Memo

PIONEER TECHNOLOGIES CORPORATION
5205 Corporate Ctr. Ct. SE, Ste. A
Olympia, WA 98503-5901
Phone: 360.570.1700
Fax: 360.570.1777
www.uspioneer.com

To: Steve Teel, LGH (Ecology)

From: Hannah Morse, EIT and Chris Waldron, PE (PIONEER)

Cc: Jake Lund (City of Olympia), Chance Asher (Ecology), Tim Mullin (Ecology)

Date: August 24, 2022

Subject: Data Gaps Investigation Work Plan for the City of Olympia's Solid Wood, Inc. Site in Olympia, Washington
Response to Ecology's Comments dated July 26, 2022

The purpose of this memorandum (memo) is to provide response to comments[1] from the Washington State Department of Ecology (Ecology) regarding the Data Gaps Investigation Work Plan for the City of Olympia's (City's) Solid Wood Incorporated Site dated May 4, 2022.

Response to Comments

No.	Ecology's Comment	City's Response to Comment
1.	Section 1 – Introduction Add the Sediment Management Standards WAC 173-204 to the last paragraph.	A reference to the Sediment Management Standards was added to Section 1.
2.	Section 2.1.1 – Soil, Table 2, Summary of Sample Analysis and Number of Samples Please modify the table to more accurately show the actual number of samples that will be collected and possibly analyzed. For example, the table indicates that 12 samples will be analyzed for carcinogenic polycyclic aromatic hydrocarbons (cPAHs) plus one duplicate sample. However, archive samples will also be collected for potential analysis from depths of 6-8 feet below ground surface (bgs) and/or 12-15 feet bgs from the rail spur and soil stain areas. Therefore the total number of field samples that could be analyzed ranges from a minimum of 12 and a maximum of 33 (not including duplicates). Please also note that duplicates need to be collected at a frequency of 1 per 20 samples.	Table 1 (in Section 2.1.1) was updated to include the total number of samples that will be collected. A table footnote (identified as footnote a) was added to the table stating: Only 13 samples (including 1 duplicate) will be analyzed by the lab. The remaining 22 samples (including 1 duplicate) will be sent the laboratory and held until the analytical results are returned for the first set of samples.
3.	Figure 2-1 – Proposed Soil Sample Locations The figure indicates that rail spur samples will be collected from a depth of approximately 2 4o 4 feet bgs. However, the text description in Section 2.1.1 states that the sample depth will be approximately 4 feet bgs. Please modify so that the text and figure are consistent.	Section 2.1.1 and Figure 2-1 were updated to state the soil samples collected along the rail spur will be collected between 2 – 4 feet bgs.

[1] Ecology's comments were received via email on July 26, 2022 from Steve Teel to Jake Lund, Hannah Morse, and Chris Waldron (Steve Teel, personal communication, July 26, 2022).

No.	Ecology's Comment	City's Response to Comment
4.	Section 2.1.2 – Sediment This section states that the deeper intertidal sediment samples will be collected from a depth of approximately 2- to-4 feet bgs. However, Figure 2-2 indicates that the subsurface sediment samples will be collected at approximately 2 feet bgs. Please revise the text and figure to state that the subsurface sediment samples will be collected at the depth interval beginning at 0.5 feet bgs and ending 2- to- 3 feet bgs. This change is needed to ensure that the underlying interval immediately below the biologically active zone (BAZ) sample interval (< 6 inches bgs) is sampled. Section 2.2.2 will also need to be corrected to be consistent with these changes.	Section 2.1.2 and Figure 2-2 were updated to state sediment samples will be collected at the following intervals: ▪ 0.0 – 0.5 feet bgs ▪ 0.5 – 2.0 feet bgs The maximum depth was set to 2.0 ft bgs based on the conceptual site exposure model. The purpose of these samples is to evaluate potential impacts to human health for the clam digger/beach combers and tribal fish consumption exposure scenarios. Based on the conceptual site exposure model, it is not expected that any receptors would be exposed to sediments deeper than 2 ft bgs. The text was updated in Section 2.2.2 to reflect these revisions.
5.	Figure 2-2 The sample area for sampling historical log rafting activities in Figure 2-2 (box outlined with red dotted line) is significantly larger than the suggested sample area indicated in Figure 1 from Ecology's May 19, 2021 comment letter (see yellow outlined box below). Please reduce the size of the proposed sample area to be more consistent with Ecology's comment letter or provide an explanation of why it is appropriate to investigate the larger area shown in Figure 2-2. Ecology's concern is that a too large a sample area will require more field time and expense than necessary plus there will be an increased likelihood that fewer samples will be from the main historic log storage area.	Agreed. Figure 2-2 was updated to reduce the sample area for sampling historical log rafting activities. The distribution of the wet-sieve testing was modified based on the decreased footprint.
6.	Section 2.2.2 – Wet Sieving Step 3 states that aggregates of material will be gently broken to facilitate sieving. These aggregates may be woodwaste, such as pieces of bark from log storage. Care should be taken to retain the woodwaste aggregates to include in the %woodwaste estimates. Any woodwaste would have had decades to decay into finer particles. To ensure woodwaste in the fines is not missed in Step 6, careful examination of the fines should be done.	Agreed. The following footnote was added to Section 3 of Wet Sieving in Section 2.2.2: Extra care should be taken when examining aggregates of material to determine whether or not the material is wood waste. Wood waste material should be retained in the sample for the purposes of estimating percent wood waste by volume.

No.	Ecology's Comment	City's Response to Comment
7.	Section 2.2.2 – Sediment Sampling Procedures Step 4 states that if the sample is contains large amounts of debris it should be discarded. Prior to discarding, please document the debris characteristics with detailed photos and descriptions. Also, please use care to ensure the debris is not woodwaste. If the sample contains woodwaste but is unacceptable due to other debris, gravel, or rocks, then attempts should be made to remove the woodwaste and include in the next grab. In Step 6, add woodwaste as part of the observation and document the nature of the woodwaste (e.g., bark, large pieces of logs, etc).	Step 4 of Wet Sieving in Section 2.2.2 was updated to state that a sample would only be rejected if there are large amounts of non-wood waste debris (e.g., rocks, gravel, trash, etc.). Field personnel will document the characteristics that warranted rejecting the sample. A grab sample will not be rejected due to large amounts of wood debris and/or wood waste. However, if a sample is rejected for having large amounts of non-wood waste debris, there will be no attempt to remove wood waste from that sample and include it in the next sample. These samples are intended to be representative of current sediment conditions. Removing the wood waste from one sample and adding it to the next sample is not representative of existing sediment conditions. Wet-sieve testing will be performed at 20 locations in order to identify the locations with the highest wood waste. Step 6 of Wet Sieving in Section 2.2.2 was updated to include documenting the characteristics of the wood waste (e.g., bark, large pieces of log, fine material) in each sample.
8.	Section 3.1 – Chemical Analysis a. Analyses Methods: Several of the analyses methods shown in this section do not match the methods indicated in Table 5-1 of Ecology's Sediment Cleanup User's Manual (SCUM, 2021). Please revise this section to be consistent with SCUM or provide an explanation why a different method is more appropriate. b. Mercury: Mercury is analyzed by a separate method from the other metals constituents. Please include this in the list. c. Footnote (9): Please add arsenic to the list of metals that will be analyzed. d. Footnote (10): Please revise this footnote to indicate that dioxins/furans will be analyzed in the subsurface intertidal samples also. e. Add phthalates to the analyte list for intertidal samples. The response to Ecology comment 1 in the March 1, 2022 minutes from the December 2, 2021 meeting states that "all intertidal sediment samples will be analyzed for the Full SMS Suite, dioxins/furans, and cPAHs." f. Grain Size and total organic carbon (TOC): Please revise to include analyses of grain size and TOC in all sediment samples. Currently, the list of analytes for the intertidal and subtidal samples south of West Bay Park and downgradient of the outfalls does not include grain size or TOC.	Below is the response to comment for each sub-comment in Comment #8. a. Analytical methods were updated to match the analytical methods presented in the SCUM guidance. b. Mercury was added to Table 5 of Section 2.4.2 and the analytical method was identified in Section 3.1. c. Arsenic was added to Footnote 9. d. The footnote was updated to clarify that dioxin/furans will be analyzed in the subsurface, intertidal samples. e. Phthalates were added to the analytical list for intertidal sediment samples. f. All sediment samples will be analyzed for TOC and Grain Size. Section 3.1 was updated accordingly.

No.	Ecology's Comment	City's Response to Comment
9.	Section 3.2 – Biological Testing a. Ensure appropriate modifications are made to the bioassay test conditions according to Ecology's woodwaste cleanup guidance publication No. 09-09-044 and include this guidance in the paragraph – it currently states PSEP and SCUM. For example, aeration for the amphipod test, retaining woodwaste in the test chamber to reflect in situ conditions. b. The last sentence states that chemical testing will be conducted before the bioassays. This is not necessary in this case since running bioassays is not dependent on the chemistry results. c. 3.2.1.1 Ash-free dry weight. Ensure SCUM, Table 8-2 is used for appropriate performance standards.	Below is the response to comment for each sub-comment in Comment #9. a. Agreed. Text was added to state bioassays will be performed based on the modifications identified in Ecology's Wood Waste Cleanup guidance (Ecology 2013). b. Agreed. c. Agreed.
10.	Section 4 – Data Analysis and Reporting a. 3rd bullet: This bullet states that results will be compared to the "appropriate screening levels" to identify exceedances. Please include in the work plan a table that lists the screening levels. Please note that the appropriate screening levels for cPAHs, dioxins/furans, and bioaccumulative metals include sediment natural background or practical quantitation limit, whichever is higher (WAC 173-204-560), as well as South Puget Sound regional background for dioxins/furans and cPAHs. b. 4th bullet: Ensure SCUM, Table 8-2 criteria is used to compare bioassay results.	Below is the response to comment for each sub-comment in Comment #10. a. Final screening levels will be developed as part of the RI/FS Report; however, for the purposes of this Work Plan, preliminary screening levels were developed based on MTCA Method A CULs, SMS criteria, and regional background values. Analytical results will be compared to the screening levels to determine whether or not additional sampling is required as part of the data gaps investigation. The purpose of these screening levels is not to finalize the screening levels that will be used in the RI/FS Report. Analytical results will be further reviewed and evaluated in the RI/FS Report. Preliminary screening levels are included in Table 4-1. b. Agreed. A reference to Table 8-2 of the SCUM guidance was added to bullet #4.
11.	Section 6 – References The SCUM reference lists December 2021 at the end of the reference. For clarity, please change the reference to SCUM 2021 and ensure this is consistent throughout the document.	The SCUM reference was updated. All citations throughout the Work Plan have been updated accordingly.

References

PIONEER. 2022. Data Gaps Investigation Work Plan: Solid Wood, Inc. Site RI/FS Report. Olympia, Washington. May.

Teel, Steve (Ecology). "Re: City of Olympia - Solid Wood, Inc. - Data Gaps Investigation Work Plan." Message to Jake Lund, Hannah Morse, and Chris Waldron. 26 July 2022. E-mail.

