Interim Action Plan

Upland Soil Contamination
Solid Wood Incorporated Site
Olympia, Washington

Agreed Order No. DE-08-TCPSR-5415
Facility/Site ID No. 94656838
Cleanup Site ID No. 4228

Prepared for:

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August 2026

Professional Certification

This document was prepared under my direction. The information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I hereby certify that I was in responsible charge of the work performed for this document.



August 26, 2026

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List of Acronyms

Acronym	Explanation
AO	Agreed Order
ARARs	Applicable or Relevant and Appropriate Requirements
bgs	Below Ground Surface
BNSF	BNSF Railway Company
City	City of Olympia
CMP	Compliance Monitoring Plan
cPAH	Carcinogenic Polycyclic Aromatic Hydrocarbons
CY	Cubic Yard
Ecology	Washington State Department of Ecology
FS	Feasibility Study
HASP	Health and Safety Plan
IA	Interim Action
IAP	Interim Action Plan
IDP	Inadvertent Discovery Plan
LF	Linear Feet
mg/kg	Milligrams per Kilogram
MTCA	Model Toxics Control Act
PIONEER	PIONEER Technologies Corporation
Port	Port of Olympia
QAPP	Quality Assurance Project Plan
QC	Quality Control
RDI	Remedial Design Investigation
RI	Remedial Investigation
RI/FS	Remedial Investigation and Feasibility Study Report
ROW	Right-of-Way
SAP	Sampling and Analysis Plan
SF	Square Feet
Site	Solid Wood Incorporated Site
TPH	Total Petroleum Hydrocarbons
TPH-D	Total Petroleum Hydrocarbons Diesel Range Organics
TPH-G	Total Petroleum Hydrocarbons Gasoline Range Organics
TPH-HO	Total Petroleum Hydrocarbons Heavy Oil Range Organics
WAC	Washington Administrative Code
WMP	Waste Management Plan

SECTION 1: INTRODUCTION

1.1 IAP Purpose

The purpose of this Interim Action (IA) Plan (IAP) for the City of Olympia (City) Solid Wood Incorporated Site (Site) is to:

- Provide context for conducting an IA that consists of removing upland source area soil containing total petroleum hydrocarbons (TPH) and carcinogenic polycyclic aromatic hydrocarbons (cPAHs);
- Summarize the conceptual IA, IA goals, and Model Toxics Control Act (MTCA) rationale for conducting the proposed IA;
- Summarize the preliminary design for the soil removal; and
- Outline the path forward for completing the IA design and implementing the IA.

1.2 IA Purpose

The proposed IA meets the MTCA IA purpose in Washington Administrative Code (WAC) 173-340-430(1) and is warranted for the following reasons:

- Per WAC 173-340-430(1)(a), the IA will reduce the threat to human health and the environment from the existing contaminated soil. The removal of the contaminated soil will reduce the potential for exposure.
- Per WAC 173-340-430(1)(b), the IA will correct "a problem that may become substantially worse or cost substantially more to address if the remedial action is delayed." The “problem” in this case is the contaminated soil. Removing the contaminated soil would minimize the potential impacts to groundwater, surface water, and sediment.
- Per WAC 173-340-430(1)(c), removing the contaminated soil will enable completion of a Remedial Investigation (RI) that provides much more certainty about current and future Site conditions.
- Section VI.E of the 2008 Agreed Order (AO) No. DE-08-TCPSR-5415 between the City and the Washington State Department of Ecology (Ecology) includes provisions for conducting an IA (Ecology 2008). Additionally, Section VII (Work to Be Prepared) will be amended to include conducting an IA prior to preparing the revised RI and Feasibility Study (FS).

In accordance with WAC 173-340-430(1), this IA only partially addresses the cleanup of this Site and is not intended to serve as the final MTCA cleanup action. The final cleanup action at this Site has not been determined, and additional remedial actions are likely necessary beyond the IA described in this IAP. Further, the IA will not preclude the final cleanup action.

1.3 Overview of the Proposed IA

This section provides a high-level overview of the proposed IA that is detailed in this IAP. The proposed IA includes:

- Excavating soil to remove IA remediation level exceedances. Excavation areas and depths were based on data collected to-date. A remedial design investigation (RDI) will be conducted prior to IA implementation to further refine the excavation footprints and depths. The excavations will address the following exceedances:

  - TPH exceedances reported at three locations (i.e., SB47, SB48, and SB59) in the Oil Stain Area.
  - Total cPAH exceedances reported at SB26, SB29, and SB30 located east of the Oil Stain Area.
  - Total cPAH exceedances reported at three locations (i.e., SS-03, SS-05, and SS-06) along the existing rail spur.
- Removing approximately 600 linear feet (LF) of railway along the existing rail spur.
- Completion of a structural integrity inspection of the North Trestle, located south of West Bay Park, to evaluate whether equipment can be safely transported across the structure to access soils near SS-03. If the trestle is determined to be unsuitable for equipment access, soils proximate to SS-03 will not be addressed as part of this IA and will instead be evaluated during the forthcoming RI/FS.
- Collecting confirmation sidewall and bottom samples in each excavation.
- Off-site disposal of excavated soil at a permitted disposal facility.
- Backfilling excavations with clean imported soil from an upland quarry source.
- Restoration of disturbed areas to pre-IA conditions.

Additional implementation details are outlined in subsequent sections of this IAP.

1.4 Site Location

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 BNSF Railway Company (BNSF) spur right-of-way (ROW), which runs through the Site.

There is a waterfront park known as West Bay Park on the northern portion of the Site. A chain link fence limits public access to the southern portion of the Site, which is undeveloped and contains remnants of the former Solid Wood Inc. plywood veneer plant foundation, scrub vegetation, and the abandoned rail spur (see Figure 1).

1.5 IAP Organization

The remainder of this IAP is organized as follows:

- Section 2: Background Information
- Section 3: IA Summary, Goals, and Rationale
- Section 4: Preliminary IA Design
- Section 5: IA Path Forward
- Section 6: References

SECTION 2: BACKGROUND INFORMATION

A summary of the Site background information most pertinent to this IA (i.e., removal of contaminated soil) is presented in this section.[1] For a more comprehensive summary of all Site background information, refer to the following documents:[2]

- West Bay Phase I Environmental Site Assessment (Parametrix 2004),
- West Bay Rail Spur Phase II Environmental Site Assessment (Parametrix 2007),
- Final Work Plan for RI/FS and Interim Action (Parametrix 2008),
- Solid Wood Incorporated Site RI/FS and IA Work Plan Addendum No. 6 – Additional Oil Stain Investigation Sampling and Analysis Plan (Parametrix 2013),
- Draft RI/FS Data Gap Sampling Report (Parametrix 2014),
- Draft RI/FS Report (PIONEER Technologies Corporation [PIONEER] and Parametrix 2015), and
- Results of Soil and Sediment Samples Collected as Part of the Data Gaps Investigation (PIONEER 2023).

2.1 Environmental Setting

2.1.1 Topography and Drainage

As a result of fill activities and the development of West Bay Park, the Site is relatively flat. The developed portion of the Site (West Bay Park) is paved and landscaped. The undeveloped portions of the Site include beach areas that are covered with sediment, and upland areas that are covered with grass/vegetation or crushed rock.

Rainwater that falls on the upland area infiltrates or flows toward Budd Inlet via small creeks or storm drains. There is a lagoon and a man-made wetland southwest of the Site. Catch basins were removed from the Site during the previous IA (Parametrix 2010).

2.1.2 Geology

The primary lithologic unit of interest within the Site is fill material, which consists of a mixture of silts, sands, and gravel, and ranges from a few feet to greater than 14 feet thick (see boring logs in Appendix A).

Native geologic materials were likely deposited during and after the two most recent glaciations and the intervening interglacial period that affected the Puget Sound region (Wallace and Molenaar 1961). The deposits related to the older of the two glaciations were tentatively correlated with the Salmon Springs

[1] This IA is focused on the upland portion of the Site and does not evaluate the nature and extent of contamination in sediments at the Site. Sediment will be evaluated in the forthcoming revised RI/FS.

[2] These documents, with the exception of the Draft RI/FS Report, are all available at: https://apps.ecology.wa.gov/cleanupsearch/site/4228. The Draft RI/FS Report is currently being revised. The report can be viewed at the Ecology Lacey office by appointment only. To schedule an appointment, contact PublicDisclosureSWRO@ecy.wa.gov or call 360-407-6365.

Drift. The younger glacial deposits have been named the Vashon Drift. The non-glacially derived materials deposited between the two glacial drifts comprise the interglacial Kitsap Formation.

Surficial geology in the vicinity of the Site consists of recent fluvial and alluvial sediments deposited over the Vashon Drift. These materials are very fine-grained silts and sands deposited by stream and volcanic-mudslide processes. The Vashon Drift consists of outwash sands, gravels, clays, and glacial till deposited during the advance and recession of the ice lobe during the most recent glacial epoch in the Puget Sound region.

2.1.3 Hydrogeology

The Vashon Drift forms water-bearing strata with variable permeability in both lateral and vertical directions. In general, the direction of groundwater movement in the upper water-bearing layers beneath the Site is toward West Bay. In areas where the upper water-bearing strata extend into West Bay, discharge occurs directly to the saltwater. Otherwise, discharge occurs to streams and springs, and as diffused seepage at altitudes above sea level. Groundwater was encountered at depths of three to eight feet below ground surface (bgs) in Site monitoring wells.

2.2 Overview of IA-Related Operational Features

Early development in the vicinity of the Site consisted of an elevated rail spur that was constructed on pilings circa 1891 (Stevenson 2008). At that time, the area consisted of tidelands which were filled to create the current 17-acre upland area (City 1993). The timing of the fill placement and the origins of the fill material are unknown; however, it is likely that the fill material originated as dredging spoils from dredging that occurred in West Bay during the early 1900s. A lagoon located southwest of the Site is designated as a protected wildlife habitat conservation area under an agreement established between the U.S. Fish and Wildlife Service and the Port in 1980 (Thurston Region Planning Council 1990). A wetland was constructed adjacent to the lagoon as mitigation for reconstruction of the 4th Avenue Bridge by the Washington State Department of Transportation in 2004. In the southern portion of the Site (east of the lagoon), the rail line was backfilled, which created a causeway that connected the rail spur to the mainland by two trestles. Fill events appeared to have occurred between 1961 and 1978 based on a review of aerial photographs (Parametrix 2004).

The Site was initially developed circa 1925 as the Olympia Harbor Lumber Mill, which produced “Ready-Cut Homes” kit houses (Stevenson 2008). A historical Sanborn fire map from 1947 shows a mill labeled “Tumwater Lumber Mills Co” (Parametrix 2004). Mill operations closed down by 1959. The Site was sold to the Port in 1963 and became the West Bay Terminal. The Port used the West Bay Terminal to store logs, which by that time had succeeded dimensional lumber as the primary port cargo. A 1968 Sanborn map shows the Site to be essentially vacant. The Solid Wood Incorporated plywood veneer mill operated on the Site from approximately 1971 until 2001, when the mill burned down. When the City purchased the Site in 2004, it was vacant with the exception of extensive asphalt pavement, former building concrete foundations, remnants of wood piling, and encroaching low-lying vegetation.

The operational features of interest for this IAP are the two proposed soil excavation areas around the Oil Stain Area, located near the Solid Wood, Inc. plant foundation, which have exceedances of TPHs, and the three proposed soil excavation areas located along the abandoned rail spur, which have exceedances of total cPAHs. The soil around the Oil Stain Area previously had a test pit excavated; during the excavation, petroleum contamination was noted on the test pit sidewalls.

IA-related Site features are shown in Figure 2.

2.3 Summary of IA-Related Investigation Activities and Results

A substantial amount of investigation activities has been completed for (or proximate to) the proposed excavation footprints. Investigations have included excavating test pits, collecting sidewall and bottom samples, advancing soil borings, installing monitoring wells, and collecting soil and groundwater samples.[3] Soil and groundwater samples collected at the Site are shown on Figures 3 and 4, respectively. Laboratory analyses for these soil and groundwater samples included TPH-diesel range organics (TPH-D), TPH-gasoline range organics (TPH-G), and TPH-heavy oil range organics (TPH-HO), volatile organic compounds, benzene, toluene, ethylbenzene, and xylenes, cPAHs, semi-volatile organic compounds, polychlorinated biphenyls, pesticides, and metals. An investigation chronology for sampling and analysis activities relevant to this IA is provided in Table 1. Results of the soil samples collected as part of the investigation activities were compared to MTCA Method A Cleanup Levels for Unrestricted Land Uses as presented in Table 740-1. A comparison of reported soil concentrations to the MTCA Method A Cleanup Levels is presented in Table 2. Based on the initial screening, TPH-D+HO and total cPAHs are the constituents with exceedances. TPH-D+HO, TPH-G, and total cPAHs soil concentrations are presented in Table 3, and TPH-D+HO, TPH-G, and total cPAHs groundwater concentrations are presented in Table 4. TPH-D and TPH-HO were combined in accordance with Ecology guidance (Ecology 2004 and 2016).[4]

2.3.1 Total TPHs in Soil

Concentrations of TPH-D+HO exceeded the IA remediation level at three locations: SB47, SB48, and SB59.[5] The TPH-D+HO soil results are shown in Figure 5. These locations are proximate to the Oil Stain Area. These exceedances are expected to have a minimal lateral extent since:

- Exceedances of the TPH-D+HO IA remediation level in soil were limited to the Oil Stain Area and were not widespread throughout the Site;
- TPH-D+HO at the Site is not associated with combustion releases;

[3] This IA focuses on upland source area soil contamination that was not addressed during previous IAs. Only the results of investigation activities relevant to the IA are presented in this Section. For example, extensive sediment sampling has been conducted to support the RI/FS and evaluation of sediment cleanup alternatives; however, because no activities will take place in sediment as part of this IA, sediment results are not discussed in this IAP.

[4] The following decision rules were used for combining non-detect results. If only one constituent was non-detect, the nondetect concentration was assumed to equal one-half of the reporting limit. If neither constituent was detected, the reporting limits were summed.

[5] For the purposes of this IA, IA remediation levels were defined as MTCA Method A Cleanup Levels for Unrestricted Land Uses as presented in Table 740-1, WAC 173-340-900.

- Erosion is not expected to be a significant transport mechanism given the data distribution and flat topography; and
- Migration to groundwater has not been demonstrated (i.e., no exceedances were detected in downgradient monitoring wells).

During initial soil investigations in the Oil Stain Area, one soil boring at SB47 was advanced to a depth of 4 feet bgs. A soil sample was collected at 3.5 feet bgs. TPH-D+HO was detected at a concentration of 17,750 milligrams per kilogram (mg/kg), which exceeds the IA remediation level of 2,000 mg/kg. A follow-up test pit investigation was performed to delineate the horizontal and vertical extent of TPH-D+HO. The test pit was 9 feet by 15.5 feet by 5 feet bgs and centered around sample location SB47. Strong petroleum odors were observed in sidewall soils between 0.5 and 3 feet bgs; therefore, samples were not collected from sidewalls at these depths due to the apparent presence of contamination. Samples were collected at the test pit bottom (5 feet bgs; sample TBT1) and were less than the TPH-D+HO IA remediation level. Soil at SB47 is no longer in place because the test pit was filled with clean fill material (Parametrix 2014). However, the soil surrounding the test pit at SB47, which had strong petroleum odors on the sidewalls from 0.5 to 3 feet bgs, was not removed. Therefore, the surrounding soil is assumed to be impacted by TPHs.

A soil exceedance was reported at SB48, located approximately 25 feet north of SB47. TPH-D+HO was detected at a concentration of 12,340 mg/kg, which exceeds the IA remediation level of 2,000 mg/kg. Soil samples were collected at three locations (SB49, SB58, and SB60), which are located approximately halfway between SB48 and SB47, and the TPH-D+HO results at these locations were below IA remediation levels. The vertical extent of the TPH-HO exceedance at sample location SB48 is unknown. The sample collected at SB48 was 5 to 7 feet bgs. Samples were not collected from shallower depths (Parametrix 2014). Therefore, the vertical extent of SB48 is unknown since sidewalls in the nearby test pit indicated that contamination is present above 5 feet bgs. Although analytical results from soil samples between SB47 and SB48 do not indicate petroleum impacts, the IA excavation footprint is conservatively defined as a continuous excavation between these locations.

2.3.2 Total TPHs in Groundwater

Four quarters of groundwater monitoring were conducted in January, May, July, and November 2009 in seven monitoring wells at the Site (i.e., MW-01 through MW-07). TPH-G was analyzed in all seven wells during the May 2009 sampling event and was non-detect in all wells. TPH-D+HO was analyzed in all seven wells across all four quarters of monitoring. TPH-D+HO was non-detect during all events, with the exception of a single detection in MW-02 during the first quarter of monitoring (i.e., January 2009), and the concentration was below the MTCA Method A groundwater CUL. MW-03 is located downgradient of the Oil Stain Area, and TPHs were non-detect during all quarters of groundwater monitoring, demonstrating that TPHs in the Oil Stain Area are not migrating to groundwater. Monitoring wells and the TPH-D+HO groundwater results are shown in Figure 6. TPH results for groundwater samples collected from existing monitoring wells at the Site are summarized in Table 4.

2.3.3 Total cPAHs in Soil

Concentrations of total cPAHs exceeded the soil IA remediation level at six locations: SS03, SS05, SS06, SB26, SB29, and SB30. The total cPAH soil results are shown in Figure 7. Concentrations ranged between 0.14 mg/kg to 0.31 mg/kg, which slightly exceeded the IA remediation level of 0.10 mg/kg. SB26, SB29, and SB30 are located east of the Oil Stain Area, along the existing rail spur. Exceedances were reported at 4 feet bgs at all three locations, with total cPAHs being non-detect or detected below the IA remediation level in deeper samples. Exceedances in SS03, SS05, and SS06 occurred in the surface soil sample. Total cPAHs were non-detect in the sample collected at 2 feet bgs at SS03 and were detected below the IA remediation level at 2 feet bgs at SS06.

Total cPAHs are expected to occur at low levels along the length of the existing rail spur due to rail operations, fill, and potential urban background. Contamination is not expected to extend significantly beyond the rail spur areas since (1) the distribution of soil concentrations did not indicate that there was a single significant source (e.g., spill) that could have impacted a large area, (2) cPAHs bind strongly to soil and have limited mobility once deposited due to their high soil organic carbon-water partitioning coefficient (Ecology 2001, 2015), (3) no leaching from soil-to-groundwater has been demonstrated, and (4) erosion is not expected to be a significant transport mechanism given the data distribution, and flat topography. As a result, the extent of each total cPAHs soil exceedances (i.e., the cPAH delineation) was assumed to extend approximately halfway to surrounding soil samples with concentrations less than the soil IA remediation level.

2.3.4 Total cPAHs in Groundwater

Total cPAHs were analyzed in all seven monitoring wells at the Site (i.e., MW-01 through MW-07) in January, May, July, and November 2009. Total cPAHs were non-detect in all wells with the exception of a single detection in MW-02 during the last quarter of monitoring (i.e., November 2009), and the concentration was below the MTCA Method A groundwater CUL. MW-03 is located downgradient of SB-26, SB-29, and SB-30, and total cPAHs were non-detect during all quarters of groundwater monitoring, demonstrating that total cPAHs are not migrating to groundwater. Monitoring wells and the total cPAHs groundwater results are shown in Figure 8. Total cPAH results for groundwater samples collected from existing monitoring wells at the Site are summarized in Table 4.

2.4 Regulatory Context

This MTCA Site is currently being addressed pursuant to AO No. DE-08-TCPSR-5415 between the City and Ecology, which became effective on November 17, 2008. A draft RI/FS was prepared in 2015 by PIONEER and Parametrix under the AO. Ecology provided comments on the draft RI/FS in 2019. The City conducted additional investigations in 2022 and 2023, based on Ecology's comments. Section VII of the AO is currently being amended to include provisions for conducting an IA, as described in this IAP. This IAP will be included as an exhibit to the amended AO and submitted to Ecology for review and approval prior to implementation. This IA is being conducted in accordance with the MTCA regulations (Chapter 173-340 WAC). Chapter 173-340 WAC citations in this IAP are from the most recent versions of the Chapter 173-340 WAC that was adopted August 23, 2023, and became effective January 1, 2024.

SECTION 3: IA SUMMARY, GOALS, AND RATIONALE

3.1 IA Summary Description

The IA design process outlined in Section 4 will present the IA design details. In general terms, the IA will consist of the following key elements:

- Advancing soil borings and analyzing resulting soil samples as described in the Sampling and Analysis Plan (SAP) to confirm excavation footprints;
- Conducting a structural integrity inspection of the North Trestle to evaluate the feasibility of bringing construction equipment across the berm to support IA implementation (see Figure 2);
- Dewatering groundwater within the Oil Stain Area excavation and disposing of generated water at an off-site facility permitted to accept the waste;[6]
- Excavating contaminated soil in the Oil Stain Area adjacent to the former Solid Wood facility (Parametrix 2013) associated with TPH-D+TPH-HO exceedances seen in RI Data Gap soil borings SB-47, SB-48, and SB-59 (Parametrix 2014);
- Excavating contaminated soil associated with cPAH exceedances seen in Phase II ESA soil borings SB-26, SB-29, and SB-30 (Parametrix 2007);
- Excavating contaminated soil associated with cPAH exceedances along the historical rail spur on the southern portion of the Site (Parametrix 2007);[7]
- Implementing a variety of engineering controls during construction activities for protection of human health and the environment (e.g., health and safety controls, stormwater controls, spill prevention and controls, dust controls, Site controls, traffic controls, noise controls);
- Disposing of excavated soils at an off-site facility permitted to accept the waste;
- Backfilling and compacting the excavated areas with clean soil; and
- Restoring the excavated areas to their original condition.

This IA only partially addresses the cleanup of this Site (in accordance with WAC 173-340-430(1)) and is not intended to serve as the final MTCA cleanup action. The final cleanup action at this Site has not been determined, and additional remedial actions may be necessary beyond the IA described in this IAWP. Further, the IA will not preclude the final cleanup action.

3.2 IA Goals

The goals of this IA are to:

- Remove contaminated soil in the Oil Stain Area around soil boring locations SB-47, SB-48, and SB-59 and achieve petroleum-related soil IA remediation levels;
- Remove contaminated soil around soil boring locations SB-26, SB-29, and SB-30 and achieve total cPAH-related soil IA remediation levels;

[6] Dewatering is not planned or expected proximate to SB-26, SB-29, and SB-30. The depth to groundwater is estimated to be between 7 and 8 feet bgs and the proposed excavation depth is 6 feet bgs.

[7] The removal of soils proximate to SS-03 is dependent on the results of the structural integrity inspection of the North Trestle. Additional information is provided in Section 4.2

- Remove contaminated soil along the existing rail spur at locations SS03, SS05, and SS06 and achieve total cPAH-related soil IA remediation levels;
- Decrease risks to human health and the environment that are associated with the existing contamination;
- Reduce the restoration time frame for the petroleum releases associated with this IA;
- Not preclude reasonable alternatives for a final cleanup action;
- Comply with applicable federal, state, and local laws and regulations;
- Consider public and tribal concerns;
- Utilize sustainable remediation principles (e.g., reuse of acceptable soil) to the extent practicable; and
- Be cost-effective.

3.3 IA Performance Criteria

The IA performance criteria for this IA are the petroleum-related and cPAH soil IA remediation levels summarized in the following table.

IA Remediation Levels

Constituent	IA Remediation Level[1] (mg/kg)
TPH-D+HO	2,000
Total cPAHs	0.10

Notes:
[1] IA remediation levels are based on the MTCA Method A Cleanup Levels for Unrestricted Land Uses as presented in MTCA Table 740-1.

Performance criteria were based on the MTCA Method A Cleanup Levels for Unrestricted Land Uses. If the City Project Manager or PIONEER Project Manager determines during IA fieldwork that it is not practicable to achieve the aforementioned soil IA remediation levels due to health and safety concerns, contract requirements, or an unforeseen situation that could exacerbate contaminant transport, the City will coordinate with Ecology about further IA or post-IA activities. If soil IA remediation levels are not achieved in one or more excavations, the rationale for not achieving soil IA remediation levels will be included in the IA Report.

Potentially applicable or relevant and appropriate requirements (ARARs; i.e., federal, state, and local laws and regulations) were identified and evaluated to determine requirements that apply to IA design and implementation (see Appendix B). Based on this evaluation, none of the laws and regulations prevent or preclude the implementation of IA components. However, the IA design will include and require measures to address the ARARs for IA implementation as outlined in Section 4 (e.g., waste management requirements, health and safety requirements, implementing an Inadvertent Discovery Plan [IDP], obtaining applicable permits in accordance with Chapter 173-160 WAC, and implementing temporary erosion, stormwater, dust, and noise controls).

3.4 Regulatory Rationale for IA

This section provides the demonstration that the proposed IA satisfies MTCA requirements and expectations in WAC 173-340-430(1) through (5) for conducting an IA.

3.4.1 IA Purpose

The IA purpose per WAC 173-340-430(1) is discussed in Section 1.2.

3.4.2 General Requirements

The proposed IA satisfies the IA general requirements pursuant to WAC 173-340-430(2)(b) since the proposed IA will "provide a partial cleanup, that is, clean up hazardous substances from all or part of the site, but not achieve cleanup standards." The final cleanup standards for this Site have not been determined. Final cleanup standards will be defined in the future Cleanup Action Plan.

3.4.3 Relationship to the Cleanup Action

The IA satisfies the requirement in WAC 173-340-430(3) via WAC 173-340-430(3)(b) since none of the IA remedial components will foreclose reasonable alternatives for the unknown final clean action.

3.4.4 Timing

The proposed IA satisfies the IA timing requirement in WAC 173-340-430(4) because (1) an IA "may occur anytime during the cleanup process" per WAC 173-340-430(4)(a), (2) the IA will not be used to delay or supplant the cleanup process, and (3) the IA will be followed by completing the RI/FS and Cleanup Action Plan.

3.4.5 Administrative Options

In accordance with WAC 173-340-430(5), an IA can be conducted under any of the MTCA administrative options, including agreed orders.

3.5 IA Alternatives Considered

An evaluation of IA alternatives was conducted in accordance with WAC 173-340-430(7)(b)(ii) to ensure the selected IA is protective and will not impede final cleanup. Alternatives evaluated included excavation and off-site disposal, capping, and in-situ treatment. Alternatives were evaluated based on protectiveness of human health and the environment, permanence, compliance with cleanup standards and applicable requirements, and public concerns.

Capping and in-situ treatment could reduce exposure; however, these alternatives would leave contamination in place and are less permanent. In-situ treatment also includes greater implementation uncertainty and longer timeframes to achieve IA remediation levels. Excavation and off-site disposal was selected as the preferred IA because it permanently removes petroleum- and total cPAH-impacted soils in the Oil Stain Area and along the rail spur (respectively), eliminates potential migration to groundwater and surface water, and is consistent with MTCA-accepted soil remedies and prior IA at the Site. This alternative allows for monitoring programs (e.g., confirmation sampling, groundwater sampling) to be adopted post-IA implementation to confirm compliance with cleanup standards and other ARARs.

The selected IA reduces contaminant mass and exposure without limiting the ability to evaluate or implement the final cleanup action and, therefore, will not preclude or interfere with final remedy selection.

SECTION 4: PRELIMINARY IA DESIGN

The IA design will consist of final plan sets and specifications for removing contaminated soil and supporting documents (i.e., Waste Management Plan [WMP], Compliance Monitoring Plan [CMP], Health and Safety Plan [HASP], and IDP) that will accompany and supplement the plan sets and specifications. The IA design is currently in the preliminary design phase. Some of the key preliminary design concepts for the contaminated soil excavations are summarized in Section 4.2. The design will be further developed and finalized as outlined in Section 5.2.

4.1 Remedial Design Investigation

An RDI will be performed to confirm the excavation footprints prior to field implementation. The purpose of this sampling is to refine the excavation footprints as needed and to support final design plans, specifications, and contract bidding. Proposed RDI activities include:

- Collecting soil samples and analyzing for TPH-D and TPH-HO within and along the perimeter of the proposed excavation footprint in the Oil Stain Area. This data may be used to refine the excavation footprint as part of the final IA design.
- Collecting soil samples and analyzing for total cPAHs within and along the perimeter of the proposed excavation footprints near SB26, SB29, and SB30 and the existing rail spur. This data may be used to refine the excavation footprint as part of the final IA design.

Additionally, a structural integrity evaluation will be conducted by a licensed professional engineer, qualified to evaluate the overall condition of the North Trestle. On January 21, 2026, PIONEER conducted a Site walk to document current conditions and support the development of the IAP. During the Site walk, PIONEER noted potential health and safety and feasibility concerns with hauling equipment over the North Trestle to perform IA-related activities on the northern berm. Representative photos of the North Trestle are provided in Appendix C. The purpose of the structural integrity assessment is to:

- Evaluate whether the North Trestle has adequate capacity to safely support the anticipated loads required to implement the IA.
- Characterize the existing condition of the structure, including identification of deterioration, damage, or deficiencies that may affect structural performance or reliability during implementation of the IA.
- Identify and recommend equipment, repairs, or modifications necessary to support safe, effective, and compliant implementation of the IA.
- Identify mitigation measures needed to address identified deficiencies and ensure protection of human health and the environment during IA activities.
- Evaluate potential risks associated with continued use of the structure and provide a determination regarding its suitability for use in support of IA, consistent with applicable safety and regulatory requirements.

The RDI will be implemented as soon as possible to facilitate the final IA design.

4.2 Key IA Design Concepts

The IA is being designed to remove the petroleum and cPAH-contaminated soil in the Oil Stain Area and along the existing rail spur, respectively. The IA is also being designed to meet the IA goals and IA remediation levels in Sections 3.2 and 3.3, respectively. Key design concepts for the IA include:

- Engineering controls (e.g., health and safety controls, stormwater control, temporary erosion and sediment controls, spill prevention and controls, dust controls, Site controls, traffic controls, noise controls) will be used during IA construction activities.
- The IA design and IA implementation will prevent stormwater from contacting contaminated IA media (e.g., excavated soil), and there will be no contaminated contact stormwater discharge. Stormwater protection measures include, but are not limited to, scheduling the work during the dry season, direct loading excavated soil to dump trucks to the extent practicable, installing and maintaining impervious stockpile covers, implementing stormwater best management practices, and housekeeping measures.
- The Remediation Contractor will be responsible for verifying utility locations and temporarily bypassing active underground utilities in direct conflict with the IA excavations, if any.
- Advancing soil borings as necessary to confirm the excavation footprints. The soil borings will be performed and analyzed as described in the SAP (see Appendix D).
- Excavating soil to remove IA remediation level exceedances. The excavations will take place in the Oil Stain Area and along the existing rail spur. Excavation areas and depths were based on data collected to-date and conservative assumptions. The excavation footprints will be refined based on the results of the RDI (discussed in Section 4.1). Excavation will address:
    - TPH-D+HO exceedances at SB47, SB48, and SB59. Excavated soil will total approximately 715 square feet (SF) to a maximum depth of 8 feet (approximately 211 cubic yards [CY]). The excavation depth was estimated based on IA remediation level exceedances reported at 7 feet bgs at SB48. The final excavation depth will be determined based on the RDI results.
    - Excavating soil associated with total cPAH exceedances at SB26, SB29, and SB30. Excavated soil will total approximately 1,780 SF to a maximum depth of 6 feet (approximately 395 CY). The excavation depth was estimated based on IA remediation level exceedances at 4 feet bgs at SB26, SB29, and SB30. Samples were also collected at 6 feet bgs at all three locations, which were nondetect or below the IA remediation level; therefore, the excavation depth was assumed to be 6 feet bgs. The final excavation depth will be determined based on the RDI results.
    - Excavating soil associated with total cPAH exceedances at SS05 and SS06 along the existing rail spur. Excavated soil will total approximately 9,300 SF to a maximum depth of 1 foot (approximately 345 CY). The excavation depth was estimated based on IA remediation level exceedances at 0 – 0.5 feet bgs; however, total cPAHs were below IA remediation levels in deeper samples (2 feet bgs) at both locations. The excavation depth was set to 1 foot bgs to be conservative and consistent with previous IAs conducted at the Site.
    - Excavating soil associated with the total cPAH exceedance at SS03 along the existing rail spur, south of the North Trestle. Excavated soil will total approximately 7,400 SF to a maximum depth of 1 foot (approximately 275 CY). The excavation depth was estimated based on IA remediation level exceedance at 0 – 0.5 feet bgs; however, total cPAHs were below IA remediation levels in the deeper samples (2 feet bgs) at SS-03. The excavation depth was set to 1 foot bgs to be conservative and consistent with previous IAs conducted

at the Site. A structural integrity inspection on the North Trestle is required prior to IA implementation to determine whether equipment can be safely transported across the trestle (see Section 4.1). In the event the results of the structural integrity inspection determine that transporting equipment across the North Trestle is not feasible or practicable, then soils proximate to SS-03 will not be removed as part of the IA, and soils proximate to SS-03 will be evaluated as part of the forthcoming RI/FS and the final cleanup action.

- Removing approximately 600 LF of railway proximate to SS03, SS05, and SS06.
- Confirmation soil samples will be collected from excavation sidewalls and bottoms (see Appendix D).
- Stockpiling excavated soil and collecting waste characterization samples for profiling prior to off-site disposal.
- All excavations will be backfilled with clean soil imported from an upland quarry that is suitable structural fill and compacted to support current industrial uses at the Site and any relevant future City redevelopment plans.[8]
- Excavated areas will be restored to their pre-IA condition.

4.3 Waste Management Plan

The characterization, transportation, treatment, storage, and disposal of all waste generated during IA implementation will be conducted in accordance with applicable federal, state, and local waste management regulations. All waste generated during the IA will be disposed of at an off-site facility permitted to receive the waste.

The anticipated waste streams for this IA are:

- Excavated soil designated as a waste that will be disposed of off-site (i.e., not reused on-site);
- Material associated with demolition of the BNSF ROW, including rails, spikes, ties, ballast, etc.;
- Groundwater generated during dewatering activities in the Oil Stain Area;
- Water generated from equipment and personnel decontamination;
- Personal protective equipment; and
- Miscellaneous construction debris (e.g., disposable equipment/materials, general trash).

A WMP will be prepared during IA design to describe the characterization, transportation, treatment (if applicable), storage, and disposal of wastes generated during the IA. The WMP will be included with the 90% design submittal to Ecology. The WMP will:

- Identify all anticipated waste streams;
- Identify the expected temporary storage, labeling, and disposition for each anticipated waste stream;
- Identify the applicable sampling and analysis that will be conducted to characterize waste for off-site disposal as well as to determine if the soil that will be excavated is a characteristic dangerous waste (aka hazardous waste) per WAC 173-303-090(8), a state-specific toxic

[8] The source of clean backfill is to be determined by the Remediation Contractor and approved by the City.

dangerous waste per WAC 173-303-100(5), or a state-specific persistent dangerous waste per WAC 173-303-100(6).

- Identify the proposed or candidate off-site disposal facility(ies) for each anticipated waste stream;
- Specify requirements for temporary soil stockpiles (e.g., approved locations for creating stockpiles, stockpile covering requirements, maintenance, tracking, and recordkeeping requirements); and
- Specify requirements for any temporary waste containers (e.g., approved locations for containers, type of containers to be used, tracking and recordkeeping requirements).

4.4 Compliance Monitoring Plan

A CMP for IA activities was prepared in accordance with the requirements of WAC 173-340-410. There are three types of compliance monitoring defined in WAC 173-340-410: protection monitoring, performance monitoring, and confirmation monitoring. The anticipated elements for each type of IA compliance monitoring are summarized in the following sub-sections.

