "8" and a 12th boring was unlabeled. For this purpose, we are identifying the northern of the two proposed borings shown in those Figures on parcel number R22911-059-1250 as "8" and the southern one as "12".

COC = chemical of concern.

LNAPL = light non-aqueous phase liquid.

RI = remedial investigation.

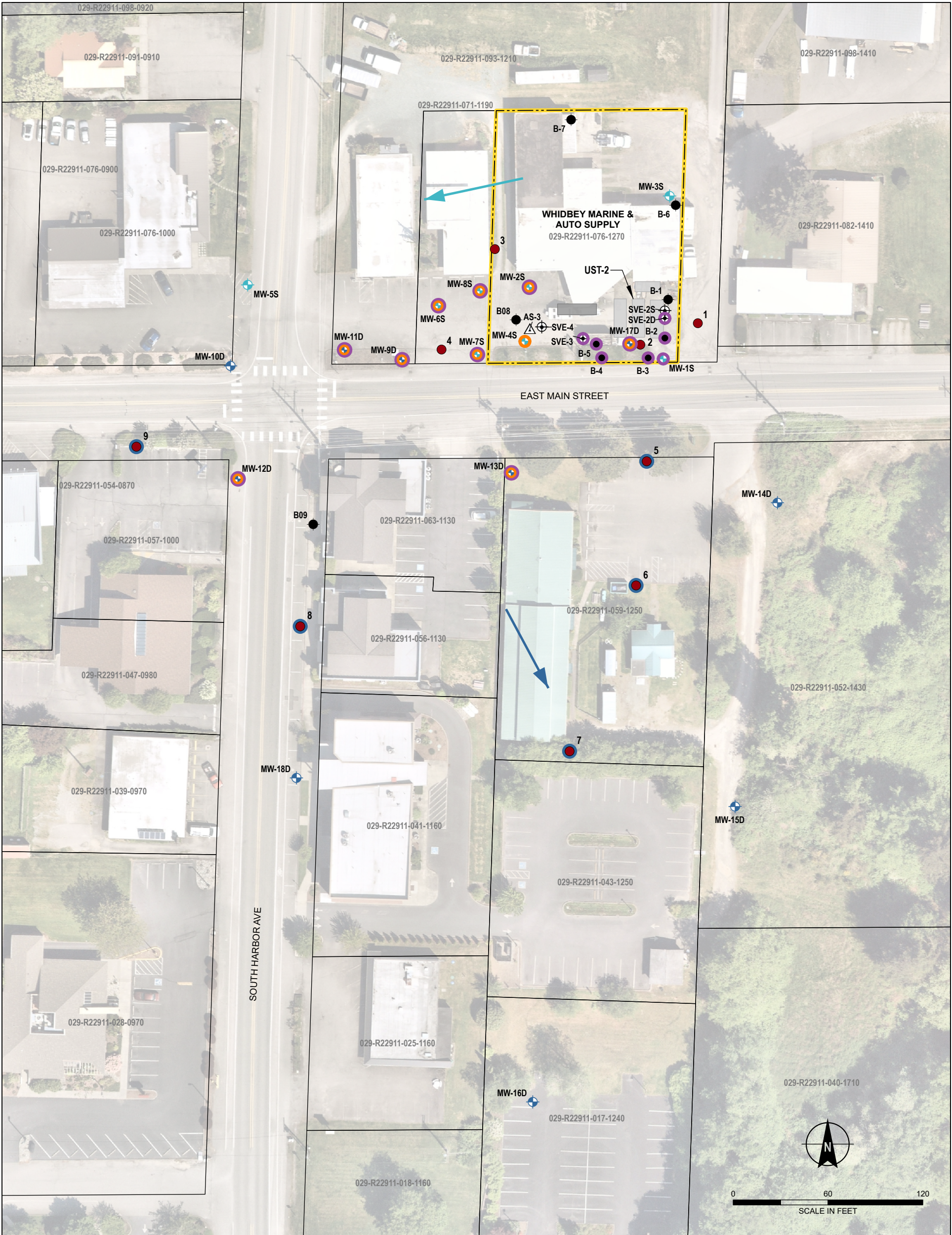
ROW = right-of-way.

UST = underground storage tank.

WBZ = water-bearing zone.

FIGURE

GIS FILE PATH: \\haleyaldrich.com\share\sea_projects\Notebooks\0204475-000_Whidbey_Marine-Auto_Supply_Site\GIS\0204475-000_Whidbey_Marine-Auto_Supply.aprx - USER: ayabui - LAST SAVED: 8/31/2023 3:44 PM



LEGEND

PROPOSED EXPLORATIONS

- PROPOSED BORING WITH TEMPORARY ID
- PROPOSED BORING AND MONITORING WELL WITH TEMPORARY ID

EXISTING WELLS

- PERCHED ZONE MONITORING WELL
- SEA LEVEL AQUIFER MONITORING WELL
- SOIL VAPOR EXTRACTION WELL
- AIR SPARGE WELL
- SOIL BORING

- GROUNDWATER RESULTS EXCEEDING MTCA CLEANUP LEVELS
- SOIL RESULTS EXCEEDING MTCA CLEANUP LEVELS
- GROUNDWATER AND SOIL RESULTS EXCEEDING MTCA CLEANUP LEVELS
- GROUNDWATER FLOW DIRECTION, PERCHED ZONE
- GROUNDWATER FLOW DIRECTION, SEA LEVEL AQUIFER
- FORMER PUMP ISLAND
- FORMER UNDERGROUND STORAGE TANK (UST)
- SITE BOUNDARY
- PARCEL BOUNDARY

NOTES

- ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE
- GROUNDWATER FLOW DIRECTIONS ARE INFERRED FROM MEASUREMENTS MADE BY SOUND EARTH STRATEGIES (SES) IN 2017
- GROUNDWATER RESULTS FROM THE 2017 SES SAMPLING EVENT SHOWN
- MTCA - WASHINGTON STATE MODEL TOXICS CONTROL ACT
- EXISTING WELLS AND SITE FEATURES DATE SOURCE: DIGITIZED FROM "FIGURE 3", PRELIMINARY PLANNING ASSESSMENT, SES, 2017
- ASSESSOR PARCEL DATA SOURCE: ISLAND COUNTY
- AERIAL IMAGERY SOURCE: NEARMAP, 14 MAY 2023

HALEY
ALDRICH

WHIDBEY MARINE & AUTO SUPPLY
1695 EAST MAIN STREET
FREELAND, WASHINGTON

SITE PLAN AND
PROPOSED INVESTIGATION

SEPTEMBER 2023

FIGURE 1



GROUNDWATER GAUGING FORM

Form FMG 5.1-01
Rev (06-09-09)

Project: Whidbey Marine & Auto Supply				Client: Ecology		File Number: 0204475-001		
Location: Freeland				Weather: Sunny		Project Manager: Heather Good		
				Tidally influenced? No		Field Representative: Andrew Nakahara		
Method:				Comments:				
Monitoring Well ID	Date	Time Opened	Time Measured	Well Dry? (Y/N)	Depth to Water (ft)	Depth to Well bottom (ft)	Remarks	Measured By
MW-1S	07/20/23	1205	1349	N	50.82	67.38	Had a SVE or air sparge cap. 4in. no lock, soil/sludge present in monument, cap was submerged in water	AN
MW-2S	07/20/23	1203	1420	N	53.50	57.61	Tubing present, no lock	AN
MW-3S	07/20/23				NA	NA	Buried in soil, monument filled with soil, no lock	AN
MW-4S	07/20/23	1145	1410	N	53.08	56.78	Tubing present, no lock	AN
MW-5S	07/20/23	1305	1507	N	62.73	64.27	Historically dry, no lock	AN
MW-6S	07/20/23	1247	1437	N	57.68	62.08	no lock	AN
MW-7S	07/20/23	1246	1432	N	57.13	59.60	no lock	AN
MW-8S	07/20/23	1254	1446	N	54.56	60.95	no lock	AN
MW-9D	07/20/23	1256	1450	N	102.00	105.26	Tubing or something else may be blocking well. Waterline initially stopped 75' bgs, but was able to be pushed through eventually, no lock, dry soil present in monument	AN
MW-10D	07/20/23	1304	1511	N	101.50	112.24	Tubing present, Well monument not flush with existing asphalt grade, approx. 1-2 inches below grade and cap covered with dirt upon arrival, no lock	AN
MW-11D	07/20/23	1300	1500	N	101.40	109.60	Tubing or something else may be blocking well. Waterline initially stopped 73' bgs, but was able to be pushed through eventually, no lock	AN
MW-12D	07/20/23	1309	1526	N	101.40	108.04	Well monument not flush with existing asphalt grade, approx. 1-2 inches below grade and cap covered with dirt upon arrival, no lock	AN
MW-13D	07/20/23	1200	1600	N	103.61	110.63	Tubing present, no lock	AN
MW-14D	07/20/23	1150	1606	N	103.62	115.62	No monument lid--covered with ~1-ft high mound of spray foam; cleaned out soil filling the monument, tubing present, no lock	AN
MW-15D	07/20/23	1331	1352	N	104.33	113.84	Monument located approx. 5 feet off gravel road to the east, obscured by blackberries, tubing present, cap was submerged in water, no lock	AN
MW-16D	07/20/23	1326	1347	N	105.55	111.99	Well monument not flush with existing gravel, approx. 1-2 inches below grade and was covered by gravel parking, no lock	AN
MW-17D	07/20/23	1244	1359	N	102.86	117.91	Tubing present, no lock	AN
MW-18D	07/20/23	1340	1342	N	103.13	107.26	Did not give time to equilibrate due to public parking over the well, no lock	AN

REPORT ON
QUALITY ASSURANCE AND PROJECT PLAN
WHIDBEY MARINE & AUTO SUPPLY SITE
1695 EAST MAIN STREET
FREELAND, WASHINGTON

by
Haley & Aldrich, Inc.
Seattle, Washington

for
Washington State Department of Ecology
Shoreline, Washington

File No. 0204475-001
September 2023



SIGNATURE PAGE FOR

REPORT ON
WHIDBEY MARINE & AUTO SUPPLY SITE
1695 EAST MAIN STREET
FREELAND, WASHINGTON

PREPARED FOR
WASHINGTON STATE DEPARTMENT OF ECOLOGY
SHORELINE, WASHINGTON

PREPARED BY:



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Environmental Engineer
Haley & Aldrich, Inc.

REVIEWED AND APPROVED BY:



Heather Good, L.H.G.
Associate Hydrogeologist
Haley & Aldrich, Inc.



Mike Ehlebracht, L.H.G.
Principal Geochemist
Haley & Aldrich, Inc.

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1. Introduction

Haley & Aldrich has prepared this Quality Assurance Project Plan (QAPP) consistent with the requirements of Washington Administrative Code (WAC) 173-340-820 for the Washington State Department of Ecology (Ecology). This document presents the organization, objectives, planned activities, and specific quality assurance/quality control (QA/QC) procedures associated with the Whidbey Marine & Auto Supply site (Site) located at 1695 East Main Street in Freeland, Washington (Facility Site ID number 17222251; Cleanup Site ID number 5610). This data collection effort is being performed as part of Ecology's remedial investigation (RI) to evaluate the nature and extent of environmental contamination associated with historical uses at the Site.

1.1 PURPOSE AND OBJECTIVE

The purpose of this RI is to generate data of sufficient quality to address data gaps and characterize the nature and extent of environmental contamination on the Site. Potentially impacted media include soil and groundwater. Activities are designed to meet the following specific project objectives:

- Develop data quality objectives for field investigation as well as sample collection and laboratory analytical activities.
- Develop preliminary and final conceptual site model (CSM).
- Evaluate potential risk to current and potential future human and ecological receptors from chemicals of concern (COCs).
- Evaluate data relative to appropriate cleanup levels (CULs).
- Define the subsurface geochemical conditions on and beneath the Site to support and evaluate potential cleanup actions.
- Evaluate the lateral and vertical extents of Site impacts.

The objective of the RI is to identify COCs at the Site and their source(s) and extent. The primary COCs appear to be gasoline-, diesel-, and/or heavy oil-range total petroleum hydrocarbons (TPH-G, TPH-D, and TPH-O, respectively), and petroleum-derived volatile organic compounds (VOCs) including benzene, toluene, ethylbenzene, and total xylenes (BTEX), and potentially heavy metals.

1.2 SCOPE OF SERVICES

Proposed exploration locations will be finalized in the final RI work plan, which will include Site background details and further details on the proposed sampling activities described below. The proposed Site data collection activities include the following:

- Advancing up to four soil boring locations advanced to approximately 130 feet below ground surface.
- Installing up to five additional groundwater monitoring wells, to approximate maximum depths of 150 feet bgs.
- Analyzing up to 57 soil and up to 78 groundwater (grab, typical well, and field duplicate) samples as follows:
 - Up to 57 soil samples will be analyzed for the following:

- TPH-G,
- TPH-D,
- TPH-O,
- VOCs,
- 1-2-dibromoethane (EDB),
- 1-2-dichloroethane (EDC),
- methyl tertiary-butyl ether (MTBE),
- polycyclic aromatic hydrocarbons (PAHs), and
- lead and arsenic.
- Up to 15 (of the 57 samples mentioned above) soil samples will be analyzed for the following:
 - volatile petroleum hydrocarbons (VPH),
 - extractable petroleum hydrocarbons (EPH), and
 - total organic carbon (TOC).
- Up to 11 grab groundwater samples will be analyzed for the following:
 - TPH-G,
 - TPH-D,
 - TPH-O,
 - total suspended solids (TSS), and
 - BTEX.
- Up to 20 groundwater samples collected during the baseline monitoring event and initial sampling of the newly installed monitoring wells will be analyzed for the following:
 - TPH-G,
 - TPH-D,
 - TPH-O,
 - VOCs,
 - EDB,
 - EDC,
 - MTBE,
 - PAHs,
 - total and dissolved lead and arsenic,
 - nitrate,
 - nitrite,
 - ammonia,
 - TSS,
 - TOC,
 - chloride,
 - sulfate,
 - alkalinity,

- sulfide,
- methane, ethene, and ethane (MEE), and
- dissolved ferrous iron and manganese.
- Up to 48 groundwater samples collected during the three quarterly monitoring events will be analyzed for the following:
 - TPH-G,
 - TPH-D,
 - TPH-O,
 - VOCs,
 - EDB,
 - EDC,
 - MTBE,
 - PAHs,
 - TSS, and
 - total and dissolved lead and arsenic.

2. Quality Assurance and Quality Control

The laboratory reports will be reviewed by a Haley & Aldrich technical specialist to ensure conformance with project standards, provide additional data qualifications as appropriate, and verify that the data are acceptable for the purposes of the project. This includes reviewing holding times, reporting limits, method blanks, surrogate recoveries, laboratory duplicate relative percent differences (RPDs), spike blank/spike blank duplicate (SB/SBD) recoveries, and matrix spike/matrix spike duplicate (MS/MSD) recoveries.

2.1 DATA QUALITY INDICATORS

The overall quality assurance objectives for field sampling, field measurements, and laboratory analysis are to produce data of known and appropriate quality. The procedures and quality control checks specified herein will be used so that known and acceptable levels of accuracy and precision are maintained for each data set. This section defines the objectives for accuracy and precision for laboratory data. These goals are primarily expressed in terms of acceptance criteria for the quality control checks performed.

2.1.1 Precision

Precision is the degree of reproducibility or agreement between independent or repeated measurements. Analytical variability will be expressed as the RPD between laboratory duplicates and between MS and MSD analyses. RPD will be used to measure precision for this investigation and is defined as follows:

$$RPD = \frac{(D_1 - D_2)}{(D_1 + D_2)/2} \times 100$$

Where

D₁ = sample value

D₂ = duplicate sample value

2.1.2 Accuracy

Accuracy is the agreement between a measured value and its true or accepted value. While it is not possible to determine absolute accuracy for environmental samples, analysis of standards and spiked samples provides an indirect assessment of accuracy.

Laboratory accuracy will be assessed as the percent recovery of MSs, MSDs, surrogate spiked compounds (for organic analyses), and laboratory control samples. Accuracy will be defined as the percentage recovery compared with the true or accepted value and is defined as follows:

$$\% Recovery = \frac{(SSR - SR)}{SA} \times 100$$

Where

SSR = spiked sample result

SR = sample results (not applicable for surrogate recovery)

SA = amount of spike added

2.1.3 Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, or an environmental condition. The sampling program will be designed carefully to see that sample locations are selected properly, sufficient numbers of samples are collected to accurately reflect conditions at the Site, and samples are representative of sample locations. A sufficient sample volume will be collected at each sampling point to minimize bias or errors associated with sample particle size and heterogeneity.

2.1.4 Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. So that results are comparable, samples will be analyzed using standard United States Environmental Protection Agency (EPA) methods and protocols as described in Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods (EPA 1986). Data will also be reviewed to verify that precision and accuracy criteria have been achieved and, if not, that data have been appropriately qualified.

Field personnel will collect samples in a consistent manner at all sampling locations so that all data collected as part of this study are comparable. Comparability is attained by careful adherence to standardized sampling and analytical procedures, based on rigorous documentation of sample locations (including depth, time, and date).

2.1.5 Completeness

Completeness is the percentage of measurements made that are judged to be valid. Completeness will be calculated separately for each analytical group (e.g., TPHs and VOCs). For results to be considered complete, all quality control check analyses required to verify precision and accuracy must have been performed. Data qualified as estimated during the validation process will be considered complete. Results that are rejected during the validation review or samples for which no analytical results were obtained will be considered non-valid measurements. Completeness will be calculated for each analysis using the following equation:

$$\text{Completeness} = \frac{\text{valid data points obtained}}{\text{total data points planned}} \times 100$$

The target goal for completeness is a minimum of 95 percent. Completeness will be monitored on an on-going basis so that archived sample extracts can be reanalyzed, if required, without remobilization.

2.2 DATA QUALITY ASSURANCE REVIEW

Haley & Aldrich will independently review the quality of the chemical analytical results provided by the laboratory. The data quality report will assess the adequacy of the reported detection limits in achieving the project screening levels; the precision and accuracy of the data; and the usability of the analytical data for project objectives. Exceedances of analytical control limits will be summarized and evaluated.

A data evaluation review will be performed on all results using quality control summary sheet results provided by the laboratory for each report. Data evaluation reviews are based on the quality control requirements previously described and follow the format of the EPA National Functional Guidelines for Organic Superfund Methods Data Review (EPA 2020), modified to include specific criteria of individual analytical methods. The laboratory will be contacted to obtain raw data (instrument tuning, calibrations, instrument printouts, bench sheets, and laboratory worksheets) if any problems or discrepancies are discovered during the routine evaluation.

The data evaluation review will verify:

- Sample numbers and analyses match the chain of custody request;
- Sample preservation and holding times;
- Instrument tuning and performance criteria were achieved;
- Laboratory blanks were analyzed at the proper frequency and that no analytes were present in the blanks;
- Laboratory duplicates, MSs, surrogate compounds, and laboratory control samples control limits were met; and
- Required detection limits were achieved.
- Data qualifier flags, beyond any applied by the laboratory, will be added to sample results that fall outside the quality control acceptance criteria. Typical data qualifiers are:
 - **U** The compound was analyzed for but was not detected above the reporting limit. The associated numerical value is the sample reporting limit.

- **J** The associated numerical value is an estimated quantity because quality control criteria were slightly exceeded and/or the associated numerical value is detected below Reporting Limit and above the method detection limit.
- **UJ** The compound was analyzed for, but not detected. The associated numerical value is an estimated reporting limit because quality control criteria were not met.
- **R** Data are not usable because of significant exceedance of quality control criteria. The analyte may or may not be present; resampling and/or reanalysis is necessary for verification.