Enclosures

Attachment #1 Data Gaps Investigation Work Plan for the Solid Wood, Inc. Site. Revised: August 2022

Data Gaps Investigation Work Plan

Solid Wood, Inc. Site RI/FS Report
Olympia, Washington

Prepared for:

City of Olympia
PO Box 1967
Olympia, WA 98507-1967

Prepared by:

PIONEER TECHNOLOGIES CORPORATION
5205 Corporate Center Ct. SE, Suite A
Olympia, Washington 98503
Phone: 360.570.1700
Fax: 360.570.1777
www.uspioneer.com

August 2022

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Tables

Attachments

List of Acronyms

Acronym	Explanation
AO	Agreed Order No. DE-08-TCPSR-5415
AST	Aboveground Storage Tank
BAZ	Biologically Active Zone
bgs	Below Ground Surface
BNSF	Burlington Northern Santa Fe
City	City of Olympia
cPAH	Carcinogenic Polycyclic Aromatic Hydrocarbons
CUL	Cleanup Level
DAHP	Department of Archeology and Historic Preservation
DGPS	Differential Global Positioning System
Ecology	Washington State Department of Ecology
ESA	Environmental Site Assessment
FS	Feasibility Study
FSAP	Field Sampling and Analysis Plan
GPS	Global Positioning System
Gravity	Gravity Marine Consulting
IA	Interim Action
IDP	Inadvertent Discovery Plan
mg/kg	Milligram per Kilogram
mL	Milliliter
MLW	Mean Low Water
mm	Millimeter
MTCA	Model Toxics Control Act
NAD	Northern American Datum
PAHs	Polycyclic Aromatic Hydrocarbons
Parametrix	Parametric Inc.
PCBs	Polychlorinated Biphenyls
PIONEER	PIONEER Technologies Corporation
Port	Port of Olympia
QA/QC	Quality Assurance/Quality Control
RI	Remedial Investigation
ROW	Right-of-Way
SCUM	Sediment Cleanup User's Manual
Site	Solid Wood Incorporated Site
SMS	Sediment Management Standards

Acronym	Explanation
SOW	Scope of Work
sVOCs	Semi-Volatile Organic Compounds
USCS	United Soil Classification System
UST	Underground Storage Tank
TPH	Total Petroleum Hydrocarbons
VOCs	Volatile Organic Compounds
WAC	Washington Administrative Code
WP	Work Plan

SECTION 1: INTRODUCTION

Since 2008, PIONEER Technologies Corporation (PIONEER) and Parametrix, Inc. (Parametrix) have been conducting a Remedial Investigation (RI) and Feasibility Study (FS) on behalf of the City of Olympia (City) at the Solid Wood Incorporated Site (Site) located at 700-710 West Bay Drive in Olympia, Washington (see Figure 1-1). The RI/FS was being conducted as part of the remedial action for the Site, per Agreed Order (AO) No. DE-08-TCPSR-5415 between the City and the Washington State Department of Ecology (Ecology).

As part of the RI, soil, groundwater, surface water, and sediment investigations were performed at the Site to determine the nature and extent contamination associated with historical operations. This RI/FS report, which is intended to provide sufficient information to enable the City and Ecology to select a final cleanup action for the Site, documents the investigations that were performed at the Site, evaluates the nature and extent of in-place contamination, and presents cleanup action alternatives for the Site under the requirements of Models Toxics Control Act (MTCA) chapter 173-340-350 Washington Administrative Code (WAC) and the Sediment Management Standards (SMS) chapter 173-204 WAC.

1.1 Purpose

The City submitted the RI/FS Report to Ecology in October 2015. In December 2019, Ecology provided the City with initial comments on the RI/FS Report which identified several data gaps in soil, sediment, and groundwater.[1] The scope of work (SOW) presented in this Data Gaps Investigation Work Plan (WP) is based on the agreed-upon path forward for addressing the data gaps identified by Ecology.[2] The purpose of this WP is to present the specific procedures for the collection and analysis of soil and sediment samples.

1.2 Site Background

The Site is located along the West Bay of Budd Inlet, east of West Bay Drive Northwest and north of the 4th Avenue Bridge. The Site originally consisted of tidelands, which were filled to create a relatively-level 17-acre property used historically for industrial purposes. The City purchased two properties to develop the Site:

- The main upland area, formerly owned by the Port of Olympia (Port), which was used for various lumber milling activities; and
- The Burlington Northern Santa Fe (BNSF) railroad spur right-of-way (ROW), which runs through the Site.

Potential contaminated sources were identified in a Phase I Environmental Site Assessment (ESA) conducted at the Site. Potential contaminant sources included the hazardous material storage, logway,

[1] No additional groundwater sampling is proposed as part of this data gaps investigation.

[2] The City and Ecology have met several times between May 2021 and December 2021 to discuss Ecology's comments to the RI/FS Report for the Solid Wood Incorporated Site. The purpose of these meetings was for the City and Ecology to agree on the path forward for addressing Ecology's comments and revising the RI/FS Report.

oil stain area, pilings, railroad activities, former repair shop and welding shop, underground storage tanks (USTs) and aboveground storage tanks (ASTs), former wood burner and bag house, and wood treating activities.

Prior to developing the RI/FS Report, several RI/FS-related activities were completed at the Site. These activities included:

- A Phase II ESA for areas outside the BNSF ROW conducted in 2004 which indicated there were no significant environmental impacts to these areas (Parametrix 2004b).
- A Phase II ESA focused near the BNSF ROW conducted in 2007 which identified petroleum and low levels of carcinogenic polycyclic aromatic hydrocarbons (cPAHs) that exceeded MTCA Method A Cleanup Levels (CULs; Parametrix 2007).
- Interim actions (IAs) performed in the summer and fall of 2009. IAs were performed in seven areas (Area A through E, a catch basin removal area, and a pilings removal area; see Figure 1-2). Details of the IAs performed are provided in the IA Report (Parametrix 2010).

Starting in 2008, soil, groundwater, and sediment sampling activities were performed in support of the RI. A total of 177 soil samples from 117 sample locations (see Figure 1-3), 101 groundwater samples from 46 sample locations (see Figure 1-4), and 80 sediment samples from 59 sample locations (see Figure 1-5) were collected and analyzed as part of the RI. All samples were analyzed for a variety of constituents, depending on the sample location and the nature of the investigation activity. Additionally, bioassays were performed on 13 samples at 11 sample locations (see Figure 1-5).

1.3 Project Roles and Responsibilities

Project responsibilities include:

- Coordinating sampling and analysis activities with the analytical laboratories and other vendors (e.g., sampling supply vendors, driller, boat/captain);
- Reviewing analytical reports from the laboratories to determine if analytical methods were run properly, quality assurance/quality control (QA/QC) procedures were performed, and the analytical results are acceptable;
- Notifying Ecology when sampling and analysis activities are scheduled; and
- Analyzing, summarizing, and reporting analytical results to Ecology for review and approval.

The roles and responsibilities associated with the sampling and analysis identified in this WP are summarized in Table 1.

Table 1. Project Roles and Responsibilities

Organization	Personnel	Roles/Responsibility
City of Olympia	Jake Lund, PE	Project Manager for City (owner); Coordinate with field personnel to ensure access to the Site
PIONEER Technologies Corporation	Hannah Morse, EIT	Project manager. Primary point of contact for the City and Ecology. Scopes and coordinates field activities; Oversees day-to-day project activities; Ensures all field sampling and handling procedures are followed and documented; Conduct field sampling activities.

Organization	Personnel	Roles/Responsibility
PIONEER Technologies Corporation	Chris Waldron, PE	Provide technical support and oversight to ensure team is successful at achieving the project objectives.
	Kevin Gallagher, MS, ASP, CSP	Participates in a Project Safety Analysis (PSA) to identify potential safety hazards and identify safety measures/procedures to use in the field to mitigate potential safety hazards; Ensures all project health and safety requirements are followed.

1.4 Work Plan Organization

This WP is organized as follows:

- **Section 1 (Introduction)** presents the Site background and purpose of collecting additional samples at the Site.
- **Section 2 (Field Sampling Plan)** summarizes the sampling SOW including sampling locations, methods, and handling procedures.
- **Section 3 (Laboratory Analysis Plan)** summarizes the chemical analysis to be performed for each media.
- **Section 4 (Data Analysis and Reporting)** summarizes how analytical data will be evaluated (i.e., which screening criteria the analytical results will be compared to) and how the data will be reported.
- **Section 5 (Schedule)** summarizes the schedule for completing the field work and revising the RI/FS Report for the Solid Wood, Inc. Site.
- **Section 6 (References)** provides a bibliographic list of references cited in the text.

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SECTION 2: FIELD SAMPLING PLAN

This section summarizes the field sampling plan including number of samples, sampling locations, sampling methods and procedures, and sample handling procedures.

2.1 Summary of Proposed Work

The following section summarizes the proposed soil and sediment sample locations.[3,4]

2.1.1 Soil

Soil samples will be collected in two primary locations: along the rail spur and the oil stain area (see Figure 2-1). Twenty-seven samples, from nine locations, will be collected along the rail spur. Nine soil samples, collected approximately 2 – 4 feet below ground surface (bgs), will be analyzed for cPAHs. Additional samples will be collected approximately 6 – 8 feet bgs and 12 – 15 feet bgs at each of the nine locations. These samples will be sent to the laboratory and held until the analytical results are returned for the samples collected 2 – 4 feet bgs. If cPAH concentrations do not exceed the MTCA Method A Cleanup Level (CUL) of 0.10 milligrams per kilogram (mg/kg), the deeper samples will not be analyzed.

Six soil samples will be collected from three locations in the oil stain area near SB26, SB29, and SB30 (see Figure 2-1).[5] Three soil samples, collected approximately 6 – 8 feet bgs, will be analyzed for cPAHs. Additional samples will be collected approximately 12 – 15 feet bgs at each of the three locations; however, if groundwater is encountered before reaching the desired depth, a sample will be collected at the depth of groundwater. These samples will be sent to the laboratory and held until the analytical results are returned for the samples collected six – eight feet bgs. If cPAH concentrations do not exceed the MTCA Method A CUL of 0.10 mg/kg, the deeper samples will not be analyzed.

Table 2 summarizes the total number of soil samples to be collected.

Table 2. Summary of Sample Analysis and Number of Samples

Analysis	No. of Field Samples	No. of Duplicate Samples	Total No. of Samples
cPAHs	33[a]	2[a]	35[a]

Notes:

[a] Only 13 samples (including 1 duplicate) will be analyzed by the lab. The remaining 22 samples (including 1 duplicate) will be sent the laboratory and held until the analytical results are returned for the first set of samples.

[3] The proposed soil locations are based on the discussion between the City and Ecology on December 9, 2021. The proposed soil sample locations were documented in the Meeting Minutes from 12/09/2021 Meeting with Ecology to Discuss the Soil Scope of Work (SOW) to be included in the Data Gaps Investigation Work Plan, finalized and approved by Ecology via email on January 5, 2022.

[4] The proposed sediment locations are based on the discuss between the City and Ecology on December 2, 2021. The proposed sediment sample locations were document in the Meeting Minutes from 12/02/2021 Meeting with Ecology to Discuss the Sediment Scope of Work (SOW) to be included in the Data Gaps Investigation Work Plan, finalized and approved by Ecology via email on March 7, 2022.

[5] The cPAH analytical results at SB26, SB29, and SB30 (soil samples collected approximately four feet bgs) exceeded the MTCA Method A CUL of 0.1 mg/kg (0.14 mg/kg, 0.31 mg/kg, and 0.14 mg/kg, respectively).