4.4.1 Protection Monitoring

Per WAC 173-340-410(1)(a), the purpose of protection monitoring is to "confirm that human health and the environment are adequately protected during construction and the operation and maintenance period of an interim action or cleanup action as described in the health and safety plan." The applicable protection monitoring for this IA (e.g., dust monitoring, noise monitoring, heat/cold stress monitoring) is included in the PIONEER HASP (see Section 4.5).

4.4.2 Performance Monitoring

Per WAC 173-340-410(1)(b), the purpose of performance monitoring is to "confirm that the interim action or cleanup action has attained cleanup standards and, if appropriate, remediation levels or other performance standards such as construction quality control measurements or monitoring necessary to demonstrate compliance with a permit or, where a permit exemption applies, the substantive requirements of other laws." For this IA, performance monitoring will consist of "other performance standards such as construction quality control measurements or monitoring necessary to demonstrate compliance with a permit." Specifically, the applicable performance monitoring for this IA will consist of PIONEER oversight of the Remediation Contractor to ensure:

- Successful completion of all construction quality control (QC) components included in the final design;
- Adherence to the plan sets and specifications for the soil removals;
- Appropriate implementation of the WMP, CMP, Remediation Contractor HASP, and IDP; and
- Compliance with all requirements for IA-related permits (see Section 5.4), including any permit-required monitoring.

4.4.3 Confirmation Monitoring

Per WAC 173-340-410(1)(c), the purpose of confirmation monitoring is to "confirm the long-term effectiveness of the interim action or cleanup action once cleanup standards and, if appropriate,

remediation levels or other performance standards have been attained." Confirmation soil samples (e.g., sidewall and bottom soil samples) will be collected from each excavation. The SAP for the confirmation soil samples, which was prepared in accordance with WAC 173-340-820, WAC 173-340-830, and applicable components of Ecology guidance (Ecology 1995), is included in Appendix D. Appendix D also includes the Quality Assurance Project Plan (QAPP) that will support the confirmation soil sampling and associated laboratory analyses.

4.5 Health and Safety Plan

PIONEER has prepared a HASP for PIONEER employees and subcontractors who may perform IA fieldwork such as Remediation Contractor oversight (see Appendix E). In addition, IA specifications will require the Remediation Contractor to prepare and implement its own HASP (that is at least as stringent as the PIONEER HASP) for all IA activities conducted by Remediation Contractor employees and subcontractors. The HASP must comply with the requirements set forth in 29 Code of Federal Regulations 1910.120, WAC 296-843-120, and WAC 173-340-810. IA specifications will also require the Remediation Contractor to (1) submit its HASP to the City and PIONEER for approval, and (2) utilize 40-hour hazardous waste operations and emergency response-trained personnel with current refresher certifications for all IA fieldwork.

4.6 Inadvertent Discovery Plan

Prior to completing any ground-disturbing activities, a cultural resource review will be completed. In accordance with WAC 173-340-815(3)(a) and Governor Executive Order 21-02, Ecology will consult with the Department of Archaeology and Historic Preservation and affected tribes prior to IA implementation about the potential effects of the IA on potential cultural resources at the Site.

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 that the Site is at high risk for pre-historical artifacts or other archaeological resources and recommended on-Site monitoring throughout the sampling activities. As a result, the City will have a licensed archeologist on-Site for the duration of field activities. Contact information for the project archaeologist will be provided to Ecology, DAHP, and the Tribes prior to conducting field activities.

A Site-wide IDP (see Appendix F) will be implemented if a cultural resource is inadvertently discovered during IA activities. The IDP shall be readily available during all IA implementation activities, and all field personnel shall be familiar with the contents and location of the IDP. In addition, it is recommended for all field personnel to watch the following Ecology training video before beginning fieldwork: https://www.youtube.com/watch?v=ioX-4cXfbDY.

If a cultural resource is discovered during investigation activities, all work in the vicinity of the discovery shall stop immediately and a discovery protection boundary shall be established around the discovery (see Step B in Section 3 of the IDP). All field personnel shall follow the IDP procedures and treat all

cultural resources with respect. On-site PIONEER field personnel shall promptly notify the project lead contacts (primary and alternate). The primary project lead contact (or the alternate if the primary is not available) shall then promptly notify the Ecology Project Manager (or the alternate Ecology contact if the Ecology Project Manager is not available), who will notify the Department of Archaeology and Historic Preservation. As indicated in the IDP, it is acceptable to contact the Department of Archaeology and Historic Preservation directly if Ecology cannot be reached. Fieldwork within the discovery protection boundary will not continue until the Department of Archaeology and Historic Preservation has issued an approval for work within the discovery protection boundary to proceed.

SECTION 5: IA PATH FORWARD

5.1 Public Participation and Tribal Engagement for the IAP

Pursuant to WAC 173-340-430(6)(a) and WAC 173-340-600(16), Ecology will engage the public about the proposed IA described in this IAP before approving the IAP. Ecology will utilize multiple methods to notify the public about the IAP in accordance with WAC 173-340-600(2)(a), which includes the following notification methods: publishing on Ecology's website, emailing an electronic alert to people who request an electronic alert, publishing in the Contaminated Site Register, mailing written notices to people who request a written notice, mailing written notices to people residing within the potentially affected vicinity of the IA, sending a written notice to appropriate news media, and publishing in an appropriate newspaper. Ecology will invite members of the public to review and comment on the IAP for at least 30 days per WAC 173-340-600(2)(b). Comments received by Ecology during the public participation period will be considered by Ecology before the IAP is finalized and approved. If ten or more persons request a public meeting regarding this IAP, Ecology will host a public meeting for the purpose of receiving comments from the public. If necessary, this section of the IAP may be updated to summarize Ecology's responses to public comments prior to finalizing the IAP.

In accordance with WAC 173-340-620, Ecology will:

- Develop a tribal engagement plan for this Site;
- Initiate meaningful engagement with affected tribes about this IA before approving the IAP; and
- Engage with affected tribes in addition to and independent of the public participation process.

5.2 Finalizing the IA Design

Washington-licensed professional engineers are (and will continue to be) in responsible charge for the preparation and completion of the IA design. Plans and specifications in WAC 173-340-400(4)(b) will be further developed and documented as the IA design is finalized. Following submittal of the IAP to Ecology, the City team will:

- Develop the 60% design plans, specifications, and WMP for Ecology review and comment.
- Advance the plans, specifications, and WMP from 60% to 90% based on Ecology comments and submitted to Ecology for review.
- Prepare the final (100%) IA design (i.e., plans, specifications, and WMP) and submit to Ecology for approval.

5.3 Construction Quality Control

Construction QC is part of design and will be finalized along with the plan sets, specifications, and WMP. The IA design will include a variety of construction QC requirements to ensure that the IA construction activities being conducted by the Remediation Contractor are completed correctly, effectively, and safely. The construction QC requirements will include, but are not limited to:

- Implementing the WMP;
- Implementing the CMP;

- Implementing the HASPs and associated health and safety requirements;
- Implementing the IDP, if necessary;
- Implementing engineering controls;
- Review and approval of Remediation Contractor submittals;
- Testing for import soil proposed for backfill and compaction; and
- Conducting oversight of all Remediation Contractor activities to ensure compliance with the plan sets, specifications, supporting plans, and permit requirements.

5.4 Permits/Approvals

The following permits/approvals may be required for this IA:

- Ecology approval of the IAP and final IA design (e.g., plans and specifications);
- Ecology Construction Stormwater General Permit;
- Waste Disposal Authorization approval;
- City of Olympia Shoreline Substantial Development Permit for conducting IA activities within 200 feet of Budd Inlet;
- City of Olympia Site Development Permit for excavation and grading activities; and
- City of Olympia Tree Removal Permit for vegetation removal along the berm.

However, per the MTCA law, WAC 173-340-710(9), and Section VIII.P.2 of AO DE 9553 (Ecology 2008), the City is exempt from the procedural requirements of Chapters 70.94, 70.95, 70.105, 77.55, 90.48, and 90.58 RCW and local permits/approvals and select state permits/approvals (although the City must comply with the associated substantive requirements). The purpose of MTCA's permit/approval exemptions is to expedite cleanup of contaminated sites. The City and Ecology will collaborate and coordinate to identify the associated substantive requirements of applicable permits.

5.5 Public Works Contracting

The City will competitively bid the IA implementation work for the to-be-determined Remediation Contractor as a public works solicitation. The solicitation will include this IAP, the final plan sets, the final specifications, and the supplemental plans as attachments. The solicitation will be posted and advertised in accordance with standard City procurement procedures, such as posting on the City's procurement website and sending email updates to all City procurement subscribers. The bidding process will include opportunities for bidders to ask questions. The City will collect bids on the time and date advertised. The City will review each bid proposal with the evaluation requirements included in the solicitation and select the lowest bidder of the bidders that had responsive and responsible bids. The City will then enter into a contract with the selected Remediation Contractor.

5.6 Key Anticipated IA Roles and Responsibilities

The key anticipated IA roles and responsibilities are summarized in Table 5. Contact information in this table will be updated following the Port's selection of and contracting with the Remediation Contractor.

5.7 IA Reporting

A draft IA Report will be prepared and submitted to the Ecology Site Manager for review. The IA Report is expected to include (1) as-built drawings, (2) the final excavation limits, (3) a summary of the Remediation Contractor's construction activities and the oversight activities, (4) a photolog of representative photos taken during the phase, (5) a discussion of any deviations from the final design, (6) applicable testing and construction QC results (including laboratory reports if applicable), (7) laboratory reports and a data evaluation for confirmation soil samples, and (8) waste disposal documentation (e.g., bills of lading/waste manifests). The purpose of this report will be to document the results of the IA relative to the compliance monitoring requirements established in Section 4.4. The IA report will be used to support the finalization of the RI/FS for the Site and support the establishment of the final cleanup alternative.

5.8 IA Schedule

The IA schedule is contingent upon a variety of factors, including (1) approval of this IAP, (2) Ecology approval of the plans and specifications, (3) obtaining permits/approvals, and (4) City contracting. As a result, the IA implementation schedule will be refined over time as the IAP is approved, the final design is approved, permits are obtained, and the City contracts with a Remediation Contractor. In the meantime, the current schedule for key near-term IA tasks includes:

- May 2026: Ecology review agency Draft IAP.
- June 2026: Public review draft IAP completed.
- July – August 2026: Public comment period.
- August – September 2026: RDI implementation.
- October 2026: Submittal of RDI Report and 60% Plans and Specifications to Ecology for review.
- November 2026: 90% Plans and Specifications submitted to Ecology for review.
- December 2026: 100% Plans and Specifications submitted to Ecology for review and approval.
- January 2027: IA bid period, contract award, and Remediation Contractor pre-construction submittals.
- March 2027: IA construction starts.

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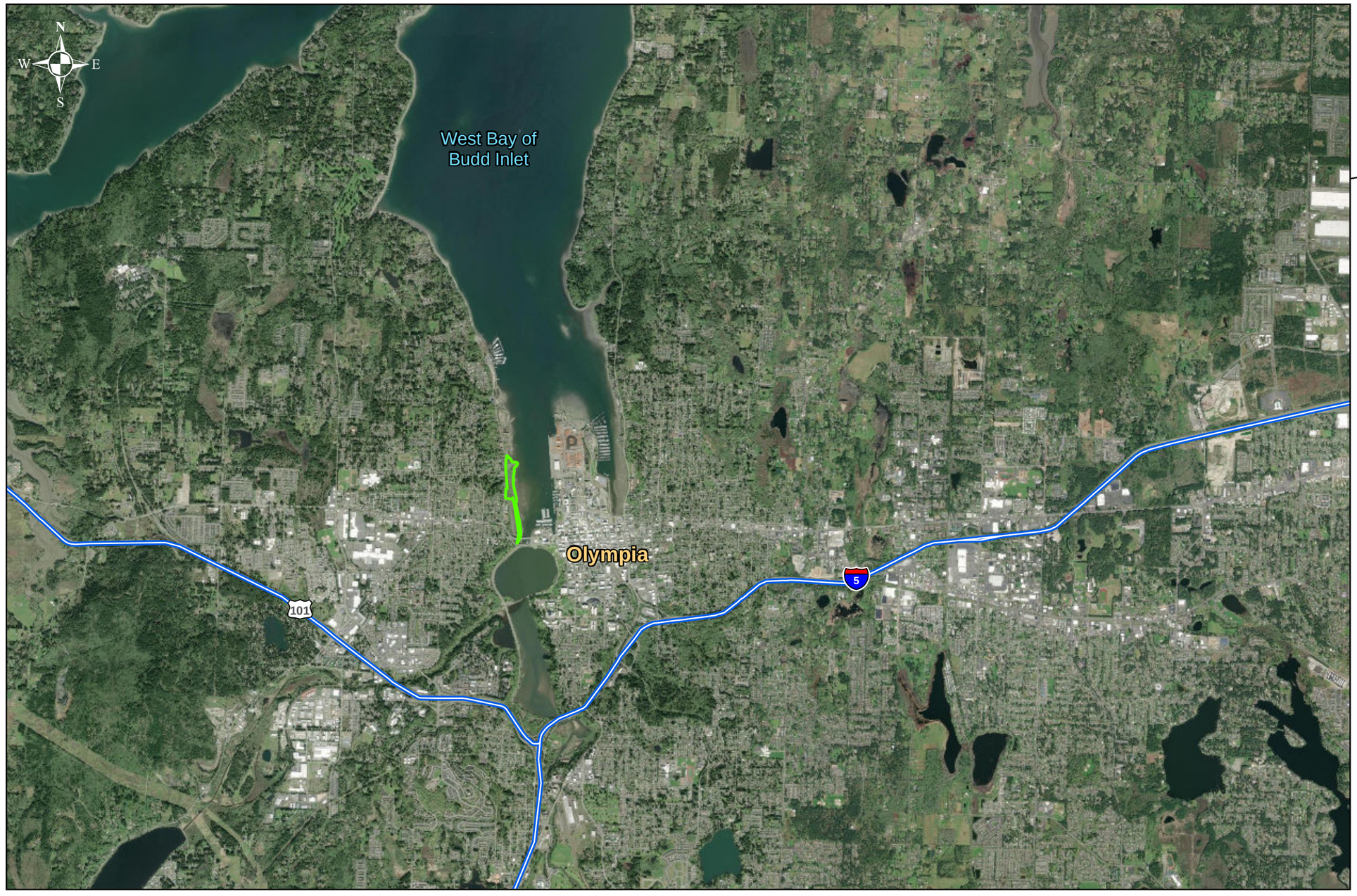
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Figures





Legend

Agreed Order Boundary

0 1 2 Miles

PIONEER TECHNOLOGIES CORPORATION

Site Location
Interim Action Plan
Solid Wood Incorporated Site

Figure 1

Document Path: G:\Projects\City of Olympia\GIS\Maps\2026\Solid Wood IAWP\Figure 1 Site Location.mxd; Author: CO; Date Saved: 5/27/2026





Legend

- Agreed Order Boundary
- Abandoned Rail Spur

IA Features

- Proposed Soil Excavation Area

0 250 500 Feet

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IA-Related Site Features
Interim Action Plan
Solid Wood Incorporated Site

Figure 2

Document Path: G:\Projects\City of Olympia\GIS\Maps\2026\Solid Wood IAWP\Figure 2 IA Related Site Features.mxd; Author: KI; Date Saved: 5/26/2026



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Previous Soil Sample Locations
Interim Action Plan
Solid Wood Incorporated Site

Figure 3

Document Path: G:\Projects\City of Olympia\GIS\Maps\2026\Solid Wood IAWP\Figure 3 Previous Soil Sample Locations.mxd; Author: KI; Date Saved: 6/5/2026



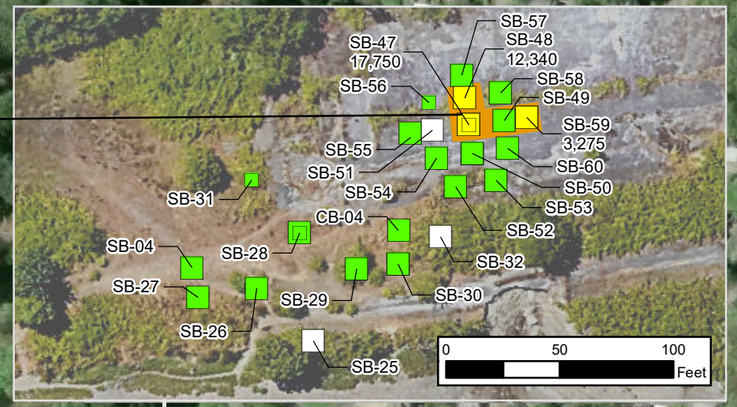
PIONEER TECHNOLOGIES CORPORATION

Previous Groundwater Sample Locations
Interim Action Plan
Solid Wood Incorporated Site

Figure 4

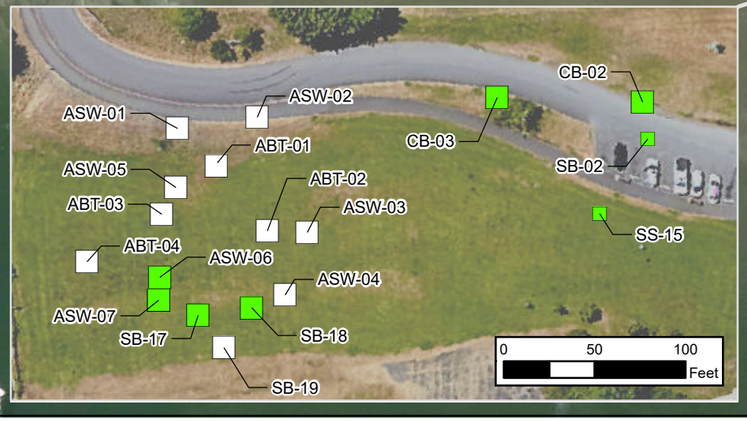
Document Path: G:\Projects\City of Olympia\GIS\Maps\2026\Solid Wood IAWP\Figure 4 Previous Groundwater Sample Locations.mxd; Author: KI; Date Saved: 6/3/2026

SB47/TPBT1: TPH-HO was detected at concentrations greater than SLs at SB-47. SB-47 was removed when a test pit investigation was performed. Concentrations at the bottom of the test pit were less than SLs. However, petroleum contamination was noted on test pit sidewalls during the test pit excavation. Therefore, soil in the vicinity of SB47 was included as part of this IA.





SS-01
SS-02
SS-03
SS-04
SS-05
SS-06
SS-07
SS-11





Legend

Soil Sample Locations
- Surface Soil Samples (0 - 2 feet)
- Subsurface Soil Samples (> 2 feet)

TPH-D+HO Results
- Non-Detect
- Detected Concentration ≤ MTCA Method A Soil CUL
- Detected Concentration > MTCA Method A Soil CUL

Site Features
- Agreed Order Boundary
- Abandoned Rail Spur

IA Features
- Proposed Excavation Footprint

Notes:
- All concentrations reported in milligrams per kilogram (mg/kg).
- Multiple samples were collected at SB-47. The highest concentration (collected at 3.5 feet) is reported on the figure.
- The MTCA Method A Soil CUL for TPH-D+HO is 2,000 mg/kg

CUL: Cleanup Level
TPH-D: Total Petroleum Hydrocarbons Diesel
TPH-HO: Total Petroleum Hydrocarbons Heavy Oil

0 250 500 Feet

PIONEER TECHNOLOGIES CORPORATION

TPH-D+HO Results in Soil
Interim Action Plan
Solid Wood Incorporated Site

Figure 5

Document Path: G:\Projects\City of Olympia\GIS\Maps\2026\Solid Wood IAWP\Figure 5 TPH-D+HO Results in Soil.mxd; Author: KI; Date Saved: 5/27/2026





Legend

Groundwater Sample Locations

- Monitoring Well

TPH-D+HO Results

- Non-Detect
- Detected Concentration ≤ MTCA Method A Groundwater CUL
- Detected Concentration > MTCA Method A Groundwater CUL

Site Features

- Agreed Order Boundary
- Abandoned Rail Spur

IA Features

- Proposed Excavation Footprint

Notes:
- Only results from groundwater samples collected from existing monitoring wells at the Site are shown on this figure.
- All results are shown in micrograms per liter (ug/L).
- The MTCA Method A Groundwater CUL for TPH-D+HO is 500 ug/L.

CUL: Cleanup Level
TPH-D: Total Petroleum Hydrocarbons Diesel
TPH-HO: Total Petroleum Hydrocarbons Heavy Oil

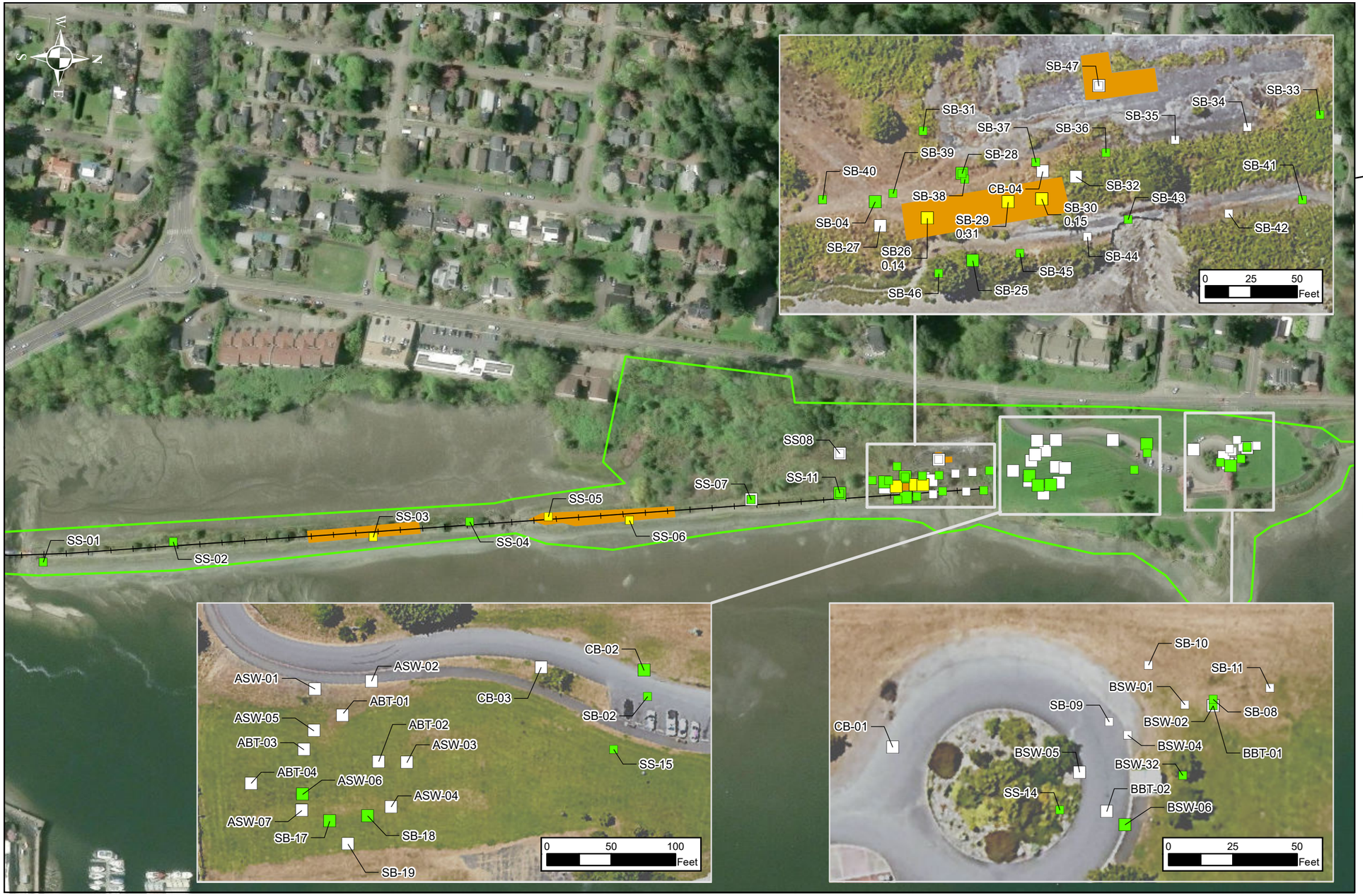
0 250 500 Feet

PIONEER TECHNOLOGIES CORPORATION

TPH-D+HO Results in Groundwater
Interim Action Plan
Solid Wood Incorporated Site

Figure 6

Document Path: G:\Projects\City of Olympia\GIS\Maps\2026\Solid Wood IAWP\Figure 6 TPH-D+HO Results in GW.mxd; Author: KI; Date Saved: 5/27/2026





Legend

Soil Sample Locations
- Surface Soil Samples (0 - 2 feet)
- Subsurface Soil Samples (> 2 feet)

Total cPAH Results
- Non-Detect
- Detected Concentration ≤ MTCA Method A Soil CUL
- Detected Concentration > MTCA Method A Soil CUL

Site Features
- Agreed Order Boundary
- Abandoned Rail Spur

IA Features
- Proposed Excavation Footprint

Notes:
- All results are shown in milligrams per kilogram (mg/kg).
- The MTCA Method A Soil CUL for Total cPAHs is 0.10 mg/kg.

cPAHs: carcinogenic polycyclic aromatic hydrocarbons
CUL: Cleanup Level

0 250 500 Feet

PIONEER TECHNOLOGIES CORPORATION

Total cPAHs Results in Soil
Interim Action Plan
Solid Wood Incorporated Site

Figure 7

Document Path: G:\Projects\City of Olympia\GIS\Maps\2026\Solid Wood IAWP\Figure 7 Total cPAH Results in Soil.mxd; Author: KI; Date Saved: 5/21/2026





Legend

Groundwater Sample Locations
- Monitoring Well

TPH-D+HO Results
- Non-Detect
- Detected Concentration ≤ MTCA Method A Groundwater CUL
- Detected Concentration > MTCA Method A Groundwater CUL

Site Features
- Agreed Order Boundary
- Abandoned Rail Spur

IA Features
- Proposed Excavation Footprint

Notes:
- Only results from groundwater samples collected from existing monitoring wells at the Site are shown on this figure.
- All results are shown in micrograms per liter (ug/L).
- The MTCA Method A Groundwater CUL for Total cPAHs is 0.10 ug/L.

cPAHs: carcinogenic polycyclic aromatic hydrocarbons
CUL: Cleanup Level

0 250 500 Feet

PIONEER TECHNOLOGIES CORPORATION

Total cPAHs Results in Groundwater
Interim Action Plan
Solid Wood Incorporated Site

Figure 8

Document Path: G:\Projects\City of Olympia\GIS\Maps\2026\Solid Wood IAWP\Figure 8 Total cPAHs Results in GW.mxd; Author: KI; Date Saved: 5/27/2026

Tables

Table 1. Summary of IA-Related Investigations with Sampling Locations and Laboratory Analyses to Date

Date	Activity (Document)	Total # of Soil Sampling Locations[1]	Sampling Location IDs[2]	Laboratory Analyses	Investigation Acivities & Findings, or Work Plan Objectives
June 2004	2004 Phase II ESA (Parametrix 2004)	14	N/A	IA-related: TPH & PAHs other: SVOCs, VOCs, Metals, Dioxin, Pesticides/PCBs	In soil, TPH-D, TPH-HO, mineral oil, and metals were detected at concentrations less than SLs.
December 2007	2007 Phase II ESA (Parametrix 2007)	14	SB-02, SB-04, SS-1 through SS-09, SS-11, SS-14, SS-15	IA-related: TPH & PAHs other: SVOCs, VOCs, Metals, Dioxin, Pesticides/PCBs	Investigation activities occured at the BNSF ROW property. samples along the length of the BNSF rail line and analyzing those samples for constituents expected to be associated with historic railroad activities (i.e., dioxins, pesticides, PCBs, PAHs, VOCs, SVOCs, and TPH). The samples were collected in February 2007 and sampling locations were "strategically planned for areas where the right-of-way was the shortest in width so as to provide samples as close as possible to the rail spur without going over the right-of-way" (Parametrix 2007). In soil, dioxins, pesticides, herbicides, and metals were detected at concentrations less than SLs. PAHs, TPH-D, and motor oil were detected at concentrations greater than SLs.
December 2007	2007 Phase II ESA follow-up (Parametrix 2008)	7	SB-08 through SB-11, SB-17 through SB-19	IA-related: TPH & PAHs other: BTEX, lead	Soil and groundwater samples (SB-08 through SB-21) were collected in the upland areas. Soil samples were analyzed for BTEX, TPH-D, TPH-HO, PAHs, and lead. In soil, TPH-HO and cPAHs were detected at concentrations greater than SLs.
May 2008	2007 Phase II ESA follow-up (Parametrix 2008)	9	SB-24 through SB-32	IA-related: TPH & PAHs other: VOCs, metals	Soil and groundwater samples (SB24 through SB32) were collected in the upland areas. Soil samples were analyzed for VOCs, TPH-D, TPH-HO, PAHs, and metals. In soil, cPAHs were detected at concentrations greater than SLs.
October 2008	Work Plan (Parametrix 2008)	N/A	N/A	N/A	An RI/FS and IA Work Plan was prepared. This primary planning document also presented results from soil, groundwater, and sediment samples collected subsequent to the two Phase II ESAs (listed above).
January 2009	Work Plan Addendum (Parametrix 2009)	N/A	N/A	N/A	To further evaluate the groundwater plume near SB19, RI/FS and IA Work Plan Addendum No. 1 – Soil Sampling from Monitoring Well Borings Downgradient of SB19 was issued. The addendum proposed that soil samples be collected from the three wells that were installed downgradient of SB19.

Table 1. Summary of IA-Related Investigations with Sampling Locations and Laboratory Analyses to Date

Date	Activity (Document)	Total # of Soil Sampling Locations[1]	Sampling Location IDs[2]	Laboratory Analyses	Investigation Acivities & Findings, or Work Plan Objectives
August & September 2009	Interim Action Sampling (Parametrix 2010)	27	ABT-10 through ABT-04, ASW-01 through ASW-07, BBT-01, BBT-02, BSW-01, BSW-02, BSW-04 through BSW-06, BSW-32, CB-01 through CB-04, DBT-03, DBT-04, DSW-06, DSW-07	IA-related: TPH & PAHs Other: SVOCs, VOCs, Metals, Dioxins/Furans, Pesticides/PCBs	Confirmation sidewall and excavation bottom samples and stockpile samples were collected from each IA excavation area. All confirmation sample concentrations that remained in-place were below selected remedial levels. If a confirmation samples exceeded an RL, the excavation was extended and the confirmation sample that exceeded was removed.
September 2010	Interim Action Report (Parametrix 2010)	N/A	N/A	N/A	The Solid Wood Incorporated Site (West Bay Park) Interim Action Report described cleanup activities performed at the property in 2009.
September 2012	Draft Data Gap Sampling Report (Parametrix 2014)	14	SB33 through SB46	cPAHs	No cPAH concentrations were detected at concentrations greater than the SL.
January 2013	Solid Wood Incorporated Site RI/FS and IA Work Plan Addendum No. 6 – Additional Oil Stain Investigation Sampling and Analysis Plan (Parametrix 2013)	N/A	N/A	N/A	Plans to investigate an oil stain adjacent to the former Solid Wood facility were presented in the RI/FS and IA Work Plan Addendum No. 6. The sampling plan described the process that would be used to characterize the oil stain area using a test pit and single groundwater sample.
November 2013	Draft Data Gap Sampling Report (Parametrix 2014)	14	SB47 through SB60	TPH-D and TPH-HO	TPH-HO was detected at concentrations greater than the SL. Soil contamination was not completely delineated north of the oil stain.
August 2022	Data Gap Investigation Work Plan for the Solid Wood, Inc. Site RI/FS Report, Olympia, Washington (PIONEER 2022)	N/A	N/A	N/A	Plans to perform additional soil and sediment characterization were presented in the Data Gaps Investigation Work Plan for the RI/FS at the Solid Wood Incorporated Site. The proposed sampling and analysis plan was based on comments received by the Washington State Department of Ecology's comments on the Draft RI/FS Report submitted in October 2015. The work plan described additional characterization (i.e., SMS suite analysis and bioassay testing) to take place in sediment proximate to the footprint where historical log rafting activities took place. Sampling also included collecting soil samples and analyzing those samples for cPAHs to delineate the vertical extent of contamination of cPAHs in soil.

Table 1. Summary of IA-Related Investigations with Sampling Locations and Laboratory Analyses to Date

Date	Activity (Document)	Total # of Soil Sampling Locations[1]	Sampling Location IDs[2]	Laboratory Analyses	Investigation Acivities & Findings, or Work Plan Objectives
April 2023	City of Olympia Solid Wood Incorporated Site Results of Soil and Sediment Samples Collected as Part of the Data Gaps Investigation (Appendix F)	11	SS01 through SS08, SS11, SB26, SB29, and SB30	cPAHs	Analytical results for cPAHs in soil were compared to the MTCA Method A CUL of 0.10 mg/kg. All concentrations were less than the MTCA Method A CUL. No further soil characterization was recommended.
		110			

Notes:

BTEX: benzene, toluene, ethylbenzene, and xylenes; cPAH: carcinogenic polycyclic aromatic hydrocarbons; CUL: cleanup level; ESA: environmental site assessment; FS: feasibility study; IA: interim action; MTCA: Model Toxics Control Act; PAH: polycyclic aromatic hydrocarbons; PCB: polychlorinated biphenyl; RI: remedial investigation; ROW: railroad right-of-way; SL: screening level; SVOC: semi-volatile organic compound; TPH: total petroleum hydrocarbons; TPH-D: total petroleum hydrocarbons in the diesel range; TPH-HO: total petroleum hydrocarbons in the heavy oil range; VOC: volatile organic compound

[1] Sampling activities may have included other media. These totals include only samples taken from soil in place as of January 2026

[2] Some sampling locations were removed as part of the 2009 IA, those sampling locations are not included in this table

Table 2. MTCA Method A Cleanup Level Exceedances in In-Place Soil

Constituent	Number of Samples	Number of Detected Results	Frequency of Detection (%)	Maximum Detected Concentration (mg/kg)	MTCA Method A Cleanup Level (Table 740-1) (mg/kg)	Does the Maximum Detected Concentration Exceed the SL? (Yes / No)
Total Petroleum Hydrocarbons						
TPH-G	7	0	0.0	--	30	No
TPH-D+HO	73	45	62	17,750	2,000	Yes
Volatile Organic Compounds						
1,1,1-Trichloroethane	7	0	0.0	--	2.0	No
Benzene	37	0	0.0	--	0.030	No
Ethylbenzene	37	0	0.0	--	6.0	No
Methylene Chloride	7	0	0.0	--	0.020	No
Tetrachloroethylene	7	0	0.0	--	0.050	No
Toluene	37	2	5.4	0.038	7.0	No
Total Xylenes	28	1	3.6	0.0010	9.0	No
Trichloroethylene	7	0	0.0	--	0.030	No
Pesticides/SVOCs						
DDT	11	5	45	0.0013	3.0	No
1,2-Dibromoethane (EDB)	7	0	0.0	--	0.0050	No
Methyl tert-Butyl Ether (MTBE)	7	0	0.0	--	0.10	No
Metals						
Arsenic, Inorganic	23	10	43	2.7	20	No
Cadmium	23	2	8.7	0.11	2.00	No
Chromium, Total	23	23	100	34	2,000	No
Lead and Compounds	54	22	41	30	250	No
Mercury	23	10	43	0.13	2.0	No
PAHs						
Total cPAHs	89	44	49	0.31	0.10	Yes
Total Naphthalenes	37	20	54	0.76	5.0	No
PCBs						
Total PCBs (Sum Aroclors)	14	2	14	0.023	1.0	No

Notes:

--: Constituent not detected in any samples.