3. Data Analysis and Reporting

3.1 LABORATORY REPORTS

The laboratory data reports will consist of summary data packages that will include:

- A case narrative identifying the laboratory analytical batch number, matrix and number of samples included, analyses performed, and analytical methods used, and description of any problems or exceedance of quality control criteria and corrective action taken. The laboratory manager or a designee must sign the narrative.
- A copy of chain of custody forms for all samples included in the analytical batch.
- Tabulated sample analytical results with units, data qualifiers, percent solids, sample weight or volume, dilution factor, laboratory batch and sample number, Haley & Aldrich sample number, and dates sampled, received, extracted, and analyzed all clearly specified.
- Blank summary results indicating samples associated with each blank.
- MS/MSD result summaries with calculated percent recovery and relative percent differences.
- Laboratory control sample results, when applicable, with calculated percent recovery.
- Electronically formatted data deliverable results in EQuIS and Ecology Environmental Information Management database format.

3.2 DATA EVALUATION, ANALYSIS, AND REPORTING

After the planned fieldwork, sample analysis, and data quality review, results will be compared with the preliminary screening levels identified in the final RI work plan. A draft RI report will be prepared summarizing the sampling procedures and laboratory testing results. The report will include a map with sampling locations, figures and cross sections with areas and elevations of contamination, tabulated analytical testing data compared with Washington State Model Toxics Control Act preliminary cleanup levels, sample depth, chemical data quality review, and laboratory analytical reports. The report will include statements on any limitations on the data use that are the result of adverse QC exceedances, as identified in Section 3.2, Data Quality Assurance Review. A public review draft RI report will be completed after incorporating comments from Ecology.

References

1. ASTM 2009. ASTM D2488-09a, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure). American Society for Testing Materials. ASTM International, West Conshohocken, PA.
2. Ecology 1997. NWTPH-Gx and NWTPH-Dx Methods, in Analytical Methods for Petroleum Hydrocarbons, ECY 97-602. Washington State Department of Ecology. June 1997.
3. EPA 1986. Test Methods for Evaluating Solid Waste; Physical/Chemical Methods, SW-846, 3rd Update. Environmental Protection Agency.
4. EPA 1992. Specifications and Guidance for Contaminant-Free Sample Containers. Environmental Protection Agency. OSWER Directive 92.0-05A.
5. EPA 2020. US EPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review. Environmental Protection Agency. EPA-540-R-20-005, November 2020.
6. Standard Methods 1989. Standard Methods for the Examination of Water and Wastewater. 17th Edition, American Water Works Association.

https://haleyaldrich.sharepoint.com/sites/WashingtonStateDepartmentofEcology261/Shared Documents/0204475.Whidbey Marine Auto Supply Site/Deliverables/RI Work Plan Memo/Final/Attachments/QAPP/2023_0918_HAI_QAPP_F.docx



**HALEY & ALDRICH, INC.
SITE-SPECIFIC SAFETY PLAN**

FOR

Whidbey Marine & Auto Supply Site Remedial Investigation and Feasibility Study

1695 E Main Street, Freeland, Washington

Project/File No. 0204475-001

Gensuite EZ Scan®



BI - Government Infrastructure

Prepared By: Andrew Nakahara

Date: 6/9/2023

Approvals: The following signatures constitute approval of this Health & Safety Plan.

Insert Field Safety Managers electronic signature.

Field Safety Manager: Sage Bedard

Date: 6/13/2023

Insert Project Manager's electronic signature.

Project Manager: Heather Good

Date: 9/6/2023

HASP Valid Through: 9/6/2024

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Attachments

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STOP WORK AUTHORITY

In accordance with Haley & Aldrich, Inc. (Haley & Aldrich) Stop Work Authority Operating Procedure (OP1035), any individual has the right to refuse to perform work that he or she believes to be unsafe without fear of retaliation. He or she also has the authority, obligation, and responsibility to stop others from working in an unsafe manner.

STOP Work Authority is the stop work policy for all personnel and subcontractors on the Site. When work has been stopped due to an unsafe condition, Haley & Aldrich site management (e.g., Project Manager [PM], Site Health & Safety Officer [SHSO], etc.) and the Haley & Aldrich Senior Project Manager (SPM) will be notified immediately.

Reasons for issuing a stop work order include, but are not limited to:

- The belief/perception that injury to personnel or accident causing significant damage to property or equipment is imminent.
- An Haley & Aldrich subcontractor is in breach of site safety requirements and/or their own site HASP.
- Identifying a substandard condition (e.g., severe weather) or activity that creates an unacceptable safety risk as determined by a qualified person.

Work will not resume until the unsafe act has been stopped OR sufficient safety precautions have been taken to remove or mitigate the risk to an acceptable degree. Stop work orders will be documented as part of an on-site stop work log, on daily field reports to include the activity/activities stopped, the duration, person stopping work, person in-charge of stopped activity/activities, and the corrective action agreed to and/or taken. Once work has been stopped, only the Haley & Aldrich SPM or SHSO can give the order to resume work. Haley & Aldrich senior management is committed to support anyone who exercises his or her "Stop Work" authority.

ISSUANCE AND COMPLIANCE

This HASP has been prepared in accordance with Occupational Safety and Health Administration (OSHA) regulations (CFR 29, Parts 1904, 1910, and 1926) if such are applicable.

The specific requirements of this HASP include precautions for hazards that exist during this project and may be revised as new information is received or as site conditions change.

- This HASP must be signed by all Haley & Aldrich personnel involved in implementation of the SOW (Section 2 of this HASP).
- This HASP, or a current signed copy, must be retained at all times when Haley & Aldrich staff are present.
- Revisions to this HASP must be outlined within the contents of the HASP. If immediate or minor changes are necessary, the Field Safety Manager (FSM), Haley & Aldrich, Site Health & Safety Officer (SSHO) and/or Project Manager (PM) may use Attachment A (HASP Amendment Form), presented at the end of this HASP. Any revision to the HASP requires employees and subcontractors to be informed of the changes so that they understand the requirements of the change.
- Deviations from this HASP are permitted with approval from the Haley & Aldrich FSM, PM, or Senior Health & Safety Manager (SHSM). Unauthorized deviations may constitute a violation of Haley & Aldrich company procedures/policies and may result in disciplinary action.
- This HASP will be relied upon by Haley & Aldrich's subcontractors and visitors to the site. Haley & Aldrich's subcontractors must have their own HASP which will address hazards specific to their trade that is not included in this HASP. This HASP will be made available for review to Haley & Aldrich's subcontractors and other interested parties (e.g. Facility personnel and regulatory agencies) to ensure that Haley & Aldrich has properly informed our subcontractors and others of the potential hazards associated with the implementation of the SOW to the extent that Haley & Aldrich is aware.

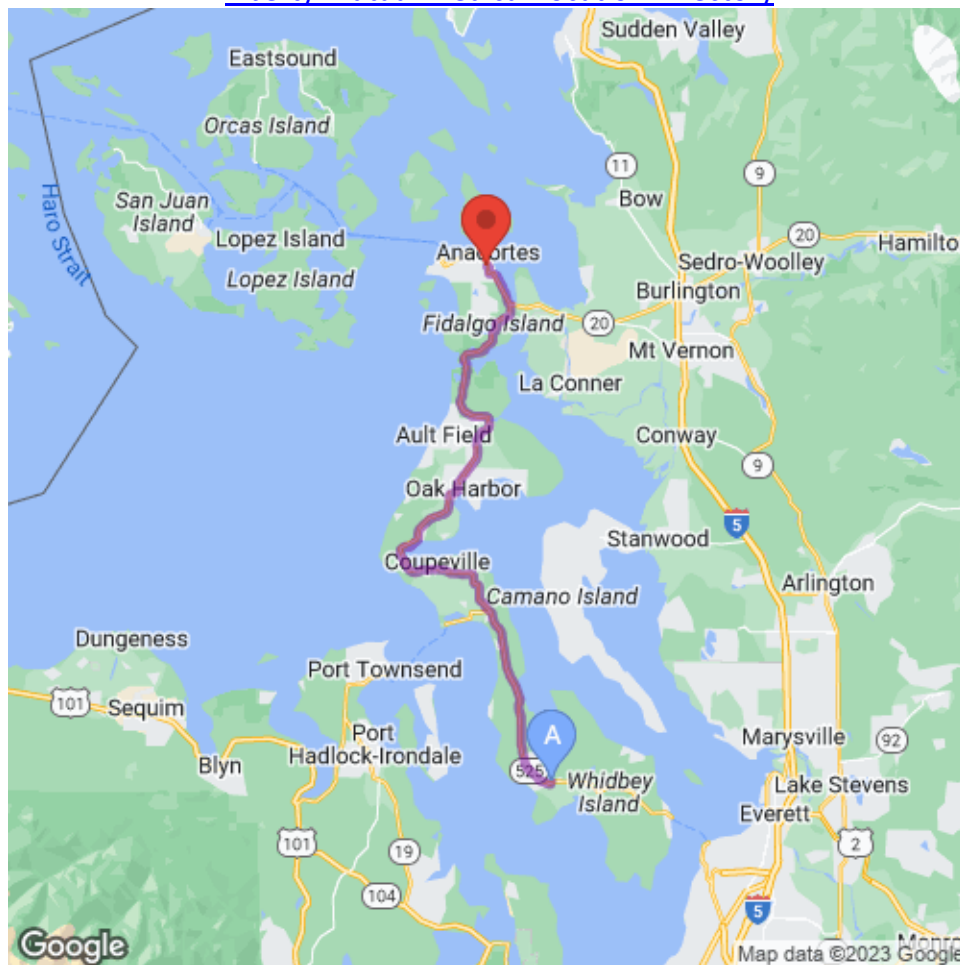
This site-specific HASP provides only site-specific descriptions and work procedures. General safety and health compliance programs in support of this HASP (e.g., injury reporting, medical surveillance, personal protective equipment (PPE) selection, etc.) are described in detail in the Haley & Aldrich Corporate Health and Safety Program Manual and within Haley & Aldrich's Standard Operating Procedures. Both the manual and SOPs can be located on the Haley & Aldrich's Company Intranet. When appropriate, users of this HASP should always refer to these resources and incorporate to the extent possible. The manual and SOPs are available to clients and regulators upon request.

EMERGENCY EVENT PROCEDURES	
1 - ASSESS THE SCENE	
• STOP WORK • Review the situation and ascertain if it's safe to enter the area. • Evacuate the site if the conditions are unsafe.	
2 - EVALUATE THE EMERGENCY	
• Call 911, or designated emergency number, if required. • Provide first aid for the victim if qualified and safe to do so. – First aid will be addressed using the onsite first aid kit. * ▪ If providing first aid, remember to use proper first aid universal precautions if blood or bodily fluids are present. • If exposure to hazardous substance is suspected, immediately vacate the contaminated area. – Remove any contaminated clothing and/or equipment. – Wash any affected dermal/ocular area(s) with water for at least 15 minutes. – Seek immediate medical assistance if any exposure symptoms are present. <i>* Note: Haley & Aldrich employees are not required or expected to administer first aid / CPR to any Haley & Aldrich staff member, Contractor, or Civilian personnel at any time; it is Haley & Aldrich's position that those who do are doing so on their own behalf and not as a function of their job.</i>	
3 - SECURE THE AREA	
• Cordon off the incident area, if possible. – Notify any security personnel, if required. – Escort all non-essential personnel out of the area, if able.	
4 - REPORT ON-SITE ACCIDENTS / INCIDENTS TO PM / SHSO	
• Notify the PM and SHSO as soon as it is safe to do so. – Assist PM and SHSO in completing any additional tasks, as required.	
5 - INVESTIGATE / REPORT THE INCIDENT	
• Record details of the incident for input to the Gensuite. – Complete any additional forms as requested by the PM and SHSO.	
6 - TAKE CORRECTIVE ACTION	
• Implement corrective actions per the PM following root cause analysis. – Complete Lessons Learned form.	

PROJECT INFORMATION AND CONTACTS	
Project Name: Whidbey Marine & Auto Supply Site Remedial Investigation and Feasibility Study	Haley & Aldrich File No.: 0204475-001
Location: 1695 E Main Street, Freeland, Washington	
Client/Site Contact: Phone Number:	John Rapp, Washington State Department of Ecology 206-247-3242
Haley & Aldrich Field Representative: Phone Number: Emergency Phone Number:	Andrew Nakahara 206-491-2274 Enter Phone Number
Haley & Aldrich Project Manager: Phone Number: Emergency Phone Number:	Heather Good 360-927-1309 360-927-1309
Field Safety Manager: Phone Number: Emergency Phone Number:	Bonnie Govoni 206-437-4691 Enter Phone Number
Subcontractor Project Manager: Phone Number:	Anderson Environmental Consulting/ Ron Rider 253-293-1910
Nearest Hospital: Address: (see map on next page) Phone Number:	Island Health 1211 24th St Anacortes, WA 98221 360-299-1300
Nearest Occ. Health Clinic: http://www.talispoint.com/liberty/ext/ Address: (see map on next page) Phone Number:	Concentra Medical Center 3101 111th St. SW, Unit #T/U Everett, WA 98204 425-267-0299
Liberty Mutual Claim Policy	WC6Z11254100033
Emergency Response Number:	911
Other Local Emergency Response Number:	N/A
Other Ambulance, Fire, Police, or Environmental Emergency Resources:	

DIRECTIONS TO THE NEAREST HOSPITAL

[Liberty Mutual Medical Location Directory](#)



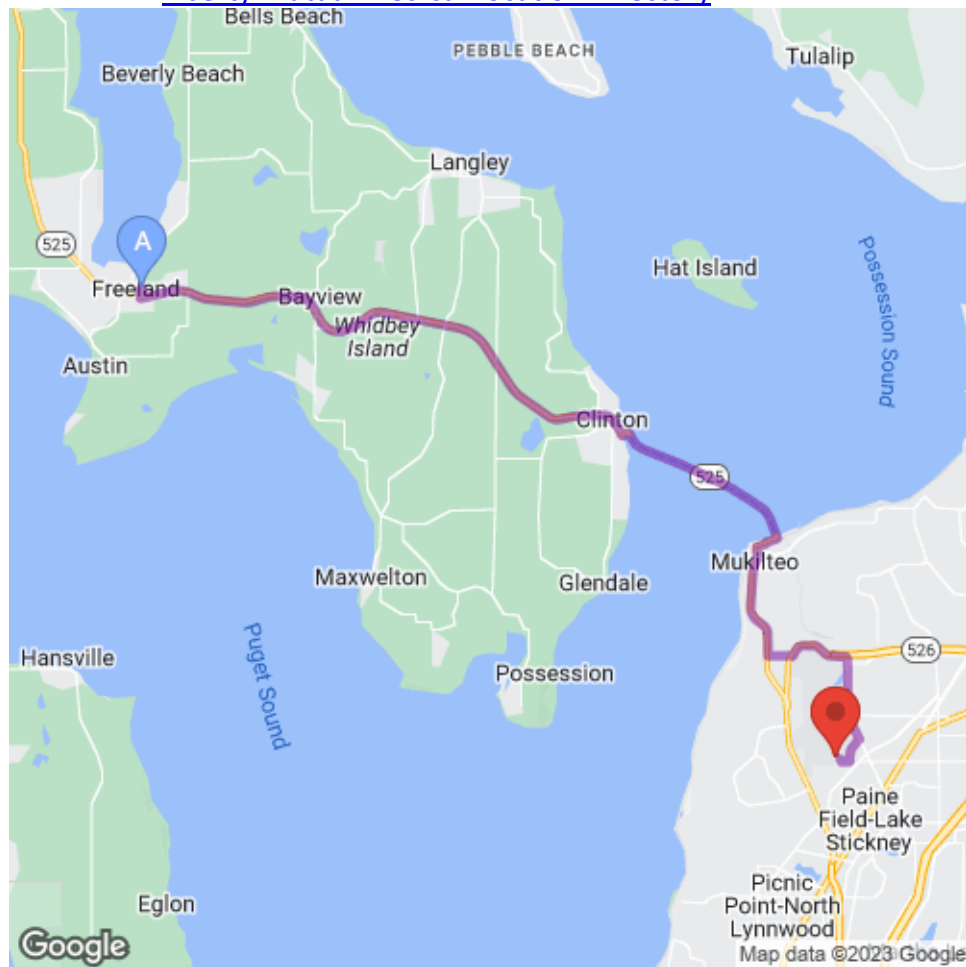
Directions to the Nearest Hospital:

1. 187 ft
2. Head **west** toward **S Harbor Ave**
3. 0.1 mi
4. Turn **left** onto **S Harbor Ave**
5. 12.7 mi
6. Turn **right** onto **WA-525 N**
7. 15.0 mi
8. Continue onto **State Rte 20 E**
9. Pass by Petco (on the left in 14.7 mi)
10. 7.8 mi
11. Turn **left** onto **State Rte 20 E/S Oak Harbor St**
12. Continue to follow State Rte 20 E
13. Pass by Jiffy Lube (on the right in 0.6 mi)
14. 8.0 mi
15. At the traffic circle, continue straight onto **State Rte 20**
16. 0.6 mi
17. At the traffic circle, take the **2nd** exit onto **State Rte 20 E**

18. 2.8 mi
19. At the traffic circle, take the **2nd** exit onto **WA-20 Spur W**
20. 0.4 mi
21. At the traffic circle, take the **1st** exit onto **Commercial Ave**
22. 0.2 mi
23. Turn **left** onto **28th St**
24. Destination will be on the right
25. 47.7 mi
26. Estimated driving time: 66 minutes

DIRECTIONS TO THE NEAREST URGENT CARE

[Liberty Mutual Medical Location Directory](#)



Directions to the Nearest Occupational Clinic:

27. 187 ft
28. Head **west** toward **S Harbor Ave**
29. 0.1 mi
30. Turn **left** onto **S Harbor Ave**
31. 9.4 mi
32. Turn **left** onto **WA-525 S**
33. Toll road
34. 230 ft
35. Turn **right** to stay on **WA-525 S**
36. Toll road
37. 3.1 mi
38. Take the **Clinton - Mukilteo** ferry to Mukilteo
39. Toll road
40. 0.4 mi
41. Continue straight onto **WA-525**
42. Toll road
43. 1.9 mi
44. Turn **left** onto **Mukilteo Speedway**

45. 0.4 mi
46. Turn **left** onto **84th St SW** (signs for **State Hwy 525/Seattle**)
47. 0.8 mi
48. Turn **left** onto **WA-526 E/Boeing Fwy/Casino Fwy**
49. 0.2 mi
50. Take the **Airport Rd** exit toward **Paine Fld**
51. 1.4 mi
52. Keep **right** at the fork, follow signs for **Boeing Parking** and merge onto **Airport Rd**
53. 0.4 mi
54. Turn **right** onto **Minuteman Dr**
55. 0.1 mi
56. Turn **right** onto **112th St SW**
57. 151 ft
58. Turn **right** onto **30th Ave W**
59. 72 ft
60. Turn **left** onto **111th St SW**
61. 69 ft
62. Turn **right**
63. 20 ft
64. Turn **left**
65. Destination will be on the right
66. 18.4 mi
67. Estimated driving time: 56 minutes