2.1.2 Sediment

As part of Ecology's review of the 2015 RI/FS Report, Ecology identified a data gap in sediment. Ecology identified two primary locations where the nature and extent of contamination in sediment had not been fully characterized (see Figure 2-2):

- South of West Bay Park along the shoreline; and
- South of West Bay Park, waterward of the shoreline approximate to where historical, in-water log storage and handling activities occurred.

Ten intertidal samples will be collected from five locations along the shoreline. Five surface samples (0 to 0.5 feet bgs) and five samples approximately 0.5 – 2 feet bgs will be collected near-shore. Five subtidal (i.e., below the mean-low water [MLW] line), surface (0 to 0.5 feet bgs) samples will be collected waterward (i.e., due east) of the intertidal samples.

Six sediment samples will be collected waterward of the shoreline proximate to where historical, in-water log storage and handling activities occurred. The six sediment sample locations will be determined as follows:

1. Establish a grid of 20 locations in the vicinity of historical, in-water log storage and handling activities;
2. Collect sediment samples for field screening of wood waste from the biologically active zone (BAZ; top 0.5 feet) from each of the 20 locations;
3. Perform a wet sieve analysis using a full range of mesh sizes with a minimum of 0.075 millimeters (mm) mesh sieve (No. 200 Sieve);[6]
4. Document the results of the wet sieve analysis including any observations (e.g., wood waste, shells, debris);
5. Estimate the wood waste by volume;[7] and
6. Collect sediment samples for chemical analysis and biological testing at the six locations with the highest wood waste by volume.

Table 3 summarizes the total number of sediment samples to be collected.

Table 3. Summary of Sample Analysis and Number of Samples

Analysis	No. of Field Samples	No. of Duplicate Samples	Total No. of Samples
Volatile Organic Compounds (VOCs)	21	1	22
Semi-Volatile Organic Compounds (sVOCs)	21	1	22
Polycyclic Aromatic Hydrocarbons (PAHs)	21	1	22
Metals[a]	21	1	22
Total Petroleum Hydrocarbons (TPHs)	21	1	22
Polychlorinated Biphenyls (PCBs)	21	1	22

[6] Wet sieve testing methods are summarized in Section 2.2.4.

[7] The wood waste by volume will be verified by two field personnel.

Analysis	No. of Field Samples	No. of Duplicate Samples	Total No. of Samples
Phthalates	21	1	22
Phenols	21	1	22
Dioxin/Furans[b]	16	1	17
Ammonia	6	1	7
Total Volatile Solids	6	1	7
Total Organic Carbon	6	1	7
Sulfides	6	1	7
Grain Size	21	1	22
pH	21	1	22

Notes:
[a] The metals analyzed for include arsenic, cadmium, chromium, copper, lead, mercury, silver, and zinc.
[B] Five intertidal subsurface samples will be collected and sent to the laboratory and placed on hold until results of the intertidal surface samples are received.

2.2 Sampling Methods and Procedures

The following section summarizes the soil and sediment sampling procedures. All soil/sediment samples will be placed into the appropriate sample containers using dedicated, disposable polyethylene scoops. All sample containers will be provided by the analytical laboratory. Bowls used during sample collection will be dedicated, disposable, and constructed of polyethylene. Surface and subsurface samples will be collected from discrete locations. Soil samples will be logged by a qualified scientist using the Unified Soil Classification System (USCS). Following sampling collection, the location of all samples will be tied to existing site features and sketched in the field logbook.

2.2.1 Soil

A Geoprobe or equivalent push-probe rig will be used to collect subsurface soil samples. The stainless-steel core sampler will be fitted with a disposable acetate sleeve for each sample run. Soil samples will generally be collected continuously from the ground surface to the planned depth of the borings. Once the sampling depth is reached for each sample run, the coring devise will be retracted, and the acetate sleeve will be cut length-wise and opened to allow for observation of the soil core. Observations of the soil core will be logged, and selected sections will be placed into the appropriate sampling containers.

2.2.2 Sediment

Sediment sample locations will be determined by performing a wet sieve test at 20 locations. The procedure for wet sieve is as follows:

1. Measure and record the exact volume of a small volumetric vessel.
2. Fill the vessel to the 50-millileter (mL) line with an aliquot of homogenized sediment. Lightly tap the beaker on a hard surface to remove any air bubbles and level the surface.

3. Rinse the entire content through a full sieve set. Aggregates of material should be gently broken to facilitate sieving.[8] Continue sieve until clear rinse water passes through all sieves. Extra precaution should be taken to ensure rinse water does not overflow and cause fine-grained particles to exit the sieve.
4. Allow all material to settle for 5 minutes. Determine the volume of material retained by each sieve by transferring the materials into a clean graduated cylinder.
5. Record the percentage of coarse-grained and fine-grained material in field notes.
6. Visually inspect all samples and document any observed wood waste. If wood waste is present, determine and document the wood waste by volume.
7. Collect a sediment sample for chemical analysis and biological testing from the six locations with the highest percentage of wood waste by volume.

Sediment samples will be collected using a stainless-steel power grab sampler mounted on a vessel owned and operated by Gravity Marine Consulting (Gravity). Surface sediment samples will be collected from the 0- to 6-inch depth interval. Five sediment samples will be collected from 0.5 – 2 feet bgs. Two grab samples may be collected at each location to ensure there is enough sample volume for all analysis. Sediment sampling procedures are summarized as follows:

1. Position the sampling vessel over the targeted sampling location using the Trimble Differential Global Positioning System (DGPS) on the vessel owned and operated by Gravity.[9] Record the final coordinates of each sample location in the field logbook.
2. Set the sample jaws in the open position, place the sampler over the edge of the boat, and lower the sampler to the surface bottom.
3. Retrieve the sampler and place is securely on the sampling vessel.
4. Examine the sample. If the sample is unacceptable (e.g., sample contains large amount of non-wood waste debris, sample consists of large rocks or gravel) or not collected from the correct sample depth, reject the sample and collect a new sample. Note: Prior to discarding the sample, the field team should document (e.g., photos, field notes) debris characteristics of the sample.
5. Measure and collect a sample with a stainless-steel spoon, avoiding any sediment in contact with the grab sampler. Place the sample in a stainless-steel bowl.
6. Record the following observations: texture, color, presence of biological organisms, presence of debris, presence of oil sheen or obvious contamination, and odor. In addition, field personnel should document whether or not wood waste is present in the sample and the characteristics of the wood waste (e.g., bark, large pieces of log, fine material).
7. Homogenize the sample in the stainless-steel bowl. Place the sediment in the appropriate sediment sample containers.

[8] Extra care should be taken when examining aggregates of material to determine whether or not the material is wood waste. Wood waste material should be retained in the sample for the purposes of estimating percent wood waste by volume.

[9] The DGPS uses a ground-based reference station that sends carrier-phase corrections to an onboard GPS receiver to achieve sub-centimeter accuracy. The antenna for the onboard GPS receiver will be located at the end of the power grab sampler and collect coordinates directly above the sampling location. Coordinates are based on the North American Datum of 1983 (NAD 1983).

2.3 Decontamination Procedures

All non-disposable sampling tools and equipment (e.g., trowel, stainless-steel bowl, sieves) will be decontaminated between each sampling location. Decontamination procedures are summarized below:

- Scrub tools/equipment using a brush and Alconox cleaner
- Rinse thoroughly with deionized water
- Allow the tool/equipment to air dry
- Place in a clean, uncontaminated location for storage

2.4 Sample Handling and Custody

2.4.1 Sampling Identification and Labeling

Prior to the field investigation, each sample will be assigned a sample identification number. The sample identification protocol will be consistent with the protocol identified in the original RI/FS work plan (Parametrix 2008). Samples identifications will be assigned based on the sample media, sample station, sample type, and the sample depth. The protocol is summarized in Table 4.

Table 4. Sample Identification Protocol

Site ID	WB = West Bay Waterfront
Matrix	SO = Soil SD = Sediment
Sampling Station	SB61 = Soil Boring No. XX (for continuity with past work, direct push numbering will begin with 61) SD60 = Sediment Station XX (for continuity with past work, sediment numbering will begin with 60)
Sample Type/Sample Depth	0000 = Field sample collected at a depth of 0.0 feet 1010 = Field duplicate collected at a depth of 1.0 feet

Example: WB-SO-SB22-0150 = Soil sample collected from soil boring SB-22 at a depth of 15.0 feet.

2.4.2 Sample Storage, Packaging, and Transportation

All samples will be placed in a cooler and held at approximately 4 degrees Celsius until they are received by the appropriate laboratory. Following completion of each day's sampling activities, all samples will be transported and/or shipped to the analytical laboratories, as appropriate. Analytical methods, sample containers, preservation requirements, and maximum holding times are summarized in Table 5.

Table 5. Sample Containers, Preservations, and Holding Times provided by Libby Environmental

Analysis	Container	Preservation	Holding Time
cPAH	(2) 4 oz. Glass Jar	Cool to 4°C	14 Days
VOCs	(2) 40 mL Glass VOA Vial	Cool to 4°C; MeOH	14 Days
PAHs	(2) 4 oz. Glass Jar	Cool to 4°C	14 Days
Metals (except Mercury)	4 oz. Glass Jar	Cool to 4°C	6 Months
Mercury	4 oz. Glass Jar	Cool to 4°C	28 Days
TPHs	(2) 40 mL Glass VOA Vial	Cool to 4°C; MeOH	14 Days

Analysis	Container	Preservation	Holding Time
PCBs	(2) 4 oz. Glass Jar	Cool to 4°C	14 Days
Phenols	4 oz. Glass Jar	Cool to 4°C	28 Days
Dioxins/Furans	(2) 4 oz. Glass Jar	Cool to 4°C	28 Days
Ammonia	4 oz. Glass Jar	Cool to 4°C	14 Days
Total Volatile Solids	4 oz. Glass Jar	Cool to 4°C	14 Days
Total Organic Carbon	4 oz. Glass Jar	Cool to 4°C	28 Days
Sulfides	4 oz. Glass Jar	Cool to 4°C	28 Days
pH	4 oz. Glass Jar	Cool to 4°C	N/A[a]

Notes:

[a] Samples are analyzed for pH on receipt or as soon as possible.

2.5 Documentation

2.5.1 Field Notes

At each sampling location, descriptions of the soil/sediment will be recorded on the sampler's field note from (see Attachment 1). Descriptions will include density, color, consistency, odor, organic matter, shall or wood debris, biological activity, presence of staining or sheen, and any other distinguishing characteristics or features, when appropriate. Additional field notes include:

- Date, time, and location of sampling
- Identification of all personnel on-Site
- Summary of safety discussions and/or concerns
- Field measurements (including units)
- Observations about the Site (e.g., weather, tide conditions, current in water)
- Observations about the collected soil (e.g., odors, texture, debris)

The location of each soil sample will also be recorded using a handheld GPS device in the NAD 1983 State Plane Washington FIPS 4602 (US Feet) coordinate system. The location of each sediment sample will be recorded using the DGPS (in the NAD 1983 State Plane Washington FIPS 4602 [US Feet] coordinate system) on the vessel owned and operated by Gravity.

2.5.2 Chain-of-Custody

Prior to sending collected samples to the laboratory, the designated sampler will complete a chain-of-custody form and deliver the original copy to the laboratory along with the samples.