Table 3. IA-Related TPH and Total cPAH Soil Concentrations

Site ID	Sample Depth (feet bgs)	Date	TPH-G		TPH-D		TPH-HO		TPH-D+HO		Total cPAHs	
			Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
SB-02	2	1/1/2007	--		17	JB	--		17	JB	0.0049	J
SB-04	3	1/1/2007	--		20	JB	--		20	JB	0.050	
SB-08	2	12/3/2007	--		29	U	93		108		0.0092	
SB-09	2	12/3/2007	--		29	U	57	U	86	U	0.012	U
SB-10	2	12/3/2007	--		28	U	55	U	83	U	0.011	U
SB-11	2	12/7/2007	--		30	U	70		85		0.012	U
SB-17	6.5	12/7/2007	--		35	U	1,600		1,618		0.023	
SB-18	6.5	12/7/2007	--		39	U	110		130		0.029	
SB-19	6.5	12/7/2007	--		28	U	55	U	83	U	0.011	U
SB-25	3.5	5/27/2008	--		28	U	56	U	84	U	0.0075	
SB-26	4	5/27/2008	--		170		580		750		0.14	
	6	4/10/2023	--		--		--		--		0.0099	J
SB-27	3	5/27/2008	--		27	U	130		144		0.011	U
SB-28	2	5/27/2008	--		130		460		590		0.0052	
	5.5	5/27/2008	--		29	U	260		275		0.0073	
SB-29	4	5/27/2008	--		65		540		605		0.31	
	6	2/28/2023	--		--		--		--		0.019	U
SB-30	4	5/27/2008	--		71		240		311		0.14	
	4	5/27/2008	--		120		330		450		0.15	
	6	2/28/2023	--		--		--		--		0.015	U
SB-31	2	5/27/2008	--		50	U	545		570		0.0058	
SB-32	9	5/28/2008	--		34	U	68	U	102	U	0.014	U
SB-33	0.5	9/27/2012	--		--		--		--		0.016	
SB-34	1.5	9/27/2012	--		--		--		--		0.0099	U
SB-35	1.5	9/27/2012	--		--		--		--		0.0099	U
SB-36	1.5	9/27/2012	--		--		--		--		0.040	
SB-37	0.5	9/27/2012	--		--		--		--		0.0095	
	2 – 3	9/27/2012	--		--		--		--		0.0085	
SB-38	0.5	9/27/2012	--		--		--		--		0.0045	
SB-39	0.5	9/27/2012	--		--		--		--		0.0057	
SB-40	0.5	9/27/2012	--		--		--		--		0.0060	
	0.5	9/27/2012	--		--		--		--		0.0063	
SB-41	1	9/27/2012	--		--		--		--		0.035	
SB-42	2	9/27/2012	--		--		--		--		0.010	U
SB-43	1.5	9/27/2012	--		--		--		--		0.030	
SB-44	1	9/27/2012	--		--		--		--		0.0099	U
SB-45	1.5	9/27/2012	--		--		--		--		0.0051	
SB-46	0.5	9/27/2012	--		--		--		--		0.053	
SB-47	1	9/27/2012	5.1	U	360	U	**11,000**		**11,180**		0.051	U
	3.5	9/27/2012	5.5	U	1,500	U	**17,000**		**17,750**		0.051	U
	3.5	9/27/2012	5.0	U	600	U	**16,000**		**16,300**		0.051	U
SB-48	7	11/6/2013	--		680	U	**12,000**		**12,340**		--	
SB-49	6	11/6/2013	--		48	U	530		554		--	
SB-50	6	11/6/2013	--		36	U	150		168		--	
SB-50	6	11/6/2013	--		--		150		150		--	
SB-51	7	11/6/2013	--		27	U	55	U	82	U	--	
SB-52	7	11/6/2013	--		41	U	89		110		--	
SB-53	7	11/6/2013	--		59	U	360		390		--	
SB-54	6.5	11/6/2013	--		65	U	390		423		--	
SB-55	7	11/6/2013	--		60	U	1,100		1,130		--	
SB-56	1	11/6/2013	--		42	U	210		231		--	
SB-57	8	11/6/2013	--		42	U	210		231		--	
SB-58	7	11/6/2013	--		60	U	480		510		--	
SB-59	6	11/6/2013	--		150	U	**3,200**		**3,275**		--	
	6	11/6/2013	--		30	U	420		435		--	
SB-60	7	11/6/2013	--		35	U	92		110		--	

Table 3. IA-Related TPH and Total cPAH Soil Concentrations

Site ID	Sample Depth (feet bgs)	Date	TPH-G		TPH-D		TPH-HO		TPH-D+HO		Total cPAHs	
			Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
SS-01	0 – 0.5	1/1/2007	--		6.5	U	--		6.5	U	0.040	
	2	4/11/2023	--		--		--		--		0.016	U
SS-02	0 – 0.5	1/1/2007	--		5.9	U	--		5.9	U	0.025	
	2	4/11/2023	--		--		--		--		0.015	U
SS-03	0 – 0.5	1/1/2007	--		22	J	--		22	J	0.16	
	2	4/11/2023	--		--		--		--		0.016	U
SS-04	0 – 0.5	1/1/2007	--		5.9	J	--		5.9	J	0.045	
	2	4/11/2023	--		--		--		--		0.017	U
SS-05	0 – 0.5	1/1/2007	--		5.9	U	--		5.9	U	0.22	
SS-06	0 – 0.5	1/1/2007	--		19	J	--		19	J	0.17	
	2	4/10/2023	--		--		--		--		0.052	J
SS-07	0 – 0.5	1/1/2007	--		6.0	U	--		6.0	U	0.012	J
	0 – 0.5	1/1/2007	--		5.9	U	--		5.9	U	0.0050	J
	2	4/10/2023	--		--		--		--		0.016	U
	6	4/10/2023	--		--		--		--		0.019	U
SS-08	2	4/10/2023	--		--		--		--		0.019	U
	6	4/10/2023	--		--		--		--		0.018	U
	6	4/10/2023	--		--		--		--		0.019	U
SS-11	0 – 0.5	1/1/2007	--		19	JB	--		19	JB	0.011	J
	2	4/10/2023	--		--		--		--		0.020	U
	6	4/10/2023	--		--		--		--		0.015	J
CB-04	3	8/12/2009	11.0	U	75		130		205		0.011	U

Notes:

-- Constituent not analyzed

All results are presented in milligrams per kilogram (mg/kg).

Yellow highlighted concentrations were > the screening level.

Screening levels were retrieved from Ecology's CLARC tables, updated February 2026.

TPH-G: 30 mg/kg

TPH-D: 2,000 mg/kg

TPH-HO: 2,000 mg/kg

TPH-D+HO: 2,000 mg/kg

Total cPAHs: 0.10 mg/kg

Qualifiers

J: Estimate; JB: The analyte was positively identified in a sample, but its reported concentration is considered an estimated value because the same analyte was also detected in the associated blank sample; U: Non detect

Table 4. TPH and Total cPAH Groundwater Concentrations in Monitoring Wells

Site ID	Date	TPH-G		TPH-D		TPH-HO		TPH-D+HO		Total cPAHs	
		Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
MW-01	1/28/2009	--		130	U	200	U	330	U	0.029	U
	5/6/2009	100	U	170	U	270	U	440	U	0.029	U
	7/30/2009	--		180	U	280	U	460	U	0.029	U
	11/5/2009	--		180	U	290	U	470	U	0.030	U
	11/5/2009	--		170	U	280	U	450	U	0.030	U
MW-02	1/28/2009	--		130	U	250		315		0.029	U
	5/6/2009	100	U	170	U	270	U	440	U	0.029	U
	5/6/2009	100	U	170	U	270	U	440	U	0.029	U
	7/30/2009	--		170	U	270	U	440	U	0.029	U
	11/5/2009	--		170	U	270	U	440	U	0.0082	
MW-03	1/28/2009	--		130	U	200	U	330	U	0.029	U
	1/28/2009	--		130	U	200	U	330	U	0.029	U
	5/6/2009	100	U	170	U	270	U	440	U	0.029	U
	7/30/2009	--		170	U	270	U	440	U	0.028	U
	7/30/2009	--		170	U	270	U	440	U	0.028	U
	11/5/2009	--		180	U	280	U	460	U	0.030	U
MW-04	1/28/2009	--		130	U	200	U	330	U	0.028	U
	5/6/2009	100	U	170	U	270	U	440	U	0.029	U
	7/30/2009	--		170	U	270	U	440	U	0.030	U
	11/5/2009	--		170	U	280	U	450	U	0.030	U
MW-05	1/29/2009	--		130	U	210	U	340	U	0.030	U
	5/5/2009	100	U	170	U	270	U	440	U	0.029	U
	7/29/2009	--		170	U	270	U	440	U	0.029	U
	11/18/2009	--		180	U	290	U	470	U	0.029	U
MW-06	1/29/2009	--		130	U	200	U	330	U	0.028	U
	5/5/2009	100	U	180	U	290	U	470	U	0.029	U
	7/29/2009	--		180	U	280	U	460	U	0.029	U
	11/5/2009	--		180	U	280	U	460	U	0.033	U
MW-07	1/29/2009	--		130	U	200	U	330	U	0.029	U
	5/5/2009	100	U	170	U	270	U	440	U	0.029	U
	7/29/2009	--		170	U	270	U	440	U	0.029	U
	11/5/2009	--		180	U	290	U	470	U	0.030	U

Notes:

-- Constituent not analyzed

All results are presented in micrograms per liter (ug/L).

Yellow highlighted concentrations were > the screening level.

Screening levels were retrieved from Ecology's CLARC tables, updated February 2026.

TPH-G: 800 ug/L

TPH-D: 500 ug/L

TPH-HO: 500 ug/L

TPH-D+HO: 500 ug/L

Total cPAHs: 0.10 ug/L

Qualifiers

J: Estimate; JB: The analyte was positively identified in a sample, but its reported concentration is considered an estimated value because the same analyte was also detected in the associated blank sample; B: The analute was detected in the method blank; U: Non detect

Table 5. Key Anticipated IA Roles and Responsibilities

Role	Name	Contact Information	Key Investigation Responsibilities
Ecology Site Manager	Steve Teel, LHG	steve.teel@ecy.wa.gov 360-890-0059 (O)	▪ Lead public participation and tribal engagement for IAWP ▪ Review and approve IAWP ▪ Review and approve IA plans and specifications ▪ Conduct field oversight as necessary
City Parks Planning and Design Manager	Laura Keehan	lkeehan@ci.olympia.wa.us 360-570-5855 (O)	▪ Provide City engineering direction and technical support for IA implementation ▪ City's Designated Project Coordinator for Agreed Order DE-08-TCPSR-5415 ▪ Lead remediation contractor bidding and contracting process ▪ Ensure necessary permits are obtained ▪ Manage team performance, budget, and schedule for IA implementation ▪ Support IA communication with Ecology
PIONEER PM and Project Engineer	Hannah Morse, PE	morseh@uspioneer.com 360-570-1700 (O) 360-556-7642 (C)	▪ Prepare IAWP ▪ Manage overall completion of the IA ▪ Review consultant team documents ▪ Communicate and coordinate with City, Ecology, and consultant team ▪ Prepare IA Report
PIONEER SSO for RDI Fieldwork	TBD	TBD	▪ Provide oversight of Remediation Contractor IA field activities ▪ Coordinate and oversee completion of all RDI fieldwork ▪ Implement PIONEER HASP
PIONEER Health and Safety Manager	Kevin Gallagher, ASP, CSP	gallagherk@uspioneer.com 360-570-1700 (O) 206-226-3623 (C)	▪ Provide health and safety support as necessary
Design Engineer	TBD	TBD	▪ Provide input and approval (if warranted) for planned structural reinforcement of BNSF trestle. ▪ Finalize the IA design plans and specifications ▪ Provide support for Remediation Contractor bidding and construction
Licensed Driller (Holocene Drilling)	Anisa Harnden	aharnden@holocenedrilling.com 253-848-6500	▪ Advance soil borings as necessary
Project Laboratory	Libby Environmental, Inc.	TBD	▪ Perform laboratory analyses for confirmation soil samples ▪ Perform associated laboratory quality control
Data Quality Validator (QA/QC Solutions)	James McAteer	jjmcateer@msn.com 503-763-6948	▪ Perform independent data quality validation of laboratory data from the project laboratory
Remediation Contractor[(1)]	TBD	TBD	▪ Communicate and coordinate with the City Parks Planning and Design Manager, Design Engineer, and PIONEER PM ▪ Adhere to the plans, specifications, contract requirements, and permit requirements ▪ Implement remediation contractor HASP

Notes:

EDR: engineering design report; HASP: health and safety plan; IA: interim action; IAWP: interim action work plan; PM: project manager; RDI: remedial design investigation; SSO: site safety officer; TBD: to be determined

(1) Key remediation contractor roles are anticipated to include PM, supervisor/foreman, and SSO.

Appendices

Appendix A

Parametrix *inspired people - inspired solutions - making a difference*

Log ID: MW-01

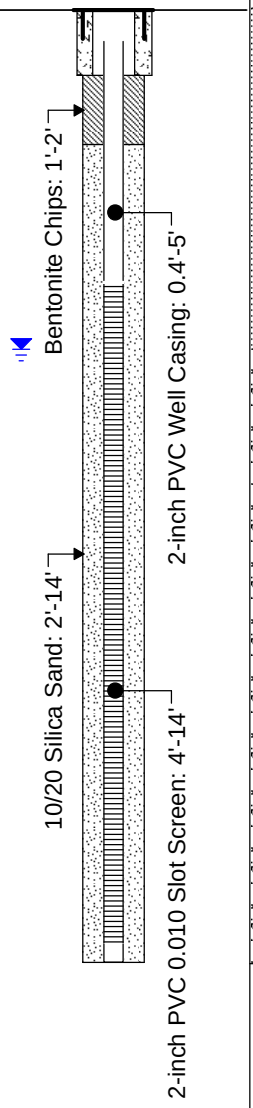
Project Name: West Bay RI/FS
Project #: 235-1577-024
Location: Olympia, WA
Coordinates:

Drilling Company: ESN Northwest
Drilling Method: HSA
Logged by: David Dinkuhn, P.E.
Checked by: M. Marshall, R.G.

Drilling Dates: 7/14/08
Boring Depth: 14 ft
Depth to Water: 5 ft
Ground Elevation:

Depth (ft)	Lithologic Symbol	Description/Classification of Materials	Sample Details: PID (ppm)	Sample Details: Sample ID	Sample Details: Recovery
0		Ground Surface			
0		**Silty Sandy Gravel (FILL)** Gray, damp, no odor	0		44/48
5		**Sand (SP)** Gray to black, medium grained, no odor, wet (beach) 30% shells 5 to 7 feet interbedded with sand 10% shells 7 to 12 feet	0		44/48
10			0		48/48
		Bottom of boring at 14 feet below ground surface.			
15					
20					

Boring Diagram



Lithologic Symbol
Depth (ft)

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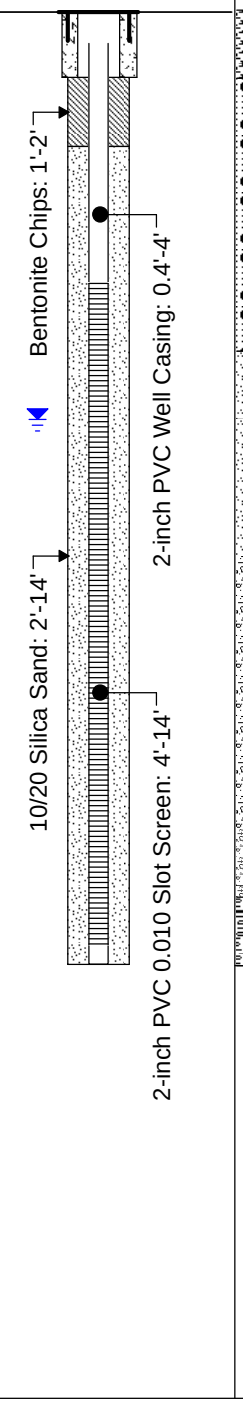
Log ID: MW-02/BBK307

Project Name: West Bay RI/FS
Project #: 235-1577-024
Location: Olympia, WA
Coordinates:

Drilling Company: ESN Northwest
Drilling Method: HSA
Logged by: L. Linde
Checked by: M. Marshall, R.G.

Drilling Dates: 1/13/09
Boring Depth: 14 ft
Depth to Water: 6 ft
Ground Elevation:

Depth (ft)	Lithologic Symbol	Description/Classification of Materials	Sample Details: PID (ppm)	Sample ID	Recovery
0		Ground Surface			
0		**Bark Debris**			
		Sand and Gravel (FILL) Moist, no odor	0		44/48
5		**Sand (SP)** Brown grading to gray, f-m, loose, NP, no odor Wet	0		38/48
		80% shells 8 to 12 feet, fine gravel lense with silt	0		32/48
10		100% shells 12 to 13 feet, wood plug in drill shoe			
		Silt (ML/CL) Dark brown to black, SP, loose, 25% shells, grades to clay/peat horizon, no odor	0		12/24
15		Bottom of boring at 14 feet below ground surface.			
20					



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Log ID: MW-03/BBK308

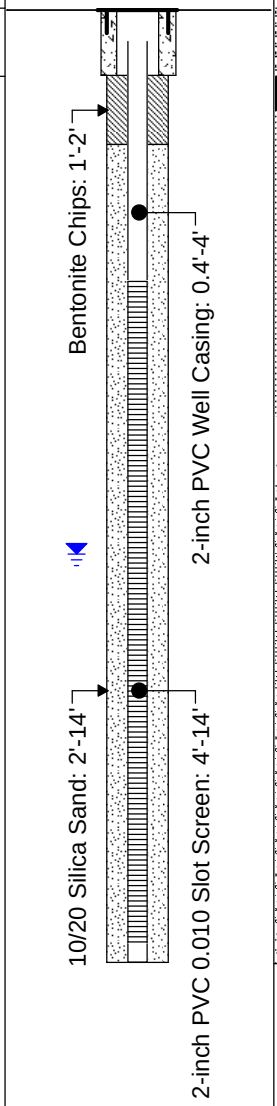
Project Name: West Bay RI/FS
Project #: 235-1577-024
Location: Olympia, WA
Coordinates:

Drilling Company: ESN Northwest
Drilling Method: HSA
Logged by: L. Linde
Checked by: M. Marshall, R.G.

Drilling Dates: 1/13/09
Boring Depth: 14 ft
Depth to Water: 6 ft
Ground Elevation:

Depth (ft)	Lithologic Symbol	Description/Classification of Materials	Sample Details: PID (ppm)	Sample ID	Recovery
0		Ground Surface			
		Bark Debris			
		Asphalt			
		Sand and Gravel (FILL) Brown, fine sand, no odor	0		36/48
5		Charred wood, no odor	0		36/48
		Sand (SP) Gray brown, f-m, loose, NP, 90% shells 7.5 to 13.5 feet, no odor Silt (ML) lense, wet	0		36/48
10		Shells absent	0		24/24
		Bottom of boring at 14 feet below ground surface.			
15					
20					

Boring Diagram



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Log ID: MW-04/BBK309

Project Name: West Bay RI/FS
Project #: 235-1577-024
Location: Olympia, WA
Coordinates:

Drilling Company: ESN Northwest
Drilling Method: HSA
Logged by: L. Linde
Checked by: M. Marshall, R.G.

Drilling Dates: 1/13/09
Boring Depth: 15 ft
Depth to Water: 8 ft
Ground Elevation:

Depth (ft)	Lithologic Symbol	Description/Classification of Materials	Sample Details: PID (ppm)	Sample ID	Recovery
0		Ground Surface			
		Asphalt/Quarry spall (RR ballast)			
		Sand and Gravel (FILL) Brown, fine sand, no odor	0		24/48
5		**Sand (SP)** Gray, f-m, loose, NP, moist, no odor 90% shells 5 to 11.5 feet	0		30/48
		Rust Wet			
10		Shells absent No Recovery, rock in shoe	0		48/48
			NS		0/24
15		Bottom of boring at 15 feet below ground surface.			
20					

Boring Diagram: Bentonite Chips: 1'-2'; 2-inch PVC Well Casing: 0'-4'; 10/20 Silica Sand: 2'-14'; 2-inch PVC 0.010 Slot Screen: 4'-14'

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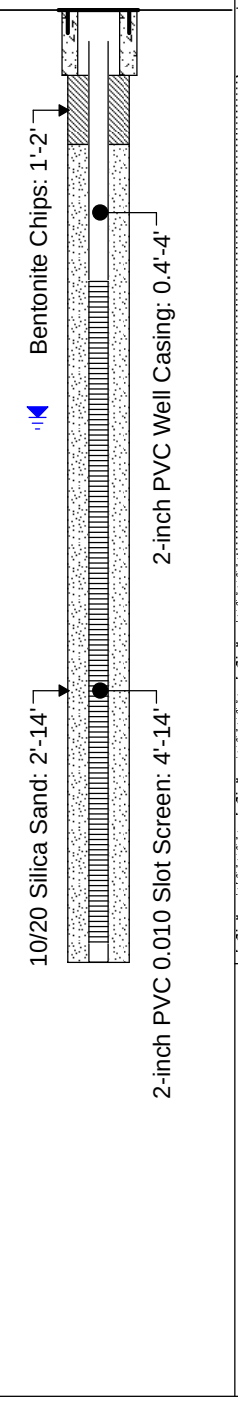
Log ID: MW-05/BBK310

Project Name: West Bay RI/FS
Project #: 235-1577-024
Location: Olympia, WA
Coordinates:

Drilling Company: ESN Northwest
Drilling Method: HSA
Logged by: L. Linde
Checked by: M. Marshall, R.G.

Drilling Dates: 1/14/09
Boring Depth: 15 ft
Depth to Water: 6 ft
Ground Elevation:

Depth (ft)	Lithologic Symbol	Description/Classification of Materials	Sample Details: PID (ppm)	Sample ID	Recovery
0		Ground Surface			
0		**Bark and Organic Debris**			
		Sand and Gravel (FILL) Brown, fine sand, no odor	0		30/48
5		Wet	0		45/48
		Sand (SP) Gray, f-m, loose, NP, moist, no odor, 100% shells, alternating sand and 80% shells 8 to 14 feet	0		42/48
10			0		14/24
15		Bottom of boring at 14 feet below ground surface.			
20					



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Log ID: MW-06/BBK311

Project Name: West Bay RI/FS
Project #: 235-1577-024
Location: Olympia, WA
Coordinates:

Drilling Company: ESN Northwest
Drilling Method: HSA
Logged by: L. Linde
Checked by: M. Marshall, R.G.

Drilling Dates: 1/14/09
Boring Depth: 15 ft
Depth to Water: 6 ft
Ground Elevation:

Depth (ft)	Lithologic Symbol	Description/Classification of Materials	Sample Details: PID (ppm)	Sample ID	Recovery	Boring Diagram	Lithologic Symbol	Depth (ft)
0		Ground Surface						0
		Bark Debris						
		Sand and Gravel (FILL) No odor						
		Sawdust	0		36/48			
5		**Creosote Piling and Associated Debris**						5
		Sand (SP) Gray, f-m, loose, NP, moist, no odor, 75% shells 7 to 13.5 feet, saturated						
			0		18/48			
10								10
			0		46/48			
		Shells absent	0		24/24			
		Bottom of boring at 14 feet below ground surface.						
15								15
20								20

Boring Diagram: Bentonite Chips: 1'-2'; 2-inch PVC Well Casing: 0.4'-4'; 10/20 Silica Sand: 2'-14'; 2-inch PVC 0.010 Slot Screen: 4'-14'

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Log ID: MW-07/BBK312

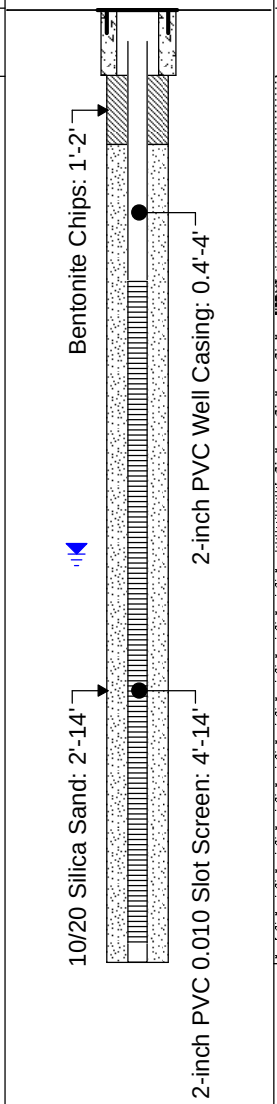
Project Name: West Bay RI/FS
Project #: 235-1577-024
Location: Olympia, WA
Coordinates:

Drilling Company: ESN Northwest
Drilling Method: HSA
Logged by: L. Linde
Checked by: M. Marshall, R.G.

Drilling Dates: 1/14/09
Boring Depth: 15 ft
Depth to Water: 8 ft
Ground Elevation:

Depth (ft)	Lithologic Symbol	Description/Classification of Materials	Sample Details: PID (ppm)	Sample ID	Recovery
0		Ground Surface			
		Bark Debris			
		Sand and Gravel (FILL) No odor	0		24/48
		Sand (SP) Gray, f-c, loose, NP, moist, no odor Organics 50% shells 4.5 to 7.5 feet	0		40/48
		Silt lense, no odor Purple, 90% shells 8 to 14 feet, saturated	0		44/48
			0		12/24
		Bottom of boring at 14 feet below ground surface.			

Boring Diagram



Lithologic Symbol | Depth (ft)
0 5 10 15 20

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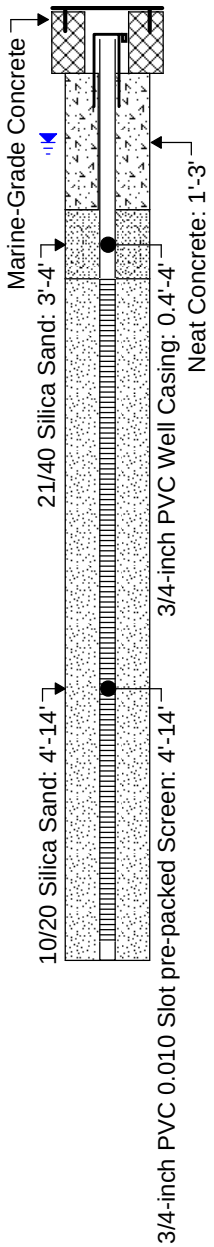
Log ID: MW-08/BCC757

Project Name: West Bay RI/FS
Project #: 235-1577-024
Location: Burner Point
Coordinates: N47°03'10.2" / W122°54'41.6"

Drilling Company: ESN Northwest
Drilling Method: Direct Push
Logged by: L. Linde
Checked by: M. Marshall, L.G.

Drilling Dates: 1-21-2010
Boring Depth: 14 ft
Depth to Water: 2 ft
Ground Elevation: ~11 ft

Depth (ft)	Lithologic Symbol	Description/Classification of Materials	Sample Details: PID (ppm)	Sample Details: Sample ID	Sample Details: Recovery	Boring Diagram	Lithologic Symbol	Depth (ft)
0		Ground Surface						0
		Imported Gravel and Cobble (Fill) Brown						
10		**Sand (Native)** Gray, shells, easy drilling						10
		Bottom of boring at 14 feet below ground surface.						
15								15
20								20



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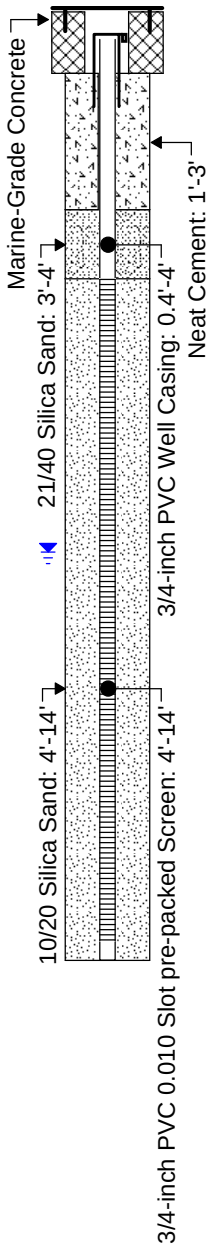
Log ID: MW-09/BCC758

Project Name: West Bay RI/FS
Project #: 235-1577-024
Location: Burner Point
Coordinates: N47°03'09.8" / W122°54'40.6"

Drilling Company: ESN Northwest
Drilling Method: Direct Push
Logged by: L. Linde
Checked by: M. Marshall, L.G.

Drilling Dates: 1-21-2010
Boring Depth: 14 ft
Depth to Water: 8 ft
Ground Elevation: ~9 ft

Depth (ft)	Lithologic Symbol	Description/Classification of Materials	Sample Details: PID (ppm)	Sample Details: Sample ID	Sample Details: Recovery	Boring Diagram	Lithologic Symbol	Depth (ft)
0		Ground Surface						0
		Imported Gravel and Cobble (Fill) Brown						
5								5
10								10
		Bottom of boring at 14 feet below ground surface.						
15								15
20								20



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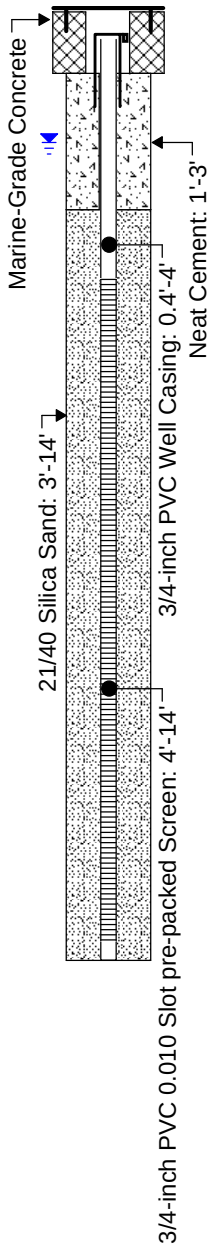
Log ID: MW-10/BCC759

Project Name: West Bay RI/FS
Project #: 235-1577-024
Location: Burner Point
Coordinates: N47°03'09.3" / W122°54'41.3"

Drilling Company: ESN Northwest
Drilling Method: Direct Push
Logged by: L. Linde
Checked by: M. Marshall, L.G.