1. WORK SCOPE			
This Site-Specific Health and Safety Plan addresses the health and safety practices and procedures that will be exercised by all Haley & Aldrich employees participating in all work on the Project Site. This plan is based on an assessment of the site-specific health and safety risks available to Haley & Aldrich and Haley & Aldrich's experience with other similar project sites. The scope of work includes the following: Coordinate and drill 9 explorations to approximately 150 feet bgs and complete 5 of the borings as monitoring wells. Conduct quarterly and baseline groundwater sampling at new and existing monitoring wells. Part of the tasks will be completed in the public right of way or in active parking lots.			
Project Task Breakdown			
Task No.	Task Description	Employee(s) Assigned	Work Date(s) or Duration
	Site Reconnaissance	Andrew Nakahara, Heather Good	1 day
	Utility Clearance	Andrew Nakahara	1 day
	Mobilization/Demobilization	Andrew Nakahara	2 days
	Drilling, Soil Sampling, and Well Installation	Andrew Nakahara, Zach Stephens, Yida Fang	21 days
	Groundwater Sampling	Andrew Nakahara, Zach Stephens, Yida Fang	3-5 days/event
Subcontractor(s) Tasks			
Firm Name	Work Activity	Work Date(s) or Duration	
Anderson Environmental	Drilling/Well installs/development	21 days	
LineScope LLC	Utility Locates	1 day	
ACT Environmental	IDW Disposal	4 days	
NW Barricade	TCP	5 days	
Apex Engineering	Surveying	1 day	
Projected Start Date: TBD			
Projected Completion Date: TBD			

2. SITE OVERVIEW / DESCRIPTION
Site Classification
Commercial
Site Description
Historically, the Property was occupied by the Whidbey Marine & Auto Supply between at least 1971 and 2014 which operated as a gasoline service station for a portion of that time. Property records indicate that four underground storage tanks were installed at the Property between 1982 and 1986, which included one 3,000-gallon diesel UST, two 10,000-gallon gasoline USTs, and one 8,000-gallon gasoline UST. A release of unleaded gasoline from UST 2 was reported to Ecology in 2005. Fuel sales ceased in mid-2009, and the Property was sold in October 2009. The USTs were removed in January 2011 by Ultra-Tank Services, Inc. The Property is currently occupied by Scotty's Towing.
Background and Historic Site Usage
In 2005, unleaded gasoline was released from one of the 10,000-gallon USTs (UST2) and was reported to Ecology. Between 2005 and 2017, the Property a series of investigations and groundwater monitoring events were conducted. TPH-G and/or benzene were detected at concentrations above MTCA Method A CULs in soil samples. Groundwater samples collected from several wells contained concentrations of TPH-G, TPH-D. and/or BTEX were detected at concentrations above MTCA Method A cleanup levels in MW-2S, MW-4S, and MW-6S through MW-12D. LNAPL thickness has ranged from less than 0.01 foot to 0.98 foot between 2012 and 2016. In 2012, a sorbent sock was installed in MW-9D to passively recover LNAPL. A soil vapor extraction (SVE) system was installed on the Property in 2006. SVE system installation details are summarized in the October 2006 Cleanup Action Progress Report (Farallon 2006b). Continuous SVE system operation began on September 13, 2006. Two additional remediation wells were concurrently installed. In 2010 and 2011, a preliminary injection using clean water to estimate injection rates that could be achieved in the perched groundwater zone and three in situ chemical injections were conducted at the Property. Initial concentration of COCs in groundwater increased, as expected, due to desorption from soil (Farallon 2012). Groundwater COC concentrations in the vicinity of the injection points decreased but continue to exceed MTCA Method A CULs. Additional details on previous investigations and cleanups can be found in the Haley & Aldrich Remedial Investigation Work Plan (Haley & Aldrich 2022).
Site Status
Indicate current activity status and describe operations at the site: Partially Active The Property is currently occupied by Scotty's Towing.

Site Plan
Is a site plan or sketch available? Yes
Work Areas
List and identify each specific work areas(s) on the job site and indicate its location(s) on the site plan: Each of the nine borings will have an approximately 50- by 20-foot work area. Two of the borings will be drilled in the public ROW along E Main Street and South Harbor Avenue. New and existing monitoring wells are scattered throughout the property and nearby properties, Ecology will provide access agreements.



Site Plan

Will be provided with updated RI Work Plan

3. HAZARD ASSESSMENT

Indicate all hazards that may be present at the site and for each task. If any of these potential hazards are checked, it is the Project Manager's responsibility to determine how to eliminate / minimize the hazard to protect onsite personnel.

Site Chemical Hazards

Is this Site impacted with chemical contamination? Yes

Source of information about contaminants: Previous Investigation

Contaminant of Concern	Location/Media	Concentration	Units
BTEX/VOCs	Soil	250, 990, 270, 1140 (BTEX, respectively)	mg/kg
BTEX/VOCs	Groundwater	23.3, 2870, 845, 6740 (BTEX, respectively)	ug/L
Total Petroleum Hydrocarbons (TPH)	Soil	31,000	mg/kg
Total Petroleum Hydrocarbons (TPH)	Groundwater	70,200	ug/L

BTEX/VOCs: BTEX is an acronym for benzene, toluene, ethylbenzene and xylenes. These compounds are VOCs, are common in petroleum-related products (e.g., oil, gasoline, coal-tar DNAPL, etc.), and frequently co-occur at hazardous waste sites. Benzene, toluene, ethylbenzene, and xylenes have acute and chronic harmful effects on the central nervous system. Benzene is classified as a carcinogen. Short-term health effects of low-level BTEX exposure include drowsiness, dizziness, accelerated heart rate, headaches, tremors, confusion, and unconsciousness.

Total Petroleum Hydrocarbons (TPH): is a term used to describe a large family of several hundred chemical compounds that originally come from crude oil. Crude oil is used to make petroleum products, which can contaminate the environment. Because there are so many different chemicals in crude oil and petroleum products, it is not practical to measure each one separately. However, it is useful to measure the total amount of TPH at a site.

TPH is a mixture of chemicals, but they are all made mainly from hydrogen and carbon, called hydrocarbons. Scientists divide TPH into groups of petroleum hydrocarbons that act alike in soil or water. These groups are called petroleum hydrocarbon fractions. Each fraction contains many individual chemicals.

Site Hazards Checklist			
Weather			
Cold Temperatures	Hot Temperatures	Select Hazard	Select Hazard
Cold Temperatures Cold stress may occur at any time work is being performed at low ambient temperatures and high velocity winds. Because cold stress is common and has potentially serious illnesses associated with outdoor work during cold seasons, regular monitoring and other preventative measures are vital. Refer to OP1003-Cold Stress for additional information and mitigation controls.			
Hot Temperatures Heat stress may occur at any time work is being performed at elevated ambient temperatures. Because heat stress is one of the most common and potentially serious illnesses associated with outdoor work during hot seasons, regular monitoring and other preventative measures are vital. Site workers must learn to recognize and treat the various forms of heat stress. The best approach is preventative heat stress management. Haley & Aldrich employees and their subcontractors should be aware of potential health effects and/or physical hazards of working when there are hot temperatures or a high heat index. Refer OP1015-Heat Stress for a discussion on hot weather hazards.			
Biological			
Small Mammals	Mosquitoes	Ticks	Stinging Insects
Small Mammals Rodents, are the most abundant order of mammals. There are hundreds of species of rats; the most common are the black and brown rat. Other rodents you may encounter are mice, beavers, squirrels, guinea pigs, capybaras and coypu. The Brown Rat has small ears, blunt nose, and short hair. It is approximately 14-18" long (with tail). They frequently infest garbage/rubbish, slaughterhouses, domestic dwellings, warehouses, and supermarkets. They also frequent any space with an easy meal and potential nesting sites. The Black Rat is identified by its tail, that is always longer than the length from the head to the body. It is also			

slimmer and more agile than the Brown rat. Its size varies according to its environment and food supply.

The House Mouse has the amazing ability to adapt and can frequently be found in human dwellings. In buildings, mice will live anywhere and difficult to keep out. Mice are omnivorous, they will eat anything. Rats and mice often become a serious problem in cold winter months when they seek food and warmth inside buildings. They may suddenly appear in large numbers when excavation work disturbs their in-ground nesting locations or their food source is changed.

Some major problems caused by rats and mice are contaminating the food they eat with urine and excrement. Gnawing into materials such as paper, wood, or upholstery, to use as nest material. Also gnawing plastic, cement, soft metals such as lead and aluminum, and wiring, which may cause a fire hazard. Occasionally biting people and may kill small animals. They, or the parasites they carry, like fleas, mites and worms, spread many diseases such as salmonella, trichinosis, rat bite fever, hantavirus, Weil's disease, and bubonic plague. They damage ornamental plants by burrowing among the roots or feeding on new growth. They also eat garden vegetables, such as corn and squash. These rodents have been a problem for centuries, because of their incredible ability to survive and are so difficult to eliminate. In addition, they are extremely compatible with human behavior and needs.

Avoid contact with rodents, if possible. Avoid contact with rodent excrement. Do not eat food or water that may have encountered rodent excrement. If exposed, wash hands and avoid touching your face with your hands.

Mosquitos

Work outdoors with temperatures above freezing will likely bring staff into contact with mosquitos. There are a variety of mosquito species that can transmit a range of diseases. Birds act as reservoirs for the viruses that can be collected by the mosquito and transmitted to a person. Majority of mosquitos are mainly a nuisance but staff need to take appropriate precautions to minimize the potential transmission of a virus that can result in one of the following diseases: West Nile, Eastern Equine Encephalitides and Western Encephalitides. Knowing some key steps that can minimize the risk of mosquito bites is, therefore, important in reducing the risks. Workers working outdoors should be aware that the use of PPE techniques is essential to preventing mosquito bites especially when working at sites where mosquitoes may be active and biting.

Use repellents containing DEET, picaridin, IR3535, and some oil of lemon eucalyptus and para-menthane-diol products provide longer-lasting protection. To optimize safety and effectiveness, repellents should be used according to the label instructions. Cover as much of your skin as possible by wearing shirts with long-sleeves, long pants, and socks whenever possible. Avoid use of perfumes and colognes when working outdoors during peak times when mosquitoes may be active; mosquitoes may be more attracted to individuals wearing perfumes and colognes.

Ticks

Ticks are generally found in wooded, brushy, or grassy areas. They favor moist, shaded areas with fallen leaves and low vegetation, often sitting on the tips of tall grass or on shrubs waiting for a host to pass. Adult ticks are approximately the size of sesame seeds and are most active from March to mid-May and mid-August to November. Both nymphs and adults can transmit Lyme disease. Ticks can be active any time the temperature is above freezing. Ticks burrow into the host's skin to position themselves to withdraw blood. Infected ticks pass pathogens to the host through the bloodstream. Once imbedded, they may remain on the host for days. On humans, they frequently crawl to fleshy parts of the body and into difficult to reach spots such as the groin, armpit, or scalp.

A fine-tipped tweezer is recommended for tick removal tool and should be in the first-aid kit. Follow these steps: Pull upward with steady, even pressure. Do not twist or jerk the tick; this can cause mouth parts to break off and remain in the skin. If this happens, remove the parts with tweezers. If unable to remove easily with tweezers, leave them alone and let the skin heal.

After removing the tick, thoroughly clean the bite area and hands with rubbing alcohol, iodine scrub, or soap & water. Dispose of live ticks by submersion in alcohol, placing it in a sealed bag/container, wrap it tightly in tape or flush it down the toilet. Never crush ticks with your fingers. Do not attempt to use nail polish remover, petroleum jelly, lotion or heat to try to get the tick to exit skin. Swift removal is key.

Wear light-colored clothing so ticks stand out and long-sleeved shirts and long pants to reduce skin exposure. Tuck your shirt into your pants and tuck your pants into your socks to close gaps. Use repellent containing 20-30% DEET (N, N-diethyl-m-toluamide) on exposed skin and clothing. Avoid hands, eyes and mouth and wash off repellent when back indoors. Treat clothing with or purchase clothing with products containing 0.5% permethrin. It remains protective through several washings. Conduct frequent tick checks on clothing and skin. Have others check your back, scalp, and behind your ears and check gear for "hitchhikers". As soon as returning indoors, take a bath or shower and do a full-body inspection using a mirror. Wash field clothes and tumble dry on high to kill any ticks that may be hidden. If working in an area of significant tick habitat PPE may need to be upgraded to a Tyvek suit. Implementation of controls is crucial to minimize or eliminate the possibility of a tick bite. Should a staff member find an embedded tick they need to report it immediately to Corporate Health and Safety. If a staff member has been bitten, contact Corporate H&S and Work Care at 888-449-7787 to initiate the Tick Management Protocol. Once bitten, it takes approximately 48 hours to transmit Lyme Disease.

Stinging Insects

Stinging Insects fall into two major groups: Apidae (honeybees and bumblebees) and vespids (wasps, yellow jackets, and hornets). Apidae are docile and usually do not sting unless provoked. The stinger of the honeybee has multiple barbs, which usually detach after a sting. Vespids have few barbs and can inflict multiple stings.

There are several kinds of stinging insects that might be encountered on the project site. Most stings

will only result in a temporary injury. However, sometimes the effects can be more severe, even life-threatening depending on where you are stung and what allergies you have. Being stung in the throat area of the neck may cause edema (swelling caused by fluid build-up in the tissues) around the throat and may make breathing difficult.

In rare cases, a severe allergic reaction can occur. This can cause "anaphylaxis" or anaphylactic shock with symptoms appearing immediately or up to 30 minutes later. Symptoms include; hives, itching and swelling in areas other than the sting site, swollen eyes/eyelids, wheezing, chest tightness, difficulty breathing, hoarse voice, swelling of the tongue, dizziness or sharp drop in blood pressure, shock, unconsciousness or cardiac arrest. Reactions can occur the first time you are stung or with subsequent stings. If you see any signs of reaction, or are unsure, call or have a co-worker call emergency medical services (e.g., 911) right away. Get medical help for stings near the eyes, nose, or throat. Stay with the person who has been stung to monitor their reaction.

Staff who are allergic to bee stings are encouraged to inform their staff/project manager. If staff member carries an Epi-pen (i.e., epinephrine autoinjector) they are encouraged to inform their colleagues in case they are stung and are incapable of administering the injection. Examine site for any signs of activity or a hive/nest. If you see several insects flying around, see if they are entering/exiting from the same place. Most will not sting unless startled or attacked. Do not swat, let insects fly away on their own. If you must, walk away slowly or gently "blow" them away. If a nest is disturbed and you hear "wild" buzzing, protect your face with your hands and run from the area immediately. Wear long sleeves, long pants, and closed-toed boots. Wear light colored clothes such as khakis. Avoid brightly colored, patterned, or black clothing. Tie back long hair to avoid bees or wasps from entanglement. Do not wear perfumes, colognes, or scented soaps as they contain fragrances that are attractive. If bee or wasp is found in your car, stop and leave windows open.

Location/Terrain			
Public Rd/Right of Way	Slip/Trip/Falls	Choose an item.	Choose an item.

Public Right of Way

Haley & Aldrich staff and their subcontractors conducting work on public roads and/or right of ways can be exposed to vehicular traffic and expose the public to the hazards of the job site. Where a hazard exists to site workers because of traffic or haulage conditions at work sites that encroach public streets or highways, a system of traffic controls in conformance with the Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD), or state program, is required. A Temporary Traffic Control Plan (TCP) describes traffic controls to be used for facilitating vehicle and pedestrian traffic through a temporary traffic control zone TCPs are required to provide for worker protection and safe passage of traffic through and around job sites with as little inconvenience and delay as possible.

The plan may range in scope from being very detailed, to merely referencing typical drawings contained in the MUTCD. The degree of detail in the TCP depends entirely on the complexity of the situation, and TCPs should be prepared by persons knowledgeable about the fundamental principles of temporary traffic control and the work activities to be performed.

Haley & Aldrich Project Managers or their subcontractors need to establish appropriate control measures and obtain any permits when project work is on or encroaches public roadways. You may need flaggers or police details. Cease work and notify the field supervisor immediately if any conditions are such that safety is jeopardized. Utilize protective vehicles whenever appropriate or position equipment so in between the work and oncoming traffic.

Slips, Trips, & Falls

Slip and trip injuries are the most frequent injuries to workers. Statistics show most falls happen on the same level resulting from slips and trips. Both slips and trips result from unintended or unexpected change in the contact between the feet and the ground or walking surface. Good housekeeping, quality of walking surfaces (flooring), awareness of surroundings, selection of proper footwear, and appropriate pace of walking are critical for preventing fall accidents.

Site workers will be walking on a variety of irregular surfaces, which may affect their balance. Extra care must be taken to walk cautiously near rivers because the bottom of the riverbed maybe slick and may not be visible. Rocks, gradient changes, sandy bottoms, and debris may be present but not observable.

Take your time and pay attention to where you are going. Adjust your stride to a pace that is suitable for the walking surface and the tasks you are doing. Check the work area to identify hazards - beware of trip hazards such as wet floors, slippery floors, and uneven surfaces or terrain. Establish and utilize a pathway free of slip and trip hazards. Choose a safer walking route. Carry loads you can see over. Keep work areas clean and free of clutter. Communicate hazards to on-site personnel and remove hazards as appropriate.

Miscellaneous

Extended Shift	Choose an item.	Choose an item.	Choose an item.
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Extended Shift

An extended shift can include extending a workday beyond eight hours. Extended or unusual work shifts may be more stressful physically, mentally, and emotionally. Non-traditional shifts and extended work hours may disrupt the body's regular schedule, leading to increased fatigue, stress, and lack of concentration. This leads to an increased risk of operator error, injuries and/or accidents. The degree to which an individual is exposed to fatigue risk factors depends upon the work schedule. As both the duration of the workday and the number of days worked increase so does the fatigue risk factors. Staff Managers need to be aware of the fatigue risk factors and ensure projects are structured to mitigate these factors. Staff Members also have a responsibility to manage the personal fatigue risk factors that they can control outside of work (e.g, duration and quality of sleep, diet, drugs, and alcohol).

Fatigue is a message to the body to rest and can be eliminated with proper rest. However, if rest is not possible, fatigue can increase and becomes distressing and eventually debilitating. Fatigue symptoms, both mental and physical, vary and depend on the person and degree of overexertion. Examples include: weariness, sleepiness, irritability, reduced alertness, lack of memory, concentration and motivation, increased susceptibility to illness, depression, headache, loss of appetite, and digestive problems.

When possible, managers should limit use of extended shifts and increase the number of days worked. Working shifts longer than 8 hours generally result in reduced productivity and alertness. Additional breaks and meals should be provided when working extended shift periods. Tasks requiring heavy physical labor or intense concentration should be performed at the beginning of the shift if possible. This is an important consideration for pre-emergency planning.

Make efforts, when feasible, to ensure that unavoidable extended work shifts and shift changes allow affected employees time for adequate rest and recovery. Project Managers need to plan to have an adequate number of personnel available to enable workers to take breaks, eat meals, relax, and sleep.

Plan for regular and frequent breaks throughout the work shift. If at remote sites, ensure if possible, that there is a quiet, secluded area designated for rest and recuperation. In addition to formal breaks such as lunch or dinner, encourage use of micro breaks to change positions, move about, and shift concentration. Personnel should look to obtain an adequate quantity and quality of sleep.

Task Hazard Summary**Task 1 – Water Sampling**

Environmental water sampling could include activities such as groundwater sampling from permanent or temporary wells, or surface water sampling from streams, rivers, lakes, ponds, lagoons, and surface impoundments.

Sampling tasks could involve uncapping, purging (pumping water out of the well), and sampling, and/or monitoring, new or existing monitoring wells. A mechanical pump may be used to purge the wells and can be hand-, gas-, or electric-operated. Water samples taken from the wells are then placed in containers and shipped to an analytical laboratory for analysis. The physical hazards of these operations are primarily associated with the collection methods and procedures used.