The chain-of-custody form must include the following:

- Sample date and time
- Sampler's signature and time of delivery/shipment
- A list of analyses to be completed
- Sample media (e.g., soil, sediment)

- Total number of sampling jars

2.6 Inadvertent Discovery Plan

In January 2022, members of the Department of Archeology and Historic Preservation (DAHP), Puyallup Tribe of Indians, Nisqually Tribe of Indians, Squaxin Island Tribe, Confederated Tribes of the Chehalis Reservation, and Samish Tribe reviewed the area of potential effect to determine the risk of discovering archaeological materials or human remains at the Site. In February 2022, Ecology determined the Site is a high-risk for pre-historical artifacts or other archaeological resources and recommended on-Site monitoring throughout the duration of sampling activities. A copy of Inadvertent Discovery Plan (IDP) for the Site is provided in Appendix 2. The IDP outlines the City's procedures in the event of a discovery of archaeological materials or human remains, which was developed in accordance with applicable state and federal laws. In accordance with Ecology's recommendation, a licensed archeologist will be on-Site for the duration of field activities. Contact information for the project archeologist will be provided to Ecology, DAHP, and the Tribes prior to conducting field activities.

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SECTION 3: LABORATORY ANALYSIS PLAN

This section summarizes the chemical analysis and bioassay testing that will be performed for soil and sediment samples.

3.1 Chemical Analysis

Chemical analysis will be performed by Libby Environment, Inc. of Olympia, Washington. Soil samples, collected from the former oil stain area and along the berm, will be analyzed for the following:

- cPAHs (EPA Method 8270)

Intertidal and subtidal sediment samples, collected south of West Bay Park and downgradient of three former outlets, will be analyzed for the following:

- VOCs (EPA Method 8260D)
- sVOCs (EPA Method 8270)
- PAHs (EPA Method 8270)
- Metals (EPA Method 6010/6020)[10,11]
- TPHs (Method NWTPH-Gx and NWTPH-Dx)
- PCBs (EPA Method 8082/1668)
- Phthalates (EPA Method 8270)
- Phenols (EPA Method 8151/2070)
- Dioxins/Furans (EPA Method 1613)
- Total Organic Carbon (EPA Method 9060A)
- Grain Size (PSEP 1995)

Sediment samples, collected in the approximate area of historical log rafting activities, will be analyzed for the following:

- VOCs (EPA Method 8260D)
- sVOCs (EPA Method 8270)
- PAHs (EPA Method 8270)
- Metals (EPA Method 6010/6020)[9,10]
- TPHs (Method NWTPH-Gx and NWTPH-Dx)
- PCBs (EPA Method 8082/1668)
- Phthalates (EPA Method 8270)
- Phenols (EPA Method 8151/2070)
- Dioxins/Furans (EPA Method 1613)
- Ammonia (Plumb 1981)
- Total Volatile Solids (PSEP 1995)

[10] The metals analyzed for are arsenic, cadmium, chromium, copper, lead, mercury, silver, and zinc.
[11] Mercury is analyzed using EPA Method 7471.

- Total Organic Carbon (EPA Method 9060A)
- Sulfides (PSEP 1995 or EPA Method 9034/9030B)
- Grain Size (PSEP 1995)
- pH (EPA Method 9045D)

3.2 Biological Testing

Biological testing will be performed by EcoAnalysts, Inc. (previously known as Environ Global) in Port Gamble, Washington. Biological testing will be performed on six sediment samples collected in the approximate area of the historical log rafting activities. Biological tests will consist of the following bioassays:

- 10-day amphipod solid phase survival test using *eohaustorius estuaries* or *ampelisca abdita*;[12]
- Sediment larval development test using *bivalve mytilus spp*; and
- 20-day polychaeta growth test using *neanthes arenaceodentata*.

Bioassays will be conducted using the protocol in the Puget Sound Estuary Program's (PSEP) with modifications based on the recommendations in Ecology's Sediment Cleanup User's Manual (SCUM) II guidance (PSEP 1995 and 2021). Additional modifications will be made in accordance with the recommendations summarized as part of the annual review process and modifications identified in Ecology's Wood Waste Cleanup guidance (Ecology 2013).

Bioassay testing will begin within seven days of receipt of the sediment samples by EcoAnalysts. All sediment samples will be kept in a dark location at 4 degrees Celsius until bioassay testing begins. The samples will be sieved using a 4-mm sieve to remove large rocks and pebbles that are too large for the test chambers and could potentially impact the survival of the organisms. Additionally, previous testing indicated that ammonia build-up from shells and decaying macro-invertebrates (e.g., mussels and clams) can be a potential contributor to negative biological effects. Therefore, the samples will also be sieved to remove any shells and macro-invertebrates.

3.2.1 Identified Modifications to PSEP Methods

During previous bioassays, EcoAnalysts (previously known as Environ Global), the Army Corps of Engineers, and Ecology identified modified test methods that increased the data quality of PSEP methods. These modifications apply to the sediment larval development test and the 20-day polychaete solid phase survival and growth test and introduce additional steps in the post-processing of the test samples.

3.2.1.1 Polychaete Ash-Free Dry Weight Modification

The purpose of this modification was to account for the weight of sediment contained in the gut of the worms during the drying process. Worms reared under similar conditions and life history, but exposed to different grain size sediment, may express significantly different dry weights due to the contribution of heavier gut material of the worms maintained in sandy (heavier particles) sediment. This discrepancy

[12] The species will be selected based on results of the grain size analysis.

in dry weight has the potential to lead to Type II errors, where significant differences are found between test treatments, when none actually exist. The procedure described here is a tool to estimate the actual contribution of gut content to the overall weight of the animals. A procedure defined as "ashing" is employed to heat the worm tissue at high temperatures until all that is left behind is solid inorganic material. At the termination of the 20-day survival and growth test, sediment from each test chamber is sieved through a 0.5-mm screen and all recovered polychaetes transferred into a plastic cup. Survival is recorded and worms are rinsed with deionized water and placed in pre-ashed, pre-weighed aluminum boats and dried in a gravimetric oven at 60° Celsius for at least 24 hours. Each weigh boat is removed from the oven, cooled in a desiccator for approximately 30 minutes, and then weighed on an analytical microbalance to 0.01 mg. Each weigh boat is then dried in a muffle furnace heated to 550° Celsius for 2 hours to determine ashed weights. The ashed boats are again weighed to 0.010-mg and the ashed weight was subtracted from the dry weight to calculate the ash-free dry weight. Both the dry weight and the ash-free dry weight are used to determine individual worm weight and growth rates.

3.2.1.2 Larval Resuspension and Enumeration

The purpose of this modification was to address a phenomenon observed in the larval development test where the developing larvae have the potential to become buried or incorporated among the fine silt or flocculent material that settles in the test chamber as an artifact of the test procedure. The standard procedure of decanting and sub-sampling the test chambers (which contains the larvae) may underestimate the number of animals remaining at test termination (a critical endpoint for results interpretation). The test is terminated approximately 48 to 96 hours after initiation (test and species dependent), when 90% of the control larvae have achieved the appropriate life stage. At termination, the overlying seawater of each replicate test chamber (containing 18 grams of sediment and 900 milliliters of seawater) is decanted into a clean 1-liter jar (leaving the sediment behind) and homogenized with a perforated plunger. From this container, a 10-mm subsample is transferred to a shell vial and preserved in 5% buffered formalin. Larvae are subsequently stained with a solution of Rose Bengal to enhance visualization of larvae. The numbers of normal and abnormal larvae are enumerated using an inverted microscope. Following the sampling of larvae for the standard PSEP protocol, the sediment in the test chamber will be re-suspended by pouring the decanted water back into the test chamber, mixing 30 seconds with a perforated plunger, and allowing it to settle for approximately 12 hours. This action of pouring the decanted liquid back into the test chamber (containing the remaining sediment) and mixing has been found to be a useful technique in releasing larvae from the sediment matrix that were otherwise unaccounted for under the standard procedure. A second subsample is then collected as described above. At this point there are two sets of sub-samples that may require microscope enumeration. The decision to enumerate the re-suspended subsamples can be based on the results of the standard test samples.

3.3 Quality Assurance/Quality Control

3.3.2 Chemical Analysis Quality Control

Libby Environmental, Inc. will be responsible for conducting laboratory QC procedures and reporting laboratory QA results in accordance with the laboratory's standard operating procedures. The laboratory will perform and report the following laboratory QC results once per batch of samples:

- Method blank;
- Blank spike;
- Matrix spike; and
- Matrix spike duplicate.

3.3.3 Biological Testing Quality Control

Several QC methods will be utilized to ensure that the bioassays are ran properly including monitoring water quality parameters throughout the tests, collecting and analyzing reference samples, and running two control test environments. This section provides a summary of each QC method.

3.3.3.1 Water Quality

Monitoring of sulfide and ammonia concentrations will be analyzed prior to, during, and at the termination of the biological tests. Sulfides will be measured using a spectrophotometer and ammonia will be monitored using an ammonium ion-specific probe. Additionally, dissolved oxygen, salinity, pH, and temperature will be monitored using water-quality probes prior to the biological tests, as well as daily. Acceptable ranges for these parameters are listed in the table below.

Table 6. Target Parameters for Bioassays

Bioassay	DO	pH	Temperature	Salinity
10-day amphipod solid phase survival test	> 5.1 mg/L	7 – 9	15 ± 1 °C	27 – 29 ppt
Sediment larval development test	5.0 mg/L	7 – 9	16 ± 1 °C	27 – 29 ppt
20-day polychaeta growth test	> 4.6 mg/L	7 – 9	20 ± 1 °C	26 – 30 ppt

Notes:
°C: degrees Celsius; DO: dissolved oxygen; mg/L: milligrams per liter; ppt: parts per trillion

3.3.3.2 Reference Samples

Two reference samples will be collected by EcoAnalysts, Inc. within three days of the Site sediment sampling event. Reference samples will be collected in Carr Inlet using a boat and a Van Veen grab sampler. Reference sample locations will be selected based on their grain size. The grain size of the reference samples will be similar to the grain size (+/- 5 percent) of the sediment samples collected at the Site. Reference samples will be analyzed for the same biological tests as Site sediment samples.

3.3.3.3 Controls

Two controls will be implemented for each of the bioassays. Two controls will be implemented for each of the bioassays. The first control will be a negative control, which will utilize negative sediment (i.e., sediment free from contaminants) and the test organisms. The negative control will provide evidence

regarding the health of the organisms as well as any laboratory issues. The second control will be a positive control, which will utilize negative sediment (i.e., sediment free from contaminants) and a reference toxicant specific to each biological test (e.g., ammonium chloride, cadmium chloride). The positive control exposes test populations to known toxicants to calculate an LC_{50} (i.e., the concentration at which 50% of the population has died) for the populations.

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SECTION 4: DATA ANALYSIS AND REPORTING

Results of the data gaps investigation will be documented in a technical memorandum that will present the results in text, tables, and figures. The purpose of the technical memorandum is to:

- Summarize field activities including sample locations, sampling methods, and any observations recorded in the field;
- Summarize and present all results from the field event (e.g., sieve test results, chemical analysis results, bioassay results);
- Compare the analytical results for soil and sediment to the appropriate screening levels to identify any potential exceedances (see Table 4-1);[13]
- Evaluate the bioassay results using SMS criteria (see Table 8-2 of the SCUM guidance [Ecology 2021]);
- Determine whether or not soil and sediment characterization is complete;
- Recommend whether or not further investigation is warranted in soil or sediment based on the results of analytical data; and
- Summarize how the analytical data will be incorporated into the RI/FS and the next steps for revising the RI/FS for the Solid Wood, Inc., Site.