Drilling Dates: 1-22-2010
Boring Depth: 14 ft
Depth to Water: 2 ft
Ground Elevation: 12 ft

Depth (ft)	Lithologic Symbol	Description/Classification of Materials	Sample Details: PID (ppm)	Sample Details: Sample ID	Sample Details: Recovery	Boring Diagram	Lithologic Symbol	Depth (ft)
0		Ground Surface						0
		Imported Gravel and Cobble (Fill) Brown						
5								5
10		Hard drilling, difficult to advance						10
		Sand (Native) Gray, shells, easy drilling						
		Bottom of boring at 14 feet below ground surface.						
15								15
20								20



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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 235-1577-024 BORING/WELL NUMBER # SB-01

PROJECT NAME Westbay Rail Spur Phase II DATE COMPLETED 2/9/07

LOCATION Olympia, WA TOTAL DEPTH OF BORING 12 ft

COORDINATES N/A INITIAL WATER LEVEL ▽ 8 ft

DRILLING METHOD Direct Push STATIC WATER LEVEL ▼ N/A

SAMPLING METHOD Split Spoon LOGGED BY M Bethune

GROUND ELEVATION Sea level TOP OF CASING ELEVATION N/A

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		24/48	SB-1-02		0	SW		Sand, SW, 10YR 4/2, somewhat Plastic, DRY, Fine - course, black discoloration	0	
						GW		Gravel - GW - 10YR 4/2 non plastic, Fine - medium, Dry, no odor		
					5				5	Bentonite Chip Backfill →
		34/48				SW		0-6" same as above no discoloration.		
		44/48	SB-1-08				▽	6-36" Sand, SW, 10YR 4/2 Grading to 10YR 5/1, Fine - course, Damp, shell material last 6"		
					10				10	
								Same as above but increasing shell 80% shell 20% sand		
					15				15	
					20				20	
					25				25	

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER	235 1577 024	BORING/WELL NUMBER #	SB-02
PROJECT NAME	Westbay Rail Spur Phase II	DATE COMPLETED	2 9 07
LOCATION	Olympia WA	TOTAL DEPTH OF BORING	12 Ft
COORDINATES	N/A	INITIAL WATER LEVEL ▽	8 Ft
DRILLING METHOD	Direct Push	STATIC WATER LEVEL ▼	N/A
SAMPLING METHOD	Split Spoon	LOGGED BY	Bethune
GROUND ELEVATION	Sea level	TOP OF CASING ELEVATION	N/A

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		32/48	SB-2-02		0	SW		2" Bark, 2-5" Sand, SW	0	
						Bark		5-7" Bark		
						GW		7-9" Gravel/sand		
						SW		9-32" Sand w/ Silt		
		36/48			5	SM		Bark - 10YR 2/1, NP, DRY.	5	Bentonite Chip Backfill
								Sand gravel - SW, 10YR 4/2, NP, Fine-Course - DRY, 75% Sand 25% Gravel		
		44/48					▽	Sandy Silt, SM 5YR 5/3, NP Fine-course, DRY, iron staining.		
					10	SW		Sand SW 10YR 4/2	10	
								Same as above		
								Damp Shell material		
								No odor		
					15				15	
								Same as above But wet		
					20				20	
					25				25	

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 235 1577 024 | BORING/WELL NUMBER # SB-03
PROJECT NAME Westbay Rail Spur | DATE COMPLETED 2907
LOCATION Olympia, WA | TOTAL DEPTH OF BORING 12 Ft
COORDINATES N/A | INITIAL WATER LEVEL ▽ 9FT
DRILLING METHOD Direct Push | STATIC WATER LEVEL ▼ N/A
SAMPLING METHOD Split Spoon | LOGGED BY M Bethune
GROUND ELEVATION Sea level | TOP OF CASING ELEVATION @ N/A

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		32/48	SB-3-03		0	Asphalt		0-6" asphalt 6"-30" Sand 10YR 4/2, NP, Fine-Course, Damp 12-24" Gravel, GW, 10YR 3/3, NP, Fine-medium, Damp, Black discoloration petroleum odor/Slight	0	
		18/48			5	SW			5	Bentonite Chip Backfill
		48/48	SB-3-04		10	GW		30-32" Gravel, GW, same as above. 0-12" same as above 12-48" Wood 0-48" = Wood	10	
					15	WD			15	
					20				20	
					25				25	

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER	235-1577-021	BORING/WELL NUMBER #	SB-04
PROJECT NAME	Westbay Bail Spur Phase II	DATE COMPLETED	2907
LOCATION	Olympia WA	TOTAL DEPTH OF BORING	8 Ft
COORDINATES	N/A	INITIAL WATER LEVEL ▽	4 Ft
DRILLING METHOD	Direct Push	STATIC WATER LEVEL ▼	N/A
SAMPLING METHOD	Split Spoon	LOGGED BY	Bethune
GROUND ELEVATION	Sea level	TOP OF CASING ELEVATION	NA

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		36/48	SB-4-03	Blast	0		Ballast	0-18" R-Road Balast 18-36" Sand, SW, 10YR 4/2 NP; Sand = Fine → course Gravel = Fine → med, DAMP Black discoloration @ 33" Lo 24" 33-36" mild Petroleum odor.	0	
		36/48	SB-4-04 SB-4-5D4		5		Sand	Gravel SW 10YR 4/2 75% Gravel, 25% Sand	5	Bentonite chip Backfill
					10			0-24" Gravel SAme as Above 24-48", Sand, SW, 10YR 4/2 → 10YR 4/1, Rest is Same as Above. Shells Bottom 18"	10	
					15				15	
					20				20	
					25				25	

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER	235-1577-024	BORING/WELL NUMBER #	SB-05
PROJECT NAME	Westbay Bail Spur Phase II	DATE COMPLETED	2-9-07
LOCATION	Olympia, WA	TOTAL DEPTH OF BORING	12 Ft
COORDINATES	N/A	INITIAL WATER LEVEL ▽	9 Ft
DRILLING METHOD	Direct Push	STATIC WATER LEVEL ▼	N/A
SAMPLING METHOD	Split Spoon	LOGGED BY	M Bethune
GROUND ELEVATION	Sea level	TOP OF CASING ELEVATION	N/A

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		24/48			Topsoil			0-4" Top soil 4-20" - Sand/Gravel, SW, 10YR 4/2, NP, Sand = Fine→Course Gravel = Fine→medium Damp Last 20-26" So Same as above w/ Black discoloration, smells of petroleum. 70% gravel, 30% Sand		
		34/48			SW	SW				Bentonite Backfill
			SB-5 8ft		5				5	
			SB-5 508							
		18/48	SB-5 09		10			0-10" same as above 10-48" Sand/Grave, SW, 10YR, 5/1, NP. Sand = Fine→Course, Gravel = Fine→medium, Damp ~ strong hydrocarbon or Diesel odor & visible Sheen on last 10 inches,	10	
					15			0-48" same as above	15	
					20			High Petroleum odor, Sheen visible Between 4 & 10 ft there was a petroleum odor, 8-9 ft Strongest	20	
					25				25	

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 235-1577-024
PROJECT NAME WestBay Rail Spur Phase II
LOCATION Olympia, WA
COORDINATES N/A
DRILLING METHOD Direct Push
SAMPLING METHOD Split Spoon
GROUND ELEVATION Sea Level

BORING/WELL NUMBER # SB-6
DATE COMPLETED 2/9/07
TOTAL DEPTH OF BORING 12 FT
INITIAL WATER LEVEL ▽ 8 FT
STATIC WATER LEVEL ▽ N/A
LOGGED BY L. Linde
TOP OF CASING ELEVATION N/A

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		32/48	SB-6		0	topsoil SW		0-4" topsoil 4-12" Sand, SW, 5YR 2.5/1, NP, sand f-m 75%, gravel f-m 25% dry, some bark & sm worms	0	
						GW		12-32" gravel, GW, 7.5YR 4/2, NP gravel m-c 80%, sand f-c 20% damp	5	Bentonite Chip Backfill
		46/48			5					
						SM	▽	0-2" bark/sluff 2-10" gravel same as above 10-48" Sand, SM 7.5YR 3/2 grading to 7.5YR 3/0, Plastic top 12" then grading to shells, sand f-m moist, iron staining in silty top 12", shell 10%		
		49/48			10				10	
								48" same as above, shell quantity decreases w/ 25% shell, wet		
					15				15	
					20				20	
					25				25	

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 235-1577-024
PROJECT NAME West Bay Rail Spur Phase II
LOCATION Olympia
COORDINATES N/A
DRILLING METHOD Direct Push
SAMPLING METHOD Split Spoon
GROUND ELEVATION Sea Level

BORING/WELL NUMBER # SB-7
DATE COMPLETED 2/9/07
TOTAL DEPTH OF BORING 12 FT
INITIAL WATER LEVEL ▽ 8 FT
STATIC WATER LEVEL ▼ N/A
LOGGED BY L. Hillside
TOP OF CASING ELEVATION N/A

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		32/48	SB-7			topsoil		0-5" topsoil w/ bark 5"-48" gravel GW, 10YR 3/2, NP, gravel f-m 10%, sand f-c 30%		
						GW				
					5			0-12" gravel as above moist near bottom	5	Bentonite Bark Fill
		32/48						12"-48" Sand SW 11YR 3/3, NP, f-m color grades to 2.5YR 3/0 increasing shell w/ depth & coloration moist		
						SW	▽			
		46/48			10			0-48" sand as above (2.5YR 3/0) shell increases from ~40% at top to 80% @ bottom, wet	10	
					15				15	
					20				20	
					25				25	

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 235-1577-021 03/03
PROJECT NAME West Bay Phase II/RI/FS
LOCATION Olympia
COORDINATES
DRILLING METHOD Geoprobe - Direct Push
SAMPLING METHOD
GROUND ELEVATION

BORING/WELL NUMBER # SB-08
DATE COMPLETED 12/3/07
TOTAL DEPTH OF BORING 12 ft
INITIAL WATER LEVEL ▽ 10.5 ft
STATIC WATER LEVEL ▼
LOGGED BY L. Linde
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous
		44/48	WB-SD-SB08-0020		0	Asphalt		0-1.5 ft asphalt & fill, petroleum odor
						Fill		1.5-5 ft Fill, gray, moist to wet, petroleum odor @ 2 ft, no odor from 4-5 ft, blue @ 2 ft
		44/48	WB-GW-SB08-0065		5	SM SW	▽	5-5.5 ft Silty sand, dark gray, some pebbles, wood, no odor, wet
		48/48			10			5.5-12 ft Sand, gray, some pebbles, 50% broken shell, no odor
					15			
					20			
					25			

DEPTH (ft.)	WELL DIAGRAM
0	
5	Bentonite Backfill
10	
15	
20	
25	

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 235-1577-024 03/03
PROJECT NAME West Bay Phase II/RI/FS
LOCATION Olympia
COORDINATES
DRILLING METHOD Geoprobe - Direct Push
SAMPLING METHOD
GROUND ELEVATION

BORING/WELL NUMBER # SB-09
DATE COMPLETED 12/3/07
TOTAL DEPTH OF BORING 12 ft
INITIAL WATER LEVEL ▽ 4 ft
STATIC WATER LEVEL ▼
LOGGED BY K. Linde
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous
		40/48	WB-SB-SB09-0020 WB-SB-SB09-0408		0	Asphalt		0-2" Asphalt 2"-4ft Fill, brown, moist to wet, @ 2ft slight petroleum odor & dine color
		12/48			5	Fill SM	▽	4-8 ft Silty sand, gray, wet, wood bottom 6", no odor
		40/48			10	Wood piling SW		8-11 ft wood, no odor 11-12 ft Sand, gray, wet, 50% broken shell, no odor
					15			
					20			
					25			

DEPTH (ft.)	WELL DIAGRAM
0	
5	Bentonite Backfill
10	
15	
20	
25	

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 235-1577-024 03/03
PROJECT NAME West Bay Phase II / RI/FS
LOCATION Olympia
COORDINATES
DRILLING METHOD Geoprobe - Direct Push
SAMPLING METHOD
GROUND ELEVATION

BORING/WELL NUMBER # SB-10
DATE COMPLETED 12/2/01
TOTAL DEPTH OF BORING 12 ft
INITIAL WATER LEVEL ▽ 4 ft
STATIC WATER LEVEL ▼
LOGGED BY L. Linde
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous
						Asphalt		0-2" Asphalt
		46/48	WB-SB-SB10-0020			Fill		2"-4 ft Fill, brown to gray, moist to wet, mild petroleum odor @ 2 ft
			WB-GW-SB10-0040		5		▽	4-12 ft Sand, gray, wet, 50% broken shell, 4-4.5 ft no shell, no odor
		42/48				SW		
		48/48			10			
					15			
					20			
					25			

DEPTH (ft.)	WELL DIAGRAM
5	Bentonite Backfill →
10	
15	
20	
25	

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 235-1577-024 03/03
PROJECT NAME West Bay Phase II/RI/FS
LOCATION Olympia
COORDINATES
DRILLING METHOD Geoprobe - Direct Push
SAMPLING METHOD
GROUND ELEVATION

BORING/WELL NUMBER # SB-11
DATE COMPLETED 12/7/07
TOTAL DEPTH OF BORING 8 ft
INITIAL WATER LEVEL ▽ 6 ft
STATIC WATER LEVEL ▼
LOGGED BY L. Linde
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
5.2 4.6		40/48	WB-SB-SB11-0020			Pavement Fill		0-5 ft Fill, brown to gray, moist, petroleum odor - slight @ 2-3 ft		
		30/40	WB-GW-SB11-0060		5	SW	▽	5-8 ft Sand, gray, wet, 50% broken shell, wood @ 6 ft	5	Bentonite Backfill
					10				10	
					15				15	
					20				20	
					25				25	

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 235-1577-024 03/03
PROJECT NAME West Bay Phase II/RI/FS
LOCATION Olympia
COORDINATES
DRILLING METHOD Geoprobe - Direct Push
SAMPLING METHOD
GROUND ELEVATION

BORING/WELL NUMBER # SB-12
DATE COMPLETED 12/7/07
TOTAL DEPTH OF BORING 8 ft
INITIAL WATER LEVEL ▽ 4 ft
STATIC WATER LEVEL ▼
LOGGED BY K. Linde.
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
6.3		11/48	WB-SS-SB12-0835		0	Asphalt		0-5 ft Fill, brown to gray, petroleum odor @ 3-3.5 ft strong, mild odor from 1-2 ft, wood @ 3.5 ft, moist to wet	0	
10.2		46/48	WB-GW-SB12-0040			Fill				
						Wood				
						Fill	▽			Bentonite Backfill
					5	SW		5-8 ft Sand, gray, wet, 50% broken shell, no odor	5	
					10				10	
					15				15	
					20				20	
					25				25	

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 235-1577-024 03/03
PROJECT NAME West Bay Phase II / RI/FS
LOCATION Olympia
COORDINATES
DRILLING METHOD Geoprobe - Direct Push
SAMPLING METHOD
GROUND ELEVATION

BORING/WELL NUMBER # SB-13
DATE COMPLETED 12/1/07
TOTAL DEPTH OF BORING 8 ft
INITIAL WATER LEVEL ▽ 4.5 ft
STATIC WATER LEVEL ▼
LOGGED BY L. Linde
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
52.7		24/48 48/48	WB-GW-SB13-0045 WB-SS-SB13-0060		0 5 10 15 20 25	Asphalt Fill Creosote Wood SW	▽	0-6 ft Fill, gray, moist to wet, no odor 6-7 ft Creosote wood 7-8 ft Sand, gray, wet, 50% broken shell	0 5 10 15 20 25	Bentonite Backfill

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 235-1577-024 03/03
PROJECT NAME West Bay Phase II/RI/FS
LOCATION Olympia
COORDINATES
DRILLING METHOD Geoprobe - Direct Push
SAMPLING METHOD
GROUND ELEVATION

BORING/WELL NUMBER # SB-14
DATE COMPLETED 12/7/07
TOTAL DEPTH OF BORING 8 ft
INITIAL WATER LEVEL ▽ 3.5 ft
STATIC WATER LEVEL ▼
LOGGED BY L. Linde
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous
		40/48	WB-GW-SB14-0055		0	Asphalt		0-5 ft Fill, gray, moist to wet, mild petroleum odor @ 5.5 ft, wet @ 3.5 ft, wood @ 5.5 ft
						Fill		
30.4		36/48	WB-SD-SB14-0055		5	Wood		5.5-8 ft Sand, gray, wet, 50% broken shell
						SW		
					10			
					15			
					20			
					25			

DEPTH (ft.)	WELL DIAGRAM
0	
5	Bentonite Backfill
10	
15	
20	
25	

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 235-1577-024 03/03
PROJECT NAME West Bay Phase II/RI/FS
LOCATION Olympia
COORDINATES
DRILLING METHOD Geoprobe - Direct Push
SAMPLING METHOD
GROUND ELEVATION

BORING/WELL NUMBER # SB-15
DATE COMPLETED 12/7/01
TOTAL DEPTH OF BORING 8ft
INITIAL WATER LEVEL ▽ 3ft
STATIC WATER LEVEL ▼
LOGGED BY L. Linde
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		36/48	WB-GW-SB15-00304 1030 (dup)			Asphalt Fill		0-5 ft Fill, brown, moist to wet, no odor, wood on bottom		
31.8		36/48	WB-SD-SB15-00804 1040 (dup)		5	Wood GW Wood SW		5-6 ft Sandy gravel, brown, small pebbles, wet 6-7 ft Sandy gravel w/ wood, strong petroleum odor, wet, visible sheen 7-8 ft Sand, gray, wet, 50% brown shell, moderate petroleum odor	5	Bentonite Backfill
					10				10	
					15				15	
					20				20	
					25				25	

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 235-1577-021 03/03
PROJECT NAME West Bay Phase II/RI/FS
LOCATION Olympia
COORDINATES
DRILLING METHOD Geoprobe - Direct Push
SAMPLING METHOD
GROUND ELEVATION

BORING/WELL NUMBER # SB-16
DATE COMPLETED 12/1/07
TOTAL DEPTH OF BORING 8 ft
INITIAL WATER LEVEL ▽ 3.5 ft
STATIC WATER LEVEL ▼
LOGGED BY L. Linde
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous
		36/48	WB-GW-SB16-0035		0	Asphalt		0-1 ft Fill, gray to brown, moist to wet @ 3.5 ft, no odor
						Fill		
21.7		36/48	WB-SD-SB16-0055		5			6-8 ft Sand, gray, wet, 50% broken shell
						SW		
					10			
					15			
					20			
					25			

DEPTH (ft.)	WELL DIAGRAM
0	
5	Bentonite Backfill →
10	
15	
20	
25	

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 235-1577-024 03/03
PROJECT NAME West Bay Phase II/RI/FS
LOCATION Olympia
COORDINATES
DRILLING METHOD Geoprobe - Direct Push
SAMPLING METHOD
GROUND ELEVATION

BORING/WELL NUMBER # SB-17
DATE COMPLETED 12/21/07
TOTAL DEPTH OF BORING 8 ft
INITIAL WATER LEVEL ▽ 4 ft
STATIC WATER LEVEL ▼
LOGGED BY K. Linde
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		36/48	WB-GW-SB17-0040		0	Fill		0-6.5 ft Fill, gray, moist to wet, no odor, sandust @ 3-3.5 ft, wet @ 4 ft	0	
		36/48	WB-SD-SB17-0065		5	SW Wood SW		6.5-8 ft Sand, gray, wet, no odor, 50% broken shell, wood @ 7 ft	5	Bentonite Backfill
21.7					10				10	
					15				15	
					20				20	
					25				25	

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 235-1577-024 03/03
PROJECT NAME West Bay Phase II/RI/FS
LOCATION Olympia
COORDINATES
DRILLING METHOD Geoprobe - Direct Push
SAMPLING METHOD
GROUND ELEVATION

BORING/WELL NUMBER # SB-18
DATE COMPLETED 12/7/07
TOTAL DEPTH OF BORING 8ft
INITIAL WATER LEVEL ▽ 6.5ft
STATIC WATER LEVEL ▼
LOGGED BY L. Linde
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		32/48				Fill		0-7ft Fill, brown to gray, moist to wet, black @ fill/native contact, mild petroleum odor @ 6.5ft, wood @ fill/native contact		
18.4		24/48	WB-SC-SB18-0005 WB Grab SB18-0005		5	SW	▽	7-8ft Sand, gray, wet, 50% brokenshell, no odor	5	
					10				10	
					15				15	
					20				20	
					25				25	

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 235-1577-024 03/03
PROJECT NAME West Bay Phase II/RI/FS
LOCATION Olympia
COORDINATES
DRILLING METHOD Geoprobe - Direct Push
SAMPLING METHOD
GROUND ELEVATION

BORING/WELL NUMBER # SB-19
DATE COMPLETED 12/7/07
TOTAL DEPTH OF BORING 8 ft
INITIAL WATER LEVEL ▽ 6.5 ft
STATIC WATER LEVEL ▼
LOGGED BY L. Linde
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		30/48				topfill		0-7.5 ft Fill, brown to gray, moist to wet, wood & fill/native contact - black, no oder		
						Fill				Bentonite Backfill
		24/48	SB19-0065 SB19-0065		5		▽		5	
25.7						Wood				
						Silt		7.5-8 ft Sand, gray, wet, 50% broken shell, no odor		
					10				10	
					15				15	
					20				20	
					25				25	

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 235-1577-024 03/03
PROJECT NAME West Bay Phase II/RI/FS
LOCATION Olympia
COORDINATES
DRILLING METHOD Geoprobe - Direct Push
SAMPLING METHOD
GROUND ELEVATION

BORING/WELL NUMBER # SB-20
DATE COMPLETED 12-1-07
TOTAL DEPTH OF BORING 8 ft
INITIAL WATER LEVEL ▽ 4 ft
STATIC WATER LEVEL ▼
LOGGED BY L. Linde
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous
		36/48			0	Asphalt		0-5 ft Fill, brown to gray, moist to wet, no odor, wood 3-4 ft
						Fill		
			WB-GW-SB20-0046				▽	
27.8		36/48	WB-GW-SB20-0055		5	GW		5-6 ft Sandy gravel, brown, wet, small pebbles, no odor
						SW		6-8 ft sand, gray, no odor, 50% broken shell
					10			
					15			
					20			
					25			

DEPTH (ft.)	WELL DIAGRAM
5	Bentonite Backfill →
10	
15	
20	
25	

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 235-1577-024 03/03
PROJECT NAME West Bay Phase II/RI/FS
LOCATION Olympia
COORDINATES
DRILLING METHOD Geoprobe - Direct Push
SAMPLING METHOD
GROUND ELEVATION

BORING/WELL NUMBER # SB-21
DATE COMPLETED 12/7/01
TOTAL DEPTH OF BORING 8 ft
INITIAL WATER LEVEL ▽ 3.5 ft
STATIC WATER LEVEL ▼
LOGGED BY L. Linde
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		36/48	WB-GP-SB21-0025			Asphalt		0-1 ft Fill, brown to gray, moist to wet, no petroleum odor. 3.5 ft		Bentonite Backfill
230		45/48	WB-SO-SB21-0005		5			5-1 ft mild petroleum odor, wood 1-8 ft sand, gray, wet, 50% broken shell, minimal sheen on gw, odor from 5-7 ft	5	
					10				10	
					15				15	
					20				20	
					25				25	

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PARAMETRIX, INC. **BORING/WELL CONSTRUCTION LOG**

Project Number 1577-024 ~~2354-004-0~~
Project Name WEST BAY PARK
Location SEE PLAN
Coordinates
Drilling Method pprobe
Sampling Method PP
Ground Elevation ~ 14' MLLW

Boring/Well Number # SB-22
Date Completed 5/19/08
Total Depth of Boring 12 FT
Initial Water Level 4 FT
Static Water Level
Logged by DAVID Dinkuhn
Top of Casing Elevation

NOTE - 14.5 FT Tide @ 12:15

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	GEOLOGIC DESCRIPTION	DEPTH (ft.)	WELL DIAGRAM
		24"			1 2 3 4			0'-6' GY-BN SL. SILTY SANDY GRAVEL, NO ODOR OR STAINING, D TO WET		
		36"			5 6 7 8			6'-7' CLAY/BK SILTY SAND MIXED W/ASH & WOOD DEBRIS WET		
		24"			9 10 11 12			7'-11' GY-BN Med-Coarse SAND, WET, NO ODOR 11'-12' WOOD (DRIFTWOOD)		
								BOH @ 12'		

1154
WB-SO-~~SB22~~-0050 (5')

1200
WB-SO-SB22-0060 (6')

1220
WB-GW-SB22-0060 (6') (clear)

1225
WB-GW-SB22-1060 (Duplicate)

All samples for PP Metals

Purged 1gal

PARAMETRIX, INC.

BORING/WELL CONSTRUCTION LOG

Project Number 235-1577-024
Project Name West Bay Park
Location See plan
Coordinates
Drilling Method PP
Sampling Method PP
Ground Elevation ~14' MLLW

Boring/Well Number # SB-23
Date Completed 5/19/08
Total Depth of Boring 8 ~~FT~~
Initial Water Level
Static Water Level 4'-5'
Logged by David Dinkuhn
Top of Casing Elevation

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	GEOLOGIC DESCRIPTION	DEPTH (ft.)	WELL DIAGRAM
		36"			1 2 3 4 5 6 7 8			0'-3' GY-BN SILTY Sandy Gravel, Damp, No Odor 3'-4' BK Ash mixed w/soil 4'-8' GRAY M-C Sand, Some shells, wet		
		30"						BOH @ 8' 1330 WB-GW-SB23-0000 (8 FT) Very slow flow Clear All samples for PP metals Purged 1/2 gallon		

PARAMETRIX, INC. **BORING/WELL CONSTRUCTION LOG**

Project Number 235-1577-024
Project Name West Bay Park
Location See Plan
Coordinates
Drilling Method PProbe
Sampling Method Same
Ground Elevation ~14' MLLW Peristaltic

Boring/Well Number # SB-24
Date Completed 5/19/08
Total Depth of Boring 8FT
Initial Water Level 4FT - 5FT
Static Water Level
Logged by David Dinkuhn
Top of Casing Elevation

FID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	GEOLOGIC DESCRIPTION	DEPTH (ft.)	WELL DIAGRAM
								0FT TO 4 FT		
		12"			1 2 3 4			GYBN SILTY, Sandy Gravel with some wood debris		
		30"			5 6 7 8	SW		4FT TO 8' Gray Med Sand, wet		
								BOH @ 8FT		
								1400 WB-SD-PP24-0050 (5FT)		
								1415 WB-GW-PP24-0070 (7FT)		
								Water colored brown from tannins		
								All Samples for PP metals		

Purged 1.5 gal.

1430 WB-WT-Rinsate-0000 (Stainless Screen)

0859-0910

Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 235-1577-024
PROJECT NAME WestBay
LOCATION
COORDINATES
DRILLING METHOD Direct Push
SAMPLING METHOD
GROUND ELEVATION

BORING/WELL NUMBER # SB-25
DATE COMPLETED 5/27/08
TOTAL DEPTH OF BORING 12 ft
INITIAL WATER LEVEL ▽ 8 ft
STATIC WATER LEVEL ▼
LOGGED BY L. Linde
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		39/48					Asphalt	Bark debris 0-2" 2-12" Black asphalt, mild odor		
							Fill	12"-48" Brn fill, rounded to angular gravel mix w/ sand base (brn) Black staining @ 3.5-4ft, mild odor, moist		
		41/48			5			Brn and gravel fill, 4-5 ft, moist, no odor	5	Bentonite Backfill
							SW	5-7ft Brn sand (f-c), 50% shell, moist, 6" layer @ 6.5-7ft solid shell, no odor		
							▽	7-12 ft, gray sand, native, 25-50% shell, no odor		
		42/48			10				10	
					15				15	
					20				20	
					25				25	

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Parametrix, Inc.

0940

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 235-1577-024
PROJECT NAME West Bay
LOCATION
COORDINATES
DRILLING METHOD Direct Push
SAMPLING METHOD
GROUND ELEVATION

BORING/WELL NUMBER # SB-26
DATE COMPLETED 5-2-08
TOTAL DEPTH OF BORING 12 ft
INITIAL WATER LEVEL ▽ 7.5 ft
STATIC WATER LEVEL ▽
LOGGED BY L. Linde
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		24/48				Piling & Debris		0-2" Asphalt 2-6" fill, gray-brn, dry; angular gravel w/ sand & silt 6"-3ft Redwood piling, strong petro odor 3-5" gravel fill; gray-brn, mild petro odor, moist		
		48/48			5	Fill		5-6.5 ft brn sand, SW, NP, (f-m), moist to wet, no odor	5	Bentonite Backfill
		48/48			10	SW		6.5-12 ft gray sand, SW, NP, wet, moist to 50% shell, areas of silt w/ grass & organic debris, no odor	10	
					15				15	
					20				20	
					25				25	

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 235-1977-024
PROJECT NAME West Bay
LOCATION
COORDINATES
DRILLING METHOD Direct Push
SAMPLING METHOD
GROUND ELEVATION

BORING/WELL NUMBER # SB-27
DATE COMPLETED 5/27/03
TOTAL DEPTH OF BORING 12 ft
INITIAL WATER LEVEL ▽ 6 ft
STATIC WATER LEVEL ▼
LOGGED BY L. Lindle
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		36/48				ballast		0-6" ballast 6"-3.5 ft fill, sand and gravel, angular moist @ bottom; mild petro odor		
						Fill		3.5-4 piling or RR tie		
						fill		4-5 fill gray to brn gravel, mild petro odor		Bentonite Backfill
		42/48			5		▽	5-5.5 brn organic layer w/ roots & organic odor	5	
						SW		5.5-12 gray sand, SW, NP, (f-m) wet @ 6ft, shell ~ 50% silt layers interbedded, no odor, slow direct occassional		
		48/48			10				10	
					15				15	
					20				20	
					25				25	

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 235-1577-024
PROJECT NAME West Bay
LOCATION
COORDINATES
DRILLING METHOD Direct Push
SAMPLING METHOD
GROUND ELEVATION

BORING/WELL NUMBER # SB-2S
DATE COMPLETED 5/27/08
TOTAL DEPTH OF BORING 12 ft
INITIAL WATER LEVEL ▽ 7 ft
STATIC WATER LEVEL ▽
LOGGED BY L. Linde
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		36/48				Fill		0-3.5 ft fill, gray gravel angular to round, dry; petro odor @ 0.5 ft & 1 ft bgs		
		44/48			5	Organic Fill		3.5-4 ft, organic layer, dk brn silt w/ plant debris & grass, organic odor	5	Bentonite Backfill
						SW	▽	4-5 ft fill, gray gravel, rounded slight odor @ 5 ft, visibly dk in color		
		48/48			10			5-12 ft, sand, SW, gray, NP, f-m, wet @ 7 ft, silt interbedded, ~50% shell fragments & sand lenses (occasional) @ 11.5 ft	10	
					15				15	
					20				20	
					25				25	

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 235-1577-021 | BORING/WELL NUMBER # SB-29
PROJECT NAME West Bay | DATE COMPLETED 5/27/03
LOCATION | TOTAL DEPTH OF BORING 12 ft
COORDINATES | INITIAL WATER LEVEL ▽ 6.5 ft
DRILLING METHOD Direct Push | STATIC WATER LEVEL ▽
SAMPLING METHOD | LOGGED BY L. Linde
GROUND ELEVATION | TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		24/48				Ballast		0-6" Ballast w/ organic debris/topsoil		
						Piling or Rubble		6"-3.5 ft Piling or Rubble, petro odor		
								3.5 ft-6.5 gravel fill material, visibly stained, overwhelming petro odor 3.5-4ft		
		24/48			5	Fill		sm rounded gravel & sand	5	Bentonite Backfill
								6.5-12ft Sand, SW, gray, NP, f-c, wet @ 6.5 ft, shell 5%		
		48/48				SW				
					10				10	
					15				15	
					20				20	
					25				25	

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 235-1577-024
PROJECT NAME WLCA Bay
LOCATION
COORDINATES
DRILLING METHOD Direct Push
SAMPLING METHOD
GROUND ELEVATION

BORING/WELL NUMBER # SB-20
DATE COMPLETED 5/27/08
TOTAL DEPTH OF BORING 12 ft
INITIAL WATER LEVEL ▽ 8 ft
STATIC WATER LEVEL ▽
LOGGED BY L. Lavelle
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		24/48				Topsoil		0-6" Topsoil & ballast; dry		
						Piling or rock		6"-3ft piling/tie, strong to overwhelming petro odor		
								3-Leftfill gravel, gray with significant black discoloration & strong to overwhelming petro odor, moist		
		20/48			5	Fill		6-7ft, gravel, gravelfill, tan to gray, slight odor	5	Bentonite Backfill
						SW		7-12ft gray sand, SW, shell ~50%, organic odor, silt interbedded		
		48/48			10				10	
					15				15	
					20				20	
					25				25	

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 235-1577-024
PROJECT NAME West Bldg
LOCATION
COORDINATES
DRILLING METHOD Direct Push
SAMPLING METHOD
GROUND ELEVATION

BORING/WELL NUMBER # SB-31
DATE COMPLETED 5/27/08
TOTAL DEPTH OF BORING 12ft
INITIAL WATER LEVEL ▽ 10ft
STATIC WATER LEVEL ▼
LOGGED BY L. Linde
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		4/48			0	topsoil		0-2" top soil 2"-5ft gray gravel fill with sand, sm rounded gravel, moist, mild petro odor @2ft	0	
		44/48			5	Fill SW		5ft-12ft Sand, SW, gray; wet 5ft silt interbedded, mod mod shell to 9ft then heavy (>90% shell) w/ decayed organic debris	5	Bentonite Backfill
		24/48			10				10	
					15				15	
					20				20	
					25				25	

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PARAMETRIX, INC. **BORING/WELL CONSTRUCTION LOG**

Project Number 235-1577-024
Project Name West Bay Park
Location See Plan
Coordinates —
Drilling Method Push Probe
Sampling Method " "
Ground Elevation ~19'

Boring/Well Number # SB-[redacted]32
Date Completed 5/28/08
Total Depth of Boring 12'
Initial Water Level 9'
Static Water Level 9'
Logged by D. Dinkuhn
Top of Casing Elevation

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	GEOLOGIC DESCRIPTION	DEPTH (ft.)	WELL DIAGRAM
		30"			1 2 3 4			0"-4" BN Topsoil w/wood debris 4"-5' Gray, sandy gravel, dry, no HC odor		
		40"			5 6 7 8			5'-12' Gray, med sand (Fill)		
0.4 (9')		48"			9 10 11 12		SW	w/numerous shells, broken, no odor, wet below 9' (~50%)		
								(in interbeds to 8' BOH @ 12'		
								1545 WB-SO-SB29-0090 (9' depth)		
								~~1600~~ 1608 WB-GW-SB29-0100 (10' depth)		
								Dx, cPAHs, BTEX, Diss. Pb		

Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 233-1577-037
PROJECT NAME West Bay Park
LOCATION Olympia, WA
COORDINATES N47°03'01.3" W122°54'44.9"
DRILLING METHOD N/A
SAMPLING METHOD N/A
GROUND ELEVATION ~20 ft

BORING/WELL NUMBER SB33
DATE COMPLETED 9/27/12
TOTAL DEPTH OF BORING 0.5
INITIAL WATER LEVEL ▽ N/A
STATIC WATER LEVEL ▼ N/A
LOGGED BY J. Lanz
TOP OF CASING ELEVATION N/A

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		6/6		X		ML		Silt, ML, dk brn, NP, dry, loose, ~25% sm-lg gravel rounded to angular, -fill, no odor WB-SD-SB33-0005 @ 1030		dirt backfill

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 233-1577-037
PROJECT NAME West Bay Park
LOCATION Olympia, WA
COORDINATES N47°03'03.8" W122°54'44.5"
DRILLING METHOD Direct Push
SAMPLING METHOD Split Spoon
GROUND ELEVATION ~26 ft

BORING/WELL NUMBER # SB34
DATE COMPLETED 9/27/12
TOTAL DEPTH OF BORING 4 ft
INITIAL WATER LEVEL ▽ N/A
STATIC WATER LEVEL ▼ N/A
LOGGED BY L. Lindle
TOP OF CASING ELEVATION N/A

PID (ppm)	BLOW/ COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		31/48			0	Fill		Concrete & asphalt rubble/fill 0-1.5 ft DK brn black asphaltic gravel, organic odor	0	
						GP		Gravel, GP, gray, NP, med-lg rounded moist, loose no odor		
					5			WB-SO-SB36-0015 Sample collected @ 1.5 ft, shallowest depth at which matrix was able to be sampled immediately below asphalt/rubble.	5	dirt and bentonite backfill
					10				10	
					15				15	
					20				20	
					25				25	

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 233-1577-037
PROJECT NAME West Bay Park
LOCATION Olympia, WA
COORDINATES N47°03'03.4" W122°54'44.4"
DRILLING METHOD Direct Push
SAMPLING METHOD Split Spoon
GROUND ELEVATION ~20 ft

BORING/WELL NUMBER SB35
DATE COMPLETED 9/29/12
TOTAL DEPTH OF BORING 4 ft
INITIAL WATER LEVEL ▽ N/A
STATIC WATER LEVEL ▽ N/A
LOGGED BY L. Wade
TOP OF CASING ELEVATION N/A

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		48/48				Fill		Concrete & Asphalt rubble fill 0-1.5ft		
								Dk brn asphaltic gravel, asphalt/organic odor		
						GW		Gravel, GW, grain, NP, sm-lg rounded w/some sand, moist, loose, no odor		
					5				5	dirt and bentonite backfill
								WB-SI-SB35-0015 @ 1310		
								Sample collected @ 1.5ft, shallowest depth at which matrix was able to be sampled immediately below asphalt rubble		
					10				10	
					15				15	
					20				20	
					25				25	

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 233-1577-037 | BORING/WELL NUMBER # SB36
PROJECT NAME West Bay Drive | DATE COMPLETED 9/27/12
LOCATION Olympia, WA | TOTAL DEPTH OF BORING 4.5 ft
COORDINATES N47°03'03.0" W122°54'44.3" | INITIAL WATER LEVEL ▽ N/A
DRILLING METHOD Direct Push | STATIC WATER LEVEL ▽ N/A
SAMPLING METHOD Split Spoon | LOGGED BY L. Linde
GROUND ELEVATION 21 ft | TOP OF CASING ELEVATION N/A

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		32/48			0	Fill GW Fill		Concrete & Asphalt rubble fill 0-1.5 ft Dk-brn asphaltic gravel w/ asphaltic odor Dk-brn, sand w/ gravel, mild petroleum odor, moist, loose, NP, twigs Wood plug	0	dirt and bentonite backfill
					5			Asphalt & gravel mixed with Creosote treated wood	5	
					10			WB-SO-SB36-0015 @ 1345 Sample collected @ 1.5 ft, shallowest depth at which native was able to be sampled immediately below asphalt rubble.	10	
					15				15	
					20				20	
					25			Continued Next Page	25	

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 283-1574-037
PROJECT NAME West Bay Park
LOCATION Olympia, WA
COORDINATES N47°03'02.7" W122°54'44.1"
DRILLING METHOD N/A
SAMPLING METHOD N/A
GROUND ELEVATION ~21 ft

BORING/WELL NUMBER SB37
DATE COMPLETED 9/27/17
TOTAL DEPTH OF BORING 0.5 ft
INITIAL WATER LEVEL ▽ N/A
STATIC WATER LEVEL ▼ N/A
LOGGED BY L. Linde
TOP OF CASING ELEVATION N/A

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		6/6		X		GM		RR ballast with silt, GM, dk brn, NP, fist-sized ballast w/smaller angular & rounded sm-lg gravel, dry, hard & compact; no odor, occasional brick & clam shell WB-SO-SB37-0005 @ 1045		dirt backfill

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 233-1577-037
PROJECT NAME West Bay Park
LOCATION Olympia, WA
COORDINATES N47°03'02.4" W122°54'44.0"
DRILLING METHOD N/A
SAMPLING METHOD N/A
GROUND ELEVATION ~20 ft

BORING/WELL NUMBER # SB38
DATE COMPLETED 9/27/12
TOTAL DEPTH OF BORING 0.5 ft
INITIAL WATER LEVEL ▽ N/A
STATIC WATER LEVEL ▼ N/A
LOGGED BY L. Linde
TOP OF CASING ELEVATION N/A

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		6"		X		GM		RR ballast w/ silt, GM + cobble, dk brn, NP, cobble to small gravel, rounded to angular, dry, hard & compact, no odor, bark & occassional clam shell WB-SO-SB38-0005 C1105		dirt backfill