When sampling bodies of water containing known or suspected hazardous substances, adequate precautions must be taken to ensure the safety of sampling personnel. The sampling team member collecting the sample should not get too close to the edge, where ground failure or slips, trips or falls may cause him/her to lose his/her balance. The person performing the sampling should have fall restraint or protection for the task. When conducting sampling from a boat in an impoundment or flowing waters, appropriate vessel safety procedures should be followed. Avoid lifting heavy coolers with back muscles; instead, use ergonomic lifting techniques, team lift or mechanical lifts. Wear proper gloves, such as when handling sample containers to avoid contacting any materials that may have spilled out of the sample containers.

Inhalation and absorption of COCs are the primary routes of entry associated with water sampling, due to the manipulation of sample media and equipment, manual transfer of media into sample containers, and proximity of operations to the breathing zone. During this project, several different groundwater sampling methodologies may be used based on equipment accessibility and the types of materials to be sampled. These sampling methods may include hand or mechanical bailing. The primary hazards associated with these specific sampling procedures are not potentially serious; however, other operations in the area or the conditions under which samples must be collected may present chemical and physical hazards. The hazards directly associated with groundwater sampling procedures are generally limited to strains or sprains from hand bailing, and potential eye hazards. Exposure to water containing COCs is also possible. All tools and equipment that will be used at the site must be intrinsically safe (electronics and electrical equipment) and non-sparking or explosion-proof (hand tools).

Task 2 - Underground Utility Clearance

Ground disturbance activities such as excavating or drilling have the potential to contact underground utilities and may be considered a hazardous activity and a permit to work may be required. Once the Haley & Aldrich Project Manager has identified the work zone and the areas designated for ground disturbance the PM or designee is required to delineate the area with either white paint or flags so that the appropriate agencies know which area to check for their respective utilities. Haley & Aldrich staff

members must ensure that permission has been gained from the property owner to access the property prior to site entry and before marking any proposed exploration or drilling locations.

The Project Manager shall verify that the proposed dig or drill zones are adequately marked or staked prior to the locators site visit, and that the appropriate Line Location Organization/ Contractor has been notified (a minimum of 72 business hours in advance) of all planned ground disturbance activities and a request for line location has been registered with the applicable One Call or dial Before You Dig organization when applicable. Personnel that are required to mark the area need to identify and understand the hazards associated with the project area which can range from a public roadway to a greenspace in a remote location.

See OP1020 Work Near Utilities.

Task 3 – Drilling

Drilling is conducted for a range of services that can include but are not limited to: soil characterization, environmental investigation, well installation, and ore exploration. Familiarity with basic drilling safety is an essential component of all drilling projects. Potential hazards related to drilling operations include, but are not limited to: encountering underground or overhead utilities, traffic and heavy equipment, hoisting heavy tools, steel impacts, open rotation entanglement, and the planned or unexpected encountering of toxic or hazardous substances. While staff members do not operate drilling equipment, they may work in close proximity to operating drilling equipment and may be exposed to many of the same hazards as the drilling subcontractor. It is imperative that staff are aware of emergency stops and establish communication protocols with the drillers prior to the start of work.

See OP 1002 Drilling Safety for more information.

Task 4 – Soil Sampling

Soil sampling by Haley & Aldrich staff on active construction sites can be conducted in conjunction with a wide range of activities such as building construction, earthwork and soil management related activities. These activities can include, but are not limited to: drill spoil characterization and management during building foundation element installation, characterization of excavated soils for management/disposal/reuse during earthwork activities, and as part of environmental remedial activities such as delineation and confirmation sampling. Familiarity with basic heavy construction safety, site conditions (geotechnical and environmental), and potential soil contaminants are essential components of soil sampling performed on active sites. Potential hazards related to soil sampling at construction sites include, but are not limited to: encountering site vehicle traffic and heavy equipment operations, manual lifting, generated waste, contact or exposure to impacted soil, and encountering unknown toxic or hazardous substances. Although soil sampling is commonly performed within active excavations, from stockpiles, or within trench excavations, sampling locations and situations will vary depending on site conditions. Care should be taken while entering and exiting excavations or trenches,

and when accessing (climbing up or down) soil stockpiles, ensuring that the sampling area is not being actively accessed by construction equipment. Care should also be taken with handling of potentially environmentally impacted soil during sampling, with appropriate PPE identified and used. At no time during classification activities are personnel to reach for debris near machinery that is in operation, place any samples in their mouth, or come in contact with the soils without the use of gloves. Staff will have to carry and use a variety of sampling tools, equipment, containers, and potentially heavy sample bags. It is imperative that staff are aware of emergency / communication protocols with the Contractor prior to the start of work.

Task Physical Hazards Checklist				
Potential Task Hazards	Task 1 Water Sampling	Task 2 Utility Clearance	Task 3 Drilling	Task 4 Soil Sampling
Ergonomics	☒	☒	☒	☒
Energized Equipment	☒	☐	☐	☐
Traffic	☒	☒	☒	☐
Underground Utilities	☐	☒	☒	☐
Slippery Surfaces	☒	☐	☐	☐
Generated Wastes	☒	☐	☐	☐
Noise	☐	☐	☒	☐
Rotating Equipment	☐	☐	☒	☐
Congested Area	☒	☐	☒	☐
Overhead Utilities	☐	☐	☒	☐
Line of Fire	☐	☐	☒	☐
Other: Specify	☐	☐	☐	☐

Summary of Physical Hazards & Controls

Ergonomics

Most Work-related Musculoskeletal Disorders (WMSDs) are caused by Ergonomic Stressors. Ergonomic Stressors are caused by poor workplace practices and/or insufficient design, which may present ergonomic risk factors. These stressors include, but not limited to, repetition, force, extreme postures, static postures, quick motions, contact pressure, vibration, and cold temperatures.

WMSDs are injuries to the musculoskeletal system, which involves bones, muscles, tendons, ligaments, and other tissues in the system. Symptoms may include numbness, tightness, tingling, swelling, pain, stiffness, fatigue, and/or redness. WMSD are usually caused by one or more Ergonomic Stressors. There may be individual differences in susceptibility and symptoms among employees performing similar tasks. Any symptoms are to be taken seriously and reported immediately.

See OP1053 Ergonomics for more information.

Controls

- Ensure workstations are ergonomically correct so bad posture is not required to complete tasks.
- Take periodic breaks over the course of the day.
- Stretch during break times.
- Break up tasks that require repetitive motion.
- Contact Corporate H&S with any ergonomic concerns.

Energized Equipment

Energy sources including electrical, mechanical, hydraulic, pneumatic, or other sources in machines and equipment can be hazardous to workers. During servicing and maintenance of machines and equipment, the unexpected startup or release of stored energy can result in serious injury or death to workers.

Staff members that are required to work on energized equipment must first ensure that the source of energy is isolated and/or de-energized. In addition, any stored energy must also be released. Staff must ensure that the process to de-energize and isolate energy sources is documented and communicated to those who are working on the equipment. Staff must be trained on and understand the procedure.

See OP 1032 Control of Hazardous Energy for more information.

Controls

- Document process to de-energize or isolate energy sources.
- Ensure staff are appropriately trained to conduct work requiring LOTO.
- Affix log or tag to equipment to ensure improper start-up or release of energy.

- Execute an Energy Isolation Permit.

Traffic

To ensure worker protection and the safe passage of traffic through and around job sites, Site Traffic Control procedures may need to be implemented on project sites. Job zone control and traffic management are necessary when Simultaneous Operations (SIMOPS) or third parties could be at risk of injury by entering the work zone, or when the work crew is at risk of injury by other operations.

Traffic patterns shall be evaluated. Conditions such as high pedestrian traffic, peak periods, daily deliveries or SIMOPS known, Heavy equipment traffic volume and light duty traffic volume shall be evaluated

Early identification and planning for site operations that require job zone control and traffic management, including SIMOPS, is the responsibility of the Project Manager and primary contractor manager. Traffic control plans shall be consistent with the Manual on Uniform Traffic Control Devices.

See OP1025 Signs, Signals, and Barricades and/or OP1043 Site Traffic Control for more information.

Controls

- Alternate walkways where possible.
- Use of the local police to direct traffic.
- Use of an air horn to alert drivers or other workers.
- Maintain good housekeeping and clean the area as work is completed.
- Use the 'buddy' or 'watchperson' system while performing work.
- Use a spotter for backing, tight maneuvers and bin/tank/equipment drop-offs.
- Use traffic control devices, field vehicles and barricades and avoid the use of caution tape.
- Park all vehicles (with wheels in a safe direction away from work) to block traffic with a flashing yellow light. Park so that access to the vehicle is away from oncoming traffic while working.
- When parking a vehicle and equipment, utilize a 'first move forward' driving practice.
- Work in an upright position, face traffic and make eye contact with drivers when possible.
- Minimize work time in traffic.
- Establish a 'Stop Work' hand signal.
- Personnel shall always wear high visibility vest.

If public sites, such as public roads, bicycle paths or footpaths, are closed or rerouted, local and regulatory requirements shall be followed and traffic control permits shall be put in place. Proper traffic guiding equipment includes stop/slow paddle signs, flaggers, flashing lights and directional signs.

All personnel on-site should be aware of the plan of the day and the Traffic Control Plan should be communicated with all parties involved during the pre-shift meeting.

Line of Fire

Line of fire refers to the path an object will travel. Examples of line of fire situations typically observed on project sites include lifting/hoisting, lines under tension, objects that can fall or roll, pressurized objects or lines, springs or stored energy, work overhead, vehicles and heavy equipment.

Controls

- Never walk under a suspended load.
- Be aware and stay clear of tensioned lines such as cable, chain, and rope.
- Be cautious of torque stresses that drilling equipment and truck augers can generate. Equipment can rotate unexpectedly long after applied torque force has been stopped.
- Springs and other items can release tremendous energy if compressed and suddenly released.
- Items under tension and pressure can release tremendous energy if it is suddenly released.
- Not all objects may be overhead; be especially mindful of top-heavy items and items being transported by forklift or flatbed.
- Secure objects that can roll such as tools, cylinders, and pipes.
- Stay clear of soil cuttings or soil stockpiles generated during drilling operations and excavations, be aware that chunks of soil, rocks, and debris can fall or roll.

Underground Utilities

Various forms of underground/overhead utility lines or conveyance pipes may be encountered during site activities. Prior to the start of intrusive operations, utility clearance is mandated, as well as obtaining authorization from all concerned public utility department offices. Should intrusive operations cause equipment to come into contact with utility lines, the SHSO, Project Manager, and Regional H&S Manager shall be notified immediately. Work will be suspended until the client and applicable utility agency is contacted and the appropriate actions for the situation can be addressed.

See OP1020 Work Near Utilities for complete information.

Controls

- Obtain as-built drawings for the areas being investigated from the property owner.
- Visually review each proposed soil boring locations with the property owner or knowledgeable site representative.
- Perform a geophysical survey to locate utilities.
- Hire a private line locating firm to determine location of utility lines that are present at the property.
- Identifying a no-drill or dig zone.
- Hand dig or use vacuum excavation in the proposed ground disturbance locations if insufficient data is unavailable to accurately determine the location of the utility lines.

Slippery Surfaces

Both slips and trips result from unintended or unexpected change in the contact between the feet and ground or walking surface. Good housekeeping, quality of walking surfaces, selection of proper footwear, and appropriate pace of walking are critical for preventing fall accidents. Slips happen where there is too little friction or traction between the footwear and walking surface.

Common causes of slips are wet or oily surfaces, spills, weather hazards, loose unanchored rugs or mats and flooring or other walking surfaces that do not have same degree of traction in all areas.

Weather-related slips and falls become a serious hazard as winter conditions often make for wet or icy surfaces outdoors. Even wet organic material or mud can create hazardous walking conditions. Spills and leaks can also lead to slips and falls.

Controls

- Evaluate the work area to identify any conditions that may pose a slip hazard.
- Address any spills, drips or leaks immediately.
- Mark areas where slippery conditions exist.
- Select proper footwear or enhance traction with additional PPE.
- Where conditions are uncertain or environmental conditions result in slippery surfaces walk slowly, take small steps, and slide feet on wet or slippery surfaces.

Generated Waste

Activities on environmental sites may generate waste that requires regulated handling and disposal. Excess sample solids, decontamination materials, poly sheeting, used PPE, etc. that are determined to be free of contamination through field or laboratory screening can usually be disposed into client-approved, on-site trash receptacles. Uncontaminated wash water may be discarded onto the ground surface away from surface water bodies in areas where infiltration can occur. Contaminated materials must be segregated into liquids or solids and drummed separately for off-site disposal.

Controls

- Manage waste properly through good work practices.
- Collect, store, containerize waste, and dispose of it properly.
- All wastes generated shall be containerized in an appropriate container (i.e., open or closed top 55-gallon drum, roll-off container, poly tote, cardboard box, etc.) as directed by the PM.
- Containers should be inspected for damages or defects.
- Waste containers should be appropriately labeled indicating the contents, date the container was filled, owner of the material (including address) and any unique identification number, if necessary.
- Upon completion of filling the waste container, the container should be inspected for leaks and an appropriate seal.

Noise

Working around heavy equipment (drill rigs, excavators, etc.) often creates excessive noise. The effects of noise include physical damage to the ear, pain, and temporary and/or permanent hearing loss. Workers can also be startled, annoyed, or distracted by noise during critical activities. Noise monitoring data that indicates that working within 25 feet of operating heavy equipment result in exposure to hazardous levels of noise (levels greater than 85 dBA).

See OP 1031 Hearing Conservation for additional information.

Controls

- Personnel are required to use hearing protection (earplugs or earmuffs) within 25 feet of any operating piece of heavy equipment.
- Limit the amount of time spent at a noise source.
- Move to a quiet area to gain relief from hazardous noise sources.
- Increase the distance from the noise source to reduce exposure.

Rotating Equipment

Exposure to rotating parts can occur when working near a drilling rig, or other similar equipment. All rotating parts should be covered with guards to prevent access by workers. When performing maintenance activities that require the rotating parts to be exposed, workers should not allow loose clothing, hands, or tools to approach the rotating parts. Energy isolation procedures must be followed, and guards must be replaced as soon as possible after completing the maintenance task.

Operation of drilling equipment also creates hazards associated with pinch points and rotating equipment. These are hazards where the body and extremities, especially the hands, can be caught in moving equipment and crushed.

Controls

- Evaluate work procedures to avoid placing the body and extremities in the path of rotating equipment and tools to avoid being struck by moving equipment, tools and machinery.
- Evaluate equipment and tool use to identify pinch points and develop procedures to avoid placing body parts in a position where they can be caught in moving equipment, tools and machinery.
- Follow energy isolation procedures if required.
- Do not work near rotating equipment with long loose hair, loose clothing or jewelry.

Congested Areas

Working in congested areas can expose both workers and the public to a wide range of hazards depending upon the specific activities taking place. Staff Members need to understand the work scope, work areas, equipment on-site, and internal traffic patterns to minimize or eliminate exposure potential.

Controls

- Provide barricades, fencing, warning signs/signals and adequate lighting to protect people while working in or around congested areas.
- Vehicles and heavy equipment with restricted views to the rear should have functioning back-up alarms that are audible above the surrounding noise levels. Whenever possible, use a signaler to assist heavy equipment operators and/or drivers in backing up or maneuvering in congested areas.
- Lay out traffic control patterns to eliminate excessive congestion.

- Workers in congested areas should always wear high visibility clothing.
- Be aware of Line of Fire hazards when performing work activities in congested areas.
- Hazards associated with SIMOPs should be discussed daily at Tailgate Safety Meetings.

Overhead Utilities

When work is undertaken near overhead electrical lines, the distance maintained from those lines shall also meet the minimum distances for electrical hazards as defined in Table 1 below. Note: utilities other than overhead electrical utilities need to be considered when performing work.

Table 1. Minimal Radial Clearance Distances *	
Normal System Voltage Kilovolts (kV)	Required Minimal Radial Clearance Distance (feet/meters)
0 - 50	10/3.05
51 - 100	12/3.66
101 - 200	15/4.57
201 - 300	10/6.1
301 - 500	25/7.62
501 - 750	35/10.67
750 - 1000	45/13.72

* For those locations where the utility has specified more stringent safe distances, those distances shall be observed.

Controls

- To prevent damage, guy wires shall be visibly marked and work barriers or spotters provided in those areas where work is being conducted.
 - When working around guy wires, the minimum radial clearance distances for electrical power shall be observed.
- The PM shall research and determine if the local, responsible utility or client has more restrictive requirements than those stated in Table 1.
- If equipment cannot be positioned in accordance with the requirements established in Table 1 the lines need to be de-energized.

4. PROTECTIVE MEASURES

The personal protective equipment and safety equipment (if listed) is specific to the associated task. The required PPE and equipment listed must be onsite during the task being performed. Work shall not commence unless the required PPE or Safety Equipment is present.

Required Safety & Personal Protective Equipment

Required Personal Protective Equipment (PPE)	Task 1	Task 2	Task 3	Task 4
	Water Sampling	Utility Clearance	Drilling	Soil Sampling
Hard hat	☒	☒	☒	☒
Safety Glasses	☒	☒	☒	☒
Safety Toed Shoes	☒	☒	☒	☐
Class 2 Safety Vest	☒	☒	☒	☒
Hearing Protection	☐	☐	☒	☐
Nitrile Gloves	☒	☐	☐	☒
Cut Resistant Gloves	☐	☐	☒	☐
Choose an item.	☐	☐	☐	☒
Choose an item.	☐	☐	☐	☐
Level of protection required	D	D	D	D
Required Safety Equipment				
Barricade Tape	☒	☐	☒	☐
Fire Extinguisher	☐	☐	☒	☐
First Aid Kit	☒	☒	☒	☒
Safety Cones	☒	☐	☒	☐
Eyewash Bottles	☒	☐	☒	☐
Choose an item.	☐	☐	☐	☐

5. TRAINING REQUIREMENTS

The table below lists the training requirements staff must have respective to their assigned tasks and that are required to access the Site.

Site Specific Training Requirements

HAZWOPER - 40 Hour (Initial)

Task Specific Training Requirements

Required Training Type	Task 1	Task 2	Task 3	Task 4
	Water Sampling	Utility Clearance	Drilling	Soil Sampling
Portable Fire Extinguisher	☐	☐	☒	☐

6. AIR MONITORING PLAN AND EQUIPMENT

Exposures to airborne substances shall be fully characterized throughout project operations to ensure that exposure controls are effectively selected and modified as needed.

Is air/exposure monitoring required at this work site for personal protection? No

Is perimeter monitoring required for community protection? No

Air monitoring plan not applicable Yes

Air Monitoring/Screening Equipment Requirements

Photo-Ionization Detector (PID) 10.6eV

The required equipment listed above must be on site. Work shall not commence unless the equipment is present and in working order.

Monitoring Plans

Parameter/ Contaminant	Equipment	Action Level	Response Activity
VOCs	PID 10.6 eV	<10 ppm	Continue work and monitoring.
		>10 ppm for 5 minutes	Clear Instrument and Re-Monitor the Area. Implement PPE upgrades.
		>10 ppm for >5 minutes	Evacuate the area and call the FSM and/or PM for further guidance. Implement engineering controls.

Zone Location and Monitoring Interval

Breathing zone and edge of Exclusion Zone.

*If chemical does not have an action level use TLV or REL, whichever is lowest, to be used as an action level. If TLV or REL are the same as PEL, cut the PEL in half for an action level.

Parameter/ Contaminant	Equipment	Action Level*	Response Activity
VOCs	PID 10.6 eV		
Zone Location		Monitoring Interval	
Breathing Zone	Choose an item.	Grab Sampling	

7. DECONTAMINATION & DISPOSAL METHODS

All possible and necessary steps shall be taken to reduce or minimize contact with chemicals and contaminated/impacted materials while performing field activities (e.g., avoid sitting or leaning on, walking through, dragging equipment through or over, tracking, or splashing potential or known contaminated/impacted materials.)