[13] The purpose of these screening levels is to evaluate whether or not additional sampling/data collection is required as part of the data gaps investigation. The screening levels presented in this Work Plan are not necessarily the final screening levels that will be developed in the RI/FS Report. All analytical results will be further evaluated in the RI/FS Report.

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SECTION 5: SCHEDULE

In August 2020, AO No. DE-08-TCPSR-5415 between the City and Ecology was amended to revise the RI/FS Schedule of Deliverables. In accordance with the AO, field work will be completed within 6 months of receiving Ecology's approval of this WP. A summary of the schedule of deliverables for finalizing the Solid Wood, Inc. RI/FS Report is summarized in Figure 1 below.

Figure 1. Steps for Finalizing the Solid Wood, Inc. RI/FS

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SECTION 6: REFERENCES

Ecology. 2013. Wood Waste Cleanup: Identifying, Assessing, and Remediating Wood Waste in Marine and Freshwater Environments. Guidance for Implementing the Cleanup Provisions of the Sediment Management Standards, Chapter 173-204 WAC. Publication No. 09-09-044. September.

Ecology. 2021. Sediment Cleanup User's Manual (SCUM). Guidance for Implementing the Cleanup Provisions of the Sediment Management Standards, Chapter 173-204 WAC. December.

Parametrix. 2004a. West Bay Phase I Environmental Site Assessment, Port of Olympia Property. Prepared for the City of Olympia. June.

Parametrix 2004b. West Bay Phase II Environmental Site Assessment. Prepared for the City of Olympia Parks, Arts, and Recreation Department. June.

Parametrix. 2007. West Bay Rail Spur Phase II Environmental Site Assessment. Prepared for the City of Olympia Parks, Arts, and Recreation Department. August.

Parametrix. 2008. Work Plan for Remedial Investigation/Feasibility Study and Interim Action Solid Wood Incorporated Site (West Bay Park). Olympia, Washington. October.

PSEP. 1995. Recommended Guidelines for Conducting Laboratory Bioassays on Puget Sound Sediments. Prepared by PTI Environmental Services for PSEP, United States Environmental Protection Agency, Office of Puget Sound, Seattle, WA.

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Tables

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Table 4-1: Data Gaps Investigation Preliminary Screening Levels

Constituent	Sediment Management Standards (WAC 173-204)[1]		Apparent Effects Threshold Criteria (Dry Weight Analogs of SMS Criteria)[2]		South Puget Sound Regional Background[3]	Puget Sound Marine Sediment Natural Background[4]	Sediment Practical Quantitation Limit[5]
	SCO	CSL	SCO	CSL			
TPH (mg/kg dry weight)							
TPH-D	--	--	100[6]		--	--	TBD
TPH-HO	--	--	100[6]		--	--	TBD
Metals (mg/kg dry weight)							
Arsenic	57	93	57	93	--	11	0.30
Cadmium	5.1	6.7	5.1	6.7	--	0.80	0.070
Chromium	260	270	260	270	--	62	0.20
Copper	390	390	390	390	--	45	0.10
Lead	450	530	450	530	--	21	0.10
Mercury	0.41	0.59	0.41	0.59	--	0.20	0.020
Silver	6.1	6.1	6.1	6.1	--	0.24	0.10
Zinc	410	960	410	960	--	93	1.0
VOCs and SVOCs (mg/kg organic carbon)							
1,2,4-Trichlorobenzene	0.81	1.8	0.031	0.051	--	--	TBD
1,2-Dichlorobenzene	2.3	2.3	0.035	0.050	--	--	TBD
1,4-Dichlorobenzene	3.1	9.0	0.11	0.11	--	--	TBD
2-Methylnaphthalene	38	64	0.67	0.67	--	--	TBD
Acenaphthene	16	57	0.50	0.50	--	--	TBD
Acenaphthylene	66	66	1.3	1.3	--	--	TBD
Anthracene	220	1,200	0.96	0.96	--	--	TBD
Benz(a)anthracene	110	270	1.3	1.6	--	--	TBD
Benzo(a)pyrene	99	210	1.6	1.6	--	--	TBD
Benzo(g,h,i)perylene	31	78	0.67	0.72	--	--	TBD
Total Benzofluoranthenes	230	450	3.2	3.6	--	--	TBD
Bis(2-ethylhexyl)phthalate	47	78	1.3	1.9	--	--	TBD
Butyl benzyl phthalate	4.9	64	0.063	0.90	--	--	TBD
Chrysene	110	460	1.4	2.8	--	--	TBD
Dibenz(a,h)anthracene	12	33	0.23	0.23	--	--	TBD
Dibenzofuran	15	58	0.54	0.54	--	--	TBD
Diethyl phthalate	61	110	0.20	1.2	--	--	TBD
Dimethyl phthalate	53	53	0.071	0.16	--	--	TBD
Di-n-butyl phthalate	220	1,700	1.4	1.4	--	--	TBD
Di-n-octyl phthalate	58	4,500	6.2	6.2	--	--	TBD
Fluoranthene	160	1,200	1.7	2.5	--	--	TBD

Table 4-1: Data Gaps Investigation Preliminary Screening Levels

Constituent	Sediment Management Standards (WAC 173-204)[1]		Apparent Effects Threshold Criteria (Dry Weight Analogs of SMS Criteria)[2]		South Puget Sound Regional Background[3]	Puget Sound Marine Sediment Natural Background[4]	Sediment Practical Quantitation Limit[5]
	SCO	CSL	SCO	CSL			
Fluorene	23	79	0.54	0.54	--	--	TBD
Hexachlorobenzene	0.38	2.3	0.022	0.070	--	--	TBD
Hexachlorobutadiene	3.9	6.2	0.011	0.12	--	--	TBD
Indeno(1,2,3-c,d)pyrene	34	88	0.60	0.69	--	--	TBD
Naphthalene	99	170	2.1	2.1	--	--	TBD
N-Nitrosodiphenylamine	11	11	0.028	0.040	--	--	TBD
Phenanthrene	100	480	1.5	1.5	--	--	TBD
Pyrene	1,000	1,400	2.6	3.3	--	--	TBD
Total HPAH	960	5,300	12	17	--	--	TBD
Total LPAH	370	780	5.2	5.2	--	--	TBD
Carcinogenic Polycyclic Aromatic Hydrocarbons (µg/kg dry weight)							
cPAHs	--	--	--	--	78	21	9.0
PCBs (mg/kg dry weight)							
Total PCBs	12	65	0.13	1.0	--	0.0035	0.00000070
Phenols (µg/kg dry weight)							
2,4-Dimethylphenol	29	29	29	29	--	--	TBD
2-Methylphenol	63	63	63	63	--	--	TBD
4-Methylphenol	670	670	670	670	--	--	TBD
Benzoic acid	650	650	650	650	--	--	TBD
Benzyl alcohol	57	73	57	73	--	--	TBD
Pentachlorophenol	360	690	360	690	--	--	TBD
Phenol	420	1,200	420	1,200	--	--	TBD
Dioxins/Furans (ng/kg dry weight)							
Total TCDD-TEQ	--	--	--	--	19	4.0	5.0

Notes:

[1] SMS Marine Sediment SCO and CSL values were obtained from Table 8-1 of Ecology's SCUM Guidance (Ecology 2021).

[2] Apparent Effects Threshold (AET) Criteria were obtained from Table 8-1 of Ecology's SCUM Guidance (Ecology 2021).

[3] South Puget Sound Regional Background concentrations were obtained from Table 10-2 of Ecology's SCUM Guidance (Ecology 2021) and Table 1 of the South Puget Sound Regional Background: Data Evaluation & Summary Report (Ecology 2018)

[4] South Puget Sound Regional Background concentrations were obtained from Table 10-1 of Ecology's SCUM Guidance (Ecology 2021) and Table 1 of the South Puget Sound Regional Background: Data Evaluation & Summary Report (Ecology 2018)

[5] Sediment PQLs were obtained from Table 11-1 of Ecology's SCUM Guidance (Ecology 2021).

[6] The Ecology-derived TPH sediment screening level is applicable to the sum of TPH-D and TPH-HO results.

mg/kg: microgram per kilogram; ng/kg: nanogram per kilogram; µg/L: microgram per kilogram

CSL: cleanup screening level

SCO: sediment cleanup objective

TBD: to be determined by laboratory

Figures

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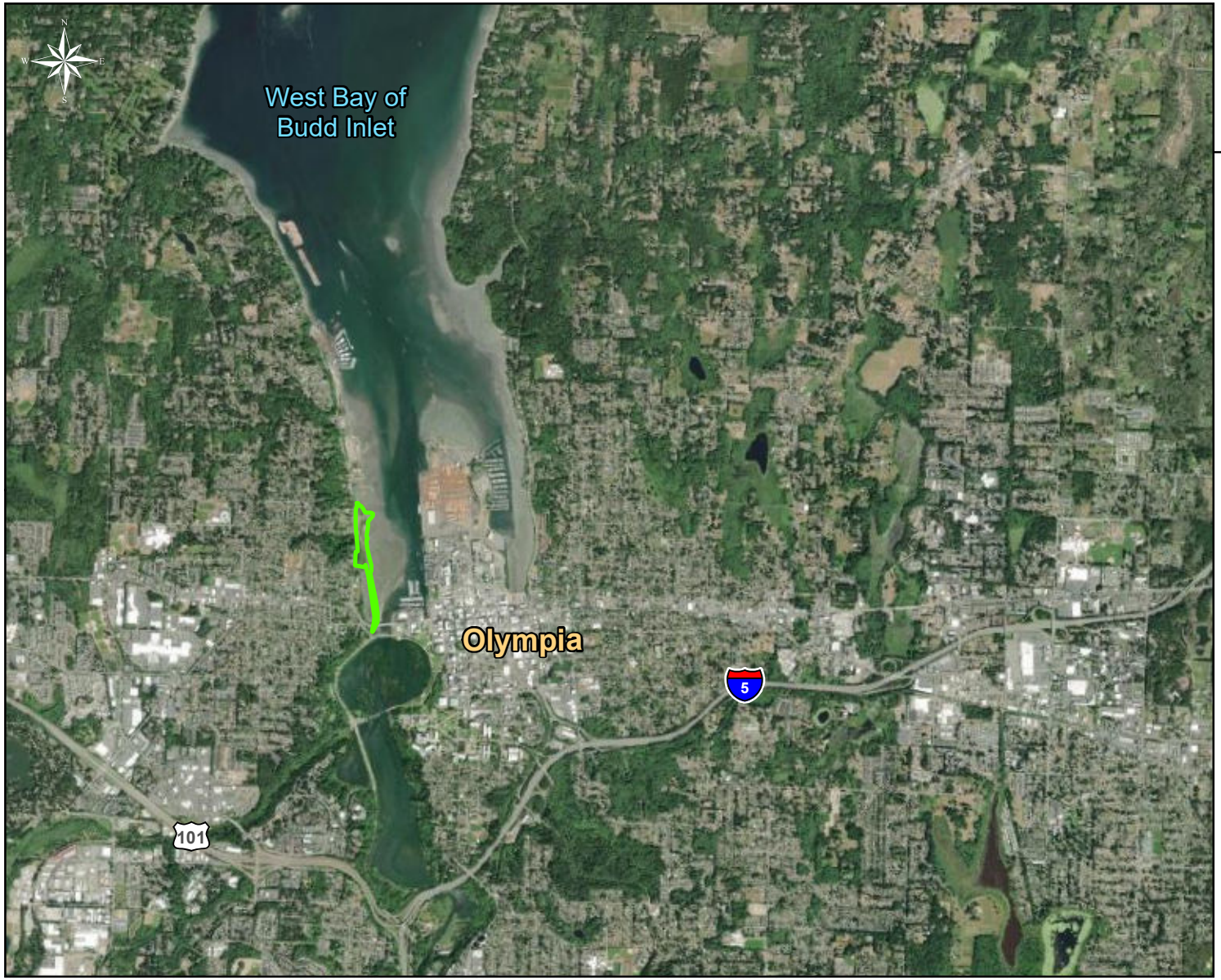