5
10
15
20
25

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 333-1577-037 | BORING/WELL NUMBER # SB-39
PROJECT NAME West Bay Park | DATE COMPLETED 3/28/12
LOCATION Olympia WA | TOTAL DEPTH OF BORING 15ft
COORDINATES N47°03'018" W122°54' 43.8" | INITIAL WATER LEVEL ▽ N/A
DRILLING METHOD N/A | STATIC WATER LEVEL ▽ N/A
SAMPLING METHOD N/A | LOGGED BY Lalonde
GROUND ELEVATION ~21ft | TOP OF CASING ELEVATION N/A

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		6/6		X	0	GM		FILL ballast w/ silt & gravel, GM, dk brn, NP, cobble to sm gravel, angular to rounded, dry, hard & compact, no odor, trace roots	0	dirt backfill
					5			WB-SO-SB39-0005 @ 11'D	5	
					10				10	
					15				15	
					20				20	
					25				25	

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 233-1577-037 | BORING/WELL NUMBER # SB40

PROJECT NAME West Bay Park | DATE COMPLETED 9/27/12

LOCATION Olympia, WA | TOTAL DEPTH OF BORING 0.5 ft

COORDINATES N47°03'01.5" W122°54'43.8" | INITIAL WATER LEVEL ▽ N/A

DRILLING METHOD N/A | STATIC WATER LEVEL ▽ N/A

SAMPLING METHOD N/A | LOGGED BY L. Vinde

GROUND ELEVATION ~20ft | TOP OF CASING ELEVATION N/A

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		6/6		X		GM		RR Ballast w/ silt, @ GM, dk brn, NP, cobble to sm gravel, dry, hard, no odor, bark common. WB-SD-SB40-0005@1120 WB-SD-SB40-1005@1125, field dup		dirt backfill

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 233-1577-037
PROJECT NAME West Bay Park
LOCATION Olympia, WA
COORDINATES N47° 03' 04.1" W122° 54' 43.9"
DRILLING METHOD Direct Push
SAMPLING METHOD Split Spoon
GROUND ELEVATION ~20 Ft

BORING/WELL NUMBER SB41
DATE COMPLETED 9/27/12
TOTAL DEPTH OF BORING 4 ft
INITIAL WATER LEVEL ▽ N/A
STATIC WATER LEVEL ▼ N/A
LOGGED BY J. Liddle
TOP OF CASING ELEVATION N/A

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		44/48			0	Fill		Asphalt rubble/fill 0-1 ft	0	dirt and bentonite backfill
						GM		Gravel, Gm, orange brn, SP, mod-lg rounded to angular, loose, dry, moder dk orange horizon with wood & bark gravel, Gm, gray, NP, med-lg sand, loose, moder		
					5			WB-SD-SB41-0010 @ 1505	5	
								Sample collected @ 1 ft, shallowest depth at which matrix was able to be sampled immediately below asphalt rubble.		
					10				10	
					15				15	
					20				20	
					25				25	

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 2-33-1577-037
PROJECT NAME West Bay Park
LOCATION Olympia, WA
COORDINATES N47° 03' 03.7" W122° 54' 43.8"
DRILLING METHOD Direct Push
SAMPLING METHOD Split Spoon
GROUND ELEVATION ~16 ft

BORING/WELL NUMBER # SB42
DATE COMPLETED 9/27/12
TOTAL DEPTH OF BORING 47 ft
INITIAL WATER LEVEL ▽ N/A
STATIC WATER LEVEL ▼ N/A
LOGGED BY L. Linde
TOP OF CASING ELEVATION N/A

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION (SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous)	DEPTH (ft.)	WELL DIAGRAM
		3/48				Asphalt		Asphalt 6+ inches		
						GW		Gravel, GW, dk brn, NP, sand, dry, loose, no odor, no fines		
						GM		Gravel, GM dk brn, NP, sm-med, sand, loose, no odor, fines present		
						PT		Peat with gravel		
						GW		Gravel, same as above.		
					5			NB-SD-SB42-0220 @ 1455	5	dirt and bentonite backfill
								Sample collected @ 25', shallowest depth at which matrix was able to be sampled immediately below asphalt (able due to lack of fines in matrix (above 25' matrix was too large to sample)		
					10				10	
					15				15	
					20				20	
					25				25	

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 233-1574-037
PROJECT NAME West Bay Park
LOCATION Olympia, WA
COORDINATES N47°03'032" W122°54'43.8"
DRILLING METHOD Direct Push
SAMPLING METHOD Split Spoon
GROUND ELEVATION ~19ft

BORING/WELL NUMBER # SB43
DATE COMPLETED 9/27/17
TOTAL DEPTH OF BORING 4ft
INITIAL WATER LEVEL ▽ N/A
STATIC WATER LEVEL ▽ N/A
LOGGED BY L. Linde
TOP OF CASING ELEVATION N/A

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		36/48			0	Fill		Concrete & Asphalt rubble/fill 0-1.5ft	0	
						GW		Gravel, GW, brn, NP, med to lg rounded to angular, dry, loose, noodor		
						Fill		Asphalt & gravel mix, asphaltic odor, fill		
					5			WB-SO-SB43-0015 @ 1445	5	dirt and bentonite backfill
								Sample collected @ 1.5ft, shallowest depth at which matrix was able to be sampled immediately below asphalt rubble.		
					10				10	
					15				15	
					20				20	
					25				25	

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 233-1577-037
PROJECT NAME West Bay Park
LOCATION Olympia, WA
COORDINATES N47°03'02.9" W122°54'43.6"
DRILLING METHOD Direct Push
SAMPLING METHOD Split Spoon
GROUND ELEVATION ~16.5 ft

BORING/WELL NUMBER # SB44
DATE COMPLETED 9/27/10
TOTAL DEPTH OF BORING 4 ft
INITIAL WATER LEVEL ▽ N/A
STATIC WATER LEVEL ▼ N/A
LOGGED BY L. Linde
TOP OF CASING ELEVATION N/A

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		4½/48			0	Fill GW		Asphalt & concrete rubble/fill 0-6 inches Gravel, GW, brn, NP, large, rounded dry, loose, no odor or fines	0	
					5	GM		Gravel, GM, brn, NP, sm-med, dry loose, no odor, fines present large gravel @ 4 ft WB-SO-SB44-0010 @ 1435 Sample collected @ 1 ft, shallowest depth at which matrix was able to be sampled immediately below asphalt rubble due to lack of fines in matrix (above 1 ft matrix was too large to sample)	5	dirt and bentonite backfill
					10				10	
					15				15	
					20				20	
					25				25	

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 233-1577-037
PROJECT NAME West Bay Park
LOCATION Olympia, WA
COORDINATES N47°03'02.7" W122°54'43.5"
DRILLING METHOD Direct Push
SAMPLING METHOD Split Spoon
GROUND ELEVATION ~19 ft

BORING/WELL NUMBER SB45
DATE COMPLETED 9/27/12
TOTAL DEPTH OF BORING 4 ft
INITIAL WATER LEVEL ▽ N/A
STATIC WATER LEVEL ▽ N/A
LOGGED BY L. Linde
TOP OF CASING ELEVATION N/A

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		48/48			0	FILL		Asphalt rubble 0-1 feet inches	0	dirt and bentonite back fill
						GW		Gravel, GW, brn gray, NP, large, angular dry, loose, no odor or fines		
						SM				
						GW		Gravel, GM, brn gray, NP, sm-med, angular; dry, loose, no odor, fines present		
						GW				
					5			Gravel, GW, gray to dk gray black, sl. large, rounded, dry, loose, asphaltic odor	5	
								Gravel, GM, brn, NP, sm-med, dry, loose, slight asphaltic odor		
					10			Gravel, GW, same as asphaltic gravel above	10	
								WB-20-SB45-0015		
					15			Sample collected @ 1.5 ft, shallowest depth at which matrix was able to be sampled immediately below asphalt rubble due to lack of fines in matrix (above 1.5 ft matrix was too large to sample).	15	
					20				20	
					25				25	

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 233-1577-037
PROJECT NAME Inner Bay Bank
LOCATION Olympia, WA
COORDINATES N47°03'02.2" W122°54'43.2"
DRILLING METHOD N/A
SAMPLING METHOD N/A
GROUND ELEVATION ~19 ft

BORING/WELL NUMBER # SB46
DATE COMPLETED 9-07-12
TOTAL DEPTH OF BORING 0.5
INITIAL WATER LEVEL ▽ N/A
STATIC WATER LEVEL ▽ N/A
LOGGED BY L. Linde
TOP OF CASING ELEVATION N/A

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		6/6		X		ML		Silt, ML, light orange brn, NP, fine to med, dry, loose, extremely light weight, bark remnants, no odor WB-SO-SB46-0005 @1135		dirt backfill

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 233-1577-037
PROJECT NAME West Bay Park
LOCATION Olympia, WA
COORDINATES N47°03'03.1" W122°54'44.9"
DRILLING METHOD Direct Push
SAMPLING METHOD Split Spoon
GROUND ELEVATION ~20ft

BORING/WELL NUMBER # SB47
DATE COMPLETED 9/27/12
TOTAL DEPTH OF BORING 4ft
INITIAL WATER LEVEL ▽ N/A
STATIC WATER LEVEL ▼ N/A
LOGGED BY L. Linde
TOP OF CASING ELEVATION N/A

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		44/48				GM		Asphalt rubble 0-6 inches Gravel, GM, brn gray, NP, dry, loose mild petroleum odor mild petroleum odor @3.5ft WB-SO-SB47-0010 @1355 WB-SO-SB47-0035 @1405 WB-SO-SB47-1035 @1410 Sample collected @ 1ft, shallowest depth at which native was able to be sampled immediately below asphalt/rubble. Sample collected @ 3.5 ft, area of mild petroleum odor		dirt and bentonite backfill

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 2331577638
PROJECT NAME SOLID WOOD INC SITE
LOCATION WEST BAY PARK
COORDINATES
DRILLING METHOD PUSH PROBE
SAMPLING METHOD PUSH PROBE
GROUND ELEVATION

BORING/WELL NUMBER # SB-48
DATE COMPLETED 11-6-13
TOTAL DEPTH OF BORING 10'
INITIAL WATER LEVEL ▽ 7'
STATIC WATER LEVEL ▼
LOGGED BY WALTER HARUBY
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		24/60			0	SP		CONCRETE SAND, SP, BROWN, NP, GRAVEL-SAND, MOIST, LOOSE, SUBROUNDED ROCK, ORGANIC ODOR	0	
								SAND, SP, GRAY, NP, GRAVEL-SAND, MOIST, SUB LOOSE, SUB ROUNDED ROCK		
		48/60			5	SM	▽	~~GRAY~~ SAND, SM, GRAY, NP ~~LOOSE~~ SMALL TO FINE, LOOSE, ORGANIC ODOR, (CRASHELL) PETROLEUM ODOR AT 6'-7' SAMPLED AT 6' TO 7'	5	
					10				10	
					15				15	
					20				20	
					25				25	

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 2331577638
PROJECT NAME SOLID WOOD INC SITE
LOCATION WEST BAY PARK
COORDINATES
DRILLING METHOD PUSH PROBE
SAMPLING METHOD PUSH PROBE
GROUND ELEVATION

BORING/WELL NUMBER # SB-49
DATE COMPLETED 11-6-13
TOTAL DEPTH OF BORING 10'
INITIAL WATER LEVEL ▽ 6'
STATIC WATER LEVEL ▼
LOGGED BY WALTER HARVEY
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		24/60			0	SP		ASPHALT SAND, SP, DARK BROWN, NP, GRAVEL TO SAND MOIST, LOOSE, SUBROUNDED ROCK, BROWN - SAME AS ABOVE GRAY - SAME AS ABOVE	0	
		50/60			5	SM	▽	DARK BROWN, SAND, SM, NP, SAND TO SILT, MEDIUM DENSE, GRAY, SAND, SM, NP, SAND TO SILT, MEDIUM DENSE. SAMPLED AT 6' ORGANIC ODOR	5	
					10				10	
					15				15	
					20				20	
					25				25	

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 2331577 638
PROJECT NAME SOLID WOOD INC SITE
LOCATION WEST BAY PARK
COORDINATES
DRILLING METHOD PUSH PROBE
SAMPLING METHOD PUSH PROBE
GROUND ELEVATION

BORING/WELL NUMBER # SB-50
DATE COMPLETED 11-6-13
TOTAL DEPTH OF BORING 10'
INITIAL WATER LEVEL ▽ 6'
STATIC WATER LEVEL ▽
LOGGED BY WALTER HARVEY
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		48/60			0	SP		ASPHALT SAND, SP, BROWN, NP, GRAVEL TO SAND, MOIST, LOOSE, SUBROUNDED ROCKS SAND SP GRAY, NP, GRAVEL TO SAND, MOIST, LOOSE, SUBROUNDED ROCKS,	0	
		48/60			5	SM	▽	SAND, SM, DARK BROWN, NP, SAND TO SILT, MOIST, MEDIUM DENSE SAMPLED AT 6' SAND, SM, GRAY, NP, SAND TO SILT, MOIST, MEDIUM DENSE ORGANIC MATTER (SEASHELL) ORGANIC ODOR	5	
					10				10	
					15				15	
					20				20	
					25				25	

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 2331577638
PROJECT NAME SOLID WOOD INC SITE
LOCATION WEST BAY PARK
COORDINATES
DRILLING METHOD PUSH PROBE
SAMPLING METHOD PUSH PROBE
GROUND ELEVATION

BORING/WELL NUMBER # SB-51
DATE COMPLETED 11-6-13
TOTAL DEPTH OF BORING 10'
INITIAL WATER LEVEL ▽ 7'
STATIC WATER LEVEL ▼
LOGGED BY WALTER HARVEY
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		36/60				SM		ASPHALT. SAND, SM, BROWN-GRAY, NP, GRAVEL TO SAND, MOIST, LOOSE, ORGANIC ODOR		
						PT		PEAT, PT, PARK BROWN, NP, ~~SLIGHTLY~~ VERY FINE MOIST, ORGANIC ODOR, DENSE		
						SM		SAND, SM, GRAY, NP, SAND TO SILT, MOIST, MEDIUM DENSE, ORGANIC ODOR		
		36/60			5			SAMPLED AT 7'	5	
					10				10	
					15				15	
					20				20	
					25				25	

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 2331577638
PROJECT NAME SOLID WOOD INC SITE
LOCATION WEST BAY PARK
COORDINATES
DRILLING METHOD PUSH PROBE
SAMPLING METHOD PUSH PROBE
GROUND ELEVATION

BORING/WELL NUMBER # SB-52
DATE COMPLETED 11-6-13
TOTAL DEPTH OF BORING 10'
INITIAL WATER LEVEL ▽ 7'
STATIC WATER LEVEL ▽
LOGGED BY WALTER HARUBY
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		48/60			0	SP		CONCRETE SP, SAND, BROWN/GRAY, NP, GRAVEL-SAND, MOIST, LOOSE. ANGULAR ROCK, ~~ORGANIC~~ ORGANIC ODOR	0	
					5				5	
		48/60				SM	▽	SM, SAND, DARK BROWN, NP, SAND-SILT, MOIST, DENSE, AT PEAT SAND MIX, ORGANIC ODOR		
						SM		SM, SAND, GRAY, NP, SAND-SILT, MOIST, MEDIUM DENSE, SOME SEASHELL (LAYERS) ORGANIC ODOR.		
					10			SAMPLED at 7'	10	
								COLLECTED A WATER SAMPLE		
					15				15	
					20				20	
					25				25	

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 2331577638
PROJECT NAME SOLID WOOD INC SITE
LOCATION WEST BAY PARK
COORDINATES
DRILLING METHOD PUSH PROBE
SAMPLING METHOD PUSH PROBE
GROUND ELEVATION

BORING/WELL NUMBER # SB-53
DATE COMPLETED 11-6-13
TOTAL DEPTH OF BORING 10'
INITIAL WATER LEVEL ▽ 7'
STATIC WATER LEVEL ▼
LOGGED BY WALTER HARVEY
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		42/60				SP		ASPHALT / SP, SAND, BROWN, NP, GRAVEL-SAND, MOIST, LOOSE, SUBANGULAR ROCK, ORGANIC ODOR		
					5	SM		SP, SAND, GRAY, NP, GRAVEL-SAND, MOIST, LOOSE, SUBANGULAR ROCK, ORGANIC ODOR	5	
		48/60				SM	▽	PSM, SAND, DARK BROWN, NP, SAND WITH PEAT, MOIST, MEDIUM DENSE, ORGANIC ODOR SM, SAND, GRAY, NP, SAND-SILT, MOIST, MEDIUM DENSE, SEASHELL LAYERS		
					10			SAMPLED AT 7' COLLECTED A WATER SAMPLE	10	
					15				15	
					20				20	
					25				25	

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 2331577638
PROJECT NAME SOLID WOOD INC SITE
LOCATION WEST BAY PARK
COORDINATES
DRILLING METHOD PUSH PROBE
SAMPLING METHOD PUSH PROBE
GROUND ELEVATION

BORING/WELL NUMBER # SB-54
DATE COMPLETED 11-6-13
TOTAL DEPTH OF BORING 10'
INITIAL WATER LEVEL ▽ 6.5'
STATIC WATER LEVEL ▽
LOGGED BY WALTER HARVEY
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		48/60			0	SP	S	ASPHALT SP, SAND, GRAY, NP, GRAVEL - SAND, MOIST, ORGANIC ODOR, LOOSE	0	
						SP		SP, SAND, BROWN, NP, GRAVEL-SAND, MOIST, ORGANIC ODOR, LOOSE.		
					5	SM		SM, SAND, DARK BROWN, NP, SAND - PEAT, MOIST, SAND - SILT, MEDIUM DENSE	5	
		48/60					▽	SM, SAND, GRAY, NP, SAND, WITH SEA SHELL LAYERS, MEDIUM DENSE, ORGANIC ODOR		
					10			SAMPLED AT 6.5'	10	
					15				15	
					20				20	
					25				25	

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 2331577638
PROJECT NAME SOLID WOOD INC SITE
LOCATION WEST BAY PARK
COORDINATES
DRILLING METHOD PUSH PROBE
SAMPLING METHOD PUSH PROBE
GROUND ELEVATION

BORING/WELL NUMBER # SB-55
DATE COMPLETED 11-6-13
TOTAL DEPTH OF BORING 10'
INITIAL WATER LEVEL ▽ 7'
STATIC WATER LEVEL ▼
LOGGED BY WALTER HARVEY
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		48/60			0	SP		CONCRETE SP, SAND, GRAY, NP, GRAVEL-SAND, MOIST, LOOSE, ORGANIC, ODOR, SUBANGULAR ROCK, SOME BROWN SAND	0	
					5	Sm	▽	Sm, SAND, GRAY, NP, SAND-SILT, MOIST, MEDIUM DENSE, ORGANIC ODOR, SEASHELL LAYERS	5	
		48/60			10			SAMPLED AT 7'	10	
					15				15	
					20				20	
					25				25	

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 2331577638
PROJECT NAME SOLID WOOD INC SITE
LOCATION WEST BAY PARK
COORDINATES
DRILLING METHOD PUSH PROBE
SAMPLING METHOD PUSH PROBE
GROUND ELEVATION

BORING/WELL NUMBER # SB-56
DATE COMPLETED 11-6-13
TOTAL DEPTH OF BORING 10'
INITIAL WATER LEVEL ▽ 1'
STATIC WATER LEVEL ▽
LOGGED BY WALTER HARVEY
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		36/60			0	SP	▽ 1'	CONCRETE SP, SAND, BROWN, NP, GRAVEL - SAND, WET, LOOSE, SUBROUNDED ROCKS, ORGANIC ODOR	0	
					5	SM		SM, SAND GRAY, NP, SAND-SILT, MOIST, MEDIUM DENSE ~~VERY WET AT 7'~~ ORGANIC ODOR	5	
		48/60			10	SM		SM, SAND, DARK BROWN, NP SAND-PEAT MOIST MEDIUM DENSE, ORGANIC ODOR SM, SAND, GRAY, NP, SAND-SILT, MOIST, MEDIUM DENSE VERY WET AT 7'-8' ORGANIC ODOR SAMPLED AT 1'	10	
					15				15	
					20				20	
					25				25	

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 2331577638
PROJECT NAME SOLID WOOD INC SITE
LOCATION WEST BAY PARK
COORDINATES
DRILLING METHOD PUSH PROBE
SAMPLING METHOD PUSH PROBE
GROUND ELEVATION

BORING/WELL NUMBER # SB-57
DATE COMPLETED 11-6-13
TOTAL DEPTH OF BORING 10'
INITIAL WATER LEVEL ▽ 8'
STATIC WATER LEVEL ▼
LOGGED BY WALTER HARVEY
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
						SP		CONCRETE SP, SAND, BROWN-GRAY, NP, GRAVEL-SAND, MOIST, LOOSE, ORGANIC ODOR		
		36/60				SP		SP, SAND GRAY, NP, GRAVEL-SAND, MOIST LOOSE, & ORGANIC ODOR, SUBANGULAR ROCK.		
					5				5	
		42/60				SM	▽	SM, SAND ~~GRAY~~ DARK BROWN, NP, SAND-SILT, MEDIUM DENSE, ORGANIC ODOR, AT A LITTLE PEAT		
						SM		SM, SAND, GRAY, NP, SAND-SILT, MEDIUM DENSE, ORGANIC ODOR		
					10			SAMPLED AT 8'	10	
					15				15	
					20				20	
					25				25	

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 2331577638
PROJECT NAME SOLID WOOD INC SITE
LOCATION WEST BAY PARK
COORDINATES
DRILLING METHOD PUSH PROBE
SAMPLING METHOD PUSH PROBE
GROUND ELEVATION

BORING/WELL NUMBER # SB-~~5~~8
DATE COMPLETED 11-6-13
TOTAL DEPTH OF BORING 10'
INITIAL WATER LEVEL ▽ 7'
STATIC WATER LEVEL ▽
LOGGED BY WALTER HARVEY
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		24/60				SP ~~SP~~ SM		ASPHALT/CONCRETE SP, SAND, BROWN, NP, GRAVEL - SAND, MOIST LOOSE.		
								~~SP~~ SM, SAND, DARK BROWN, SAND-SILT A LITTLE PEAT MOIST, MEDIUM DENSE.		
					5	SM		SM, SAND, GRAY, SAND - SILT MOIST MEDIUM DENSE.	5	
		45/60				SM	▽	SM, SAND, DARK BROWN, NP, SAND-SILT, MOIST MEDIUM DENSE		
					10			ORGANIC ODOR SAMPLED AT 7'	10	
					15				15	
					20				20	
					25				25	

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 2331577638
PROJECT NAME SOLID WOOD INC SITE
LOCATION WEST BAY PARK
COORDINATES
DRILLING METHOD PUSH PROBE
SAMPLING METHOD PUSH PROBE
GROUND ELEVATION

BORING/WELL NUMBER # SB-59
DATE COMPLETED 11-6-13
TOTAL DEPTH OF BORING 10'
INITIAL WATER LEVEL ▽ 59@ 6'
STATIC WATER LEVEL ▽
LOGGED BY WALTER HARVEY
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		48/60			0	SP		ASPHALT SP, SAND, BROWN, NP, SAND-GRAVEL, MOIST, LOOSE	0	
						SP		SP, SAND, GRAY, NP, SAND-GRAVEL, MOIST, LOOSE, SUBROUNDED/SUBANGULAR ROCKS.		
						SM		SM, SAND, GRAY, NP, SAND-SILT, MOIST, ~~LOOSE~~ MEDIUM DENSE.		
		48/60			5		▽		5	
						SM		SM, SAND, DARK BROWN, NP, SAND-SILT, MOIST, MEDIUM DENSE.		
						SM		SM, SAND, GRAY, NP, SAND-SILT, MOIST, MEDIUM DENSE.		
					10			SAMPLED AT 6'	10	
					15				15	
					20				20	
					25				25	

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 2331577638
PROJECT NAME SOLID WOOD INC SITE
LOCATION WEST BAY PARK
COORDINATES
DRILLING METHOD PUSH PROBE
SAMPLING METHOD PUSH PROBE
GROUND ELEVATION

BORING/WELL NUMBER # SB-60
DATE COMPLETED 11-6-13
TOTAL DEPTH OF BORING 10'
INITIAL WATER LEVEL ▽ 7'
STATIC WATER LEVEL ▽
LOGGED BY WALTER HARVEY
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		48/60			0	SP		ASPHALT SP, SAND, GRAY, NP, GRAVEL - SAND, MOIST, LOOSE, SUBROUNDED ROCK		
						Sm		Sm, SAND, GRAY - BROWN, NP, SAND - SILT, MOIST, MEDIUM DENSE, A FEW SUBANGULAR ROCKS		
					5	Sm		Sm, SAND, GRAY, NP, SAND - SILT, MOIST, MEDIUM DENSE	5	
		48/60					▽			
					10			SAMPLED AT 7'	10	
					15				15	
					20				20	
					25				25	

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Parametrix, Inc.

Test Pit Log

PROJECT NUMBER 235-1577-024 01/03
PROJECT NAME West Bay Phase II
LOCATION Former Wood Burner
EXCAVATION EQUIPMENT Track Excavator

TEST PIT NUMBER TP-10
DATE COMPLETED 02/19/2008
TOTAL DEPTH OF TEST PIT 7.0'
WATER LEVEL 7.0'
LOGGED BY Lily Isenhart

Depth (ft)	Soil Classification	Description	Remarks
0-6"		Dark brown silty sand & well rounded gravel	
6"-1'		Grey brown silty sand & well rounded gravel	
		Charred wood debris, ash mixed with silty sand & shells, redish colored material marginally mixed in top area of layer (1'-2'). Vertical wood post encountered	sample collected at 1.5 feet in an area with the red material, and a second one collected at 2' from charred material
5			
		Less charred material, ashy sand & silt mixed with decaying wood debris (unburnt).	Sample collected at 7' from excavator bucket
	▼		
10			
15			
20			

Parametrix, Inc.

Test Pit Log

PROJECT NUMBER 235 1577 024
PROJECT NAME WEST 4TH AVE
LOCATION OLYMPIA
EXCAVATION EQUIPMENT 310 HOE

TEST PIT NUMBER TP-11
DATE COMPLETED 3/24/05
TOTAL DEPTH OF TEST PIT 6'
WATER LEVEL 5'
LOGGED BY D. DINKUHN

Depth (ft)	Soil Classification	Description	Remarks
1		BN, SILTY SD/GRAV W/ORGS	
2		GY SANDY GRAV	
3		BK. ASH	
3.5			
4		BN WOOD DEBRIS (SAWDUST) W/ SOIL MIXED IN	
5			
6		B.O. PIT @ 6'	
		GW ~ 5', PERCHED IN TOP OF ASH, FLOWING IN	
10		12" X 12" CREOSOTE BEAMS UNEARTHED	
		NO SAMPLES	
15			
20			

CHARLIE JEFFAY

Parametrix, Inc.

Test Pit Log

PROJECT NUMBER 235-1577-024
PROJECT NAME WEST BAY PARK
LOCATION OLYMPIA
EXCAVATION EQUIPMENT 310 ITOE

TEST PIT NUMBER TP-12
DATE COMPLETED 5/24/08
TOTAL DEPTH OF TEST PIT 6'
WATER LEVEL
LOGGED BY D. DINKUHN

Depth (ft)	Soil Classification	Description	Remarks
		BN, SLTY, SDY GRAV. DAMP	
1.5		GY, SDY GRAV. FILL	
2.5		BK ASH	
4		BN, SILTY SAND & WOOD DEBRIS MIXED W/ ASH	
5		B.O. PIT @ 6'	
		GW @ ~5'; PERCHED	
		ON TOP OF ASH	
		SAMPLED ASH @	
10		1300	
		WB-SO-TP12-0025	
		DIOXINS & ARMET	
15			
20			

Parametrix, Inc.

Test Pit Log

PROJECT NUMBER 235-1577-024
PROJECT NAME WEST BAY PARK
LOCATION OLYMPIA
EXCAVATION EQUIPMENT 310 HOE

TEST PIT NUMBER TP 13
DATE COMPLETED 3/24/08
TOTAL DEPTH OF TEST PIT 4 FT
WATER LEVEL NONE
LOGGED BY D. DINKUHN

Depth (ft)	Soil Classification	Description	Remarks
		GRAY, SANDY GRAVEL	
1			
2		BRACKISH INTERMIXED W/SOIL	
		GRAY, GRAVELLY SAND W/SHELLS	
4			
5		B.O. PIT @ 4'	
		NO SAMPLES	
10			
15			
20			

Parametrix, Inc.

Test Pit Log

PROJECT NUMBER 235-1577-124
PROJECT NAME WEST BAY
LOCATION OLYMPIA
EXCAVATION EQUIPMENT 310 HOE

TEST PIT NUMBER TP 14
DATE COMPLETED 3/24/08
TOTAL DEPTH OF TEST PIT 9'
WATER LEVEL @ 8'
LOGGED BY B. DINKUHN

Depth (ft)	Soil Classification	Description	Remarks
1		BN SLTY SDY GRAV FILL W/ SAWDUST	
2			
3			
4			
5		GY/BRN SILTY SAND; HARD	
6			
7		ASH, MIXED W/ SAND & SOIL	
8		DIDN'T FIND BOTTOM OF ASH	
9		B.O. PIT @ 9'	
10			
		GW @ 8'	
		SAMPLES	
		WB-SO-TP14-0015(15') METALS 14:30	
15		WB-SO-TP14-0050(5') METALS 14:45	
		WB-SO-TP14-0080(8') METALS 15:00	
		DIOXIN	
20			

Parametrix, Inc.

Test Pit Log

PROJECT NUMBER: 033-1577-007
PROJECT NAME: West Bay RI/FS
LOCATION: Olympia, WA
EXCAVATION EQUIPMENT: Case 580 Super L Backhoe w/ breaker

TEST PIT NUMBER: @ SB47
DATE COMPLETED: 4/15/13
TOTAL DEPTH OF TEST PIT: 5ft
WATER LEVEL: N/A
LOGGED BY: L. Lindle

Depth (ft)	Soil Classification	Description	Remarks
	Fill gravel	Asphalt Fill gravel, gray, NP, sm-lg, angular @ surface, rounded w/ depth, moist, loose, strong petroleum odor 0.5ft - 5ft Scrap metal & sprayer bar @ 3ft	
5	SM	Cobbles (rounded) @ 3-5 ft in sandy matrix, mild petroleum odor, some bricks Bottom of hole @ 5 ft @ clear soil type & color change SM, dk brn, SP, sm med, moist, loose, woody odor but no petroleum odor, small roots, some silt Sample collected @ 5 ft WB-SO-TPBT1-0050 @ 0840 also field duplicate WB-SO-TPBT1-0050 @ 0845 No water encountered	
10			
15			
20			

Appendix B

Table B-1: Identification of ARARs for IA Design and Implementation

Law/Regulation/Requirement	Citation	Brief Summary	Comment for IA Implementation
Comprehensive ARARs			
State Model Toxics Control Act	Chapter 70A.305 RCW, Chapter 173-340 WAC	Processes and standards are used to identify, investigate, and cleanup sites where hazardous substances are located.	MTCA regulations are the primary requirement for IA implementation. The IAP was developed and the IA will be designed and implemented to address applicable MTCA regulations.
State Environmental Policy Act	Chapter 43.21 RCW, Chapter 197-11-268.	Requires all government agencies to consider and assess the environmental impacts of a proposed action within the state before making a decision. The SEPA procedural requirements are fulfilled via the MTCA remedy selection process pursuant to WAC 197-11-250 through 197-	The City will prepare a SEPA checklist as part of the IAP public participation package and Ecology will issue the SEPA Determination.
Chemical-Specific ARARs			
Federal Resource Conservation and Recovery Act	42 USC 6901 et seq., 40 CFR 257-268	The characterization, generation, transportation, treatment, storage, and disposal of hazardous solid wastes are regulated (Subtitle C), and minimum national guidelines exist for management of non-hazardous solid wastes (Subtitle D).	The characterization, generation, transportation, treatment, storage, and disposal of any solid waste generated during IA implementation will be conducted in accordance with applicable federal, state, and local waste management regulations. Solid waste generated during the IA will be disposed of at an off-site facility permitted to receive the waste.
State Hazardous Waste Management	Chapter 70.105 RCW, Chapter 173-303 WAC	The state's regulation for the characterization, generation, transportation, treatment, storage, and disposal of hazardous solid wastes defined in Resource Conservation and Recovery Act Subtitle C and additional dangerous solid wastes defined in Chapter 173-303 WAC.	
Federal Hazardous Materials Transportation	49 USC 5101 et seq., 49 CFR Parts 171-180	Requirements exist (e.g., packaging, labeling, placarding, communications, emergency response) for the transportation of hazardous materials, including hazardous waste.	The transportation of any hazardous materials generated during IA implementation will comply with these regulations.
Federal Occupational Safety and Health Standards	29 CFR 1910	Development and enforcement of national safety standards are used to establish safe and healthful working conditions for workers, including hazardous waste operations and emergency response workers in 29 CFR 1910.120.	IA implementation will be conducted in accordance with applicable federal and state safety and health regulations. For instance, the selected remediation contractor will be required to prepare and submit a project-specific health and safety plan for City review.
State Industrial Safety and Health Act	Chapter 49.17 RCW	Development and enforcement of state safety standards are used to establish safe and healthful working conditions for workers, including hazardous waste operations workers (Chapter 296-843 WAC) and construction workers (Chapter 296-155 WAC).	
Location-Specific ARARs			
Federal Historic Preservation Act	54 USC 300101 et seq., 36 CFR Part 800	Federal agencies are required to take into account the effect of an action upon any district, site, building, structure, or object that is included in or eligible for the National Register of Historic Places (generally 50 years old or older).	Given the nature of IA implementation activities (e.g., excavation in the former Oil Stain Area and along the existing rail spur) and the fact these activities will predominantly disturb fill material, the potential for encountering cultural resources (e.g., human remains, tribal artifacts, historical resources, archaeological resources) during the IA is low. Nonetheless, an IDP is included in the IAP, and will be implemented in the unlikely event that a cultural resource is inadvertently discovered during IA implementation activities. Additionally, archeological monitoring will take place during RDI and excavation activities.
Governor's Executive Order 21-02	Executive Order 21-02	Consultation with DAHP and any affected tribes and implementation of measures to avoid, minimize, or mitigate adverse effects to archeological and historic archaeological sites, historic buildings/structures, traditional cultural places, sacred sites or other cultural resources are required for state-funded construction or acquisition projects.	
Federal Archaeological and Historic Preservation Act	54 USC 312501 et seq., 43 CFR 7	Requirements exist to evaluate and preserve historical and archaeological data.	
Archaeological Sites and Resources	Chapter 27.53 RCW, Chapter 25-46 WAC, Chapter 25-48 WAC	Requirements exist to conserve, preserve, and protect archaeological sites and resources, including procedures for (1) registering previously unreported historic archaeological resources discovered on state-owned aquatic lands, (2) issuing archaeological excavation and removal permits, and (3) issuing civil penalties.	
State Shoreline Management Act	Chapter 90.58 RCW; Chapter 173-26 WAC	Requirements exist for substantial development occurring within 200 feet of a state shoreline to prevent harm from uncoordinated and piecemeal development of shorelines.	These are ARARs since IA implementation activities will occur within 200 feet of the Budd Inlet shoreline. The City will meet the substantive requirements outlined in the City Substantial Development, Conditional Use, or Variance.
City Shoreline Master Program	OMC Chapter 18.20, Ordinance #7280	Implements the state Shoreline Management Act by providing goals, policies, and regulations for shoreline use and protection, and establishing a permit system for substantial development occurring within 200 feet of a City shoreline	
Action-Specific ARARs			
Federal Clean Water Act	33 USC 1251 et seq., 40 CFR 122-136	Requirements (e.g., obtaining a NPDES permit) exist for wastewater and stormwater discharges to avoid adversely affecting water quality.	The IA will conform to these ARARs regarding how construction stormwater is managed. The IA design and IA implementation will prevent stormwater from contacting contaminated IA media (e.g., excavated soil), and there will be no contaminated contact stormwater discharge.
State NPDES Permit Program	Chapter 90.48 RCW, Chapter 173-220 WAC	A state program exists to regulate the discharge of pollutants, wastes, and materials to surface waters of the state via Clean Water Act NPDES permits.	
Stormwater, Drainage, and Erosion Control	OMC Chapter 13.16	Establishes regulations to control stormwater runoff, prevent pollution from entering the municipal storm sewer system (MS4), and ensure compliance with the city's state-issued stormwater permit.	
Dust control requirements	WAC 173-400-040(9). PSCAA Regulation I Article 9.15	Requirements exist to implement reasonable precautions to prevent or minimize visible emissions of fugitive dust during activities such as construction.	Dust control measures (e.g., watering/misting exposed surfaces, covering stockpiles not in use with heavy duty plastic sheeting and securing with ropes and sandbags, covering haul trucks, inspecting haul trucks before they enter public roads and removing any excess dirt on the truck) will be incorporated as necessary into the IA design to prevent and minimize visible emissions of fugitive dust during IA implementation.
ORCAA Fugitive Dust Standards	Rule 8.3(c) and 8.3(e)	Establishes emission standards for fugitive dust and requirements to prevent particulate matter from construction, material handling, or other operations from crossing property lines and unreasonably interfering with public health.	
State Noise Control Act	Chapter 70A.20 RCW, Chapter 173-60 WAC	Establishes maximum noise levels at specified times for specified durations, with some exemptions such as temporary construction activity in 173-60-050(3)(a).	IA implementation activities will be designed to comply with applicable noise requirements (e.g., limiting construction activities to the working hours specified in OMC Chapter 8.32).
Noise Control	OMC Chapter 8.32	Regulates noise disturbances within the city, establishing maximum permissible sound levels to protect public peace, health, and welfare.	
Clearing and Grading	OMC Chapter 16.48	Regulates land clearing, tree removal, and soil protection to manage environmental impacts. It requires approved permits and plans (Tree, Soil and Vegetation Plan) for removing trees defined in Section 16.48.030 or clearing significant vegetation.	Prior to IA implementation, the City will obtain the Site Development Permit and Tree Removal Permit or ensure that the work meets permit substantive requirements..