Personal Hygiene Safeguards

The following minimum personal hygiene safeguards shall be adhered to:

1. No smoking or tobacco products in any project work areas.
2. No eating or drinking in the exclusion zone.
3. It is required that personnel present on site wash hands before eating, smoking, taking medication, chewing gum/tobacco, using the restroom, or applying cosmetics and before leaving the site for the day.

It is recommended that personnel present on site shower or bathe at home at the end of each day of working on the site.

Decontamination Supplies

All decontamination should be conducted at the project site in designated zones or as dictated by Client requirements. Decontamination should not be performed on Haley & Aldrich owned or leased premises.

☐ Acetone	☒ Distilled Water	☐ Polyethylene Sheeting
☒ Alconox Soap	☒ Drums	☐ Pressure/Steam Cleaner
☐ Brushes	☐ Hexane	☒ Tap Water
☒ Disposal Bags	☐ Methanol	☐ Wash tubs
☒ 5 Gallon Buckets	☒ Paper Towels	☐ Other: Specify

Location of Decontamination Station

TBD

Standard Personal Decontamination Procedures

Outer gloves and boots should be decontaminated periodically as necessary and at the end of the day. Brush off solids with a hard brush and clean with soap and water or other appropriate cleaner whenever possible. Remove inner gloves carefully by turning them inside out during removal. Wash hands and forearms frequently. It is good practice to wear work-designated clothing while on-site which can be removed as soon as possible. Non-disposable overalls and outer work clothing should be bagged onsite prior to laundering. If gross contamination is encountered on-site contact the Project Manager and Field Safety Manager to discuss proper decontamination procedures.

The steps required for decontamination will depend upon the degree and type of contamination but will generally follow the sequence below.

1. Remove and wipe clean hard hat
2. Rinse boots and gloves of gross contamination
3. Scrub boots and gloves clean
4. Rinse boots and gloves
5. Remove outer boots (if applicable)
6. Remove outer gloves (if applicable)
7. Remove Tyvek coverall (if applicable)
8. Remove respirator, wipe clean and store (if applicable)
9. Remove inner gloves (if outer gloves were used)

PPE that is not grossly contaminated can be bagged and disposed in regular trash receptacles.

Small Equipment Decontamination

Pretreatment of heavily contaminated equipment may be conducted as necessary:

1. Remove gross contamination using a brush or wiping with a paper towel
2. Soak in a solution of Alconox and water (if possible)
3. Wipe off excess contamination with a paper towel

Standard decontamination procedure:

4. Wash using a solution of Alconox and water
5. Rinse with potable water
6. Rinse with methanol (or equivalent)
7. Rinse with distilled/deionized water

Inspect the equipment for any remaining contamination and repeat as necessary.

Disposal Methods
Procedures for disposal of contaminated materials, decontamination waste, and single use personal protective equipment shall meet applicable client, local, State, and Federal requirements.
Disposal of Single Use Personal Protective Equipment
PPE that is not grossly contaminated can be bagged and disposed in regular trash receptacles. PPE that is grossly contaminated must be bagged (sealed) and field personnel should communicate with the Project Manager to determine proper disposal.
Standard Disposal Methods for Contaminated Materials
• Excess sample solids, decontamination materials, rags, brushes, poly-sheeting, etc. that are determined to be free of contamination through field screening can usually be disposed into client-approved, on-site trash receptacles. • Uncontaminated wash water may be discarded onto the ground surface away from surface water bodies in areas where infiltration can occur. • Contaminated materials must be segregated into liquids or solids and containerized separately for offsite disposal. Any additional requirements that are designated by the workplan or by client specifications should be entered here.

8. SITE CONTROL

The overall purpose of site control is to minimize potential contamination of workers, protect the public from the site's hazards, and prevent vandalism. Site control is especially important in emergency situations. The degree of site control necessary depends on site characteristics, site size, and the surrounding community. The following information identifies the elements used to control the activities and movements of people and equipment at the project site.

Communication
Internal Haley & Aldrich site personnel will communicate with other Haley & Aldrich staff member and/or subcontractors or contractors with: Face to Face Communication
External H&S site personnel will use the following means to communicate with off-site personnel or emergency services. Cellular Phones
Visitors
Project Site Will visitors be required to check-in prior to accessing the project site? No
Visitor Access Authorized visitors that require access to the project site need to be provided with known information with respect to the site operations and hazards as applicable to the purpose of their site visit. Authorized visitors must have the required PPE and appropriate training to access the project site. Site Safety Officer is responsible for facilitating authorized visitor access.
Zoning
Work Zone The work zone will be clearly delineated to ensure that the general public or unauthorized worker access is prevented. The following will be used: Flagging Tape Cones

9. SITE SPECIFIC EMERGENCY RESPONSE PLAN

The Emergency Response Plan addresses potential emergencies at this site, procedures for responding to these emergencies, roles, responsibilities during emergency response, and training. This section also describes the provisions this project has made to coordinate its emergency response with other contractors onsite and with offsite emergency response organizations (as applicable).

During the development of this emergency response plan, local, state, and federal agency disaster, fire, and emergency response organizations were consulted (if required) to ensure that this plan is compatible and integrated with plans of those organizations. Documentation of the dates of these consultations and the names of individuals contacted is kept on file and available upon request.

The site has been evaluated for potential emergency occurrences, based on site hazards, and the major categories of emergencies that could occur during project work are:

- Fire(s)/Combustion
- Hazardous Material Event
- Medical Emergency
- Natural Disaster

A detailed list of emergency types and response actions are summarized in Table X below. Prior to the start of work, the SHSO will update the table with any additional site-specific information regarding evacuations, muster points, or additional emergency procedures. The SHSO will establish evacuation routes and assembly areas for the Site. All personnel entering the Site will be informed of these routes and assembly areas.

Pre-Emergency Planning

Before the start of field activities, the Project Manager will ensure preparation has been made in anticipation of emergencies. Preparatory actions include the following:

Meeting with the subcontractor/and or client concerning the emergency procedures in the event a person is injured. Appropriate actions for specific scenarios will be reviewed. These scenarios will be discussed, and responses determined before the sampling event commences. A form of emergency communication (i.e.; Cell phone, Air horn, etc.) between the Project Manager and subcontractor and/or client will be agreed on before the work commences.

A training session (i.e., "safety meeting") given by the Project Manager or their designee informing all field personnel of emergency procedures, locations of emergency equipment and their use, and proper evacuation procedures.

Ensuring field personnel are aware of the existence of the emergency response HASP and ensuring a copy of the HASP accompanies the field team(s).

Onsite Emergency Response Equipment

Emergency procedures may require specialized equipment to facilitate work rescue, contamination control and reduction or post-emergency cleanup. The following table summarizes where emergency response equipment will be stocked and stored.

Table 9-1. Emergency Equipment and Emergency PPE			
Emergency Equipment	Specific Type	Quantity Stocked	Location Stored
First Aid Kit	General	1	Haley & Aldrich truck
Fire Extinguisher	Type A	1	Haley & Aldrich truck
Decontamination Solution	Alconox	Enter text	Haley & Aldrich truck
Emergency Eyewash Station	Bottles	1	Haley & Aldrich truck
Select	Enter text	Enter text	Enter text.
Emergency PPE	Specific Type	Quantity Stocked	Location Stored
Gloves - "Enter Type"	Nitrile	1 box	Haley & Aldrich truck

EVACUATION ALARM
Will be communicated during the Onsite Kickoff Meeting.
EVACUATION ROUTES
Will be given a map after site specific training.
EVACUATION MUSTER POINT(S)/ SHELTER AREA(S)
Will be given a location after site specific training.
EVACUTION RESPONSE DRILLS
The Site relies on outside emergency responders and a drill is not required.

Table 9-2. Emergency Planning

Emergency Type	Notification	Response Action	Evacuation Plan/Route
Chemical Exposure	Report event to SHSO immediately	Refer to Safety Data Sheet for required actions	Remove personnel from work zone
Fire - Small	Notify SHSO and contact 911	Use fire extinguisher if safe and qualified to do so	Mobilize to <i>Muster Point</i>
Fire – Large/Explosion	Notify SHSO and contact 911	Evacuate immediately	Mobilize to <i>Muster Point</i>
Hazardous Material – Spill/Release	Notify SHSO; SHSO will contact PM to determine if additional agency notification is	If practicable don PPE and use spill kit and applicable procedures to contain the release	See Evacuation Map for route, move at least 100 ft upwind of spill location
Medical – Bloodborne Pathogen	Notify SHSO	If qualified dispose in container or call client or city to notify for further instruction.	None Anticipated
Medical – First Aid	Notify SHSO	If qualified perform first aid duties	None Anticipated
Medical – Trauma	If life threatening or transport is required call 911, immediately	Wait at site entrance for ambulance	Noe Anticipated
Security Threat	Notify SHSO who will call 911 as warranted	Keep all valuables out of site and work zones delineated.	None Anticipated
Weather – Earthquake/Tsunami’s	STOP WORK and evacuate Site upon any earthquake	Turn off equipment and evacuate as soon as is safe to do so	Mobilize to <i>Shelter Location</i>
Weather – Lightning Storm	STOP WORK	Work may resume 30 minutes after the last observed lightning.	None Anticipated
Weather – Tornadoes/Hurricanes	Monitor weather conditions STOP WORK and evacuate the site	Evacuate to shelter location or shelter in place immediately	Mobilize to <i>Shelter Location</i>
<u>MUSTER POINT</u> 1695 E Main Street, Freeland, WA		<u>SHELTER LOCATION</u> Island County Fire District 3, 5535 Cameron Rd, Freeland, WA	
In case of site emergencies, site personnel shall be evacuated per this table and will not participate in emergency response activities. Site emergencies shall be reported to local, state, and federal governmental agencies as required.			

10. HASP ACKNOWLEDGEMENT FORM

All Haley & Aldrich employees on site must sign this form prior to entering the site.

I hereby acknowledge receipt of, and briefing on, this HASP prior to the start of on-site work. I declare that I understand and agree to follow the provisions, processes, and procedures set forth herein at all times while working on this site.

[illegible]

**ATTACHMENT A
HASP AMENDMENT FORM**

HASP AMENDMENT FORM

This form is to be used whenever there is an immediate change in the project scope that will require an amendment to the HASP. For project scope changes associated with “add-on” tasks, the changes must be made in the body of the HASP. Before changes can be made, a review of the potential hazards must be initiated by the Haley & Aldrich Project Manager.

This original form must remain on site with the original HASP. If additional copies of this HASP have been distributed, it is the Project Manager’s responsibility to forward a signed copy of this amendment to those who have copies.

Amendment No.	
Site Name	
Work Assignment No.	
Date	
Type of Amendment	
Reason for Amendment	
Alternate Safeguard Procedures	
Required Changes in PPE	

Project Manager Name (Print)

Project Manager Signature

Date

Health & Safety Approver Name
(Print)

Health & Safety Approver Signature

Date

**ATTACHMENT B
TRAINING REQUIREMENTS**

TRAINING REQUIREMENTS	
Health and Safety Training Requirements	
Personnel will not be permitted to supervise or participate in field activities until they have been trained to a level required by their job function and responsibility. Haley & Aldrich staff members, contractors, subcontractors, and consultants who have the potential to be exposed to contaminated materials or physical hazards must complete the training described in the following sections. The Haley & Aldrich Project Manager/FSM will be responsible for maintaining and providing to the client/site manager documentation of Haley & Aldrich staff members' compliance with required training as requested. Records shall be maintained per OSHA requirements.	
40-Hour Health and Safety Training	
The 40-Hour Health and Safety Training course provides instruction on the nature of hazardous waste work, protective measures, proper use of personal protective equipment, recognition of signs and symptoms which might indicate exposure to hazardous substances, and decontamination procedures. It is required for all personnel working on-site, such as equipment operators, general laborers, and supervisors, who may be potentially exposed to hazardous substances, health hazards, or safety hazards consistent with 29 CFR 1910.120.	
8-hour Annual Refresher Training	
Personnel who complete the 40-hour health and safety training are subsequently required to attend an annual 8-hour refresher course to remain current in their training. When required, site personnel must be able to show proof of completion (i.e., certification) at an 8-hour refresher training course within the past 12 months.	
8-Hour Supervisor Training	
On-site managers and supervisors directly responsible for, or who supervise staff members engaged in hazardous waste operations, should have eight additional hours of Supervisor training in accordance with 29 CFR 1910.120. Supervisor Training includes, but is not limited to, accident reporting/investigation, regulatory compliance, work practice observations, auditing, and emergency response procedures.	
Additional Training for Specific Projects	
Haley & Aldrich personnel will ensure their personnel have received additional training on specific instrumentation, equipment, confined space entry, construction hazards, etc., as necessary to perform their duties. This specialized training will be provided to personnel before engaging in the specific work activities including: • Client specific training or orientation • Competent person excavations • Confined space entry (entrant, supervisor, and attendant) • Heavy equipment including aerial lifts and forklifts • First aid/ CPR • Use of fall protection • Use of nuclear density gauges • Asbestos awareness	

ATTACHMENT C
ROLES AND RESPONSIBILITIES

SITE ROLES AND RESPONSIBILITIES	
Haley & Aldrich Personnel	
Field Safety Manager (FSM)	The Haley & Aldrich FSM is a full-time Haley & Aldrich staff member, trained as a safety and health professional, who is responsible for the interpretation and approval of this Safety Plan. Modifications to this Safety Plan cannot be undertaken by the PM or the SHSO without the approval of the FSM. Specific duties of the FSM include: • Approving and amending the Safety Plan for this project; • Advising the PM and SHSOs on matter relating to health and safety; • Recommending appropriate personal protective equipment (PPE) and air monitoring instrumentation; • Maintaining regular contact with the PM and SHSO to evaluate the conditions at the property and new information which might require modifications to the HASP; and • Reviewing and approving Job Hazard Analyses (JHAs) developed for the site-specific hazards.
Project Manager (PM)	The Haley & Aldrich PM is responsible for ensuring that the requirements of this HASP are implemented at that project location. Some of the PM's specific responsibilities include: • Assuring that all personnel to whom this HASP applies have received a copy of it; • Providing the FSM with updated information regarding environmental conditions at the site and the scope of site work; • Providing adequate authority and resources to the on-site SHSO to allow for the successful implementation of all necessary safety procedures; • Supporting the decisions made by the SHSO; • Maintaining regular communications with the SHSO and, if necessary, the FSM; • Coordinating the activities of all subcontractors and ensuring that they are aware of the pertinent health and safety requirements for this project; • Providing project scheduling and planning activities; and • Providing guidance to field personnel in the development of appropriate JHAs relative to the site conditions and hazard assessment.
Site Health & Safety Officer (SHSO)	The SHSO is responsible for field implementation of this HASP and enforcement of safety rules and regulations. SHSO functions may include some or all of the following: • Act as Haley & Aldrich's liaison for health and safety issues with client, staff, subcontractors, and agencies. • Verify that utility clearance has been performed by Haley & Aldrich subcontractors. • Oversee day-to-day implementation of the Safety Plan by Haley & Aldrich personnel on site. • Interact with subcontractor project personnel on health and safety matters. • Verify use of required PPE as outlined in the safety plan.

- Inspect and maintain Haley & Aldrich safety equipment, including calibration of air monitoring instrumentation used by Haley & Aldrich.
- Perform changes to HASP and document in Attachment A of the HASP as needed and notify appropriate persons of changes.
- Investigate and report on-site accidents and incidents involving Haley & Aldrich and its subcontractors.
- Verify that site personnel are familiar with site safety requirements (e.g., the hospital route and emergency contact numbers).
- Report accidents, injuries, and near misses to the Haley & Aldrich PM and FSM as needed.

The SHSO will conduct initial site safety orientations with site personnel (including subcontractors) and conduct toolbox and safety meetings thereafter with Haley & Aldrich employees and Haley & Aldrich subcontractors at regular intervals and in accordance with Haley & Aldrich policy and contractual obligations. The SHSO will track the attendance of site personnel at Haley & Aldrich orientations, toolbox talks, and safety meetings.

Field Personnel

Haley & Aldrich personnel are responsible for following the health and safety procedures specified in this HASP and for performing their work in a safe and responsible manner. Some of the specific responsibilities of the field personnel are as follows:

- Reading the HASP in its entirety prior to the start of on-site work;
- Submitting a completed Safety Plan Acceptance Form and documentation of medical surveillance and training to the SHSO prior to the start of work;
- Attending the pre-entry briefing prior to beginning on-site work;
- Bringing forth any questions or concerns regarding the content of the Safety Plan to the PM or the SHSO prior to the start of work;
- Stopping work when it is not believed it can be performed safely;
- Reporting all accidents, injuries and illnesses, regardless of their severity, to the SHSO;
- Complying with the requirements of this safety plan and the requests of the SHSO; and
- Reviewing the established JHAs for the site-specific hazards on a daily basis and prior to each shift change, if applicable.

Visitors

Authorized visitors (e.g., Client Representatives, Regulators, Haley & Aldrich management staff, etc.) requiring entry to any work location on the site will be briefed by the Site Supervisor on the hazards present at that location. Visitors will be escorted at all times at the work location and will be responsible for compliance with their employer's health and safety policies. In addition, this safety plan specifies the minimum acceptable qualifications, training and personal protective equipment which are required for entry to any controlled work area; visitors must comply with these requirements at all times. Unauthorized visitors, and visitors not meeting the specified qualifications, will not be permitted within established controlled work areas.

SUBCONTRACTOR PERSONNEL	
Subcontractor Site Representative	
Each contractor and subcontractor shall designate a Contractor Site Representative. The Contractor Site Representative will interface directly with Insert Staff Name Here, the Subcontractor Site Safety Manager, with regards to all areas that relate to this safety plan and safety performance of work conducted by the contractor and/or subcontractor workforce. Contractor Site Representatives for this site are listed in the Contact Summary Table at the beginning of the Safety Plan.	
Subcontractor Site Safety Manager	
Each contractor / subcontractor will provide a qualified representative who will act as their Site Safety Manager (Sub-SSM). This person will be responsible for the planning, coordination, and safe execution of subcontractor tasks, including preparation of JHAs, performing daily safety planning, and coordinating directly with the Haley & Aldrich SHSO for other site safety activities. This person will play a lead role in safety planning for Subcontractor tasks, and in ensuring that all their employees and lower tier subcontractors are in adherence with applicable local, state, and/or federal regulations, and/or industry and project specific safety standards or best management practices. General contractors / subcontractors are responsible for preparing a site-specific HASP and/or other task specific safety documents (e.g., JHAs), which are, at a minimum, in compliance with local, state, and/or federal other regulations, and/or industry and project specific safety standards or best management practices. The contractor(s)/subcontractor(s) safety documentation will be at least as stringent as the health and safety requirements of the Haley & Aldrich Project specific HASP. Safety requirements include, but are not limited to: legal requirements, contractual obligations and industry best practices. Contractors/subcontractors will identify a site safety representative during times when contractor/subcontractor personnel are on the Site. All contractor/subcontractor personnel will undergo a field safety orientation conducted by the Haley & Aldrich SHSO and/or PM prior to commencing site work activities. All contractors / subcontractors will participate in Haley & Aldrich site safety meetings and their personnel will be subject to training and monitoring requirements identified in this Safety Plan. If the contractors / subcontractors means and methods deviate from the scope of work described in Section 1 of this Safety Plan, the alternate means and methods must be submitted, reviewed and approved by the Haley & Aldrich SHSO and/or PM prior to the commencement of the work task. Once approved by the Haley & Aldrich SHSO and/or PM, the alternate means and methods submittal will be attached to this Safety Plan as an Addendum.	