Legend

Agreed Order Boundary

0 0.5 1 Miles

PIONEER TECHNOLOGIES CORPORATION

Site Location
Data Gaps Investigation Work Plan
Solid Wood Incorporated Site
Olympia, Washington

Figure 1-1

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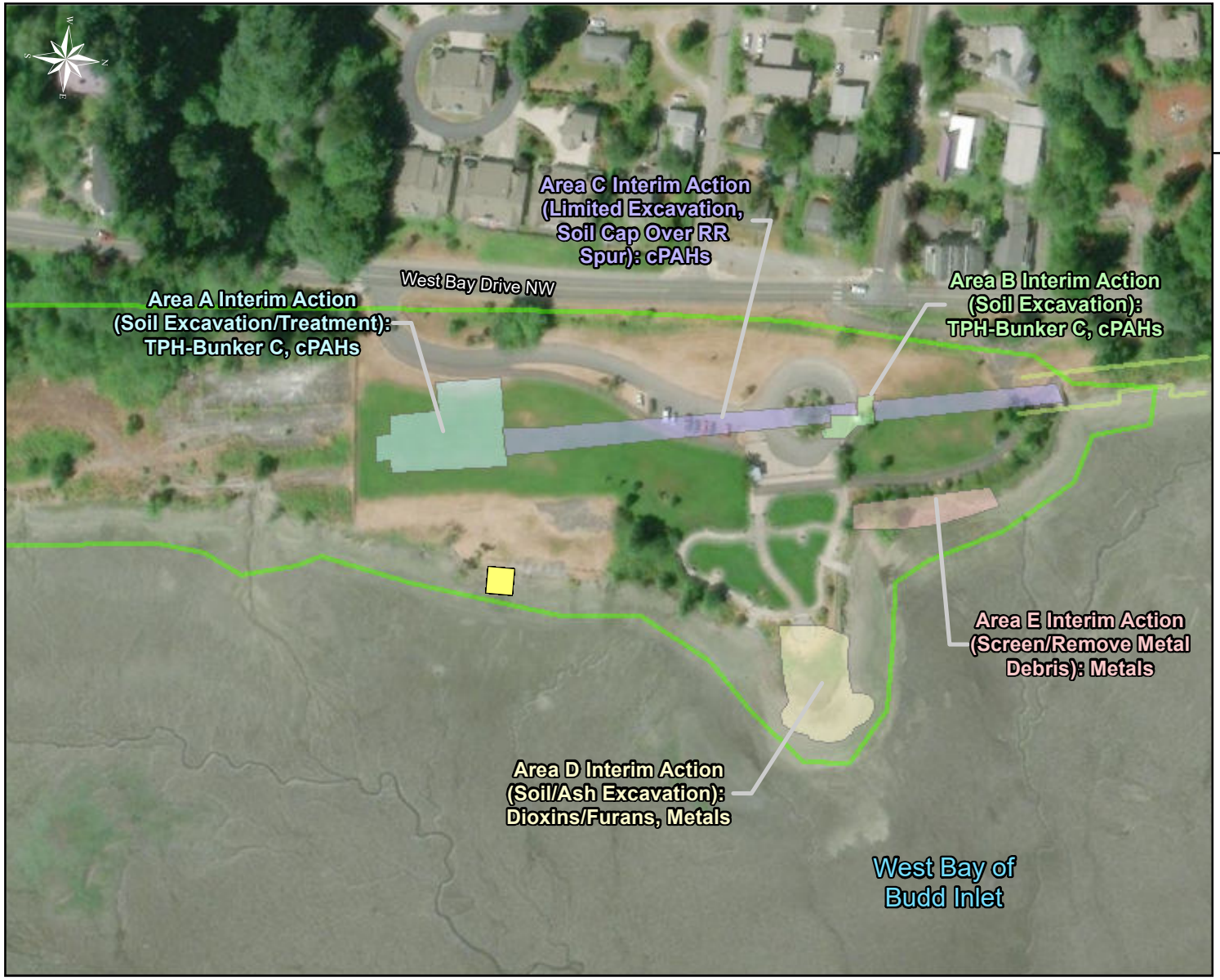

Legend

- Agreed Order Boundary
- Wooden Flume

Interim Action

- Area A Interim Action (Soil Excavation/Treatment)
- Area B Interim Action (Soil Excavation/Treatment)
- Area C Interim Action (Soil Cap Over RR Spur)
- Area D Interim Action (Soil Ash Excavation)
- Area E Interim Action (Soil Excavation)

Notes:
-The locations of Interim Action areas are approximate.

0 100 200 Feet

PIONEER TECHNOLOGIES CORPORATION

Interim Action Areas
Data Gaps Investigation Work Plan
Solid Wood Incorporated Site
Olympia, Washington

Figure 1-2

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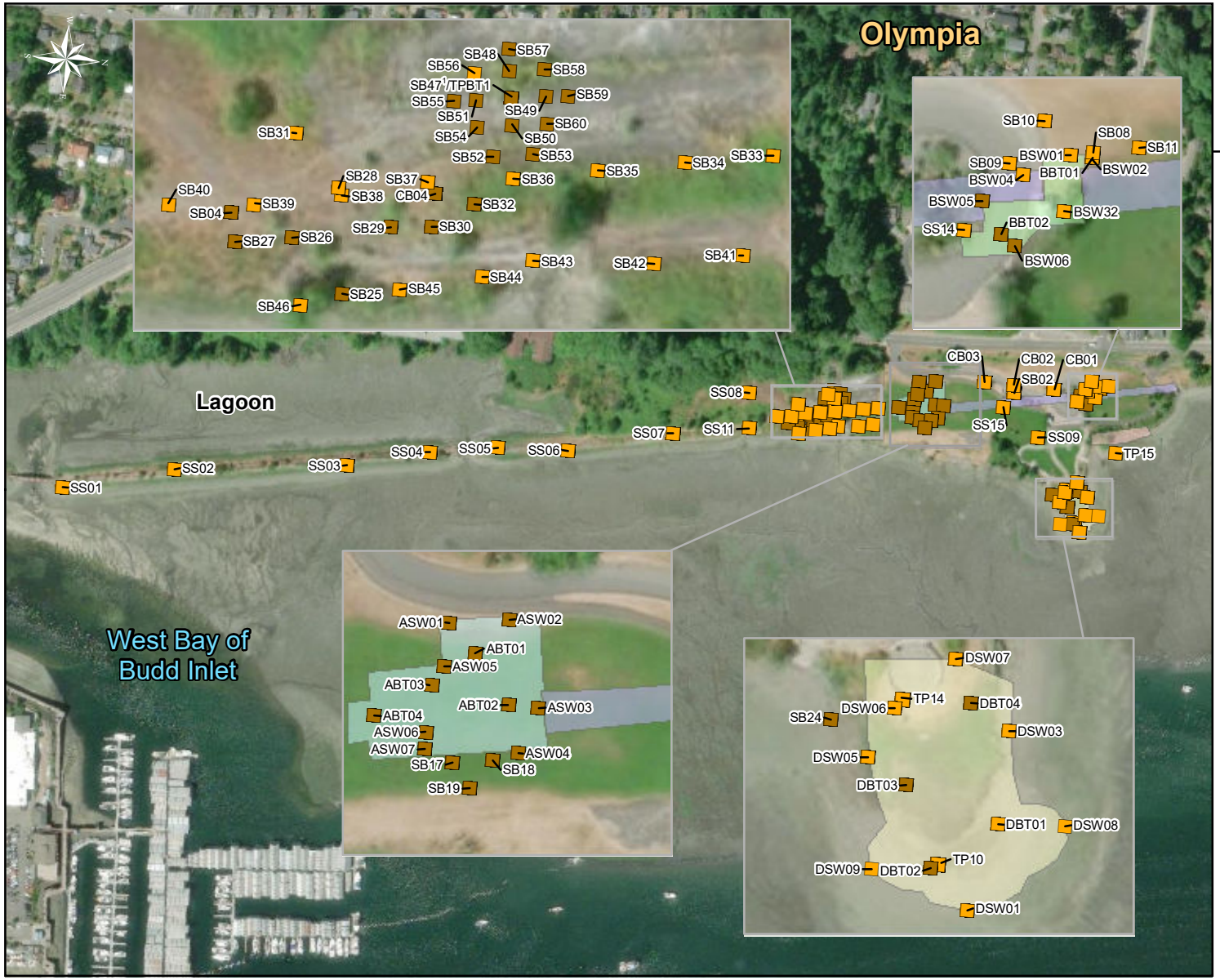

Legend

Soil Sample

- Sample Depth <= 2 ft bgs
- Sample Depth > 2 ft bgs

Interim Action

- Area A (Soil Excavation/Treatment)
- Area B (Soil Excavation)
- Area C (Limited Excavation, Soil Cap Over RR Spur)
- Area D (Soil/Ash Excavation)
- Area E (Screen/Remove Metal Debris)

Notes:
[1] SB47 was collected post-IA. It was removed when a test pit around SB47 was excavated and refilled with clean material. The sample collected at the bottom of the test pit (TPBT1) is still in place.