Notes:

ARAR: Applicable or relevant and appropriate; DAHP: Department of Archaeology and Historic Preservation; HASP: Health and Safety Plan; IDP: Inadvertent Discovery Plan; MTCA: Model Toxics Control Act; NPDES: National Pollutant Discharge Elimination System; OMC: Olympia Municipal Code; PSCAA: Puget Sound Clean Air Agency; RCW: Revised Code of Washington; SEPA: State Environmental Policy Act; USC: United States Code; WAC: Washington Administrative Code

Appendix C

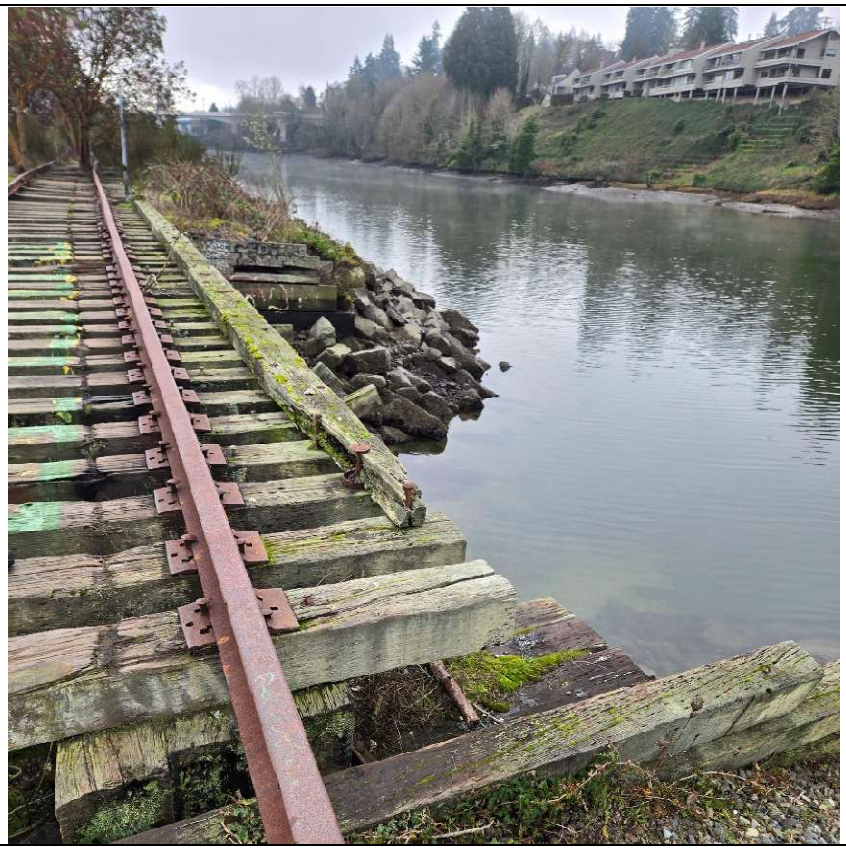
Photographic Log

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Photo No. 6: Existing Rail Spur 4

Photographic Log

Photo No. 1: Trestle Structure Photo #1 **Date:** 01/21/2026 **Direction Photo Taken:** North **Description:** North Trestle looking north.	

Photo No. 2: Trestle Structure Photo #2 **Date:** 01/21/2026 **Direction Photo Taken:** South West **Description:** North Trestle looking south. Photo taken at 11:22 AM. High Tide at 8:20 AM.	

Photographic Log

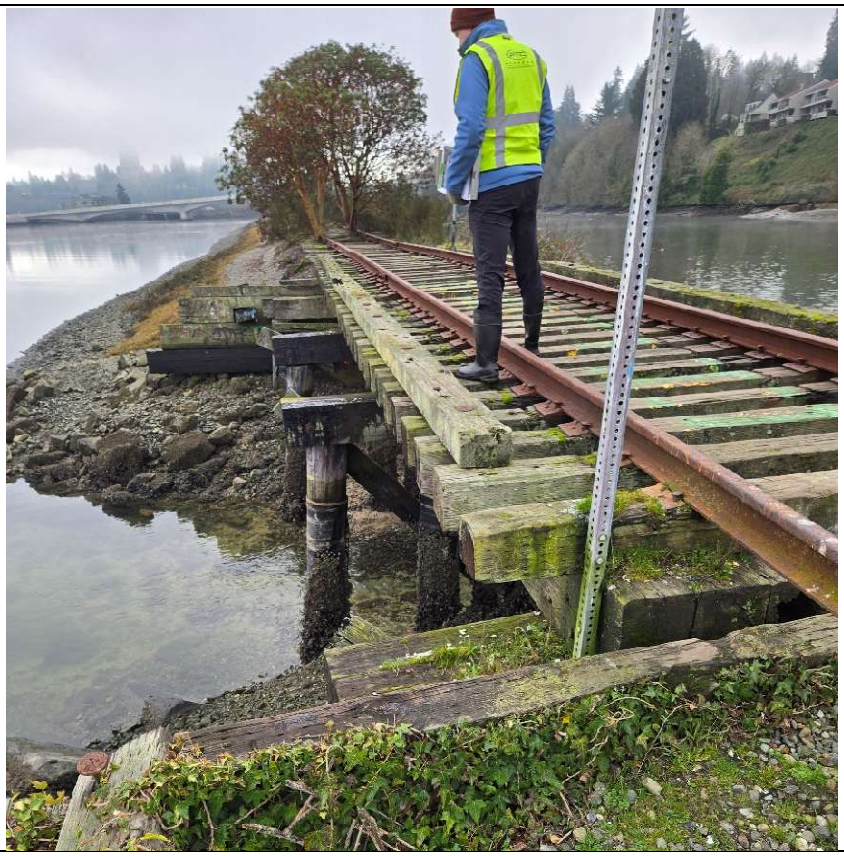
Photo No. 3: Trestle Structure Photo #3 **Date:** 01/21/2026 **Direction Photo Taken:** South **Description:** North Trestle looking south. Existing conditions below trestle.	

Photo No. 4: Trestle Structure Photo #4 **Date:** 01/21/2026 **Direction Photo Taken:** South **Description:** North Trestle looking south.	

Photographic Log

Photo No. 5: Trestle Structure Photo #5 **Date:** 01/21/2026 **Direction Photo Taken:** North **Description:** North Trestle looking north.	

Photo No. 6: Existing Rail Spur **Date:** 01/21/2026 **Direction Photo Taken:** Northeast **Description:** Existing rail spur condition along southern portion of the Site, near North Trestle.	

Appendix D

Sampling and Analysis Plan

Upland Soil Sampling to Support the Interim Action
Solid Wood Incorporated Site
Olympia, Washington

Agreed Order No. DE-08-TCPSR-5415

Facility/Site ID No. 94656838

Cleanup Site ID No. 4228

DRAFT

Prepared for:

City of Olympia
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May 2026

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Table 1 Investigation Design
Table 2 Laboratory Control Limits
Table 3 Target Reporting Limits

Attachments

Attachment 1 PIONEER Field Forms
Attachment 2 PIONEER Sample Schema

List of Acronyms

Acronym	Explanation
AO	Agreed Order
bgs	Below Ground Surface
CFR	Code of Federal Regulations
City	City of Olympia
cPAH	Carcinogenic Polycyclic Aromatic Hydrocarbon
Ecology	Washington State Department of Ecology
EIM	Environmental Information Management
GPS	Global Positioning System
IA	Interim Action
IAP	Interim Action Plan
IDW	Investigation-Derived Waste
MTCA	Model Toxics Control Act
PID	Photoionization Detector
PIONEER	PIONEER Technologies Corporation
QAPP	Quality Assurance Project Plan
QC	Quality Control
RDI	Remedial Design Investigation
SAP	Sampling and Analysis Plan
Site	Solid Wood Incorporated Site
SOW	Scope of Work
TPH	Total Petroleum Hydrocarbon
TPH-D	Total Petroleum Hydrocarbon Diesel Range Organics
TPH-HO	Total Petroleum Hydrocarbon Heavy Oil Range Organics
VOC	Volatile Organic Compound
WAC	Washington Administrative Code

SECTION 1: INTRODUCTION

1.1 Purpose

The purpose of this Sampling and Analysis Plan (SAP) for the Solid Wood Incorporated Site (Site) is to present the plan for (1) conducting a remedial design investigation (RDI) to support the implementation of an interim action (IA) to address contaminated soils and (2) collecting confirmation sidewall and bottom excavation samples following IA implementation. The scope of work (SOW) identified in this SAP is to support the Interim Action Plan (IAP). The IA is being conducted under Agreed Order (AO) No. DE-08-TCPSR-5415 between the City of Olympia (City) and the Washington State Department of Ecology (Ecology).

1.2 Site Location

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, which was used for various lumber milling activities; and
- The BNSF Railway Company spur right-of-way, which runs through the Site.

There is a waterfront park known as West Bay Park on the northern portion of the Site. A chain link fence limits public access to the southern portion of the Site, which is undeveloped and contains remnants of the former Solid Wood Inc. plywood veneer plant foundation, scrub vegetation, and the abandoned rail spur (see Figure 1).

1.3 IA-Related Background

Key Site background information necessary for completing RDI and confirmation sampling activities is summarized in this Section.

The operational features of interest for the IA are the Oil Stain Area and the existing rail spur (see Figure 1). The proposed IA includes four excavations, as shown on Figure 1. The first excavation, located in the Oil Stain Area, is to address total petroleum hydrocarbons (TPH) in the diesel range (TPH-D) plus TPH in the heavy oil range (TPH-HO) exceedances in soil found during remedial investigation (RI) activities at the Site. The remaining three excavations, located along the existing rail spur, are to address total carcinogenic polycyclic aromatic hydrocarbon (cPAH) contamination in soil.

There are no anticipated underground and overhead utilities proximate to the IA work areas. The primary lithologic unit of interest within the Site is fill material, which consists of a mixture of silts, sands, and gravel, and ranges from a few feet to greater than 14 feet thick. Groundwater was encountered at depths of three to eight feet below ground surface (bgs) in Site monitoring wells.

1.4 Sampling and Analysis Plan Organization

The remainder of the SAP is organized as follows:

- Section 2: Sampling and Analysis Plan
- Section 3: Quality Assurance Project Plan
- Section 4: Implementation
- Section 5: References

SECTION 2: SAMPLING AND ANALYSIS PLAN

The purpose of this Section is to present the methodology for collecting and analyzing samples. The SAP was prepared in accordance with Washington Administrative Code (WAC) 173-340-820 and applicable components of Ecology guidance (Ecology 1995).

2.1 Investigation Design

The investigation design is presented in Table 1 and the proposed investigation sampling locations are shown on Figures 2 and 3. The investigation design (Table 1) includes the following details: investigation area, proposed location IDs, target depths, anticipated number of samples, key sampling details, and associated laboratory analyses. The three investigation objectives are:

- Collect soil samples to refine the IA excavation footprints and excavation bottom depths (Objective #1);
- Conduct a structural integrity assessment on the North Trestle to ensure IA activities can be performed safely, assess the overall condition of the trestle, and evaluate the feasibility of implementing IA activities on the southern portion of the berm (see Figure 1; Objective #2); and
- Collect soil confirmation sidewall and bottom excavation samples to ensure soil in-place is below the performance criteria established in the IAP (Objective #3).

2.2 Field Investigation Procedures

2.2.1 Utility Locate

PIONEER will mark proposed drilling locations and conduct a public utility locate (i.e., 811) to verify the location and type of utilities within the IA areas.

2.2.2 Drilling and Associated Soil Sampling

A driller licensed in Washington State per Chapter 173-162 WAC will complete all drilling activities. Proposed drilling locations will be adjusted as necessary in the field based on access or other site constraints. Soil borings will be advanced using a direct-push, hollow-stem auger, or similar rig. Once all applicable samples have been collected from a given soil boring, the driller will decommission the soil boring in accordance with Chapter 173-160 WAC.

Soil samples will be collected from soil borings in all RDI borings to accomplish Objective #1. Applicable target drilling depths and/or target sample depths and other soil sampling-related details for each boring are included in Table 1. In each soil boring, PIONEER Technologies Corporation (PIONEER) will examine the soil cores and classify the soil lithology according to the Unified Soil Classification System. PIONEER will note all visual observations (e.g., anthropogenic materials [fill], sheens, stains, coatings) and olfactory observations potentially associated with contamination. In each boring conducted in the Oil Stain Area, PIONEER will utilize a calibrated photoionization detector (PID) to collect PID field screening measurements at a frequency of at least one measurement every two feet using the procedures described in the next section. PIONEER will log borehole lithology, PID field measurements, and record drilling and soil sampling activities on the Subsurface Sampling Field Log in Attachment 1.

2.2.3 Collecting Soil Samples from Excavations and Stockpiles

Soil samples will be collected from each excavation. Grab sidewall and bottom samples will be collected from each excavation. Confirmation samples will be collected based on the criteria outlined in the table below.

Confirmation Sampling Frequency and Spacing

Excavation	Confirmation Sampling Frequency
Proximate to SB-47, SB-48, and SB-59 (Oil Stain Area)	Sidewall samples will be collected along excavation sidewalls (i.e., north sidewall, east sidewall, south sidewall, and west sidewall) and the excavation bottom. Confirmation samples will be spaced approximately 20 feet apart and will be collected at two intervals per sample location: (1) near the sidewall bottom and (2) biased towards "worst-case" locations based on field observations (e.g., visual and olfactory) or where historical data indicated contamination may be present. In the event there are no field observations or analytical indication of contamination, the sidewall sample will be collected halfway between the bottom of the excavation and the top of the excavation.
Proximate to SB-26, SB-29, and SB-30	Sidewall samples will be collected along excavation sidewalls (i.e., north sidewall, east sidewall, south sidewall, and west sidewall) and the excavation bottom. Confirmation samples will be spaced approximately 30 feet apart. Sidewall samples will be collected at two intervals per sample location: (1) near the sidewall bottom and (2) 4 feet bgs.
Proximate to SS-03, SS-05, and SS-06 (Rail Spur)	Collect soil confirmation soil samples along excavation sidewalls (i.e., north sidewall, east sidewall, south sidewall, and west sidewall) and excavation bottom. Confirmation samples will be a maximum of 40 – 50 feet apart. Sidewall samples will be collected halfway between the bottom of the excavation and the top of the excavation.

If the excavation area exceeds the proposed excavation footprints, more confirmation samples may be required. These excavation sidewall and bottom samples will be obtained with the excavator bucket, and then retrieved from the excavator bucket using a clean stainless-steel trowel or spoon. PIONEER will log PID field readings and soil sampling activities on the Subsurface Field Log in Attachment 1.

2.2.4 PID Field Screening Procedures

The PID will be equipped with a 10.6 eV lamp and will be calibrated prior to use. Representative soil for PID field screening will be immediately placed in a small, resealable plastic bag until the bag is approximately one-third full and then the bag will be sealed. The bag will be gently shaken for a few seconds, then placed in the same location as other baggies (e.g., on the tailgate in the sun or in a vehicle if the ambient temperature is less than 40 degrees Fahrenheit) for approximately 10 minutes, and then gently shaken again before obtaining the PID measurement. A small portion of the bag seal will be opened to allow the PID to enter the headspace of the bag (without touching any soil), and the maximum PID measurement within the first 30 seconds of readings will be recorded. PID measurements will be recorded on the Subsurface Sampling Field Log in Attachment 1.

2.2.5 Equipment Decontamination Procedures

All non-dedicated equipment that contacts potentially contaminated soil will be decontaminated before use at each sampling location. The driller will use a high-pressure steam cleaner to remove visible soil and grease from all downhole equipment on drill rigs (e.g., augers, rods, samplers, drill bits) prior to arriving at the Site. Drilling tools (e.g., augers, rods, samplers, drill bits) will be (1) pressure washed or (2)

scrubbed and washed with potable water containing diluted detergent (e.g., Liquinox) and sufficiently rinsed with potable water between each drilling location based on the type of drill rig and tools used. In addition, drilling samplers (e.g., split-spoon sampler) will be scrubbed and washed with potable water containing diluted detergent (e.g., Liquinox) and sufficiently rinsed with potable water between each sampling run at a given drilling location. A cleaning area will be set up and maintained on-site during drilling operations that will allow all cleaning water to be contained and collected. The affected portions of non-drilling equipment (e.g., stainless steel bowls and spoons) will be scrubbed and washed with potable water containing diluted detergent (e.g., Liquinox), sufficiently rinsed with potable water, and wiped clean before each use. All water (and soil) generated during decontamination will be managed as investigation-derived waste (IDW).

2.2.6 GPS Coordinates

PIONEER will collect the coordinates for the RDI borings with a Trimble GeoXH or similar global positioning system (GPS) unit. The GPS accuracy will be within +/- one meter.

2.2.7 Field Recordkeeping

PIONEER will complete the following forms to document applicable investigation activities (see Attachment 1):

- Field Checklist, which is used to assist with planning and coordination prior to a field event and to document completion of field activities.
- Daily Field Report, which is used to document miscellaneous field activities daily (e.g., miscellaneous field notes, miscellaneous sampling notes).
- Subsurface Sampling Field Log, which is used to record drilling, lithologic (e.g., color, grain size, moisture, detail), and associated sampling details.

In addition, PIONEER will take representative photographs of investigation activities as necessary.

2.3 Laboratory Analyses and Sample Containers

Analytical methods, sample containers, preservation requirements, and maximum holding times are summarized in the following table.

Sample Containers, Preservations, and Holding Times (Libby Environmental, Inc.)

Analysis	Method	Container	Preservation	Holding Times
HCID	NWTPH-HCID	4 oz. Glass Jar	Cool to 4°C	14 Days
TPH-D and TPH-HO	NWTPH-Dx	4 oz. Glass Jar	Cool to 4°C	14 Days
TPH-G	NWTPH-Gx	20 mL Glass VOA (x2)	MeOH, Cool to 4°C	14 Days
PAHs	EPA 8270	4 oz. Glass Jar	Cool to 4°C	14 Days (Extraction)/ 40 Days (Analysis)
PCBs	EPA 8082	8 oz. Glass Jar	Cool to 4°C	14 Days
Volatile Organic Compounds (VOCs)	EPA 8260C	20 mL Glass VOA (x2)	MeOH, Cool to 4°C	48 Hours
Lead	EPA 6010B/6020	4 oz. Glass Jar	Cool to 4°C	6 Months

Notes:
Information in this table was provided by Libby Environmental, Inc. as of April 2026.
EPA: United States Environmental Protection Agency; MeOH: Methanol

2.4 Sample Labeling and Shipment

2.4.1 Sample Labeling

Sample labels will clearly indicate the site location, sample number identification, date, time, sampler's initials, parameters to be analyzed, and added preservative (if any). Each sample will be individually labeled. Each sample identification will be unique and will adhere to the PIONEER sample number scheme included in Attachment 2.

2.4.2 Chain-of-Custody Documentation

Chain-of-Custody procedures will be followed to maintain and document sample possession. A sample is considered under a person's custody if it is in that person's physical possession, within visual sight of that person after taking physical possession, secured by that person so that the sample cannot be tampered with, or secured by that person in an area that is restricted to unauthorized personnel.

The originator (i.e., the sampler) will complete the requested information on the custody record, including signature and date. Original signed custody records listing the samples in the cooler will accompany sample shipments. The originator of the custody record will retain a copy of the custody record.

2.4.3 Sample Shipment

Sample packaging and shipping procedures are based on United States Environmental Protection Agency specifications and United States Department of Transportation regulations as specified in 49 Code of Federal Regulations (CFR) 173.6 and 49 CFR 173.24. Soil samples will be packed in coolers with bubble wrap, bags, and ice in a manner that achieves preservation requirements while also preventing breakage of sample containers and leakage of melting ice. If shipping is required, samples will be shipped as environmental samples and not hazardous material. Samples will be hand-delivered or shipped express delivery to the laboratories. Custody seals will be used when shipping samples via courier service or commercial carriers. The chain of custody record will accompany each shipment. The method of shipment, courier name(s), and other pertinent information will be entered in the chain of custody record.

2.5 Investigation-Derived Waste

For all activities identified in this SAP, the following types of IDW will be generated during sampling activities and will be handled as follows:

- Cuttings from soil borings will be placed in sealed and labeled drums or bins, and temporarily stored in a secure area of the Site (i.e., south of West Bay Park on the other side of the existing chain link fence that is locked daily and limits public access to the southern portion of the Site).
- Decontamination water will be placed in sealed and labeled drums or totes, and temporarily stored in a secure area of the Site (i.e., south of West Bay Park on the other side of the existing chain link fence that is locked daily and limits public access to the southern portion of the Site).
- Personal protective equipment (e.g., nitrile gloves) and other disposable sampling equipment will be disposed of as solid waste in the standard municipal solid waste stream.

All IDW will be characterized and then removed by a licensed waste transporter for off-Site treatment and/or disposal at a facility permitted to accept the waste.

SECTION 3: QUALITY ASSURANCE PROJECT PLAN

The purpose of this Quality Assurance Project Plan (QAPP) is to summarize the methodology for ensuring usable sampling and analysis data of acceptable quality are generated. This QAPP was prepared in general accordance with WAC 173-340-820 and Ecology guidance (Ecology 2016).

Typical contents of a stand-alone QAPP are not repeated if included elsewhere in this document. For instance, requirements for laboratory analytical methods, sample containers, preservation, and holding times are already described in the SAP. Likewise, field procedures associated with quality assurance (e.g., equipment decontamination, field recordkeeping, sample identification schema, sample handling and shipment) are already described in the SAP.

3.1 Field Measurements and Calibration

Field measurements, observations, and notes are of vital importance to this investigation and will be documented. The PID(s) will be calibrated using procedures in accordance with the manufacturer's recommendations. The PID calibration will include a two-point calibration: a zero gas (i.e., the atmosphere) and an appropriate span gas (e.g., isobutylene at 100 parts per million). Calibrations will be documented in the field notes.

3.2 Field Quality Control Samples

Field quality control (QC) samples will include field duplicates, matrix spike/matrix spike duplicates, equipment rinsate blanks, and VOC trip blanks. The frequency expectation for each type of field QC sample is listed below:

- Field duplicates: One field duplicate per 20 samples per matrix.
- Matrix spike/matrix spike duplicate: One sample per 20 samples per matrix.[1]
- Equipment rinsate blank: One sample per 20 samples per matrix per equipment type.
- VOC trip blank: One per cooler of samples being analyzed for VOCs.

Unless otherwise noted, field QC samples will be collected, handled, preserved, and documented in the same manner as primary samples. Field duplicates and the matrix spike/matrix spike duplicate will be collected at random locations selected by the field sampling team. Field duplicate and matrix spike/matrix spike samples will be collected simultaneously with the primary sample using the same sample collection and preparation techniques. Equipment rinsate blanks will be collected by pouring deionized water on non-dedicated sampling equipment following its decontamination. Field duplicates, matrix spike/matrix spike duplicates, and equipment rinsate blanks will be analyzed for the same constituents as the applicable primary sample. VOC trip blanks will be prepared and provided by the laboratory. VOC trip blanks will consist of organic-free water and will be analyzed for VOCs.

[1] Matrix spikes and matrix spike duplicates are lab QC samples, but are also included with the field QC samples since the field sampling team is responsible for ensuring that appropriate sample volumes are collected for analysis of matrix spikes and matrix spike duplicates.

3.3 Laboratory Quality Control Samples

The project laboratories will be responsible for conducting laboratory QC procedures and reporting laboratory QC results in accordance with the analytical methods and their standard operating procedures. Laboratory QC samples provide important qualitative results used to evaluate the laboratory QC procedures. Laboratory QC samples for applicable analyses will include method blanks, laboratory control samples (also known as blank spikes), matrix spikes, and matrix spike duplicates once per batch of analyses. Expectations for laboratory control limits for laboratory control samples, matrix spikes, and matrix spike duplicates are presented in Table 2. In addition, it is also expected that the project laboratories will perform and report results of surrogate recovery for every sample being analyzed for an organic analysis. Expectations for laboratory control limits for surrogate recoveries are shown in Table 2.

3.4 Laboratory Target Reporting Limits

Analytical methods and laboratories have been selected to achieve low target reporting limits. Target reporting limits, provided by the analytical laboratory, are provided in Table 3. Target reporting limits were compared to Model Toxics Control Act (MTCA) Method A Cleanup Levels for Unrestricted Land Uses (or MTCA Method B Direct Contact screening levels in cases where a MTCA Method A value was not established). All target reporting limits are below MTCA Method A and Method B screening levels.

3.5 Data Quality Review

An evaluation of data quality will be performed for all field and lab data to determine if the data is useable. Specifically, field records will be reviewed by PIONEER for completeness, accuracy, and legibility. The laboratories will review their results relative to method criteria and laboratory QC procedures as the data are generated. Each laboratory will report their QC results and qualify data as necessary in a report and electronic data deliverable suitable for a Stage 2B validation (EPA 2009). An independent data quality validator will perform a Stage 2B validation of all analytical laboratory data generated by the laboratories using the recommended Stage 2B verification and validation checks listed in Sections 1.1 through 1.3 of Appendix A in the EPA 2009 document. The data quality validator will evaluate the validity of the sample and QC data using method-specific and laboratory-established quality control requirements, EPA data verification and validation guidance (EPA 2002), and/or national functional guidelines (EPA 2020a, 2020b) as appropriate. The data quality validator may reject data or add other qualifications in addition to the laboratory qualifications. The data quality validator will prepare a Stage 2B validation document, which will be included with the applicable laboratory reports for reporting purposes.

3.6 Corrective Action

The need for corrective action will be evaluated as appropriate for deviations from the SAP/QAPP and other potential data quality issues that arise in the field or the laboratory. Relatively minor field issues will be discussed, resolved, and documented by the PIONEER On-Site Field Lead and Site Safety Officer and/or the PIONEER Project Manager. Relatively minor laboratory issues will be discussed, resolved, and

documented by the laboratory, the PIONEER Project Manager, and/or the data quality validator. Corrective action decisions will be situation-dependent. Potential corrective action decisions may include one or more of the following:

- Revising the sampling and analysis methodology
- Collecting a new sample
- Reanalyzing an existing sample
- Accepting the data with a recognized level of uncertainty
- Revising the investigation design

In the event of a significant data quality issue, the PIONEER Project Manager will call a meeting to discuss, resolve, and document the situation with the Port and Ecology.

SECTION 4: IMPLEMENTATION

4.1 Investigation Roles and Responsibilities

The project team for implementing this SAP includes representatives from Ecology, PIONEER, and other various subcontractors (e.g., licensed driller, laboratories). The specific roles and responsibilities that are anticipated for key personnel involved in this investigation are summarized in the draft IAP.

4.2 Pre-Mobilization Tasks

PIONEER or the City will provide Ecology a notice for the RDI soil sampling at least 7 calendar days before beginning sampling. PIONEER will ensure the following pre-mobilization coordination and preparation tasks are completed:

- Subcontract field subcontractors as necessary.
- Coordinate the SOW and the anticipated field schedule with field subcontractors and field personnel.
- Coordinate with field subcontractors regarding health and safety details specific to this project (e.g., field team organization and communication, potential hazards and associated controls, work zones, decontamination, personal protective equipment).
- Ensure necessary health and safety equipment (e.g., sanitation equipment, site control equipment, personal protective equipment) will be at the Site for the duration of field activities.
- Obtain necessary health and safety paperwork from field personnel (e.g., training records).
- Perform utility locates to clear underground utilities for each drilling location by (1) calling the Washington Call Before You Dig phone number (i.e., 811), and (2) conduct a private utility locate to identify existing subsurface utilities.
- If necessary, core through concrete prior to drilling to facilitate subsequent drilling activities.
- Ensure the licensed driller submits the necessary notices of intent and associated fees to the Ecology Water Resources Program for proposed drilling locations.
- Coordinate with the project laboratory on key elements of the SAP/QAPP (e.g., sample preservation, analytical methods and analytes, field quality control samples).
- Obtain sample containers from the project laboratory.
- Obtain the necessary sample equipment and supplies.

4.3 Reporting

A technical memorandum will be prepared to document the findings of the RDI, and that memorandum will be submitted to Ecology for review. The technical memorandum will be incorporated into the final IA design. All applicable investigation results will be submitted electronically to Ecology's Environmental Information Management (EIM) database.

SECTION 5: REFERENCES

Ecology. 1995. Guidance on Sampling and Data Analysis Methods. January.

Ecology. 2016. Guidelines for Preparing Quality Assurance Project Plans for Environmental Studies, Publication No. 04-03-030. December.

EPA. 2002. Guidance on Environmental Data Verification and Data Validation, EPA QA/G-8. EPA/240/R-02/004. November.

EPA. 2009. Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use, EPA 540-R-08-005. January 13.

EPA. 2016a. National Functional Guidelines for Inorganic Superfund Methods Data Review. EPA-540-R-2016-001. September.

EPA. 2016b. National Functional Guidelines for Superfund Organic Methods Data Review. EPA-540-R-2016-002. September.

EPA. 2020a. National Functional Guidelines for Inorganic Superfund Methods Data Review. EPA-542-R-20-006. November.

EPA. 2020b. National Functional Guidelines for Organic Superfund Methods Data Review. EPA-540-R-20-005. November.