**ATTACHMENT D
JOB HAZARD ANALYSES**



JOB HAZARD ANALYSIS

Job/Operation Title:
Decontamination

JHA No.:
JHA-1

Date:
1/24/2019

Project:
Whidbey Marine & Auto Supply Site Remedial Investigation and Feasibility Study

Location(s):
1695 E Main Street, Freeland, Washington

Job Start Date:

Analysis Developed By:
Nathan Casiraro

Person(s) Performing This Job:
Haley & Aldrich

SHSO:

Duration:

Analysis Reviewed By:
Ana Mora

SIMULTANEOUS OPERATIONS AND SITE HAZARDS

Task/Step	Potential Hazards	Consequence	Recommended Safe Job Procedures
1. Rinse gross debris from equipment	Manual Lifting	Muscle strains/sprains	- Keep load in close to the body; Keep hips and shoulders aligned (no twisting); Maintain stability (keep a balanced position); Use 2 people for lifts >50 lbs; - Reduce travel distance when there is a need to carry/lift materials.
2. Clean with Alconox and Brush			
3. Rinse with Water	Slips/Trips/Falls	Physical Injury	- Survey area for uneven surfaces and other tripping hazards; Remove all trip hazards by keeping materials/objects organized and out of walkways; - Equipment will be stored unless in use. - Be aware that plastic sheeting under decontamination area is slippery when wet and use caution when walking in the area.
	Repetitive Motion	Bodily Injury	- Take adequate breaks, ensure to stretch out as needed, utilize proper techniques to mitigate overuse due to repetitive motions.
	Dropped Equipment	Hand/Foot Injuries	- Equipment that is drying shall be placed to the side and outside of travel pathways. - Safety toed shoes shall be worn at all times.
	Chemical Exposure VOCs/BTEX, PAHs Heavy Metals, TPH	Irritation to Eyes/Skin	- Safety glasses with side shields, long sleeved shirts and nitrile gloves shall be worn at all times during decontamination activities - Face shield will be worn if splash hazards are likely.
		Inhalation	- Ensure to follow Air Monitoring Plan listed below - No smoking or tobacco products will be used in the work area.
		Illness from Ingestion	- No eating or drinking in the work area, designated areas will be made available

			-Ensure employees wash hands before eating, smoking, taking medication, chewing gum/tobacco, using restrooms, or applying cosmetics and before leaving the work area for the day.
	Environmental hazards spills with decontamination water on ground or drainage inlets	Environmental Concerns	- Equipment and tools needed for the decontamination process will be placed on visqueen to prevent any spills or splashes onto the ground. Site will be examined for any drainage inlets and if encountered, will be blocked, covered or decontamination equipment will be placed as far away as possible from inlet.

FIELD HAZARDS ANALYSIS

POTENTIAL SITE HAZARDS OF THIS JOB

Site Hazards	Description/Health Hazards
Biological	- Be aware that small animals, snakes, and insects may be in the area. - Long pants, sleeved shirts and insect repellent will be worn, and caution will be used if walking in tall grass or overgrown areas to minimize potential hazards associated with insects, snakes and vermin. - DEET can be used to control exposure to insects. Personnel shall follow the directions for use of DEET. - Be aware of spiders, do not pick up and debris without carefully checking the area, and wear gloves when moving debris to protect bare hands from exposure to spiders and/or insects. - Employees allergic to insect stings shall be identified and necessary actions taken to treat in the event of a sting will be available on site.
Severe Weather	- Field activities will stop during lightning. - Operators, field crew, and other support personnel will move out of the work zone and take shelter within an approved shelter or hard top vehicles with windows up. - Every effort must be taken to remain dry, and a spare change of clothing for each personnel will be available. - The SHSO will specify the shelter, work will not resume until lightning and thunder has stopped for a minimum of 30 minutes.
Natural Disasters	- The Site is located within an active geological active zone where earthquakes may happen. The SHSO will discuss the danger of earthquakes and what to do in case it happens at the orientation meeting, and every day during daily safety meetings.
Heat Stress	Employees and subcontractors crew should be aware of potential health effects and/or physical hazards of working during hot weather. Safeguard against the effects and hazards of heat stress by drinking keeping hydrated, and taking sufficient work breaks in a shaded area. If

	staff member feels the effect of heat stress, seek a cool/shaded location and drink water and contact the SHSO. Symptoms of heat stress/exhaustion include profuse sweating, weakness, nausea, vomiting, headache, lightheadedness, and muscle cramps.
Cold Stress	Dress appropriately for wet/cold weather. If staff member feels the effect of stress, seek warm location and drink warm non-caffeinated beverages. Provide adequate work rest time frame during both cold and hot weather as necessary. Without proper protection, cold injuries, such as frostbite, can occur even when the temperature is above freezing (32 degrees F, 0 degrees C). This is especially true if there is a high wind or if a glove or sock gets wet.

POTENTIAL CHEMICAL HAZARDS OF THIS JOB

Chemical Hazards	Description/Health Hazards
BTEX/VOCs (71-43-2)	BTEX is an acronym for benzene, toluene, ethylbenzene and xylenes. These compounds are VOCs, are common in petroleum-related products (e.g., oil, gasoline, coal-tar DNAPL, etc.), and frequently co-occur at hazardous waste sites. Benzene, toluene, ethylbenzene, and xylenes have acute and chronic harmful effects on the central nervous system. Benzene is classified as a carcinogen. Short-term health effects of low-level BTEX exposure include drowsiness, dizziness, accelerated heart rate, headaches, tremors, confusion, and unconsciousness.
PAHS	PAHs are relatively nonvolatile; therefore, respiratory hazards are expected to occur only under dusty and windy conditions. Soil contact with the skin and eyes can cause irritation and burning. However, higher concentrations of pyro- or petrogenic hydrocarbons typically act as a central nervous system depressant, resulting in slurred speech and mental confusion. Higher doses can result in unconsciousness and possibly death from respiratory failure. Skin contact can result in irritation, dermatitis, and defatting. Liver and kidney damage can also result following acute or chronic exposure. The Cal/OSHA permissible exposure limit for particulate PAHs is 0.2 mg/M3 as an eight-hour time weighted average (TWA).
NAPHTHALENE (91-20-3)	Naphthalene is a white solid that evaporates easily. Fuels such as petroleum and coal contain naphthalene. It is also called white tar, and tar camphor, and has been used in mothballs and moth flakes. Burning tobacco or wood produces naphthalene. It has a strong, but not unpleasant smell. The Cal/OSHA permissible exposure limit for naphthalene is 0.1 ppm as an eight-hour time weighted average (TWA).
HEAVY METALS	Heavy metals are naturally occurring elements that have a high atomic weight and a density at least 5 times greater than that of water. Their multiple industrial, domestic, agricultural, medical and technological applications have led to their wide distribution in the environment; raising concerns over their potential effects on human health and the environment. Because of their high degree of toxicity, arsenic, cadmium, chromium, lead, and mercury rank among the priority metals that are of public health significance. These metallic elements are considered systemic toxicants that are known to induce multiple organ damage, even at lower levels of exposure.
CYANIDE	The severity of the harmful effects following cyanide exposure depends in part on the form of cyanide, such as hydrogen cyanide gas or cyanide salts. Exposure to high levels of cyanide for a short time harms the brain and heart and can even cause coma and death. Workers who inhaled low levels of hydrogen cyanide over a period of years had breathing difficulties, chest pain, vomiting, blood changes, headaches, and enlargement of the thyroid gland. Cyanide-impacted soils may have a slight to strong Prussian blue staining. Some of the first indications of cyanide poisoning are rapid, deep breathing and shortness of breath, followed by convulsions (seizures) and loss of consciousness.

HAZARD CONTROL MEASURES USED FOR THIS JOB

Administrative Controls:

OP1014 - HAZCOM
OP1021 - Emergency Action Plan
OP1024 - Personal Protective Equipment
OP1026 - Hand and Power Tools

Required Forms:

Tailgate Form
Air Monitoring Form

Required PPE:

Hi-Viz vest, Hard Hat (if overhead hazards exist), Safety toed boots, safety glasses with side shields, nitrile gloves, goggles/face shield (if needed)

Required Training:

40 Hour Hazwoper
8 Hour Hazwoper

Required Safety Equipment:

First Aid Kit
Fire Extinguisher (min. 5 lbs ABC)

Other Information:
Monitoring for VOCs

Monitoring Level	Vapor Levels	Response Action
1	<0.1 ppm for VOCs	Continue monitoring for VOCs using PID ¹
2	>0.1 ppm but less than 2 ppm for VOCs for 5 minutes	- Implement vapor suppression - Stop Work if >5 min - Allowed up to 4 Exceedances²
3	> 2 ppm for VOCs	- Stop Work

Note:

1 – MiniRae 3000 PBB PID with 10.6 eV lamp capable of parts per billion detection limit for VOCs will be used.

2 - Stop Work is issued after 4 exceedances of elevated VOCs that reaches 5 min. Personnel will notify PM and RHSM for further instruction on how to proceed.

3 – VOC readings are estimated as a surrogate for Naphthalene which is the most conservative of the COC action levels

Employee Signatures:	Date:

Employee Signatures:	Date:

A signed copy of this JHA must be posted while the applicable subcontractor is working on-site and be available to any employee upon request.



JOB HAZARD ANALYSIS

Job/Operation Title:
Groundwater Sampling

JHA No.:
JHA-2

Date:
1/24/2019

Project: Whidbey Marine & Auto Supply Site Remedial Investigation and Feasibility Study

Location(s): 1695 E Main Street, Freeland, Washington

Job Start Date:

Analysis Developed By:
Nathan Casiraro

Person(s) Performing This Job:
Haley & Aldrich and Subcontractors

SHSO:

Duration:

Analysis Reviewed By:
Ana Mora

Task/Step	Potential Hazards	Consequence	Recommended Safe Job Procedures
1. Inspect/Calibrate Sampling Equipment	Chemical Exposure VOCs/BTEX, PAHs Heavy Metals, TPH	Irritation to Skin Illness from Inhalation	- Use PID to measure headspace when opening the well cap. - Maintain first aid kit and eyewash within work zone in the event that employees eyes come into contact contaminated material; - Nitrile gloves are required during the handling or exposure to groundwater; - Calibrate and inspect monitoring equipment before use; - Use plastic sampling bottles if appropriate; - Nitrile gloves shall be worn while handling acid preserved bottles. Avoid contact with skin and clothes; - Change gloves before collecting next sample
2. Open monitoring well cover(s)			
3. Measure water levels			
4. Develop/purge monitoring well location	Contact with Preservative Solution	Irritation to skin or eyes	- Avoid contact of preservation solution with skin, eyes and clothes; - Safety glasses- side shields and nitrile gloves shall be worn during preservation activities; - Maintain the portable emergency eyewash station within reach of sample preservation activities in the event that employees eyes come into contact with preservation solution; - If preservation solution is splashed onto skin or in eyes, immediately flush the area with water and consult SDS for additional measures
5. Collect groundwater sample			
6. Close monitoring well cover	Equipment Hazards	Injury to Hand Pinch Points	- Check all equipment to ensure it is in proper working order and has been calibrated to manufacturer's standards - Avoid placing hands in pinch points - Wear gloves for task and use open face wrench/socket wrench when opening closing well covers.
7. Pack samples in container			
	Slips/Trips/Falls	Physical Injury	- Inspect and clear work area; All work areas will be kept clear of trash and other debris - Equipment will be stored unless in use; - Place excess groundwater in a drum in location away from foot traffic;

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POTENTIAL SITE HAZARDS OF THIS JOB

Site Hazards	Description/Controls
Biological	- Be aware that small animals, snakes, and insects may be in the area. - Caution will be used if walking in tall grass/overgrown areas to minimize potential hazards associated with insects, snakes and vermin. - DEET can be used to control exposure to insects. Personnel shall follow the directions for use of DEET. - Be aware of spiders, do not pick up and debris without carefully checking the area, and wear gloves when moving debris to protect bare hands from exposure to spiders and/or insects. - Employees allergic to insect stings shall be identified and necessary actions taken to treat in the event of a sting will be available on site.
Severe Weather	Field activities will stop during lightning. - Operators, field crew, and other support personnel will move out of the work zone and take shelter within an approved shelter or hard top vehicles with windows up. - Every effort must be taken to remain dry, and a spare change of clothing for each personnel will be available. - The SHSO will specify the shelter, work will not resume until lightning and thunder has stopped for a minimum of 30 minutes.
Natural Disasters	- The Site is located within an active geological active zone where earthquakes may happen. The SHSO will discuss the danger of earthquakes and what to do in case it happens at the orientation meeting, and every day during daily safety meetings.
Heat Stress	Employees and subcontractors crew should be aware of potential health effects and/or physical hazards of working during hot weather. Safeguard against the effects and hazards of heat stress by drinking keeping hydrated, and taking sufficient work breaks in a shaded area. If staff member feels the effect of heat stress, seek a cool/shaded location and drink water and contact the SHSO. Symptoms of heat stress/exhaustion include profuse sweating, weakness, nausea, vomiting, headache, lightheadedness, and muscle cramps.
Cold Stress	Dress appropriately for wet/cold weather. If staff member feels the effect of stress, seek warm location and drink warm non-caffeinated beverages. Provide adequate work rest time frame during both cold and hot weather as necessary. Without proper protection, cold injuries, such as frostbite, can occur even when the temperature is above freezing (32 degrees F, 0 degrees C). This is especially true if there is a high wind or if a glove or sock gets wet.

HAZARD CONTROL MEASURES USED FOR THIS JOB

Administrative Controls: OP1021 - Emergency Action Plan OP1024 - PPE	Required Forms: Tailgate Form Air Monitoring Form	Required PPE: Long pants, Hard Hat (if overhead hazards exist), Hi-Viz vest, Steel toed boots, safety glasses with side shields, goggles (as needed) and Nitrile gloves, cut resistant or protective gloves (as needed);
Required Training: 40 Hour Hazwoper 8 Hour Hazwoper	Required Safety Equipment: First Aid Kit Fire Extinguisher (min. 5 lbs ABC) Barricades PID 10.6 eV Lamp	Other Information:

Employee Signatures:	Date:

Employee Signatures:	Date:

A signed copy of this JHA must be posted while the applicable subcontractor is working on-site and be available to any employee upon request.



JOB HAZARD ANALYSIS

Job/Operation Title:

Investigative Derived Waste Management

JHA No.:

JHA-3

Date:

1/24/2019

Project: Whidbey Marine & Auto Supply Site
Remedial Investigation and Feasibility Study

Location(s): 1695 E Main Street, Freeland,
Washington

Job Start Date:

**Analysis Developed
By:**

Nathan Casiraro

Person(s) Performing This Job:

H&A personnel

SHSO:
Duration:

Analysis Reviewed By:

Ana Mora

Task/Step
Potential Hazards
Consequence
Recommended Safe Job Procedures
**1. Calibrate and Inspect Air
Monitoring Equipment**

Chemical Exposure

Irritation to Skin

-Calibrate the PID and air monitoring equipment to the manufacturer's
recommendations and ensure the proper calibrate steps are being followed.

**2. Placing Project Waste In
Containers**

Chemical Exposure
VOCs/BTEX, PAHs
Heavy Metals,
TPH

Inhalation &
Irritation to skin

-Prior to entering the hazardous waste storage area, insert the PID into the door
entrance and screen the area and record the PID reading.

3. Drum Handling

Struck by

-Inspect drums prior to use and before movement or handling. Ensure that the
drums are not dented and that no cracks or holes are present.
-Utilize caution when opening the drums and keep head and arms away from the
top of the drum lid.
-Look for potential air pockets and bulging in the lid which could potentially be
under some measure of pressure. If seen or observed, do not open.

Illness from
Inhalation

-During the process of opening the drums for sample collection, screen the drum
utilizing the PID multimeter for any potential chemical of concerns/VOCs and
record the PID reading.

- Follow Air Monitoring Plan listed in the HASP

Irritation to Skin

- Nitrile gloves shall be worn while handling acid preserved bottles. Avoid contact
with skin and clothes.
- Change gloves before collecting next sample.

4. Labeling Waste Containers	Tool & Sample Collection Hazards	Hand Injury	- Leather or cut resistant work gloves will be required for all work that has a potential for cuts from sharp edges or pinch points. - Avoid contact with broken bottles. Use dust pan and broom to clean up broken glass.
5. Sample Collection	Chemical Exposure VOCs/BTEX, PAHs Heavy Metals, TPH	Irritation to Skin	-Each sample that is collected should also be screened utilizing the PID and documented VOC levels, if any exist during the reading.
	Slips/Trips/Falls	Injury	-Inspect and clear work area; All work areas will be kept clear of trash and other debris; -Equipment will be stored unless in use.
6. Check around site for any drain inlets	Contact with Preservative Solution	Irritation to skin or eyes	- Avoid contact of preservation solution with skin, eyes and clothes. -Safety glasses with side shields, and nitrile gloves shall be worn during preservation activities. -Maintain the portable emergency eyewash station within reach of sample preservation activities in the event that employees eyes come into contact with sample preservation solution. - If preservation solution is splashed onto skin or in eyes, immediately flush the area with water and consult SDS for additional measures.
	Loss of Containment	Environmental Release	-Have overpacks ready before any attempt is made to move drums. -Site will be examined for any drainage inlets and if encountered, will be blocked, covered

FIELD HAZARDS ANALYSIS			
POTENTIAL SITE HAZARDS OF THIS JOB			
Site Hazards	Description/Controls		
Biological	- Be aware that small animals, snakes, and insects may be in the area. - Long pants, sleeved shirts and insect repellent will be worn, and caution will be used if walking in tall grass or overgrown areas to minimize potential hazards associated with insects, snakes and vermin. - DEET can be used to control exposure to insects. Personnel shall follow the directions for use of DEET. - Be aware of spiders, do not pick up and debris without carefully checking the area, and wear gloves when moving debris to protect bare hands from exposure to spiders and/or insects. - Employees allergic to insect stings shall be identified and necessary actions taken to treat in the event of a sting will be available on site.		
Severe Weather	Field activities will stop during lightning. - Operators, field crew, and other support personnel will move out of the work zone and take shelter within an approved shelter or hard top vehicles with windows up. - Every effort must be taken to remain dry, and a spare change of clothing for each personnel will be available. - The SHSO will specify the shelter, work will not resume until lightning and thunder has stopped for a minimum of 30 minutes.		
Natural Disasters	- The Site is located within an active geological active zone where earthquakes may happen. The SHSO will discuss the danger of earthquakes and what to do in case it happens at the orientation meeting, and every day during daily safety meetings.		
Heat Stress	Employees and subcontractors crew should be aware of potential health effects and/or physical hazards of working during hot weather. Safeguard against the effects and hazards of heat stress by drinking keeping hydrated, and taking sufficient work breaks in a shaded area. If staff member feels the effect of heat stress, seek a cool/shaded location and drink water and contact the SHSO/CSM. Symptoms of heat stress, exhaustion include profuse sweating, weakness, nausea, vomiting, headache, lightheadedness, and muscle cramps.		
Cold Stress	- Dress appropriately for wet/cold weather. If staff member feels the effect of stress, seek warm location and drink warm non-caffeinated beverages. Provide adequate work rest time frame during both cold and hot weather as necessary. Without proper protection, cold injuries, such as frostbite, can occur even when the temperature is above freezing (32 degrees F, 0 degrees C). This is especially true if there is a high wind or if a glove or sock gets wet.		