0 150 300 450
Feet

PIONEER TECHNOLOGIES CORPORATION

Historical Soil Sample Locations
Data Gaps Investigation Work Plan
Solid Wood Incorporated Site
Olympia, Washington

Figure 1-3

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Legend

Groundwater Samples

- Direct-push
- Monitoring Well
- Seep

Interim Action

- Area A (Soil Excavation/Treatment)
- Area B (Soil Excavation)
- Area C (Limited Excavation, Soil Cap Over RR Spur)
- Area D (Soil/Ash Excavation)
- Area E (Screen/Remove Metal Debris)

0 50 100 150 Feet

PIONEER TECHNOLOGIES CORPORATION

Historical Groundwater Sample Locations
Data Gaps Investigation Work Plan
Solid Wood Incorporated Site
Olympia, Washington

Figure 1-4

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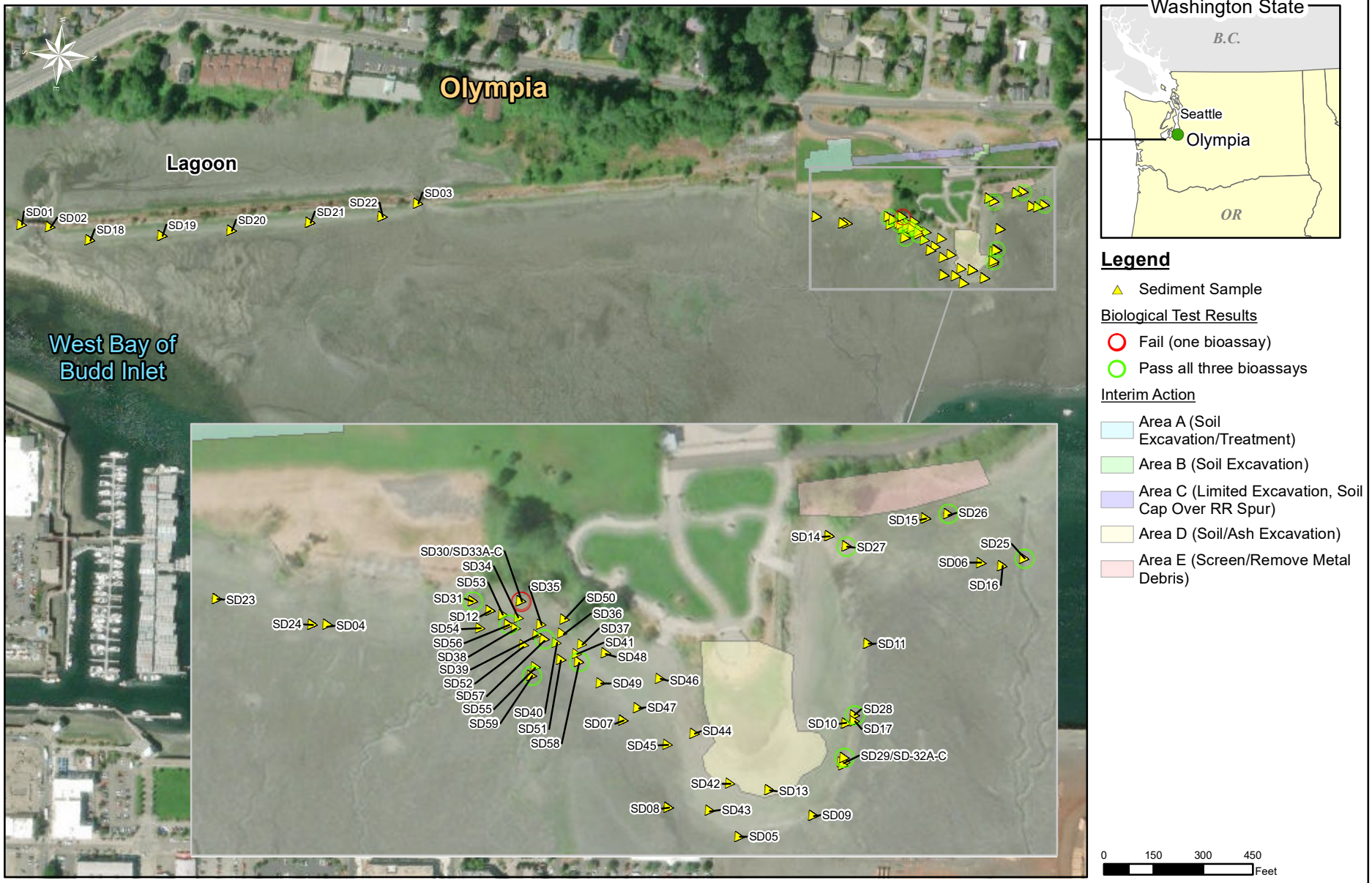

PIONEER TECHNOLOGIES CORPORATION

Historical Sediment Sample Locations
Data Gaps Investigation Work Plan
Solid Wood Incorporated Site
Olympia, Washington

Figure 1-5

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Legend

Soil Sample from 2015 RI/FS

- Sample Depth <= 2 ft bgs
- Sample Depth > 2 ft bgs

Proposed Soil Sample Locations

- Sample Depth ~6 to 8 ft bgs
- Sample Depth ~2 to 4 ft bgs

Notes:
- Additional samples will be collected ~6-8 feet bgs and ~12-15 ft bgs at all proposed locations. These samples will be held in the laboratory until results of the shallower soil samples are available. If cPAHs do not exceed MTCA Method A CUL (0.10 mg/kg), the deeper samples will not be analyzed. If cPAH concentrations exceed the MTCA Method A CUL (0.10 mg/kg), then the deeper samples will be analyzed.

0 150 300 450 Feet

PIONEER TECHNOLOGIES CORPORATION

Proposed Soil Sample Locations
Data Gaps Investgation Work Plan
Solid Wood Incorporated Site
Olympia, Washington

Figure 2-1

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Legend

- Agreed Order Boundary (DE-08-TCPSR-5415)
- RI/FS Sediment Sample Locations
- Approximate Location of Existing Outfalls

Proposed Sediment Sample Locations

- BAZ (0 - 0.5 ft bgs)
- Subsurface (0.5 - 2.0 ft. bgs.)
- Proposed Locations for Field Sieve Analysis

0 250 500 750 Feet

PIONEER TECHNOLOGIES CORPORATION

Proposed Sediment Sampling Locations
Data Gaps Investigation Work Plan
Solid Wood Incorporated Site
Olympia, Washington

Figure 2-2

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Attachment 1

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PIONEER TECHNOLOGIES CORPORATION (PIONEER)
FIELD CHECKLIST

Project/Site Name: _____ Site Location: _____
Requested By / Date: _____ Work Deadline: _____

SERVICES REQUESTED	COMPLETED
_____	☐ YES ☐ NO
_____	☐ YES ☐ NO
_____	☐ YES ☐ NO
_____	☐ YES ☐ NO
_____	☐ YES ☐ NO
_____	☐ YES ☐ NO
_____	☐ YES ☐ NO
_____	☐ YES ☐ NO
_____	☐ YES ☐ NO
_____	☐ YES ☐ NO
_____	☐ YES ☐ NO
_____	☐ YES ☐ NO

ADDITIONAL STANDARD INSTRUCTIONS	COMPLETED		COMPLETED
☐ Review Docs: _____	☐ YES ☐ NO	☐ Health & Safety Meeting	☐ YES ☐ NO
☐ Agency NOI / ☐ Utility Locate / ☐Concrete Coring	☐ YES ☐ NO	☐ Call PM from Site	☐ YES ☐ NO
☐ Coordinate Access: _____	☐ YES ☐ NO	☐ Draw Site Map _____	☐ YES ☐ NO
☐ Coordinate Sub / Equip: _____	☐ YES ☐ NO	☐ Cuttings / Purge Water Characterization & Disposal	
☐ Purchase / Rent Equip: _____	☐ YES ☐ NO	☐ Potential HW _____	☐ YES ☐ NO
☐ Client/Agency Coordination: _____	☐ YES ☐ NO	☐ Non-Haz _____	☐ YES ☐ NO
☐ Calibrate Equipment: _____	☐ YES ☐ NO	☐ Background _____	☐ YES ☐ NO

_____
_____

SAMPLING REQUIREMENTS

☐ Field Testing: _____

☐ Lab Testing: _____ Laboratory: _____
☐ Lab Testing: _____ Laboratory: _____
☐ Lab Testing: _____ Laboratory: _____

FIELD SUPPLIES NEEDED

☐ Site Map ☐ Camera ☐ Survey Equip / GPS ☐ Vehicle
☐ Std Field Equip (keys, forms, SAP, HASP, PPE, decon, tools)
☐ Drilling Equip (PID, references, knife, baggies, tape)
☐ Soil Equip (SS bowls, spoon/shovel, hand auger, pick, sieves)
☐ GWM (pump, tubing, gen., compres., bailers, rope/string, PDB)
☐ Pump / Slug Test Equip (GWM Equip, slug, stopwatch)
☐ Water Level Indicator / Interface Probe
☐ Water Quality Meter _____ ☐ Field Test Kits _____
☐ Sample Kit / Cooler / COC / Ice _____
☐ IDW: ☐ Drums _____ ☐ 5-gal buckets _____
☐ Other: _____
☐ Other: _____

PIONEER
DAILY FIELD REPORT

Date:_____ Site Location: _____ Site Arrival Time: _____ Site Departure Time :_____

WEATHER	Clear Sun	Overcast	Drizzle	Rain	Snow
TEMPERATURE	To 32	32-50	50-70	70-85	85 Up
WIND	Calm	Med.	Strong	Severe	

PEOPLE PRESENT ON SITE

NAME	ASSOCIATION	TIME ON SITE AND OFF SITE

NOTES ON WORK COMPLETED

SIGNATURE:_____ DATE:_____

Attachment A-1

PIONEER TECHNOLOGIES CORPORATION (PIONEER)
BORING LOG FORM

GENERAL INFORMATION			
Boring/SVP/MW ID		Drilling Co.	
Project/Site Name		Lisc. Driller	
Field Professional		Drilling Method	
Start Date/Time		Drill Rig	
Stop Date/Time		Drill Bit	

LOCATION SKETCH

North Arrow

SAMPLE COLLECTION

Time	Sample Depth (ft) From	Sample Depth (ft) To	Sampling Method	SPT Blows per 6 in.	% Recov.	Contacts or GW?	Localized Soil/Rock Description	Containerized From	Containerized To	PID (ppm)	Sent to Lab?
				/ /							
				/ /							
				/ /							
				/ /							
				/ /							
				/ /							
				/ /							
				/ /							
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				/ /							
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				/ /							
				/ /							
				/ /							
				/ /							

GENERALIZED DESCRIPTION OF SOIL/ROCK ENCOUNTERED IN BORING

Depth of Boring From	Depth of Boring To	USCS/ Rock Ty	Generalized Soil or Rock Description

Typical soil desc: USCS Color, sand grain size, SECONDARY modifier, PRIMARY grain size, tertiary constituents, (stiffness/density), (moisture), detail, [geologic interpretation]

Typical rock desc: Rock Type Color, grain description, ROCK TYPE, (strength), (state of weathering), (moisture), detail and bedding, [geologic formation]

OTHER RELEVANT INFORMATION

Casing Info (e.g., type, diameter, depths, casing reduction):

Groundwater Encountered (e.g., time, depth, quantity, casing position):

Misc. (e.g., drilling rate, drill cuttings, rig decon, etc.):

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Attachment 2

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DATE: 2/8/2022

TO: Steve Teel, Department of Ecology, Toxics Cleanup Program Southwest Regional Office

FROM: Amy Hargrove, Department of Ecology,
Toxics Cleanup Program Southwest Regional Office

SUBJECT: Washington State Governor's Executive Order 21-02
Solid Wood Site
DAHP Project # 2022-01-00117

Area of Potential Effect and Project Activities

The Washington State Department of Ecology (Ecology) is providing grant funding for site investigation activities at Solid Wood Site. The planned activities include soil and groundwater sampling.

The APE is located at 700 West Bay Dr NW Thurston County, parcel # 9191200000, 9101500000, 910119000000, at T18N, R02W, Section 15, (see Form for further details). Project activities within the APE include collecting sediment samples south of West Bay Park near the shoreline to approximately 700 feet off the Budd Inlet shore. Sediment samples will be collected up to 2 feet below ground surface (bgs) most likely using a combination of shovels in shallow intertidal areas and grab or core samplers from a boat in subtidal areas. Soil samples will be collected south of West Bay Park and west of Budd Inlet. Soil samples will be collected using a direct-push drill rig going to depths of 12-15 feet bgs.