Figures





Legend

- Agreed Order Boundary
- Abandoned Rail Spur

IA Features

- Proposed Soil Excavation Area

0 250 500 Feet

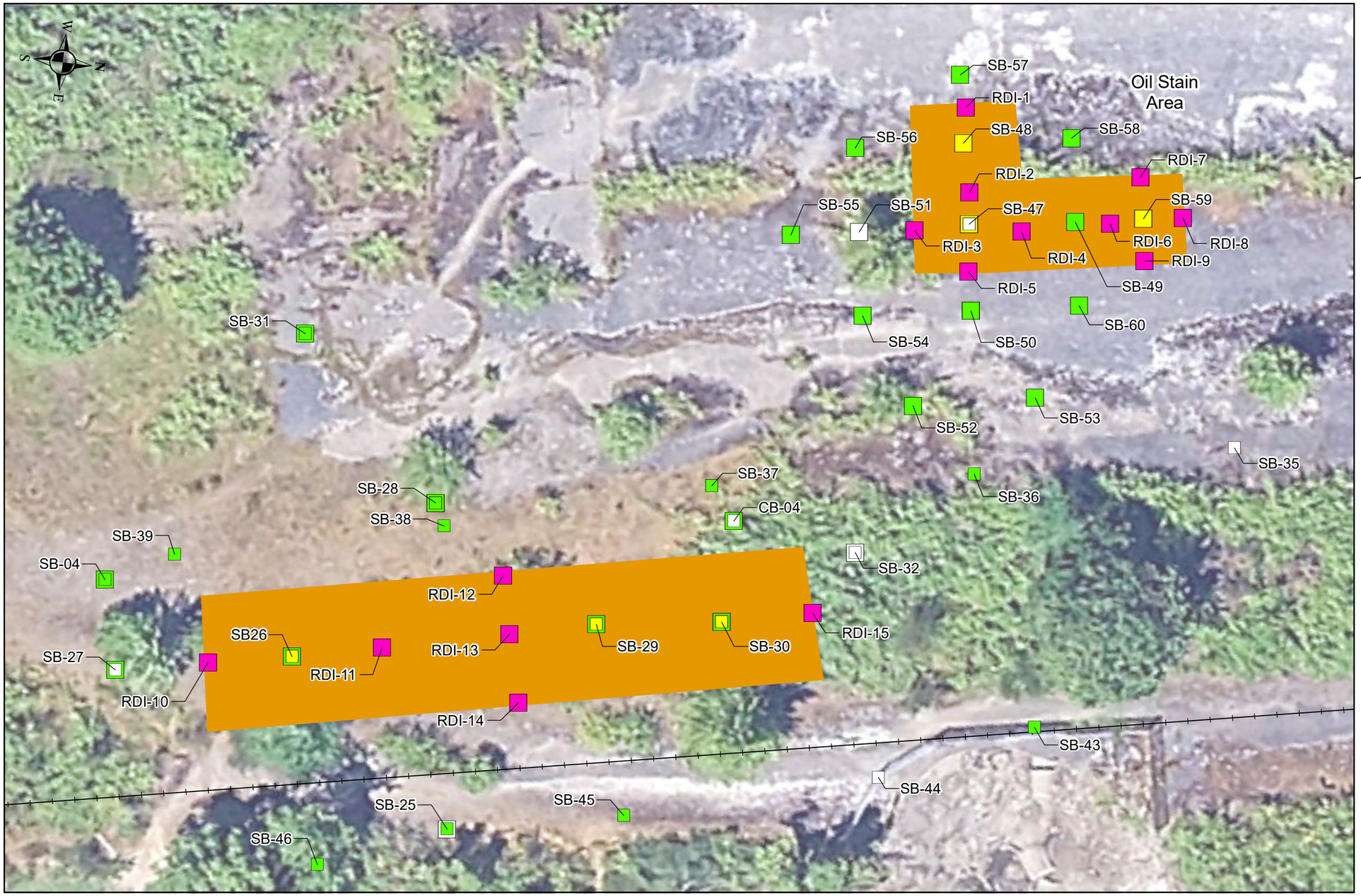
PIONEER TECHNOLOGIES CORPORATION

IA-Related Site Features
Sampling and Analysis Plan
Solid Wood Incorporated Site

Figure 1

Document Path: G:\Projects\City of Olympia\GIS\Maps\2026\RDI SAP\Figure 1 IA Related Site Features.mxd; Author: KI; Date Saved: 5/21/2026

Document Path: G:\Projects\City of Olympia\GIS\Maps\2026\RDI SAP\Figure 2 Proposed RDI Sampling Locations (Oil Stain Area and SB26, SB29, and SB30).mxd; Author: KI; Date Saved: 5/27/2026





Legend

RDI Features
- Proposed Soil Sampling Locations
- Proposed Excavation Footprint

Soil Sampling Locations
- Total cPAHs
- TPH-D+HO

Soil Concentrations
- Non-detect
- Concentration ≤ SL
- Concentration > SL

Site Features
- Agreed Order Boundary
- Abandoned Rail Spur

0 10 20 Feet

PIONEER TECHNOLOGIES CORPORATION

Proposed RDI Sampling Locations (Oil Stain Area and SB26, SB29, and SB30)
Sampling and Analysis Plan
Solid Wood Incorporated Site

Figure 2





Legend

RDI Features
- Proposed Soil Sampling Locations
- Proposed Soil Excavation Area

Soil Sampling Locations
- Total cPAHs
- TPH-D+HO

Soil Concentrations
- Non-detect
- Concentration ≤ SL
- Concentration > SL

Site Features
- Agreed Order Boundary
- Abandoned Rail Spur

0 50 100
Feet

PIONEER TECHNOLOGIES CORPORATION

Proposed RDI Sampling Locations (Rail Spur)
Sampling and Analysis Plan
Solid Wood Incorporated Site

Figure 3

Document Path: G:\Projects\City of Olympia\GIS\Maps\2026\RDI SAP\Figure 3 Proposed RDI Sampling Locations (Rail Spur).mxd; Author: KI; Date Saved: 5/27/2026

Tables

Table 1: Investigation Design

IA Area	Objective	Proposed Location ID	Target Depth (feet bgs unless otherwise noted)	Anticipated # of Samples[1]	Key Sampling Details	Analysis										
						COCs			MTCA Table 830-1[2]							
						NWTPH-HCID	NWTPH-Dx w/ SGC	cPAHs	NWTPH-Gx	NWTPH-Dx w/ SGC	BTEX	Fuel Additives	cPAHs	Naphtalenes	PCBs	Halogenated VOCs
Oil Stain Area	Confirm Excavation Footprint	RDI-1 through RDI-5	7' and 8'	10	Record field observations (i.e., visual and olfactory) from top of boring to bottom of boring. Take PID readings every two feet along the entire boring. Samples collected at 10' and 12' will be placed on Hold pending results from samples collected at 8'.	X	X									
			10' and 12'	10		H	H									
		RDI-6 through RDI-9	7' and 8'	8		X	X									
			10' and 12'	8		H	H									
	Contingent Borings	TBD	TBD	TBD	Additional step-out borings may be advanced and sampled based on field observations.	X	X									
	Confirmation Sampling	TBD	See Key Sampling Details	TBD Based on Final Excavation Footprint	Collect confirmation soil samples along excavation sidewalls (i.e., north sidewall, east sidewall, south sidewall, and west sidewall) and excavation bottom. Confirmation samples will be spaced approximately 20 feet apart and will be collected at two intervals per sample location: (1) near the sidewall bottom and (2) biased towards "worst-case" locations based on field observations (e.g., visual and olfactory) or where historical data indicated contamination may be present. In the event there are no field observations or analytical indication of contamination, the sidewall sample will be collected halfway between the bottom of the excavation and the top of the excavation.			P[3]	X	P[3]	P[3]	X	X	P[3]	P[3]
Existing Rail Spur	Confirm Excavation Footprint	RDI-10 through RDI-15	5' and 6'	6	Record field observations (i.e., visual and olfactory).			X								
		RDI-16 through RDI-20	0 – 0.5' and 1'	10	Record field observations (i.e., visual and olfactory).			X								
	Contingent Borings	TBD	TBD	TBD	Additional step-out borings may be advanced and sampled based on field observations.			X								
	Confirmation Sampling	TBD	See Key Sampling Details	TBD Based on Final Excavation Footprint	Collect soil confirmation soil samples along excavation sidewalls (i.e., north sidewall, east sidewall, south sidewall, and west sidewall) and excavation bottom. • Confirmation samples from the SB-26, SB-29, and SB-30 excavation will be spaced approximately 30 feet apart. Sidewall samples will be collected at two intervals per sample location: (1) near the sidewall bottom and (2) 4 feet bgs. • Confirmation samples from the SS-03, SS-05, and SS-06 excavations will be a maximum of 40 – 50 feet apart. Sidewall samples will be collected halfway between the bottom of the excavation and the top of the excavation.			P[3]	X	P[3]	P[3]	X	X	P[3]	P[3]

Notes:

--: not applicable; BTEX: benzene, toluene, ethylbenzene, xylenes (total); COIs: constituents of interest; cPAHs: carcinogenic polycyclic aromatic hydrocarbons; H: sample placed on hold, analysis pending based on other results; P: analysis pending based on other results; PCBs: polychlorinated biphenyls; RDI: Remedial Design Investigation; SGC: silica gel cleanup; TBD: to be determined; VOCs: volatile organic compounds; X: analytes to be analyzed

[1] This does not include samples that will be collected for QA/QC (i.e., field blanks, trip blanks, MS/MSD)

[2] Existing site data indicate that petroleum-related contamination is primarily in the heavy oil range. All soil samples collected as part of the RDI will be analyzed using NWTPH-HCID. HCID results will be used to identify the applicable MTCA Table 830-1 analytes for subsequent confirmation sampling.

[3] Analysis pending based on the results of the HCID.

Table 2: Laboratory Control Limits

Constituent(s)	Media	Analytical Method	LCS	MS/MSD		Surrogates
			% Recovery	% Recovery	RPD	% Recovery
TPH-D and TPH-HO	Soil	Ecology Method NWTPH-Dx	65 - 135	65 - 135	≤ 50	65 - 135
TPH-G	Soil	Ecology Method NWTPH-Gx	65 - 135	65 - 135	< 25	65 - 135
VOCs	Soil	USEPA Method 8260D	80 - 120	65 - 135	≤ 35	65 - 135
PAHs	Soil	USEPA Method 8270C	30 - 140	30 - 140	< 50	18 - 137
PCBs	Soil	USEPA Method SW846-8082	75 - 125	75 - 125	< 20	65 - 135
Lead	Soil	USEPA Method 6000/7000 Series	80 - 120	75 - 125	< 20	N/A

Notes:

LCS: Laboratory control sample; MS/MSD: Matrix spike/matrix spike duplicate; N/A: Not applicable; RPD: Relative percent difference

Table 3: Target Reporting Limits

Constituent	MTCA Method A Cleanup Level for Unrestricted Land Uses (MTCA Table 740-1) (mg/kg)	Soil	
		Analytical Method	Target Reporting Limit [1] (mg/kg)
TPH			
TPH-D	2,000	NWTPH-Dx	50
TPH-G	100	NWTPH-Gx	10
TPH-HO	2,000	NWTPH-Dx	250
VOCs			
1,1,1-Trichloroethane	2.0	SW846-8260D	0.030
Ethylene Dibromide (EDB)	0.0050	SW846-8260D	0.0050
1,2-Dichloroethane	11[2]	SW846-8260D	0.030
Benzene	0.030	SW846-8260D	0.020
Carbon Tetrachloride	14[2]	SW846-8260D	0.030
Chloroform	32[2]	SW846-8260D	0.030
1,2-cis-Dichloroethylene	160[2]	SW846-8260D	0.030
Ethylbenzene	6.0	SW846-8260D	0.050
Methyl-t-butyl Ether	0.10	SW846-8260D	0.050
Methylene Chloride	0.020	SW846-8260D	0.020
Tetrachloroethylene	0.050	SW846-8260D	0.030
Toluene	7.0	SW846-8260D	0.10
Total Xylenes	9.0	SW846-8260D	0.15
Trichloroethylene	0.030	SW846-8260D	0.020
Vinyl Chloride	0.67[2]	SW846-8260D	0.020
PAHs			
Benzo[a]anthracene	--	SW846-8270C	0.050
Benzo[a]pyrene	--	SW846-8270C	0.050
Benzo[b]fluoranthene	--	SW846-8270C	0.050
Benzo[k]fluoranthene	--	SW846-8270C	0.050
Chrysene	--	SW846-8270C	0.050
Dibenz[a,h]anthracene	--	SW846-8270C	0.050
Indeno[1,2,3-cd]pyrene	--	SW846-8270C	0.050
Naphthalenes, Total	5.0	SW846-8270C	0.15
Total cPAHs	0.10	SW846-8270C	0.076
PCBs			
Total PCBs	1.0	SW846-8082	0.70
Metals			
Lead	250	SW846-7010	5.0

Notes:

N/A : not applicable; No Value: A SL was not calculated for this constituent (see Appendix A).

[1] It may not be possible to achieve these reporting limits in all samples (e.g., samples requiring extra dilution to achieve laboratory control limits, interferences).

[2] In cases where a MTCA Method A Cleanup Level was not available, the minimum of cancer and noncancer MTCA Method B Direct Contact screening was used. MTCA Method B Direct Contact screening levels were obtained from Ecology's CLARC database updated as of February 2026.

Attachments

Attachment 1

PIONEER TECHNOLOGIES CORPORATION (PTC)
FIELD CHECKLIST

Project/Task 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 TECHNOLOGIES CORPORATION (PTC)
DAILY FIELD REPORT

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

WEATHER
TEMPERATURE
WIND

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

PEOPLE PRESENT ON-SITE

NAME	ASSOCIATION	TIME ON-SITE AND OFF-SITE

NOTES ON WORK COMPLETED

SIGNATURE:_____ DATE:_____

PIONEER TECHNOLOGIES CORPORATION

Project No.: _____
Project Name: _____
Location: _____

Subsurface Sampling Field Log

(applicable for direct-push Geoprobes, hand augers, and test pits)

Drilling Date(s): _____ Client: _____
Drilling Company: _____ Field rep: _____
Sampling Method/Equipment: ____ Geoprobe Rig No. _____ Driller(s): _Casey_____

Sampling Location ID: _____

Soil Collection and Recovery

Sampler No.	Tool Length (ft.)	Actual Advanced Interval (ft. - ft.)	Recovery (in.)
1			
2			
3			
4			
5			
6			

SOIL Analytical Sample(s)

Sample Interval	Basic Soil Type	Time	Weight for Meth (g)	Dup #

PID Screening

Depth (ft.)	Result (ppm)
1	
3	
5	
7	
9	
11	
13	
15	

Soil Profile/Lithology (include thickness of surfacing material)

Interval (ft. - ft.)	Description (draw horizontal line breaks between units!) (Indicate all depths in feet, e.g. instead of 11 inches, write 0.92 ft.) (For fill, qualify the description with the prefix "FILL-")	Symbol (e.g. SP, CL, SM, etc)	Remarks (include specific depth of observation; note staining, odors, etc. in this column)

END OF BORING DEPTH: _____
GROUNDWATER DEPTH DURING DRILLING:_____ AFTER:_____

GROUNDWATER Analytical Sample(s)

Screen Interval (ft. - ft.)	Time	Dup #	Remarks (e.g. odors, sheen, silty, filtered metals/PAHs, etc)

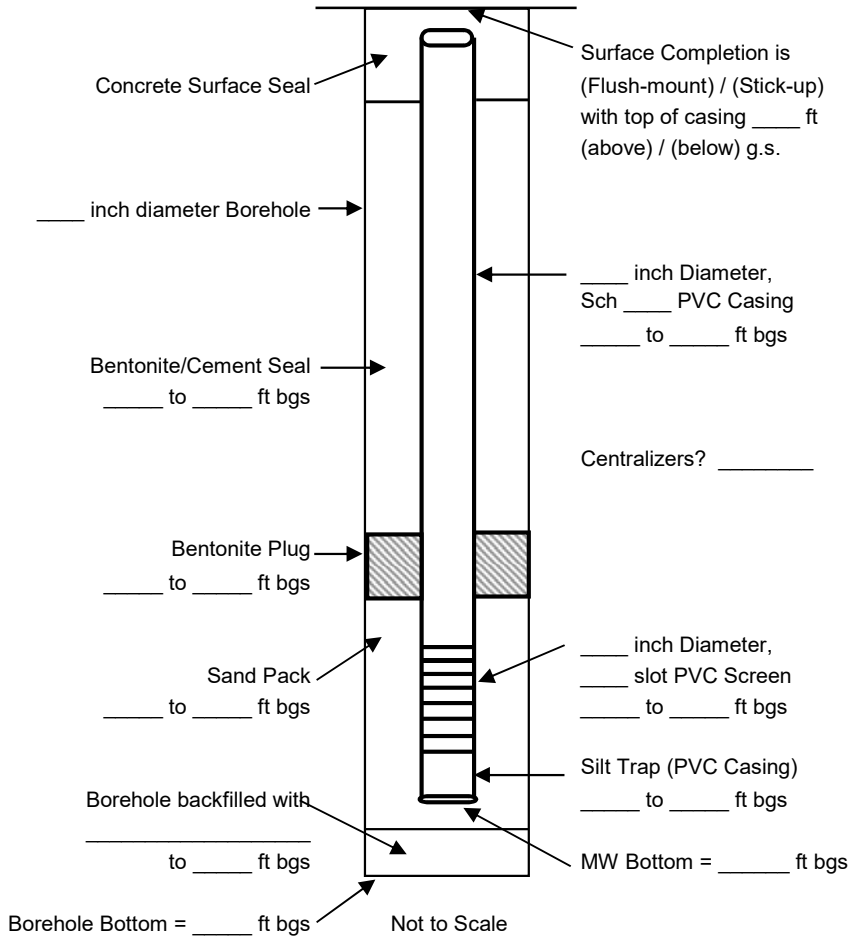
Borehole Backfill:

General Notes: (e.g. notes about location, site conditions, etc):

PIONEER TECHNOLOGIES CORPORATION (PIONEER)
MW INSTALLATION FORM

MW ID _____ Installation Start Date/Time _____ Installation Stop Date/Time _____

CONSTRUCTION DETAILS



MATERIALS USED

_____ Sacks of _____ Sand
_____ Sacks of _____ Cement
_____ Sacks of Bentonite Pellets
_____ Sacks of Powdered Bentonite
_____ Sacks of Grout
_____ Feet of _____ -inch dia PVC Casing
_____ Feet of _____ -inch dia PVC Screen

WELL PROTECTION AND IDENTIFICATION

☐ Well Cap
☐ Locking Steel Cover (Stick-up)
☐ Bollards (Stick-up)
☐ Lock
☐ Agency Well Tag No. _____
☐ Top of Casing Ref Pt. = _____

WELL DEVELOPMENT

	Following Well Construction	Following Well Development
Depth To Water (ft below TOC)		
Total Well Depth (ft below TOC)		

Development Start Date/Time _____ Development Stop Date/Time _____
Development Method _____ Development Water Discharged to _____

Elapsed Time (min)	pH	Flowrate (gpm)	Sp. Cond. (mS/cm)	Turb (NTU)	D.O. (mg/L)	Temp (oC)	Comments on TSS/Color

Total Gallons Removed _____
Additional Remarks

PIONEER TECHNOLOGIES CORPORATION (PIONEER)
GROUNDWATER MONITORING FORM

Stabilization:	
SWL < 0.33 ft	Turb ± 10%
pH ± 0.1	DO ± 0.3 mg/L
SC, Temp ± 3%	ORP ± 10 mV

SITE NAME: ____________________ **FIELD TECHNICIAN(S):** ____________________ **DATE:** ____________________

WELL INFO				DTW				PURGING											SAMPLE COLLECTION		PURGE WATER	
										Stabilization												
Well ID	Total Depth (ft)	Screen Interval (ft)	Current Condition (e.g., seal, cover, cap, casing, lock)	Time	Depth to NAPL (ft)	Depth to Water (ft)	NAPL Thick. (ft)	Pump Type	Intake Depth (ft)	Elaps. Time (min)	Flow Rate (L/min)	SWL (ft)	pH	Spec. Cond. (mS/cm)	Turb (NTU)	D.O. (mg/L)	Temp (^{o}C)	ORP (mV)	Time	Field Kit Results / General Comments	Vol (gal)	Disposal / Storage Comments

Attachment 2

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: File

From: PIONEER

Date: July 13, 2016

Subject: PIONEER Technologies Corporation Sample Number Schema

All:

The following sample number schema should be used on all PIONEER Technologies Corporation (PTC) projects:

MediaCode-SiteID-DateCode-TopDepth-BotDepth-(PTCTypeCode) – Be sure to use Dashes and Not Underscores

- Media Code = 2 Letter Code for Media Sampled At Location (see Table 1)
- Site ID = 1 to 10 Letter/Number Code for Site ID (with Dash between Site ID and Site ID # (e.g., MW-01)
- DateCode = 6 Number Code for Date (no slashes between monthdayyear)
- TopDepth = Optional but must have 1 decimal point max.
- BotDepth = Optional but must have 1 decimal point max.
- PTCSampTypeCode = Optional (see below)
    - (01) – For Field Duplicate/Replicate #1/Test Case #1
    - (02) – Replicate #2 or Test Case #2
    - (03) – Replicate #3 or Test Case #3
    - (04) – Replicate #4 or Test Case #4
    - (05) – Replicate #5 or Test Case #5
    - (06) – Replicate #6 or Test Case #6
    - (07) – Replicate #7 or Test Case #7
    - (08) – Replicate #8 or Test Case #8
    - (09) – Replicate #9 or Test Case #9
    - (10) – Leachate Sample
    - (20) – Dissolved Sample (i.e., filtered in the field or by the lab)

Note: PTCSampTypeCodes can be combined. For example, a PTCSampTypeCode of "(11)" indicates that the sample is a field duplicate of a leachate sample and a PTCSampTypeCode of "(21)" indicates that the sample is a field duplicate of a dissolved/filtered sample.

Examples:

- EF-EF-01-100112 – No Depth Interval
- EF-EF-01-100112-(01) – No Depth Interval & Field Duplicate Sample of EF-EF01-100112
- GW-MW-01-100112-10.5-20.5 – With Depth Intervals (10.5 to 20.5 feet)

- SO-SS-01-100112-0-0.5 – With Depth Intervals (0 to 0.5 feet)

Note: Examples of leachate and dissolved samples that require field duplicates or replicates:

- SO-SS-01-100112-0-0.5-(11) – Field Duplicate of Leachate sample with depth Intervals (0 to 0.5 feet).
- SO-SS-01-100112-0-0.5-(14) – Replicate #4 of Leachate sample with depth Intervals (0 to 0.5 feet).
- GW-MW-01-100112-10.5-20.5-(21) – Field Duplicate of Dissolved/Filtered groundwater sample with depth intervals (10.5 to 20.5 feet)
- GW-MW-01-100112-10.5-20.5-(23) – Replicate #3 Triplicate of Dissolved/Filtered groundwater sample with depth Intervals (10.5 to 20.5 feet).

Table 1 – PTC Media Codes for Sample Numbers

Media	Media Code for Sample Number	Description
Ambient Air	AA	Ambient Air
Asphalt	AS	Asphalt
Bituminous Coating	BC	Bituminous Coating
Brick	BR	Brick
Concrete	CO	Concrete
Dust	DT	Dust
Equipment Blank	EB	Equipment Blank
Effluent	EF	Effluent
Field Blank	FB	Field Blank
Field Spike	FS	Field Spike Sample
Groundwater	GW	Groundwater
Indoor Air	IA	Indoor Air
Influent	IN	Influent
Midpoint Between IN and EF	MD	Midpoint Between Influent and Effluent Samples
Other Liquid	OL	Non-specified Liquid
Other Solid	OS	Non-specified Solid
Performance Evaluation	PE	Performance Evaluation Sample
Perched Water	PP	Perched Water
Paint	PT	Paint, Paint Chips, Paint Flakes
Pore Water	PW	Sediment Pore Water
Sierra-Crete	SC	Sierra-Crete
Sediment	SD	Sediment
Stack Sample (Emissions)	SE	Stack Sample (Emissions)
Soil Gas	SG	Soil Gas, Soil Vapors, Sub-Slab Soil Gas
Sludge	SL	Sludge
Soil	SO	Soil
Seep Water	SP	Seep Water from Bank Samples
Surfacewater	SW	Surfacewater

Table 1 – PTC Media Codes for Sample Numbers		
Media	**Media Code for Sample Number**	**Description**
Trip Blank	TB	Trip Blank
Tap Water	TW	Tap Water, Drinking Water
Wood	WD	Wood Debris, Wood Waste
Waste Solid	WS	Investigation Derived Waste Solid
Waste Water	WW	Investigation Derived Waste Liquid
Treated Water	XW	Treated Water from Pilot Test, Treatability Study

Sincerely,



Chris Waldron

Appendix E

Health and Safety Plan for the Solid Wood Incorporated Site

700 West Bay Drive NW
Olympia, Washington

Prepared by:

PIONEER TECHNOLOGIES CORPORATION

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January 2026

Documenting HASP Revisions

This Health and Safety Plan (HASP) has been prepared for upcoming field activities related to collecting soil samples at the City of Olympia Solid Wood, Incorporated Site. All revisions to the HASP will be documented in the following table. Significant changes to this HASP will be made by addendum and referenced in the table below. Minor revisions to the HASP (e.g., staffing changes, phone number changes) may be noted in the table below.

HASP Section	Comments	PM Initials	HSM Initials	SSO Initials	Date

Notes:
HSM: Health and Safety Manager; PM: Project Manager; SSO: Site Safety Officer

Health and Safety Plan Compliance Agreement

I have read, understood, and agree with the health and safety protocols presented in this Health and Safety Plan (HASP). I also understood that noncompliance with the HASP may result in dismissal from the Site.[1]

Printed Name	Signature	Date

[1] PIONEER is committed to everyone's health, safety, and welfare. You cannot perform any fieldwork at this Site until you have read and understood PIONEER's Health and Safety Plan (this document) and signed this page documenting the fact. If there is anything in this plan that you do not understand please contact the Project Health and Safety Manager (Kevin Gallagher – 360.570.1700), so that you can obtain this information that you need. All subcontractors conducting Site-related work will also be required to prepare their own HASP. Subcontractors are entirely responsible for the safety of their own employees.

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List of Acronyms

Acronym	Explanation
ANSI	American National Standards Institute
ASTs	Aboveground Storage Tanks
BNSF	Burlington Northern Santa Fe
CDC	Center of Disease Control
CFR	Code of Federal Regulations
City	City of Olympia
COI	Constituent of Interest
cPAHs	Carcinogenic Polycyclic Aromatic Hydrocarbons
DGPS	Differential Global Positioning System
Ecology	Washington State Department of Ecology
ESA	Environmental Site Assessment
GPS	Global Positioning System
Gravity	Gravity Marine Consulting
H&S	Health and Safety
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HSM	Health and Safety Manager
IDW	Investigation-Derived Waste
JSA	Job Safety Analysis
L&I	Labor and Industries
mL	Milliliters
MTCA	Model Toxics Control Act
MRP	Medical Removal Protection
NAD	North American Datum
OSHA	Occupational Safety and Health Act
PAHs	Polycyclic Aromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
PIONEER	PIONEER Technologies Corporation
PM	Project Manager
Port	Port of Olympia
PSA	Project Safety Analyses
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
ROW	Right-of-Way
SDS	Safety Data Sheets

Acronym	Explanation
Site	Solid Wood Incorporated Site
SOW	Scope of Work
SS	Site Supervisor
SSO	Site Safety Officer
SVOCs	Semi-Volatile Organic Compounds
TPHs	Total Petroleum Hydrocarbons
USTs	Underground Storage Tanks
VOCs	Volatile Organic Compounds
WAC	Washington Administrative Code
WISHA	Washington Industrial Safety and Health Act

SECTION 1: INTRODUCTION

1.1 General Information

The location of the Solid Wood Incorporated Site (Site) and the contact information for the Site are presented below.

Project Name: Interim Action Work Plan
Site Name: Solid Wood Incorporated
Site Address: 700 West Bay Drive NW, Olympia, Washington

Table 1. Site Contact Information

Title	Name	Contact Information
Site Owner (City of Olympia [City])	Laura Keehan	lkeehan@ci.olympia.wa.us (360) 570 – 5855
Project Manager (PIONEER Technologies Corporation [PIONEER])	Hannah Morse, PE	Morseh@uspioneer.com (360) 570 – 1700
Health and Safety Manager (PIONEER)	Kevin Gallagher, MS, ASP, CSP	Gallagherk@uspioneer.com (360) 570 – 1700
Site Representative/Safety Officer (PIONEER)	TBD	TBD

1.2 Purpose

The purpose of this Health and Safety Plan (HASP) is to present health and safety (H&S) procedures that should be used during investigation activities at the Site. This HASP was developed in compliance with requirements set forth in 29 Code of Federal Regulations (CFR) 1910.120, Hazardous Waste Operations and Emergency Response (HAZWOPER), Washington Administrative Code (WAC) 296-843-120, and WAC 173-340-810.

This document is for use in conjunction with any applicable work plans, hazard analyses, and any project-specific addendums to this HASP. The PM, Site Supervisor (SS), and Site Safety Officer (SSO) have shared responsibility for implementing and enforcing this HASP. The SSO will evaluate this HASP for continuing adequacy throughout the course of field activities. All proposed revisions to this HASP will be reviewed and approved prior to implementation by the project team and annotated on the revision checklist provided at the beginning of this document.

All participants involved in the project will be briefed on and afforded the opportunity to question this HASP. In addition, all personnel will sign the HASP Compliance Form. Workers will keep a copy of this HASP at the Site for the duration of work activities.[2]

[2] Due to the temporary nature of the work activities and because PIONEER does not have a permanent on-Site storage repository, the HASP and other associated safety records will be maintained in a binder in the field vehicle during the duration of field activities and electronically following the completion of field activities.

This HASP (and any future addenda to this HASP) should be used with all applicable work plans, and project safety analyses (PSAs). This document is an "evergreen" document (i.e., it will be revised/updated as conditions change). Changes in conditions could range from updating phone numbers to discovering additional constituents of potential concern, underground utilities, and physical or biological hazards. All revisions to the HASP should be documented in the HASP Revisions table on page vii of this HASP. Minor revisions to this HASP (e.g., updating phone numbers) should be made to the text and be documented in the HASP revisions table. Major revisions to this HASP (e.g., discovering physical or biological hazards) will be added as addenda and documented in the HASP Revisions table.

ATTENTION CONTRACTORS:

All contractors are responsible for protecting their employees in accordance with the requirements set forth in Occupational Safety and Health Act (OSHA) and all other regulatory requirements.

1.3 PIONEER Injury and Illness Prevention Program

This HASP includes the PIONEER Injury and Illness Prevention Plan and the PIONEER Accident Prevention Plan that is mandated by Chapter 396-800-140 of the WAC. PIONEER places the utmost value on the safety of its employees and has developed this corporate-wide program for injury, illness, and accident prevention. The PIONEER Injury and Illness Prevention Plan and Accident Prevention Plan are provided in Appendix A. All subcontractors must have their own Injury and Illness Prevention Plan as required by applicable state regulations.

1.4 Site Description

The Site is located along the West Bay of Budd Inlet, east of West Bay Drive Northwest and north of the 4th Avenue Bridge (Figure 1). 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, 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.

SECTION 2: SCOPE OF WORK

The scope of work (SOW) associated with this interim action includes the excavation of contaminated soil, as outlined in the *Interim Action Work Plan for the Solid Wood, Inc. Site* (PIONEER 2026). The purpose of this section is to summarize the SOW identified in the work plan, which is included as part of this HASP.

Field activities will include collecting soil samples. The following types of activities are also anticipated:

- Mobilizing equipment and facilities
- Auditing and overseeing field activities
- Excavating soils
- Collecting stockpile, bottom, and sidewall confirmation samples
- Transporting wastes for off-site disposal
- Conducting global positioning system (GPS) and other field surveys
- Decontaminating and demobilizing from the Site

2.1 Soil Excavation

Soil excavations will occur at four unique locations: three locations along the abandoned rail spur and one within the former Oil Stain Area. The two southern excavation areas along the rail spur will be excavated to 1 foot below ground surface (bgs), while the northern excavation area along the rail spur will be excavated 6 feet bgs. The excavation area near the Oil Stain Area will be excavated to 8 feet bgs.

2.2 Soil Sampling

Confirmation soil samples will be collected from each excavation area. Stockpile, bottom, and sidewall confirmation samples will be collected. Samples shall be collected from the excavator bucket, from the excavation using a remote sampling tool, or from the stockpile/storage container.

SECTION 3: ROLES AND RESPONSIBILITIES

The following section summarizes the key health and safety (H&S) responsibilities for personnel at the Site.

3.1 PIONEER Responsibility

Safety is a core value at PIONEER. Safety is the primary focus for all PIONEER projects and safety is always prioritized over production. PIONEER will continually strive to engage management and employees in identifying and eliminating hazards that may develop during work activities with the goal of avoiding all injuries.

PIONEER will provide a copy of this HASP to each contractor and subcontractor in accordance with WAC 173-340-810 to inform them of Site hazards and emergency procedures. All subcontractors are expected to conduct work in accordance with this HASP.

However, PIONEER is not responsible for contractor or subcontractor employees. Contractors and subcontractors are solely responsible for the safe and healthful performance of all work conducted by each employee and/or support personnel who may enter the Site.

3.2 Personnel Roles and Responsibilities

3.2.1 Project Manager

Hannah Morse, PE

The PM is responsible for ensuring the HASP is implemented throughout the life of the project. Responsibilities include overall coordination of Site activities and:

- Implementing the HASP throughout all field activities;
- Ensuring a hazard analysis is completed prior to performing field activities;
- Demonstrating a personal commitment to safety at all times; and
- Never compromising safety for any reason.

The PM is also responsible for ensuring that the project is audited as necessary to verify compliance with the HASP (a H&S audit form is included in Appendix B).

3.2.2 Project Health and Safety Manager

Kevin Gallagher, MS, CSP

The Project Health and Safety Manager (HSM) will be consulted on all health and safety-related issues that arise in the field including any amendments to or deviations from this HASP. The Project HSM has final authority on the HASP and should be consulted when preparing/performing hazard analysis activities (e.g., PSAs) and other safety processes.

3.2.3 Site Safety Officer

Hannah Morse or a qualified person designated by the PM and approved by the HSM

Under the direction of the PM, the SSO is responsible for:

- Daily implementation and enforcement of this HASP;
- Overseeing the safety of daily operations and coordination of H&S issues with PIONEER subcontractors;
- Conducting daily tailgate H&S meetings (a Tailgate Meeting Form is included in Appendix B); and
- Documenting the completion of H&S tasks (e.g., ensuring completion of all applicable forms in Appendix B).

3.2.4 Environmental Site Workers

Under the direction of the SSO, all environmental site workers (i.e., field personnel) are responsible for:

- Reviewing and complying this HASP;
- Reviewing the PSA(s) applicable to their scope of work;
- Taking all reasonable precautions to prevent injury to themselves and other workers;
- Conducting only those tasks that they believe they can do safely;
- Using safety equipment, personal protection equipment (PPE), and other devices and procedures necessary for their protection;
- Reporting all injuries, accidents, and unexpected occurrences to the SSO (forms are provided in Appendix B);[3] and
- Exercising stop-work authority in the event of an unsafe condition or imminent danger to any personnel.

[3] An unexpected occurrence is any unplanned event or action that could cause injury, illness, property damage, spill or environmental release, or work interruption. Unexpected occurrences include the need for first aid, injury, or even a near miss. The purposes of reporting unexpected occurrences are to (1) prevent similar incidents, (2) promote safety awareness, (3) communicate lessons learned, and (4) collect information about concerning patterns. This is not a fault-finding process and individuals will not be punished for reporting information.

SECTION 4: HAZARD EVALUATION

The processes for identifying hazards, assessing risks, and eliminating/controlling hazards (i.e., PSAs, job safety analysis [JSAs], and tailgate briefings) are discussed in this section. The PSA and JSA forms are provided in Appendix C; the completed PSA (and JSA, if applicable) will be attached to this HASP.

A hazard is any condition in the workplace that can potentially cause occupational injury, death, or disease. Site hazards and risks are addressed using one or more of the control measures listed below (in order of preference):

1. **Elimination**: Physically removing a hazard (the most effective control method)
1. **Substitution**: Replacing something that causes a hazard with something that does not
2. **Engineering Controls**: Isolating workers from hazards (does not eliminate the hazard)
3. **Administrative Controls:** Changing work practices (e.g., adding worker training)
4. **PPE:** Wearing protective equipment (the least effective control method because if the equipment fails, workers are exposed to the hazard).

4.1 Project Safety Analysis/Job Safety Analysis

A PSA is required for all projects and must be completed prior to project start up for non-general site maintenance activities. The PSA is a process to identify field H&S hazards, which may be known or anticipated and the associated control measures to be implemented. It includes a review of the physical hazards, chemical hazards, process safety hazards, non-regulated process hazards, and other hazards. It also includes pertinent background information regarding project staffing and documentation. A copy of the PSA template can be found in Appendix C. A copy of the completed PSA will be reviewed with the project team and kept on site by the SSO.

Prior to conducting tasks that require the use of physical labor or mechanical equipment, the hazards of these tasks and mitigation measures to be used will be reviewed. If at any time tasks occur that have not been addressed in the PSA, a review the hazards associated with that task will be conducted prior to the start of work. The time involved and level of crew involvement should be appropriate to the complexity of the tasks being performed. This discussion will be documented in the daily report.

4.2 Daily Briefings

Daily briefings will be conducted before each work shift at a location designated by the SSO. All personnel will attend this briefing in order to participate in field activities for that day. During the briefing, planned work tasks and associated hazards are identified, mitigation measures are discussed, and the need to evaluate modifications to the plan as work progresses is reinforced. The tailgate briefing procedures are included in the JSA, Work Permit, and Tailgate Briefing SOP, which is included in Appendix C. Tailgate briefing attendance will be documented in the Tailgate Briefing Log, which is included in Appendix B.

4.3 Safety Inspection Procedures

PIONEER is committed to identifying hazardous conditions and practices likely to result in employee injury or illness. Safety inspections will include field audits and walk-around safety inspections as follows:

- In accordance with WAC 296-155-110, walk-around safety inspections will be conducted at the beginning of projects and weekly thereafter (minimum frequency) during site work lasting for more than one week in duration. The Site Supervisor and a contractor representative will complete the weekly walk-around safety inspection and complete the inspection checklist provided in Appendix B.
- In addition, audits will be conducted at least once during site work lasting for more than one week in duration. The auditor will complete the Safety Audit Form in Appendix B to document and verify work is conducted in accordance with the site-specific HASP (see Appendix B). The audit results will be used to eliminate or control obvious hazards.

4.4 Chemical Hazards

Given the nature of current and historical land use, and known concentrations of contaminations at the Site, there is a relatively-low potential for overexposure to chemical hazards. This section summarizes the maximum concentrations that have been detected at the Site for constituents of interest and the potential hazards associated with those constituents.

4.4.1 Constituents of Concern

Constituents of concern (COCs) for the Site are those commonly associated with historical on-site operations. Workers may encounter the following COIs in soil while performing field activities described in Section 2. The COIs in soil are summarized in the table below.