HAZARD CONTROL MEASURES USED FOR THIS JOB

Administrative Controls: OP1024 - PPE OP1026 - Hand and Power Tools	Required Forms: Tailgate Form Air Monitoring Record Form	Required PPE: Hi-Viz vest, Hard Hat (if overhead hazards exist), Safety toed boots, safety glasses with side shields, and Nitrile gloves, cut resistant or leather gloves (as needed)
Required Training: 40 Hour Hazwoper 8 Hour Hazwoper	Required Safety Equipment: First Aid Kit Fire Extinguisher (min. 5 lbs ABC) PID 10.6 eV Lamp	Other Information:

Employee Signatures:	Date:

Employee Signatures:	Date:

A signed copy of this JHA must be posted while the applicable subcontractor is working on-site and be available to any employee upon request.



JOB HAZARD ANALYSIS

Job/Operation Title:
Oversight of Drilling Operations

JHA No.:
JHA-4

Date:
12.9.22

Project: Whidbey Marine & Auto Supply Site Remedial Investigation and Feasibility Study

Location(s): 1695 E Main Street, Freeland, Washington

Job Start Date:
Analysis Developed By:
Sage Bedard

Person(s) Performing This Job:
H&A Oversight, Subcontractor

SHSO:

Duration:
Analysis Reviewed By:
Ana Mora

Task/Step	Potential Hazards	Consequence	Recommended Safe Job Procedures
1. Tailgate Meeting 2. Verify Boring Locations Have Been Marked and Cleared of Utilities Verify One-Call ticket number(s) are valid prior to any ground disturbance and utility/site owners have marked utilities before the start of any ground disturbance task.	Chemical Exposure VOCs/BTEX, PAHs Heavy Metals, TPH	Irritation to Skin and Eyes Illness from Inhalation	- Wear nitrile gloves under leather work gloves will be required for all work that has a potential for cuts from sharp edges or pinch points. - Maintain eyewash within work zone in the event that employees eyes come into contact contaminated material. - Calibrate and inspect monitoring equipment before use -Ensure to follow the Air Monitoring Plan which is listed below in the "Other Information" section
	Slips/Trips/Falls	Physical Injury	-Survey area for uneven surfaces and other tripping hazards; Remove all trip hazards by keeping materials/objects organized and out of walkways; - Equipment will be stored unless in use. - Place cuttings in location away from traffic and other site functions
3. Calibrate and Inspect Air Monitoring Equipment	Manual Lifting	Muscle strains/sprains	- Keep load in close to the body; Keep hips and shoulders aligned (no twisting); Maintain stability (keep a balanced position); and Use 2 people for lifts >50 lbs; - Reduce travel distance when there is a need to carry/lift materials
4. Inspect Drill Rig	Tool Hazards	Pinch Points Cuts	- Inspect all tools prior to use; tagged or remove tools that are cracked, chipped or dulled; - Use Level 2 abrasion/cut resistant gloves during activities if there is a potential for cuts or broken skin from pinch points, etc;
5. Position and Setup Drill Rig	Struck by vehicle	Physical Injury	- Work zone will be barricaded - Watch for vehicles when out of the exclusion zone - If location in right of way Traffic Control will be setup
6. Advance Boring	Excessive Noise	Hearing Loss	- Personnel will wear ear plugs or muffs within 25 feet of any operating equipment and implement a system of hand signals understood by all.
7. Backfill Boring Location			

	Energized Equipment	Electrical shock or potential fire	- Ensure type ABC, 20-lb, fully charged fire extinguisher is within 25’ of work area; - All equipment and cords will be inspected prior to being brought on site and they have a proper ground; - Additionally, prior to each use, personnel will perform a pre-use inspection to ensure that it is still safe to operate. - Equipment must be operated and maintained in accordance with manufacturer’s guidelines.														
	Drilling Equipment	Pinch Points/Crushing Flying Debris	- Keep body parts clear of rig when adjusting and raising hammer assembly; - Inspect rods and sampler during operation-remove damaged equipment from use; - Keep clear of drive caps, thread connections, and sampler shoe when assembling/disassembling the tool string, advancing and withdrawing the sampler;														
	Utility Strikes	Physical Injury, electrical shock	- Follow Dig In Policy for Utility Clearance - Visually check area to validate overhead clearance and utility mark outs <table><tr><th>Voltage (Nominal, kV, alternating current)</th><th>Required Minimal Radial Clearance Distance (feet)</th></tr><tr><td>Up to 50</td><td>10</td></tr><tr><td>Over 50 to 175</td><td>15</td></tr><tr><td>Over 175 to 350</td><td>20</td></tr><tr><td>Over 350 to 550</td><td>27</td></tr><tr><td>Over 550 to 1,000</td><td>45</td></tr><tr><td>Over 1,000</td><td>Established by utility owner operator or registered PE qualified with respect to electrical power</td></tr></table>	Voltage (Nominal, kV, alternating current)	Required Minimal Radial Clearance Distance (feet)	Up to 50	10	Over 50 to 175	15	Over 175 to 350	20	Over 350 to 550	27	Over 550 to 1,000	45	Over 1,000	Established by utility owner operator or registered PE qualified with respect to electrical power
Voltage (Nominal, kV, alternating current)	Required Minimal Radial Clearance Distance (feet)																
Up to 50	10																
Over 50 to 175	15																
Over 175 to 350	20																
Over 350 to 550	27																
Over 550 to 1,000	45																
Over 1,000	Established by utility owner operator or registered PE qualified with respect to electrical power																

FIELD HAZARDS ANALYSIS			

POTENTIAL SITE HAZARDS OF THIS JOB			
Site Hazards	Description/Health Hazards		
Biological	- Be aware that small animals, snakes, and insects may be in the area. - Long pants, sleeved shirts and insect repellent will be worn, and caution will be used if walking in tall grass or overgrown areas to minimize potential hazards associated with insects, snakes and vermin. - DEET can be used to control exposure to insects. Personnel shall follow the directions for use of DEET. - Be aware of spiders, do not pick up and debris without carefully checking the area, and wear gloves when moving debris to protect bare hands from exposure to spiders and/or insects. - Employees allergic to insect stings shall be identified and necessary actions taken to treat in the event of a sting will be available on site.		
Severe Weather	Field activities will stop during lightning. - Operators, field crew, and other support personnel will move out of the work zone and take shelter within an approved shelter or hard top vehicles with windows up; - Every effort must be taken to remain dry, and a spare change of clothing for each personnel will be available; - The SHSO will specify the shelter, work will not resume until lightning and thunder has stopped for a minimum of 30 minutes.		
Natural Disasters	- The Site is located within an active geological active zone where earthquakes may happen. The SHSO will discuss the danger of earthquakes and what to do in case it happens at the orientation meeting, and every day during daily safety meetings.		
Heat Stress	- Employees and subcontractors crew should be aware of potential health effects and/or physical hazards of working during hot weather. Safeguard against the effects and hazards of heat stress by drinking keeping hydrated, and taking sufficient work breaks in a shaded area. If staff member feels the effect of heat stress, seek a cool/shaded location and drink water and contact the SHSO/CSM. Symptoms of heat stress, exhaustion include profuse sweating, weakness, nausea, vomiting, headache, lightheadedness, and muscle cramps.		
Cold Stress	- Dress appropriately for wet/cold weather. If staff member feels the effect of stress, seek warm location and drink warm non-caffeinated beverages. Provide adequate work rest time frame during both cold and hot weather as necessary. Without proper protection, cold injuries, such as frostbite, can occur even when the temperature is above freezing (32 degrees F, 0 degrees C). This is especially true if there is a high wind or if a glove or sock gets wet.		

HAZARD CONTROL MEASURES USED FOR THIS JOB

Administrative Controls: OP1024 - PPE OP1026 - Hand and Power Tools	Required Forms: Tailgate Form Air Monitoring Recording Form Utility Locator Report	Required PPE: Long pants, Hi-Viz vest, Hard Hat (if overhead hazards exist) Safety toed boots, safety glasses with side shields, and Nitrile gloves, cut resistant or leather gloves (as needed)
Required Training: 40 Hour Hazwoper 8 Hour Hazwoper	Required Safety Equipment: First Aid Kit Barricades PID 10.6 eV Lamp	Other Information:

Employee Signatures:	Date:

Employee Signatures:	Date:

A signed copy of this JHA must be posted while the applicable subcontractor is working on-site and be available to any employee upon request.



JOB HAZARD ANALYSIS

Job/Operation Title:
Soil Sampling & Processing

JHA No.:
JHA-5

Date:
1/24/2019

Project: Whidbey Marine & Auto Supply Site Remedial Investigation and Feasibility Study

Location(s): 1695 E Main Street, Freeland, Washington

Job Start Date:

Analysis Developed By:
Nathan Casiraro

Person(s) Performing This Job:
H&A Personnel

SHSO:

Duration:

Analysis Reviewed By:
Ana Mora

Task/Step

Potential Hazards

Consequence

Recommended Safe Job Procedures

1. Setup of sampling area and work zone

Chemical Exposure
VOCs/BTEX, PAHs
Heavy Metals,
TPH

Irritation to Skin

Illness from
Inhalation

- Maintain first aid kit and eyewash within work zone in the event that employees eyes come into contact contaminated material;
- Nitrile gloves are required during the handling or exposure to marine sediments or water;
- Use plastic sampling bottles if appropriate;
- Nitrile gloves shall be worn while handling acid preserved bottles. Avoid contact with skin and clothes;
- Change gloves before collecting next sample

2. Check over all equipment being used at site location

Contact with
Preservative
Solution

Irritation to skin
or eyes

- Avoid contact of preservation solution with skin, eyes and clothes;
- Safety glasses- side shields and nitrile gloves shall be worn during preservation activities;
- Maintain the portable emergency eyewash station within reach of sample preservation activities in the event that employees eyes come into contact with preservation solution;
- If preservation solution is splashed onto skin or in eyes, immediately flush the area with water and consult SDS for additional measures

4. Sample and classify impacted sampling media

Slips/Trips/Falls

Physical Injury

- Inspect and clear work area; All work areas will be kept clear of trash and other debris
- Equipment will be stored unless in use;
- Place excess sample media in a drum in location away from foot traffic;

5. Place sample media in containers

Manual Lifting

Sprain/Strain

- Keep load in close to the body; Keep hips and shoulders aligned (no twisting); Maintain stability (keep a balanced position); and Use 2 people for lifts >50 lbs;
- Reduce travel distance when there is a need to carry/lift materials

	Tool Use	Injury to hands via pinch points or cut/puncture	- Inspect all tools prior to use and tag out or discard defective tools; - Avoid placing hands in pinch points; - Wear protective palm and cut resistant work gloves;
FIELD HAZARDS ANALYSIS			
POTENTIAL SITE HAZARDS OF THIS JOB			
Site Hazards	Description/Controls		
Biological	- Be aware that small animals, snakes, and insects may be in the area. - Long pants, sleeved shirts and insect repellent will be worn, and caution will be used if walking in tall grass or overgrown areas to minimize potential hazards associated with insects, snakes and vermin. - DEET can be used to control exposure to insects. Personnel shall follow the directions for use of DEET. - Be aware of spiders, do not pick up and debris without carefully checking the area, and wear gloves when moving debris to protect bare hands from exposure to spiders and/or insects. - Employees allergic to insect stings shall be identified and necessary actions taken to treat in the event of a sting will be available		
Severe Weather	Field activities will stop during lightning. - Operators, field crew, and other support personnel will move out of the work zone and take shelter within an approved shelter or hard top vehicles with windows up. - Every effort must be taken to remain dry, and a spare change of clothing for each personnel will be available. - The SHSO will specify the shelter, work will not resume until lightning and thunder has stopped for a minimum of 30 minutes.		
Natural Disasters	- The Site is located within an active geological active zone where earthquakes may happen. The CM will discuss the danger of earthquakes and what to do in case it happens at the orientation meeting, and every day during daily safety meetings.		
Heat Stress	Employees and subcontractors crew should be aware of potential health effects and/or physical hazards of working during hot weather. Safeguard against the effects and hazards of heat stress by drinking keeping hydrated, and taking sufficient work breaks in a shaded area. If staff member feels the effect of heat stress, seek a cool/shaded location and drink water and contact the SHSO. Symptoms of heat stress/exhaustion include profuse sweating, weakness, nausea, vomiting, headache, lightheadedness, and muscle cramps.		
Cold Stress	- Dress appropriately for wet/cold weather. If staff member feels the effect of stress, seek warm location and drink warm non-caffeinated beverages. Provide adequate work rest time frame during both cold and hot weather as necessary. Without proper protection, cold injuries, such as frostbite, can occur even when the temperature is above freezing (32 degrees F, 0 degrees C). This is especially true if there is a high wind or if a glove or sock gets wet.		

HAZARD CONTROL MEASURES USED FOR THIS JOB

Administrative Controls: OP1024 - PPE	Required Forms: Tailgate Form Air Monitoring Form	Required PPE: Hi-Viz vest, Hard Hat (if overhead hazards exist), Safety toed boots, safety glasses with side shields, goggles (as needed) and nitrile gloves, cut resistant or protective gloves (as needed).
Required Training: 40 Hour Hazwoper 8 Hour Hazwoper	Required Safety Equipment: First Aid Kit Fire Extinguisher (min. 5 lbs ABC) PID 10.6 eV Lamp Barricades or Cones	Other Information:

Employee Signatures:	Date:

Employee Signatures:	Date:

A signed copy of this JHA must be posted while the applicable subcontractor is working on-site and be available to any employee upon request.



JOB HAZARD ANALYSIS

Job/Operation Title:
Utility Pre-Clearance

JHA No.:
JHA-6

Date:
1/24/2019

Project: Whidbey Marine & Auto Supply Site Remedial Investigation and Feasibility Study

Location(s): 1695 E Main Street, Freeland, Washington

Job Start Date:

Analysis Developed By:
Nathan Casiraro

Person(s) Performing This Job:
Private Utility Locator; H&A Oversight

SHSO:

Duration:

Analysis Reviewed By:
Ana Mora

Task/Step	Potential Hazards	Consequence	Recommended Safe Job Procedures
Support and observe Private Locator while they are determining and marking the underground utility locations. Verify One-Call ticket number(s) are valid prior to any ground disturbance and utility/site owners have marked utilities before the start of any ground disturbance task.	Pressurized Paint Can	Injury from contents under pressure Illness from odor	Review marking paint SDS; follow safe handling procedures of marking paint; keep face away from spray nozzle
	Slips/Trips/Falls	Physical Injury	- Survey area for uneven surfaces and other tripping hazards; Remove all trip hazards by keeping materials/objects organized and out of walkways; - Equipment will be stored unless in use.
	Energized Equipment	Electrical shock or potential fire	- Ensure type ABC, fully charged fire extinguisher is within 25' of work area; - All equipment will be inspected prior to being brought on site; - Additionally, prior to each use, personnel will perform a pre-use inspection to ensure that it is still safe to operate. - Equipment must be operated and maintained in accordance with manufacturers guidelines.
	Manual Lifting	Muscle strains/sprains	-Keep load in close to the body; Keep hips and shoulders aligned (no twisting); Maintain stability (keep a balanced position); and Use 2 people for lifts >50 lbs; - Reduce travel distance when there is a need to carry/lift materials and wear leather work gloves.

FIELD HAZARDS ANALYSIS			
POTENTIAL SITE HAZARDS OF THIS JOB			
Site Hazards	Description/Health Hazards		
Biological	- Be aware that small animals, snakes, and insects may be in the area. - Long pants, sleeved shirts and insect repellent will be worn, and caution will be used if walking in tall grass or overgrown areas to minimize potential hazards associated with insects, snakes and vermin. - DEET can be used to control exposure to insects. Personnel shall follow the directions for use of DEET. - Be aware of spiders, do not pick up and debris without carefully checking the area, and wear gloves when moving debris to protect bare hands from exposure to spiders and/or insects. - Employees allergic to insect stings shall be identified and necessary actions taken to treat in the event of a sting will be available on site.		
Severe Weather	Field activities will stop during lightning. - Operators, field crew, and other support personnel will move out of the work zone and take shelter within an approved shelter or hard top vehicles with windows up. - Every effort must be taken to remain dry, and a spare change of clothing for each personnel will be available. - The SHSO will specify the shelter, work will not resume until lightning and thunder has stopped for a minimum of 30 minutes.		
Natural Disasters	- The Site is located within an active geological active zone where earthquakes may happen. The SHSO will discuss the danger of earthquakes and what to do in case it happens at the orientation meeting, and every day during daily safety meetings.		
Heat Stress	Employees and subcontractors crew should be aware of potential health effects and/or physical hazards of working during hot weather. Safeguard against the effects and hazards of heat stress by drinking keeping hydrated, and taking sufficient work breaks in a shaded area. If staff member feels the effect of heat stress, seek a cool/shaded location and drink water and contact the SHSO. Symptoms of heat stress/exhaustion include profuse sweating, weakness, nausea, vomiting, headache, lightheadedness, and muscle cramps.		
Cold Stress	Dress appropriately for wet/cold weather. If staff member feels the effect of stress, seek warm location and drink warm non-caffeinated beverages. Provide adequate work rest time frame during both cold and hot weather as necessary. Without proper protection, cold injuries, such as frostbite, can occur even when the temperature is above freezing (32 degrees F, 0 degrees C). This is especially true if there is a high wind or if a glove or sock gets wet.		

HAZARD CONTROL MEASURES USED FOR THIS JOB

Administrative Controls: OP1024 - Personal Protective Equipment OP1026 - Hand and Power Tools	Required Forms: Tailgate Form Report from Utility Locator	Required PPE: Hi-Viz vest, Safety toed boots, safety glasses with side shields, and cut resistant or leather gloves (as needed)
Required Training:	Required Safety Equipment: First Aid Kit Fire Extinguisher	Other Information:

Employee Signatures:	Date:

Employee Signatures:	Date:

A signed copy of this JHA must be posted while the applicable subcontractor is working on-site and be available to any employee upon request.



INADVERTENT DISCOVERY PLAN PLAN AND PROCEDURES FOR THE DISCOVERY OF CULTURAL RESOURCES AND HUMAN SKELETAL REMAINS

To request ADA accommodation, including materials in a format for the visually impaired, call Ecology at 360-407-6000 or visit <https://ecology.wa.gov/accessibility>. People with impaired hearing may call Washington Relay Service at 711. People with a speech disability may call TTY at 877-833-6341.

Site Name(s): Whidbey Marine and Auto Supply

Good/Haley & Aldrich, Inc.

Location: 1695 E Main St, Freeland, WA 98249

Project Lead/Organization: Heather

County: Island

If this Inadvertent Discovery Plan (IDP) is for multiple (batched) projects, ensure the location information covers all project areas.

1. INTRODUCTION

The IDP outlines procedures to perform in the event of a discovery of archaeological materials or human remains, in accordance with applicable state and federal laws. An IDP is required, as part of Agency Terms and Conditions for all grants and loans, for any project that creates disturbance above or below the ground. An IDP is not a substitute for a formal cultural resource review (Executive 21-02 or Section 106).

Once completed, **the IDP shall always be kept at the project site** during all project activities. All staff, contractors, and volunteers shall be familiar with its contents and know where to find it.

2. CULTURAL RESOURCE DISCOVERIES

A cultural resource discovery could be prehistoric or historic artifacts. Examples include (see images for further examples):

- An accumulation of shell, burned rocks, or other food related materials.
- Bones, intact or in small pieces.
- An area of charcoal or very dark stained soil with artifacts.
- Stone tools or waste flakes (for example, an arrowhead or stone chips).
- Modified or stripped trees, often cedar or aspen, or other modified natural features, such as rock drawings.
- Agricultural or logging materials that appear older than 50 years. These could include equipment, fencing, canals, spillways, chutes, derelict sawmills, tools, and many other items.
- Clusters of tin cans or bottles, or other debris that appear older than 50 years.
- Old munitions casings. **Always assume these are live and never touch or move.**
- Buried railroad tracks, decking, foundations, or other industrial materials.
- Remnants of homesteading. These could include bricks, nails, household items,

toys, food containers, and other items associated with homes or farming sites. The above list does not cover every possible cultural resource. When in doubt, assume the material is a cultural resource.