Final Determination

Ecology made a preliminary determination that the area is a *high risk* for pre-historic artifacts or other archaeological resources. Ecology recommended that a monitor be present during sampling and that an inadvertent discovery plan is required. The preliminary determination and request for consultation was sent via email to the following parties on January 7, 2022:

- Rob Whitlam, Department of Archaeology and Historic Preservation
- Brandon Reynon and Jennifer Keating, Puyallup Tribe of Indians
- Brad Beach and Annette Bullchild, Nisqually Indian Tribe
- Shaun Dinubilo, Squaxin Island Tribe
- Dan Penn, Confederated Tribes of the Chehalis Reservation

- Jackie Ferry, Samish Tribe

During consultation, Ecology received concurrence on our preliminary determination from DAHP, the Squaxin Island Tribe, and the Nisqually Indian Tribe.

Based on our review and comments received, Ecology retained the preliminary determination of ***high risk*** with the stipulations of a monitor being present during the sampling and no sampling within the boundaries of the known archeological site.

Thank you for complying with the requirements of this cultural resources consultation.

Amy Hargrove

amy.hargrove@ecy.wa.gov, (360) 402-4217

Inadvertent Discovery Plan (IDP)

Olympia

Permit Number: N/A	Applicant:
Project Name: Solid Wood, INC.	Property Address: 700 W Bay Drive NW Olympia, WA 98502

As the project proponent, I have read this document in full and understand that:

1. I will follow the actions in the IDP in the event that site crew uncover any archaeological object and/or other cultural resource as a result of project actions, including but not limited to ground-disturbing activities such as excavation, boring, and concrete removal. HM
   Initials

2. It is my responsibility to ensure that all site crew on all phases of project excavation and construction understand the requirements of this IDP. HM
   Initials

3. A complete copy of this signed document will be maintained at all times on the building site for the duration of the project for site crew training and available for inspection by staff from the City of Olympia or others as authorized. HM
   Initials

4. Failure to follow the actions in this IDP is a breach of Olympia Municipal Code (OMC 18.12.120 & OMC 18.12.140) and a Class C Felony in Washington per RCW 27.53.060(1). Under Washington regulations, this may result in a fine of $5,000, which may vary depending on the determination of DAHP and/or the results of an independent archaeological investigation completed at my own expense, as outlined in WAC 25-48-043. HM
   Initials

5. Failure to follow the actions in this IDP may result in a civil action from affected tribes. HM
   Initials

Signature	Name (Printed)	Date
Hannah Morse	Hannah Morse	12/03/2021

To be completed at pre-construction meeting, if required:

As the manager of this construction site, I have read this document in full and understand its requirements in the event of an unanticipated discovery of any archaeological object and/or other cultural resource as a result of project actions.

Site Manager Initials & Name	City Staff Initials & Name	Meeting Date

Requirements of the City of Olympia IDP

This IDP outlines the required response when an archaeological object and/or other cultural material** is uncovered during the course of project construction or other activities. These materials are evidence of past human activity on the site and may be protected by local, state, and/or national laws.

During the course of project-related excavation or other ground-disturbing construction activities, the following actions will be taken when the inadvertent discovery is:

1. **An archaeological object and/or cultural material** that is not human remains**:

    a. The crew lead or contractor will cease work in and adjacent to that location, secure the area of the find, and immediately contact:

        (1) Property owner and project manager,

        (2) City of Olympia: Historic Preservation Officer (360-753-8031) &/or Building Official (360-753-8486), whose role(s) will be to coordinate an appropriate response, and

        (3) Washington State Department of Archaeology & Historic Preservation (DAHP): Gretchen Kaehler, Local Government Archaeologist (desk: 360-586-3088; cell: 360-628-2755).

    b. The City Historic Preservation Officer and/or DAHP Local Government Archaeologist will contact affected tribes. Tribal and DAHP representatives will make the final determination on site significance and potential mitigation. Their decision will be relayed to the City Building Official and/or Historic Preservation Officer.

    c. Work shall not resume in the secured area until notification from the City of Olympia Building Official or their authorized representative.

*** RCW 27.53.030(2), "'Archaeological Object' means an object that comprises the physical evidence of an indigenous and subsequent culture, including material remains of past human life including monuments, symbols, tools, facilities, and technological by-products."*

See attached photographs for illustrations of cultural material that may be protected by law, which include but are not limited to:

- *Tools made of stone, bone, shell, horn, or antler, including projectile points (arrowheads), scrapers, cutting tools, wood working wedges or axes, and grinding stones;*
- *Collections of shells, fish and mammal bones, often alongside layers of black soil or charcoal;*
- *Buried collections of cobble stones that may indicate a hearth feature or other human activity;*
- *Old building materials and foundations;*
- *Industrial or agriculture equipment more than 50 years old;*
- *Old bottles, ceramics, glass beads, clothing, casket hardware and wood, and other lost objects more than 50 years old; and*
- *Human remains.*

2. Human remains:

a. If ground-disturbing activities encounter human skeletal remains during the course of construction, then **all activity will cease** that may cause further disturbance to those remains. The area of the find will **be secured and protected** from further disturbance until the State and City provide notice to proceed.

b. The finding of human skeletal remains will be reported immediately to:

(1) The Thurston County Coroner (360-867-2140) &

(2) City of Olympia Police Department (911 or 360-753-8300).

Once they have been notified, contact the City of Olympia – Historic Preservation Officer (desk: 360-753-8031) &/or Building Official (360-753-8486) – whose role(s) will be to ensure that an appropriate response is being followed.

c. The remains will not be touched, moved, or further disturbed.

d. The county medical examiner/coroner will assume jurisdiction over the human skeletal remains and make a determination of whether those remains are forensic or non-forensic. If the county medical examiner/coroner determines that the remains are non-forensic, then they will report that finding to the Department of Archaeology and Historic Preservation (DAHP), who will then take jurisdiction over the remains.

e. DAHP will notify any appropriate cemeteries and all affected tribes of the find.

f. The State Physical Anthropologist will make a determination of whether the remains are Indian or Non-Indian and report that finding to any appropriate cemetery and the affected tribes. DAHP will then handle all consultation with the affected parties as to the future preservation, excavation, and disposition of the remains.

g. Work shall not resume in the secured area until notification from the county medical examiner/coroner or DAHP to the City of Olympia Building Official or Historic Preservation Officer.

h. Work shall not resume in the secured area until notification from the City of Olympia Building Official or their authorized representative.

Examples of Cultural and Historic Resources Addressed in this IDP

Stone Tools and Tool-Making Materials

Notice the regular chips around edges ("flaking") and the unusual shapes of the stone.

Note unusual shapes, perforations and other carving, regularity of modifications, and smooth surfaces.

Bone & Shell Objects

Look for unusual shapes for bone or shell, smooth surfaces, evidence of carving and other modifications to create tools.

Watch for tubular shapes, perforations, and evidence of other carving.

Collections of Shells ("Middens") and Stones

Notice accumulations of shells, often dense, and sometimes found with dark, black soil.

Watch for unusual accumulations of rocks, often into shapes (piles or camp-fire rings) and sometimes containing charcoal, burnt-looking soil, and accumulations of shells, bones, and artifacts.

Historical Structures and Objects

Look out for building materials and structural features that are 50 years old or older, such as foundations, walls, wells, and privies (holes associated with outhouses).

Watch for old infrastructure like wooden and iron pipes and street gutters, wooden, stone, or concrete sidewalks, and bricked or early tarmacked/paved roadbeds.

Look out for collections of old ceramics, bottles, and other household items.

Potential Human and Animal Remains

Watch for animal bones, especially those that look charred or are found alongside other artifacts, as well as human remains.

Photo examples courtesy of the **Washington Department of Fish & Wildlife**'s Inadvertent Discovery Plan, 2018

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): Solid Wood Site Location: 700 West Bay Drive NW

Project Lead/Organization: City of Olympia County: Thurston

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

2. CULTURAL RESOURCE DISCOVERIES

A cultural resource discovery could be prehistoric or historic. 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		Alternate Contact	
Name:		Name:	
Organization:		Organization:	
Phone:		Phone:	
Email:		Email:	

Ecology Contacts (completed by Ecology Project Manager)

Ecology Project Manager		Alternate or Cultural Resource Contact	
Name:	Steve Teel	Name:	Amy Hargrove
Program:	TCP	Program:	TCP
Phone:	(360) 890-0059	Phone:	360-407-6262
Email:	steve.teel@ecy.wa.gov	Email:	amy.hargrove@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:	Squaxin Island Tribe	Tribe:	Nisqually Tribe
Name:	Shaun Dinubilo	Name:	Annette Bullchild
Title:	Archaeologist	Title:	THPO
Phone:	360-870-6324	Phone:	360-456-5221 Ext. 1106
Email:	sdinubilo@squaxin.us	Email:	bullchild.annette@nisqually-nsn.gov
Tribe:	Nisqually Tribe	Tribe:	Confederated Tribes of the Chehalis Reservation
Name:	Brad Beach	Name:	Dan Penn
Title:	THPO	Title:	Cultural Resources
Phone:	360-456-5221 Ext. 2180	Phone:	360-709-1747
Email:	beach.brad@nisqually-nsn.gov	Email:	Dpenn@chehalistribe.org

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:		State Agency:	
Agency:		Agency:	
Name:		Name:	
Title:		Title:	
Phone:		Phone:	
Email:		Email:	

6. SPECIAL PROCEDURES FOR THE DISCOVERY OF HUMAN SKELETAL MATERIAL

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:
   - Local Law Enforcement main name and phone:
   - Local Non-Emergency phone number (911 if without a non-emergency number):
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. Organizations 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 assessment are made of all discovered cultural resources in cooperation with all parties: the federal agencies (if any), DAHP, Ecology, affected tribes, and the archaeologist.

The 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 sites 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)

Informational Resources

DAHP (https://dahp.wa.gov)

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

Association of Washington Archaeologists (https://www.archaeologyinwashington.com)

Potentially Interested Tribes

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

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

11. ADDITIONAL INFORMATION

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

Puyallup Tribe
Brandon Reynon, Cultural Resources
brandon.reynon@puyalluptribe-nsn.gov, 253-573-7986
Jennifer Keating, Cultural Resources
Jennifer.m.keating@puyalluptribe-nsn.gov, 253-549-5397

Cowlitz Tribe
Seth Russell, THPO, srussell@cowlitz.org, 360-353-9924

Samish Tribe
Jackie Ferry, Cultural Resources
jferry@samishtribe.nsn.us, 360-293-6404 ext. 126

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).*

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, workboot 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.*

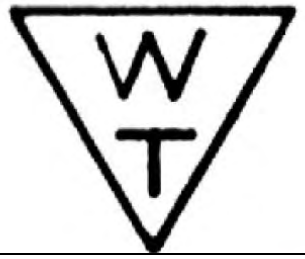
Right, from Top to Bottom: *Coins, token, spectacles and Montgomery Ward pitchfork toy discovered during Seattle Smith Cove shantytown (45-KI-1200) excavation.*

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…

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 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...

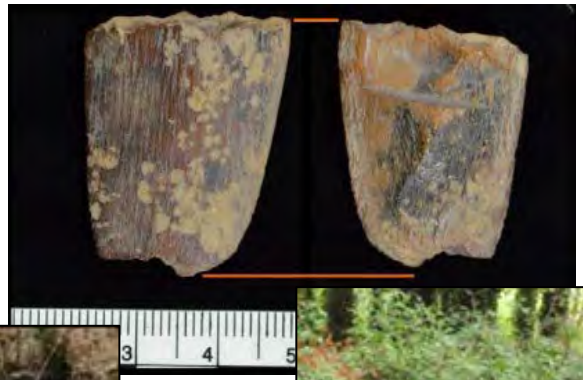
Potential human remains.

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!*

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