3. ON-SITE RESPONSIBILITIES

If any employee, contractor, or subcontractor believes that they have uncovered cultural resources or human remains at any point in the project, take the following steps to ***Stop-Protect-Notify***. **If you suspect that the discovery includes human remains, also follow Sections 5 and 6.**

STEP A: Stop Work.

All work must stop immediately in the vicinity of the discovery.

STEP B: Protect the Discovery.

Leave the discovery and the surrounding area untouched and create a clear, identifiable, and wide boundary (30 feet or larger) with temporary fencing, flagging, stakes, or other clear markings. Provide protection and ensure integrity of the discovery until cleared by the Department of Archaeological and Historical Preservation (DAHP) or a licensed, professional archaeologist.

Do not permit vehicles, equipment, or unauthorized personnel to traverse the discovery site. Do not allow work to resume within the boundary until the requirements of this IDP are met.

STEP C: Notify Project Archaeologist (if applicable).

If the project has an archaeologist, notify that person. If there is a monitoring plan in place, the archaeologist will follow the outlined procedure.

STEP D: Notify Project and Washington Department of Ecology (Ecology) contacts.

Project Lead Contacts

Primary Contact

Name: Heather Good
Organization: Haley & Aldrich, Inc.
Phone: 360-927-1309
Email: hgood@haleyaldrich.com

Alternate Contact

Name: Andrew Kaparos
Organization: Haley & Aldrich
Phone: 206-310-9771
Email: akaparos@haleyaldrich.com

Ecology Contacts (completed by Ecology Project Manager)

Ecology Project Manager

Name: John Rapp
Program: Toxic Cleanup, BFO
Phone: 206-247-3242

Email: john.rapp@ecy.wa.gov

Alternate or Cultural Resource Contact

Name: Jon Klem
Program: Toxic Cleanup, NWRO

Phone: 206-556-5584

Email: jon.klem@ecy.wa.gov

STEP E: Ecology will notify DAHP.

Once notified, the Ecology Cultural Resource Contact or the Ecology Project Manager will contact DAHP to report and confirm the discovery. To avoid delay, the Project Lead/Organization will contact DAHP if they are not able to reach Ecology.

DAHP will provide the steps to assist with identification. DAHP, Ecology, and Tribal representatives may coordinate a site visit following any necessary safety protocols. DAHP may also inform the Project Lead/Organization and Ecology of additional steps to further protect the site.

Do not continue work until DAHP has issued an approval for work to proceed in the area of, or near, the discovery.

DAHP Contacts:

Name: Rob Whitlam, PhD
Title: State Archaeologist
Cell: 360-890-2615
Email: Rob.Whitlam@dahp.wa.gov
Main Office: 360-586-3065

Human Remains/Bones:

Name: Guy Tasa, PhD
Title: State Anthropologist
Cell: 360-790-1633 (24/7)
Email: Guy.Tasa@dahp.wa.gov

4. TRIBAL CONTACTS

In the event cultural resources are discovered, the following tribes will be contacted. See Section 10 for Additional Resources.

Tribe: Stillaguamish Tribe of Indians
Name: Kerry Lyste
Title: Cultural Resources
Phone: 360-572-3072 ext. 226
Email: KLyste@stillaguamish.com

Tribe: Lummi Nation
Name: Lena Tso
Title: Cultural Resources
Phone: 360-312-2257
Email: lenat@lummi-nsn.gov

Tribe: Sauk-Suiattle Tribe
Name: Kevin Joseph
Title: Cultural Resources
Phone: 360-436-2833
Email: KJoseph@sauk-suiattle.com

Tribe: Swinomish Indian Tribal Community
Name: Josephine Jefferson
Title: Cultural Resources
Phone: 360-466-7352
Email: JJefferson@swinomish.nsn.us

Tribe: Tulalip Tribes
Name: Richard Young
Title: Cultural Resources
Phone: 425-239-0182
Email: ryoung@tulaliptribes-nsn.gov

Tribe: Upper Skagit Tribe
Name: Scott Schuyler
Title: Cultural, Natural Resources & Emergency Management
Phone: 360-854-7009

Email: ScottS@upperskagit.com

Tribe: Suquamish Tribe
Name: Stephanie Trudel (THPO)
Title: Cultural Resources
Phone: 360-394-8533
Email: strudel@suquamish.nsn.us

Tribe: Snoqualmie Indian Tribe
Name: Steven Mullen-Moses
Title: Archaeology and Historic Preservation
Phone: 425-495-6097
Email: Steve@snoqualmietribe.us

Please provide contact information for additional tribes within your project area, if needed, in Section 11.

5. FURTHER CONTACTS (if applicable)

If the discovery is confirmed by DAHP as a cultural or archaeological resource, or as human remains, and there is a partnering federal or state agency, Ecology or the Project Lead/Organization will ensure the partnering agency is immediately notified.

Federal Agency:

Agency:
Name:
Title:
Phone:
Email:

State Agency:

Agency:
Name:
Title:
Phone:
Email:

6. SPECIAL PROCEDURES FOR THE DISCOVERY OF HUMAN SKELETAL REMAINS

Any human skeletal remains, regardless of antiquity or ethnic origin, will at all times be treated with dignity and respect. Follow the steps under **Stop-Protect-Notify**. For specific instructions on how to handle a human remains discovery, see: [RCW 68.50.645: Skeletal human remains—Duty to notify—Ground disturbing activities—Coroner determination—Definitions](#).

Suggestion: If you are unsure whether the discovery is human bone or not, contact Guy Tasa with DAHP, for identification and next steps. Do not pick up the discovery.

Guy Tasa, PhD State Physical Anthropologist
Guy.Tasa@dahp.wa.gov

(360) 790-1633 (Cell/Office)

For discoveries that are confirmed or suspected human remains, follow these steps:

1. Notify law enforcement and the Medical Examiner/Coroner using the contacts below. **Do not call 911** unless it is the only number available to you.

Enter contact information below (required):

- Local Medical Examiner or Coroner name and phone: Island County Coroner, Shantel Porter, 360-679-7358
 - Local Law Enforcement main name and phone: Sheriff's Office, 360-321-5113, ext. 7310
 - Local Non-Emergency phone number (911 if without a non-emergency number): Sheriff's Office, 360-321-5113, ext. 7310
2. The Medical Examiner/Coroner (with assistance of law enforcement personnel) will determine if the remains are human or if the discovery site constitutes a crime scene and will notify DAHP.
 3. **DO NOT speak with the media, allow photography or disturbance of the remains, or release any information about the discovery on social media.**
 4. If the remains are determined to be non-forensic, cover the remains with a tarp or other materials (not soil or rocks) for temporary protection and to shield them from being photographed by others or disturbed.

Further activities:

- Per [RCW 27.44.055](#), [RCW 68.50](#), and [RCW 68.60](#), DAHP will have jurisdiction over non-forensic human remains. Ecology staff will participate in consultation. The Project Lead/Organization may also participate in consultation.
- Documentation of human skeletal remains and funerary objects will be agreed upon through the consultation process described in [RCW 27.44.055](#), [RCW 68.50](#), and [RCW 68.60](#).
- When consultation and documentation activities are complete, work in the discovery area may resume as described in Section 8.

If the project occurs on federal lands (such as a national forest or park or a military reservation) the provisions of the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) apply and the responsible federal agency will follow its provisions. Note that state highways that cross federal lands are on an easement and are not owned by the state.

If the project occurs on non-federal lands, the Project Lead/Organization will comply with applicable state and federal laws, and the above protocol.

7. DOCUMENTATION OF ARCHAEOLOGICAL MATERIALS

Archaeological resources discovered during construction are protected by state law [RCW 27.53](#) and assumed eligible for inclusion in the National Register of Historic

Places under Criterion D until a formal Determination of Eligibility is made.

The Project Lead/Organization must ensure that proper documentation and field assessments are made of all discovered cultural resources in cooperation with all parties: the federal agencies (if any), DAHP, Ecology, affected tribes, and the archaeologist.

An archaeologist will record all prehistoric and historic cultural material discovered during project construction on a standard DAHP archaeological site or isolate inventory form. They will photograph site overviews, features, and artifacts and prepare stratigraphic profiles and soil/sediment descriptions for minimal subsurface exposures. They will document discovery locations on scaled site plans and site location maps.

Cultural features, horizons, and artifacts detected in buried sediments may require the archaeologist to conduct further evaluation using hand-dug test units. They will excavate units in a controlled fashion to expose features, collect samples from undisturbed contexts, or to interpret complex stratigraphy. They may also use a test unit or trench excavation to determine if an intact occupation surface is present. They will only use test units when necessary to gather information on the nature, extent, and integrity of subsurface cultural deposits to evaluate the site's significance. They will conduct excavations using standard archaeological techniques to precisely document the location of cultural deposits, artifacts, and features.

The archaeologist will record spatial information, depth of excavation levels, natural and cultural stratigraphy, presence or absence of cultural material, and depth to sterile soil, regolith, or bedrock for each unit on a standard form. They will complete test excavation unit level forms, which will include plan maps for each excavation level and artifact counts and material types, number, and vertical provenience (depth below surface and stratum association where applicable) for all recovered artifacts. They will draw a stratigraphic profile for at least one wall of each test excavation unit.

The archaeologist will screen sediments excavated for purposes of cultural resources investigation through 1/8-inch mesh, unless soil conditions warrant 1/4-inch mesh.

The archaeologist will analyze, catalogue, and temporarily curate all prehistoric and historic artifacts collected from the surface and from probes and excavation units. The ultimate disposition of cultural materials will be determined in consultation with the federal agencies (if any), DAHP, Ecology, and the affected tribe(s).

Within 90 days of concluding fieldwork, the archaeologist will provide a technical report describing any and all monitoring and resultant archaeological excavations to the Project Lead/Organization, who will forward the report to Ecology, the federal agencies (if any), DAHP, and the affected tribe(s) for review and comment.

If assessment activities expose human remains (burials, isolated teeth, or bones), the archaeologist and Project Lead/Organization will follow the process described in **Section 6**.

8. PROCEEDING WITH WORK

The Project Lead/Organization shall work with the archaeologist, DAHP, and affected tribe(s) to determine the appropriate discovery boundary and where work can continue.

Work may continue at the discovery location only after the process outlined in this plan is followed and the Project Lead/Organization, DAHP, any affected tribe(s), Ecology, and the federal agencies (if any) determine that compliance with state and federal laws is complete.

9. ORGANIZATION RESPONSIBILITY

The Project Lead/Organization is responsible for ensuring:

- This IDP has complete and accurate information.
- This IDP is immediately available to all field staff at the site and available by request to any party.
- This IDP is implemented to address any discovery at the site.
- That all field staff, contractors, and volunteers are instructed on how to implement this IDP.

10. ADDITIONAL RESOURCES

Informative Video

Ecology recommends that all project staff, contractors, and volunteers view this informative video explaining the value of IDP protocol and what to do in the event of a discovery. The target audience is anyone working on the project who could unexpectedly find cultural resources or human remains while excavating or digging. The video is also posted on DAHP's inadvertent discovery language website.

[Ecology's IDP Video](https://www.youtube.com/watch?v=ioX-4cXfbDY) (<https://www.youtube.com/watch?v=ioX-4cXfbDY>)

Informational Resources

[DAHP](https://dahp.wa.gov) (<https://dahp.wa.gov>)

[Washington State Archeology \(DAHP 2003\)](https://dahp.wa.gov/sites/default/files/Field%20Guide%20to%20WA%20Arch_0.pdf)

(https://dahp.wa.gov/sites/default/files/Field%20Guide%20to%20WA%20Arch_0.pdf)

[Association of Washington Archaeologists](https://www.archaeologyinwashington.com) (<https://www.archaeologyinwashington.com>)

Potentially Interested Tribes

[Tribal Contacts: Interactive Map of Tribes by Area](https://dahp.wa.gov/archaeology/tribal-consultation-information)

(<https://dahp.wa.gov/archaeology/tribal-consultation-information>)

[Tribal Contacts - WSDOT Tribal Contact Website](https://wsdot.wa.gov/tribal/TribalContacts.htm)

(<https://wsdot.wa.gov/tribal/TribalContacts.htm>)

11. ADDITIONAL INFORMATION

Please add any additional contact information or other information needed within this IDP.

Ecology conducted a cultural resources review for the Site in 2022 and made a preliminary determination that the project has a low risk of disturbing pre-historic artifacts or other archaeological resources and has a low risk of disturbing historic properties. Ecology sent its preliminary determination to DAHP and the affected tribes and received concurrence from DAHP; no response was received from the tribes. Based on Ecology's review and the comments received, Ecology retained the preliminary determination as a final determination and notified DAHP and the affected tribes on July 29, 2022..

Implement the IDP if you see...

Chipped stone artifacts.

Examples are:

- Glass-like material.
- Angular material.
- “Unusual” material or shape for the area.
- Regularity of flaking.
- Variability of size.



Stone artifacts from Oregon.



Stone artifacts from Washington.



Biface-knife, scraper, or pre-form found in NE Washington. Thought to be a well knapped object of great antiquity. Courtesy of Methow Salmon Rec. Foundation.

Implement the IDP if you see...

Ground stone artifacts.

Examples are:

- Unusual or unnatural shapes or unusual stone.
- Striations or scratching.
- Etching, perforations, or pecking.
- Regularity in modifications.
- Variability of size, function, or complexity.



Above: Fishing Weight - credit [CRITFC Treaty Fishing Rights website](#).



Artifacts from unknown locations (left and right images).



Implement the IDP if you see...

Bone or shell artifacts, tools, or beads.

Examples are:

- Smooth or carved materials.
- Unusual shape.
- Pointed as if used as a tool.
- Wedge shaped like a “shoehorn”.
- Variability of size.
- Beads from shell (dentalium) or tusk.



Upper Left: *Bone Awls from Oregon.*

Upper Center: *Bone Wedge from California.*

Upper Right: *Plateau dentalium choker and bracelet, from Nez Perce National Historical Park, 19th century, made using Antalis pretiosa shells*
Credit: Nez Perce - Nez Perce National Historical Park, NEPE 8762, Public Domain.

Above: *Tooth Pendants.*

Right: *Bone Pendants. Both from Oregon and Washington.*



Implement the IDP if you see...

Culturally modified trees, fiber, or wood artifacts.

Examples are:

- Trees with bark stripped or peeled, carvings, axe cuts, de-limbing, wood removal, and other human modifications.
- Fiber or wood artifacts in a wet environment.
- Variability of size, function, and complexity.



Left and Below: *Culturally modified tree and an old carving on an aspen (Courtesy of DAHP). These are examples of above ground cultural resources.*

Right, Top to Bottom: *Artifacts from Mud Bay, Olympia: Toy war club, two strand cedar rope, wet basketry.*



Implement the IDP if you see...

Strange, different, or interesting looking dirt, rocks, or shells.

Human activities leave traces in the ground that may or may not have artifacts associated with them. Examples are:

- “Unusual” accumulations of rock (especially fire-cracked rock).
- “Unusual” shaped accumulations of rock (such as a shape similar to a fire ring).
- Charcoal or charcoal-stained soils, burnt-looking soils, or soil that has a “layer cake” appearance.
- Accumulations of shell, bones, or artifacts. Shells may be crushed.
- Look for the “unusual” or out of place (for example, rock piles in areas with otherwise few rocks).



Shell Midden pocket in modern fill discovered in sewer trench.



Underground oven. Courtesy of DAHP.

Shell Midden with fire cracked rock.



Hearth excavated near Hamilton, WA.

Implement the IDP if you see...

Historic period artifacts (historic archaeology considered older than 50 years).

Examples are:

- Agricultural or logging equipment. May include equipment, fencing, canals, spillways, chutes, derelict sawmills, tools, etc.
- Domestic items including square or wire nails, amethyst colored glass, or painted stoneware.



Left: Top to Bottom: Willow pattern serving bowl and slip joint pocket knife discovered during Seattle Smith Cove shantytown (45-KI-1200) excavation.



Right: Collections of historic artifacts discovered during excavations in eastern Washington cities.



Implement the IDP if you see...

Historic period artifacts (historic archaeology considered older than 50 years).

Examples are:

- Railway tokens, coins, and buttons.
- Spectacles, toys, clothing, and personal items.
- Items helping to understand a culture or identity.
- Food containers and dishware.



Main Image: Dishes, bottles, work boot found at the North Shore Japanese bath house (ofuro) site, Courtesy Bob Muckle, Archaeologist, Capilano University, B.C. This is an example of an above ground resource.



Right, from Top to Bottom:
Coins, token, spectacles
and Montgomery Ward
pitchfork toy discovered
during Seattle Smith Cove
shantytown (45-KI-1200)
excavation.



Implement the IDP if you see...

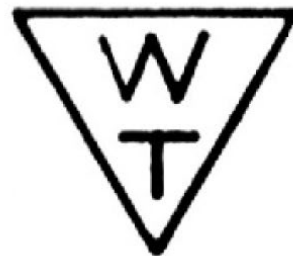
- Old munition casings – if you see ammunition of any type – ***always assume they are live and never touch or move!***
- Tin cans or glass bottles with an older manufacturer's technique – maker's mark, distinct colors such as turquoise, or an older method of opening the container.



Far Left: .303 British cartridge found by a WCC planting crew on Skagit River. ***Don't ever touch something like this!***

Left: Maker's mark on bottom of old bottle.

Right: Old beer can found in Oregon. ACME was owned by Olympia Brewery. Courtesy of Heather Simmons.



Logo employed by Whithall Tatum & Co. between 1924 to 1938 (Lockhart et al. 2016).



Can opening dates, courtesy of W.M. Schroeder.

Implement the IDP if you see...

Historic foundations or buried structures.

Examples are:

- Foundations.
- Railroad and trolley tracks.
- Remnants of structures.



Counter Clockwise, Left to Right: *Historic structure 45KI924, in WSDOT right of way for SR99 tunnel. Remnants of Smith Cove shantytown (45-KI-1200) discovered during Ecology CSO excavation, City of Spokane historic trolley tracks (above ground historic resources) uncovered during stormwater project, intact foundation of historic home that survived the Great Ellensburg Fire of July 4, 1889, uncovered beneath parking lot in Ellensburg.*

Implement the IDP if you see...

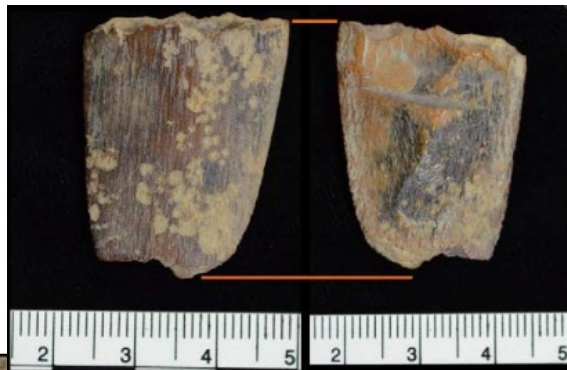
Potential human remains.

Examples are:

- Grave headstones that appear to be older than 50 years.
- Bones or bone tools--intact or in small pieces. It can be difficult to differentiate animal from human so they must be identified by an expert.
- These are all examples of animal bones and are not human.

Center: *Bone wedge tool, courtesy of Smith Cove Shantytown excavation (45KI1200).*

Other images (Top Right, Bottom Left, and Bottom) Center: Courtesy of DAHP.



Directly Above: *This is a real discovery at an Ecology sewer project site.*

What would you do if you found these items at a site? Who would be the first person you would call?

Hint: Read the plan!