Soil COCs
Carcinogenic polycyclic aromatic hydrocarbons (cPAHs)
Total Petroleum Hydrocarbons (TPHs)

The maximum concentration for the listed COIs and the respective cleanup level are summarized in Table 1. Applicable exposure limits, chemical characteristics, primary routes of exposure, and symptoms of exposure to COIs in Site soil are presented in Table 2.

4.4.2 Potential Exposure Routes and Risk Mitigation Measures

The primary exposure pathways of concern and the associated risk mitigation measures are discussed in the following sections.

Ingestion of Contaminants

Incidental ingestion of COIs is possible during field activities. The potential for incidental ingestion of COIs will be controlled and minimized as follows:

- Eating, drinking, using tobacco products, chewing gum, and applying lip balm will be prohibited within exclusion zones and contamination reduction zones.

- All workers are required to decontaminate themselves (e.g., hands, exposed skin) and equipment prior to leaving exclusion zones and contamination reduction zones.
- Workers are required to wear task-appropriate PPE.

Skin and Eye Contact with Contaminants

Skin and eye contact with some of the Site COIs may cause eye, skin, throat, central nervous system, or mucous membrane irritation/damage. Dermal absorption is possible for some of the COIs via exposed skin and eyes. Potential hazards will be reduced through decontamination and the stipulated use of PPE. The hazard hierarchy (i.e., elimination, substitution, etc.) will also be used to eliminate and/or reduce risks posed to workers. Emergency eyewashes for use in the event of an accidental chemical exposure will be available in the personnel decontamination area.

Inhalation of Contaminants

Inhalation of particulates, dust, and vapors from volatile COIs is possible during work activities. Soils will be moist, therefore reducing the potential for inhalation of particulates and dust during drilling activities. During coring of concrete and drilling for sub-slab soil gas pins (if necessary), concrete will be wetted and a dust mask will be worn. To minimize the potential for worker exposure to vapors from volatile COIs in subsurface soil and groundwater, workers will perform activities upwind of soil disturbing activities. The level of PPE will be assessed and may be upgraded if conditions change and additional controls will be used to limit worker exposure. Air monitoring will be performed to ensure that COI concentrations are below applicable limits and verify that the controls are adequate when performing drilling activities.

Administrative Controls

The following administrative controls will be used to limit exposure to COIs.

- Workers will perform activities upwind of soil disturbing activities;
- Workers will use good personal hygiene including hand washing and personal decontamination;
- Workers will undergo proper task-specific training and hazard assessment;
- Workers considered essential to the field activities being performed are the only workers who will be allowed in the exclusion zones/work areas; and
- Workers will be required to seek medical attention for potential exposures to COI concentrations above action levels.

All drilling and PIONEER staff will be 40-hour HAZWOPER trained and have up to date certification.

4.4.3 Safety Data Sheets

The SSO must receive Safety Data Sheets (SDSs) for all materials or products brought onto the Site to accomplish field activities. The SSO must review and approve the SDSs before the products can be used on the Site. SDSs must be kept on-Site for the duration the products are used at the Site. All hazardous materials must be labeled and stored in accordance with regulatory requirements.

4.5 Physical Hazards

The procedures that will be used to minimize the following potential physical hazards are presented in this section:

- **Excavation Safety:** No workers will enter an excavation greater than four feet deep at any time for any reason (even to conduct sampling or inspections) unless appropriate excavation safety measures (e.g., sloping, shoring) are used. Rather, samples should be collected from the excavator bucket, from the excavation using of a remote sampling tool, or from the stockpile/storage container.
- **Cutting Hazards**: Identify all hand safety hazards as part of the job planning process BEFORE starting work. Remember that gloves are a secondary level of defense when it comes to hand safety; the primary way to avoid hand injuries is by proper hand placement and using the right tool for the job. When using any cutting tool, set up your work so that you cut away from your body or anyone else working nearby and pay attention to the location of your free hand when cutting. Workers will use tube cutters when cutting tubing. No glove can eliminate the potential for cuts or punctures; however, cut resistant (e.g., Kevlar®) gloves should be worn to reduce the hazard when handling sharp cutting tools or sharp objects.
- **Drill Rig Safety**: All operators must be qualified and certified to operate the drill rig. All drill rigs will be inspected prior to arrival on site and then daily throughout the project. Backup alarms must be operable on all equipment. High visibility vests, a hard hat, safety glasses with side shields, and steel-toed boots are required for anyone in close proximity of machinery (i.e., spotter). Drilling safety procedures are included as Appendix D.
- **Eye Hazards**: Wear eye protection, as necessary, when in close proximity to the drill rig or when using hand tools.
- **Fire/Explosion**: Fueling of gas- or diesel-powered equipment (e.g., generator, pressure washer, or drill rig) should be performed only after the equipment has cooled down. Generators and portable gas tanks should be removed from the bed of the truck prior to fueling. Portable gas tanks will be stored outside the exclusion zones at all times. An appropriately-sized spill kit will be provided by the remediation contractor and readily accessible. Grounding techniques will be used during transfer of fuel and/or other flammable liquids. Type A/B/C fire extinguishers will be located at several locations in the work area. Because workers are not trained firefighters, never attempt to extinguish a fire under the following conditions and evacuate the area immediately:
  - You don't know what's burning;
  - The fire appears to be too large to handle with one extinguisher;
  - The fire is spreading rapidly beyond the spot where it started;
  - An adequate or appropriate fire extinguisher is unavailable;
  - You might inhale toxic smoke; and/or
  - Your instincts tell you not to.

  A dedicated fire watch is required for all welding and grinding work. Grass will be mowed prior to mobilization. Avoid driving through tall grass in any vehicle. If driving through tall grass is absolutely necessary, get out of vehicle and inspect the undercarriage to confirm that no flammable materials are stuck against a heat source.

- **Heat/Cold Exposure**: Stay apprised of the anticipated weather conditions and be aware of heat and cold exposure. Use the buddy system to let other workers know if they are getting burned or showing any signs of heat or cold exposure. As necessary, the SSO will periodically monitor for physiological signs and symptoms of heat and cold exposure during each work day using the guidance in Appendix E and behavioral changes (e.g., worker disorientation and confusion, workers who exhibit unusual level of irritability). Based on the weather conditions and the results of heat and cold exposure monitoring, the SSO will implement corrective action as necessary in accordance with Appendix E.
  - During cold weather, wear layered clothing, and gloves/hats, as necessary. During wet weather, use raingear and have a change of clothing available.
  - During hot weather, try to schedule work during the cooler times of the day, keep water and fluids available at all times, and drink water/fluids regularly (i.e., at least 1 quart per hour) to prevent dehydration. To prevent sunburn, apply sunscreen of SPF 30 or greater, and keep skin covered as much as possible.
- **Heavy Equipment Operation**: Drill rig operators must be trained in the operation of the drilling equipment and must abide by the safe work procedures outlined in Appendix D. Those employees working in the proximity of the drill rig must wear appropriate personal protective PPE, (including a high-visibility safety vest), maintain visibility with equipment operators, and should not approach equipment while in operation. When working in an area where the drill rig is being used, communicate directly with operators so that they are aware of your presence and the types of activities that you are going to perform. Do not assume that operators know you are there and what you are going to do.
- **Lone Worker**: Implement the use of the buddy system or have a means of communication (e.g., cell phone) available to maintain contact with other personnel and communicate emergencies.
- **Pinch Points**: Pinch points include vehicle doors and tailgates and hand tools. Always be aware of limb or body position proximate to moving equipment to reduce pinch point hazards. Wear appropriate hand protection to protect hands.
- **Slip/Trip/Fall**:
  - Keep work area free and clear of obstacles. Check work area for potential/slip/trip hazards and remove or mark prior to starting work. Maintain work site and equipment to minimize hazards. Good housekeeping practices will be employed to prevent slip/trip/fall hazards. Place tools out of the way when not in use.
  - Use hand rails when walking down steps and three points of contact when entering/existing equipment.
  - Wear gloves to protect hands in case of fall. The Site surface is characterized by multiple sharp objects (e.g., mussels, rocks) that can cause cuts.
  - Do not use a cell phone while walking.
- **Tools and Equipment**: Inspect all hand tools before use to determine if they are the proper size, free of oil or grease, and in good condition. Use tools for the purposes for which they are designed (i.e., use the correct tool for the job).
- **Visibility**: The PM and SSO have consulted Puget Sound tide tables to ensure that sampling will occur during low tides that coincide with daylight hours. Personnel should stop sampling when daylight levels are low, regardless of the number of samples left to sample.

- **Weather**: Weather hazards include torrential rain, lightning, flooding, excessive cold, snow, blizzards, and high winds. The SSO is responsible for being up-to-date on anticipated weather conditions and preparing the crew. Discontinue all work for 30 minutes after lightning or thunder is seen or heard.

4.6 Biological Hazards

No biological hazards are anticipated at the Site; however, the following biological hazards may be present and are described further in Appendix C:

- **Poisonous Plants**: Poisonous plants, such as poison oak, may be present on or near the Site. Inspect work areas prior to entering. Use gloves to protect skin from contact with poisonous plants. Remove coverall and gloves from the inside out to avoid contact with potentially contaminated clothing. Use poisonous plant barrier creams and cleansers as needed.
- **Mosquitoes**: Mosquitoes may be present and may be carriers of malaria, yellow fever, encephalitis, West Nile Fever and other diseases. Wear mosquito repellant as necessary, especially on areas not protected by clothing. Drain pooled or standing water if possible. West Nile Encephalitis (or Fever) is not expected.
- **Stinging Insects**: Prior to digging in any areas, observe the site for several minutes to determine if a nest is present. Look not only at the proposed excavation but in the area where you will be standing as well. If stung by a bee, carefully removed the stinger by gently scraping with a fingernail (do not squeeze). Wash the area with soapy water and apply a cold (ice) compress to decrease absorption and spreading of the venom. If excessive swelling or redness appears, seek immediate medical attention. (Note: Allergic reactions to bee stings can be life threatening; therefore, identify susceptible persons prior to project start up.)
- **Blood-Borne Pathogens**: Use latex gloves, CPR shield, and universal precautions whenever the potential exists for contact with bodily fluids; current First Aid and CPR training is required if providing assistance.

SECTION 5: SITE CONTROL MEASURES AND CONDITIONS

5.1 Site Control Measures

Site control measures are as follows:

- Access to the Site will be restricted during active work to authorized personnel. The active work zone will be treated as an exclusion zone and a contamination reduction zone will be instituted to ensure that all personnel and equipment are decontaminated prior to leaving the site. Hazards (e.g., drill rigs) and zones will be clearly delineated using tape, barriers, fences, signs, or by other means appropriate for the Site.
- Workers will enter and exit exclusion zones only through contamination reduction zones. Decontamination will occur in designated areas and must occur prior to exiting contamination reduction zones.
- The means of communication(s) will be established prior to the beginning of Site work.
- In the event of an emergency, the Site supervisors will alert all personnel to leave the work area and await further instructions.
- The buddy system will be employed to the extent feasible to assist in the event of an emergency. In event of an emergency, the SSO will alert all workers to leave exclusion zone and wait for further instructions.
- Any visitors will be escorted 100% of the time and will not be allowed in the work areas. Cones will be placed around the sampling area to prevent visitors from entering the area. If visitors or bystanders refuse to cooperate with these provisions, stop work and call Jake Lund (City).

5.2 Lone Worker

A Lone Worker is defined as one whose assigned task will take him/her out of both direct visual and verbal contact with other workers. Working alone at the Site will be minimized to the extent feasible. Workers will use of the buddy system or have a way to communicate with others (i.e., cell phones, two-way radios, satellite phones) for emergency purposes while in the field. If working alone is necessary, an alternate method of maintaining contact with others must be used. If working alone is necessary, the following applies:

- Arrangements will be stated in a written plan (e.g., PSA, tailgate briefing log).
- The degree of contact required with a lone worker is directly proportional to the degree of hazard to which the worker is exposed.
- Contact may include contractors, security, or the SS. Contact will occur at intervals agreed upon in the written plan prior to the field activity.

Workers selected for potential lone worker field activities will be competent to carry out tasks independently. The SS will involve the PM in decisions regarding whether or not the worker selected has sufficient training for and familiarity with the assignment to be able to perform the field activity with minimal guidance or oversight.

5.3 Illumination

Field activities will be performed during daylight hours only. Adequate artificial lighting will be provided as necessary for all outdoor and indoor activities.

SECTION 6: PERSONAL PROTECTIVE EQUIPMENT

The levels of PPE for Site workers were selected by evaluating the potential hazards, performance characteristics of the PEE, and the nature of task-specific conditions. PPE will be checked to ensure that it is not damaged and is capable of functioning as designed prior to, during, and following use.

The level of PPE required for the sampling activities identified in this HASP is Level D (minimum), which is comprised of the following:

- Hard hat
- Safety glasses (must include side shields)
- High-visibility safety vest
- Steel-toed boots or steel-toed chemical-resistant boots if walking in wet, potentially-contaminated media (e.g., drilling mud or contaminated soils)
- Nitrile (surgical-type) inner gloves, with outer gloves providing mechanical, cut, and puncture-resistant protection, as necessary
- Hearing protection, as necessary
- Work clothing including pants and long-sleeve shirts

The most suitable PPE level will continually be evaluated for effectiveness. Should Site conditions or tasks change, the PPE level will be re-evaluated, and upgraded or downgraded, as necessary.

If a significant COI concentration is suspected or detected above exposure criteria (see Table 3) or action levels (see Section 4.4), then the team must stop work, consult with the HSM, and reevaluate the hazard assessment, hazard controls, and PPE selection. In this situation, the HSM may require the hazard assessment be revised, and a project-specific HASP addendum be prepared to address the COI(s), which may trigger an upgraded level of PPE.

SECTION 7: WORKER MONITORING

7.1 Noise Monitoring

Noise monitoring is not required for this project. Noise levels are anticipated to be less than the OSHA action level of 85 decibels measured on the A scale (dBA) as a time weighted average for an 8-hour workday during project activities.

Hearing protection is required in any area where workers must raise their voices to communicate at a distance of three feet or less and any area where hearing protection is mandatory. In addition, hearing protection is required for activities with the potential to expose workers to noise in excess of the PEL (85 dBA). At a minimum, workers should wear hearing protection if near or operating heavy equipment. Potential noise sources and additional controls (if needed) should be identified during the PSA (i.e., prior to the start of field activities).

7.2 Heat/Cold Stress Monitoring

The SSO is responsible for monitoring heat and cold stress based on the forecasted weather for the day and actual conditions during the workday. The SSO will periodically monitor for physiological signs and symptoms of heat and cold stress during each workday and behavioral changes (e.g., disorientation and confusion or an unusual level of irritability). Based on the weather conditions and the results of heat and cold stress monitoring, the SSO will implement corrective action as necessary. In addition, the SSO will train workers how to identify signs and symptoms of heat and cold-related illnesses and empower workers to request work breaks (or other preventative measures) as conditions warrant. The SSO will qualitatively document the monitoring results in their field notes.

SECTION 8: DECONTAMINATION AND SANITATION

8.1 Decontamination Procedures

8.1.1 Personnel Decontamination

Personnel decontamination procedures include the following, in the order presented:

1. Equipment Drop
2. Boot Rinse
4. Outer Glove Rinse
6. Outer Glove Removal
1. Boot Wash
3. Outer Glove Wash
5. Boot Removal
7. Inner Glove Removal

When project requirements necessitate deviations from the listed steps, deviations will be noted in the field notes.

8.1.2 Sample Equipment Decontamination Procedures

Sampling equipment that is re-used and may be potentially contaminated must be decontaminated prior to use between sampling locations. The following steps will be followed for decontamination of sampling equipment:

1. Use a brush to clean equipment in a bucket or container containing non-phosphate detergent and water (deionized or tap water) solution;
8. Rinse equipment with water (deionized or tap water);
9. Rinse equipment with water (deionized or tap water) a second time; and
10. Allow to air dry.

Water produced while decontaminating the sampling equipment should be containerized and handled, characterized, and disposed of in accordance with all applicable waste management regulations.

8.1.3 Heavy Equipment Decontamination Procedures

The effected portions of heavy equipment that will be re-used from location to location and could potentially be contaminated (e.g., drill rig components) must be decontaminated before exiting exclusion zones and contamination reduction zones. Procedures to decontaminate heavy equipment will include the following:

1. Brush the equipment to remove all visible soil; and
2. If needed, pressure wash the equipment until all visible soil or dust is removed. The pressure washer must have a 42-inch wand (minimum) and cannot generate a pressure more than 3,000 pounds per square inch.

Water produced from heavy equipment decontamination will be containerized and handled, characterized, and disposed of in accordance with all applicable waste management regulations.

SECTION 9: SANITATION

Sanitation facilities will be provided as discussed below. The highest number of workers (PIONEER and contractors) anticipated on the Site at any time is 5.

9.1 Potable Water

☒ Provided by Site ☒ Provided by PIONEER ☒ Provided by Contractor

All potable drinking water will be clearly marked, kept tightly closed when not in use. PIONEER or other contractors will provide workers with water in the field in water bottles. Provisions will be made for sanitary storage and proper disposal of drinking vessels. The Site will supply potable water as necessary for working and decontamination purposes. Potable water is available via a water fountain at the public restroom building at West Bay Park (located on Site).

9.2 Toilet Facilities

☐ Provided by Site ☒ Provided by PIONEER ☐ Provided by Contractor ☐ Available Nearby

Toilet and handwashing facilities with wash water, hand soap, and individual hand towels are available via the public restroom at West Bay Park (located on Site). The duration of the project is expected to be four days maximum; the work crew will be mobile with access to vehicles. The access to toilet facilities meets the requirements of OSHA §1926.51(c) for mobile workers (i.e., located within 10 minutes of the jobsite).

9.3 Washing/Showering

☐ Provided by Site ☒ Provided by PIONEER (eyewash only) ☐ Provided by Contractor

All field teams are required to carry deionized or potable water, hand soap, and paper towels for hand washing at each work location. Self-contained eyewash facilities will be provided by PIONEER in the work area if contact with corrosive, toxic, or strongly irritating chemicals is possible. Emergency eyewash facilities will be in accessible locations that require the worker can reach in no more than 10 seconds. The eyewash facility will be free of any items that may obstruct the operation. Self-contained eyewashes will meet the requirements of American Nation Standards Institute (ANSI) Z358.1-1981 including:

- The eyewash will supply potable water at flow rates and time durations specified in the ANSI standard.
- The control valve will be designed so that the water flow remains on without requiring the use of the operator's hands, and so that the valve remains activated until intentionally shut off for all but hand-held drench hoses.

Units will be maintained in accordance with the manufacturer's instructions

Are showering facilities necessary? ☐ Yes ☒ No

Employee exposure to COI concentrations above action levels is not anticipated.

9.4 Personal Hygiene

Are hand-washing facilities necessary? ☒ Yes ☐ No

Prior to eating and drinking, workers must thoroughly wash their hands and face. Hand washing facilities are located at the public restroom at West Bay Park (located on Site). In addition, all field teams are required to carry deionized or potable water, hand soap, and paper towels for hand washing at each work location. Eating and drinking will only be allowed outside of exclusion zones and contamination reduction zones. See Section 7 for details on required decontamination procedures. Workers should also practice regular hand washing with soap and water for a full 20 seconds or use hand sanitizer products that contain at least 60 percent alcohol to prevent exposure to COVID-19.

SECTION 10: PERSONNEL TRAINING AND MEDICAL SURVEILLANCE

All field workers will be appropriately trained in accordance with WAC 296-843-200. For this project, this entails 40-hour initial HAZWOPER training, three days of supervised fieldwork, and eight-hour annual HAZWOPER refreshers. In addition, the SSO will have completed an additional eight hours of HAZWOPER supervisor training.

10.1 Initial HASP Review

In addition to WAC 296-843-200 training, all Site employees will attend an initial HASP review prior to initiating field activities. This review must include the following:

- **Project Personnel**: Personnel will understand the lines of authority regarding health and safety and Site personnel roles and responsibilities.
- **Site-Specific H&S Hazards**: Personnel will be informed of specific hazards related to the Site and Site operations, such as health hazards of Site chemicals and specific safety hazards of process equipment.
- **PPE**: Personnel will be trained in the proper use of PPE.
- **Safe Work Practices/Engineering Controls**: Personnel will be informed of appropriate work practices and engineering controls that will reduce risk of exposure to Site hazards.
- **Communication Methods**: Personnel will be informed of means for normal Site and emergency communication.
- **Medical Surveillance Program**: Personnel will be informed of the medical surveillance requirements, including recognition of symptoms and signs of exposure.
- **Site Control Methods**: Personnel will understand Site methods used to reduce exposure to on- and off-Site personnel.
- **Decontamination Procedures**: Personnel will be trained in proper decontamination procedures, including decontamination of PEE, equipment, and vehicles.
- **Emergency Response**: Personnel will be trained to respond properly in the event of an emergency.

10.2 Personnel Training

All on-site workers will review this HASP with all operations personnel during a mandatory safety meeting prior to beginning work. Work practices and protection for personnel (e.g., PPE) and property will be emphasized during the safety meeting. All subcontractors are entirely responsible for the safety of their own employees.

10.2.1 Pre-Assignment and Annual Refresher Training

Prior to arrive on Site, each employer (i.e., contractor) will be responsible for certifying that his or her employees meet the requirements of 40/24-hour HAZWOPER pre-assignment training. In addition, each employee must be able to document dates of attendance at annual eight-hour HAZWOPER refresher

training and three/one day(s) of fieldwork at a hazardous waste site under a qualified supervisor. Failure to provide these documents will prevent such persons from entering the Site.

10.2.2 Site Supervisor Training

Consistent with WAC 296-843-200, prior to arrival on Site, individuals designated as Site supervisors require an additional eight hours of specialized HAZWOPER training.

10.2.3 Site Safety Officer Training

All Site Safety Officers must be knowledgeable in Washington Industrial Safety and Health Act (WISHA) general industry and construction standards and the contents of this HASP. In addition, individuals designated as SSO must have current certification (minimum of every (three years) in First Aid and cardiopulmonary resuscitation (CPR).

10.3 Daily Briefings

Daily briefings will be conducted before each work shift by the SS and/or SSO at a location designated by the SSO. All workers will be required to attend this briefing in order to participate in field activities for that day. [4] Attendance at the briefing will be documented in the Daily Work Permit form included in Appendix B.

10.4 Visitor Procedures

All Site visitors will be escorted onto the Site and will be required to review and comply with the provisions of this HASP. In addition, visitors will sign in and out of the Site logbook. Only visitors who meet the training and medical monitoring HAZWOPER requirements of 29 CFR 1910.120 will be allowed to enter exclusion zones or contamination reduction zones.

10.5 Medical Surveillance

Contractors will assume responsibility for obtaining the necessary medical monitoring for their employees and will provide a medical clearance letter to the SSO, if requested. Contractors shall ensure that all medical examinations and procedures are performed by or under the supervision of a licensed physician, and shall be provided without cost to the employee, without loss of pay and at a reasonable time and place. Each employee will be notified in writing of the medical surveillance results of that employee's exposure within five working days of receipt of laboratory or physician results.

10.5.1 Initial Medical Surveillance

Initial medical surveillance is available to employees who are occupationally exposed to any constituent at or above the action level. Initial medical surveillance is required for all non-temporary workers who are or may be occupationally exposed to COIs above action levels for more than 30 days in any

[4] Workers who are unavailable for the initial tailgate briefing will be required to check-in with the SSO for a briefing prior to starting field activities.

consecutive 12 months. Work activities are not anticipated to exceed action levels. At a minimum, initial medical surveillance consists of a medical examination and shall include the following:

- A standard posterior-anterior chest x-ray;
- A nasal and skin examination; and
- Other examinations which the physician believes appropriate because of the employee exposure to inorganic arsenic or because of required respirator use.

A written opinion from the examining physician will be obtained. In accordance with 29 CFR Part 1910.1018(n) and WAC 296-155-17621, the opinion will include:

- The results of the medical examination;
- The physician's opinion as to whether the employee has any detected medical conditions which would place the employee at increased risk of material impairment of the employee's health from exposure to inorganic arsenic (or lead);
- Recommended limitations for an employee's potential exposure to lead or arsenic or use of PPE such as respirators; and
- A statement that that the employee has been informed by the physician of the results of the medical examination and any medical conditions which require further explanation or treatment.

The contractor will instruct the physician to avoid revealing specific findings or diagnoses unrelated to occupational exposure in the written opinion.

10.5.2 Follow-up Medical Surveillance

Additional biological sampling will be performed every six months for workers who are occupationally exposed to any COI above action levels for more than 30 days per year. Medical examinations and additional biological sampling will be available at an increased frequency for any employee under the following situations:

- The employee exhibits signs or symptoms commonly associated with arsenic intoxication;
- The employee has demonstrated difficulty in breathing during a respirator fit test or use;
- The employee is pregnant; or
- The employee has requested medical advice concerning the effects of current or past exposure and the employee's ability to procreate a healthy child.

10.5.3 Medical Removal Protection

Medical removal protection (MRP) involves the temporary removal of an employee from a worksite due to a physician's opinion, to a place of significantly lower exposure without loss of earnings or seniority or other employment rights or benefits.

An employee is included in the MRP program when a medical determination indicates a medical condition that places the employee at "increased risk of material impairment to health" due to constituent exposure.

An employee removed from work because of a physician's recommendation may return to their former job status when the physician indicates it is safe to do so.

SECTION 11: EMERGENCY CONTINGENCY PLAN

11.1 Emergency Contact Information

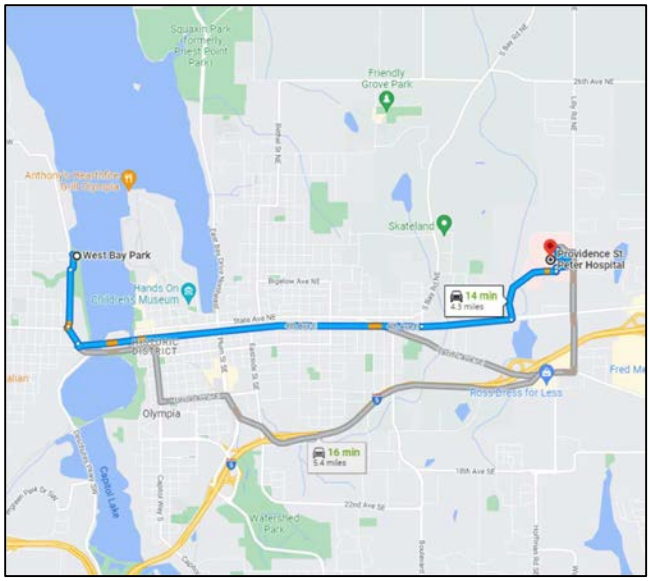
Key emergency action information is summarized in the table below.

Contact	Agency/Name	Phone Number
Police/Security	Police Department	911
Fire and Ambulance	Fire Department	911
Hospital	Providence St. Peter Hospital 413 Lily Road NE, Olympia, WA	(360) 491 – 9480
PIONEER Project Manager	Hannah Morse	(360) 570 – 1700
PIONEER Health and Safety Manager	Kevin Gallagher	(360) 570 – 1700
PIONEER Principal	Chris Waldron	(360) 570 – 1700
National Response Center	Federal 24-Hour Emergency Response for Environmental Spills	(800) 258 – 5990
Washington Emergency Management Division	Ecology 24-Hour Emergency Response for Environmental Spills	(800) 424 – 8802
Regulatory Agency Project Manager (Ecology)	Steve Teel	(360) 890 – 0059

11.2 Directions to Nearest Hospital

Directions to Providence St. Peter Hospital of Olympia:

1. Head north towards West Bay Drive NW
11. Turn left onto West Bay Drive NW
12. At the traffic circle, take the 2nd exit onto Olympia Way
13. At the traffic circle, take the 3rd exit only 4th Avenue
14. Continue onto Martin Way E
15. Turn left onto Ensign Rd NE
16. Turn left onto Lilly Rd NE
17. Destination will be on the left



Distance: 4.3 miles

Drive Time: 14 minutes (under typical traffic conditions)

11.3 Emergency Response Procedures

In the event of a personnel injury, fire, explosion, or spill:

1. Ensure all equipment has been shut off
2. Assess the nature of the injury and determine if emergency response (fire/ambulance) is necessary
3. Call 911 for emergency assistance as appropriate
4. Decontaminate the person to the maximum extent possible
5. Administer first aid (if certified to do so)
6. Meet the emergency crew or for non-emergency injuries, transport injured party to the local Occupational Medical Clinic
7. Contact the PIONEER PM and PIONEER HSM
8. Begin investigation of situation

11.3.1 Fire/Explosion Response

In the event of a fire or explosion:

1. Ensure all equipment has been shut off
2. Call 911 for emergency assistance
3. Meet at a designated location and take a headcount
4. Secure the area until emergency assistance arrives
5. Meet the emergency crew and advise the fire chief of the location and nature of the situation
6. Contact the PIONEER PM and PIONEER HSM

11.3.2 Spill/Release Response

In the event of a spill or leak:

1. Ensure all equipment is shut off
2. Call 911 for emergency assistance
3. Secure the area
4. Location and stop or contain the spill if it can be done safely (proper PEE must be worn)
5. Meet the spill response crews and advise them of the location, material, and volume that has been spilled
6. Contact the PIONEER PM and PIONEER HSM

11.3.3 Earthquake Response

In the event of an earthquake:

1. Move away from any buildings or structures if working outside
2. Call 911 for emergency assistance, if needed
3. Take a headcount
4. Determine whether or not personnel require immediate first aid
5. Secure the area until emergency assistance arrives
6. Administer first aid (if certified to do so)

7. Meet the emergency crew and advise them of the situation
8. Contact the PIONEER PM and PIONEER HSM

11.4 Emergency Equipment

The following emergency equipment will be available at the Site during sampling activities:

- Emergency eye wash and spill kit
- First-aid kit
- Fire extinguisher

SECTION 12: REPORTING AND NOTIFICATION

Any unsafe acts or conditions that are observed must be reported to the SS and SSO, who will make efforts to correct the situation. The PM will be notified of the situation and will assist in the response and implementation of additional corrective actions, as needed.

In addition, the following incidents must be reported to the Washington State Department of Labor and Industries (L&I) at 1-800-423-7233:

- A workplace fatality or in-patient hospitalization of any employee within eight (8) hours of the incident.
- A non-hospitalized amputation or loss of an eye(s) of any employee within twenty-four (24) hours of the incident

When reporting a fatality, in-patient hospitalization, amputation, or loss of an eye(s) you must provide:

- Your contact's name and phone number.
- The name of the establishment/business.
- The location/address of the work-related incident.
- The date and time of the incident.
- How many employees suffered a fatality, in-patient hospitalization, amputation, or loss of an eye, and their name(s).
- A brief description of the work-related incident.

SECTION 13: REFERENCES

OSHA. 2020. COVID-19 HAZARD Recognition. https://www.osha.gov/SLTC/covid-19/hazardrecognition.html. Last accessed on March 31, 2020.

PIONEER. 2018. Injury & Illness Prevention Plan & Accident Prevention Plan. July.

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

Figures





Legend

- Agreed Order Boundary
- Abandoned Rail Spur

0 500 1,000 Feet

PIONEER TECHNOLOGIES CORPORATION

Site Features
Health and Safety Plan
Solid Wood Incorporated Site

Figure 1

Document Path: G:\Projects\City of Olympia\GIS\Maps\2026\Solid Wood IAWP\HASP\Figure 1 Site Features.mxd; Author: CO; Date Saved: 2/9/2026

Tables

Table 1: Summary of Soil Data at Solid Wood, Inc. Site

Constituent	Number of Samples	Number of Detected Results	Frequency of Detection (%)	Minimum Non-Detect (mg/kg)	Maximum Non-Detect (mg/kg)	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	MTCA Direct Contact Soil SL (mg/kg)
Total cPAHS	89	44	49	0.0099	0.051	0.0045	0.31	0.10
Total TPH (HO + Diesel)	73	45	62	5.9	121	5.9	17,750	2,000

Table 2: Potential Chemical Hazards in Soil

Chemical Name (Synonyms, trade name, CAS No.)	Exposure Limits [1]	Characteristics [2]	Route of Exposure	Symptoms of Exposure
SVOC/PAHs (Naphthalene for Example) (91-20-3)	PEL: 10 ppm (50 mg/m^3) TLV: N/E STEL: 15 ppm CEILING: N/E IDLH: 250 ppm	Colorless to brown solid with an odor of mothballs. MW: 128.2 BP: 424°F MP: 176°F Sol: 0.003% Fl.P: 174°F IP: 8.12 eV Sp.Gr: 1.15 VP: 0.08 mmHg LEL: 0.9% UEL: 5.9%	INH (Inhalation) ABS (Skin absorption) ING (Ingestion) CON (Skin and/or eye contact)	Symptoms include irritation eyes; headache, confusion, excitement, malaise (vague feeling of discomfort); nausea, vomiting, abdominal pain; irritation bladder; profuse sweating; jaundice; hematuria (blood in the urine), renal shutdown; dermatitis, optical neuritis, corneal damage
Total Petroleum Hydrocarbons Gasoline Range Organics (TPH-GRO), Diesel Range Organics (TPH-DRO), and Oil Range Organics (TPH-ORO) **Information presented is for TPH-GRO.	PEL: 900 mg/m^3 (300 ppm) TLV: None STEL: 1500 mg/m^3 (500 ppm) CEILING: N/E IDLH: N.D. (Ca) Skin: No	Clear liquid with a characteristic odor. MW: 110 (approx.) BP: 102°F Sol: Insoluble Fl.P: -45°F IP: UN Sp.Gr (60°F): 0.72-0.76 VP: 38-300 mmHg FRZ: UN LEL: 1.4% UEL: 7.6% Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.	INH (Inhalation) ABS (Skin absorption) ING (Ingestion) CON (Skin and/or eye contact)	Symptoms include irritation of eyes, skin, and mucous membrane; dermatitis; headache, lassitude (weakness, exhaustion), blurred vision, dizziness, slurred speech, confusion, and convulsions; chemical pneumonitis (aspiration liquid); possible liver and kidney damage. Potential occupational carcinogen.
Diesel Range Organics (as Diesel exhaust) (No CAS # Provided)	PEL: None TLV: None STEL: None IDLH: N.D. (Ca) Skin: Not Listed Prop 65: Cancer	Appearance and odor vary depending upon the specific diesel exhaust component. MW: Properties vary depending upon the specific diesel exhaust component.	INH (Inhalation) CON (Skin and/or eye contact)	Symptoms include eye irritation and pulmonary function changes. Potential occupational carcinogen.

Notes:
[1] **PEL**: Permissible exposure limit established by Chapter 296-841 WAC; **Ceiling**: The ceiling concentration to not be exceeded during any part of the working exposure established by Chapter 296-841 WAC; **TLV**: Threshold limit value for an eight-hour, time-weighted average established by the American Conference of Governmental Industrial Hygienists; **STEL**: Short-term exposure limit for a 15-minute, time-weighted average established by Chapter 296-841 WAC; **IDLH**: Immediately dangerous to life or health concentration established by National Institute for Occupational Safety and Health; **(Ca)**: Potential or confirmed human carcinogen; **Skin**: The potential contribution to the overall exposure by the cutaneous route, including mucous membranes and eye, either by airborne or, more particularly, by direct contact with the substance; **N/E**: Not established
[2] **LEL**: Lower explosive limit; **UEL**: Upper explosive limit; **IP**: Ionization potential; **VP**: Vapor pressure, **Fl.P**: Flashpoint; **N/A**: Not Applicable

Appendix A

Injury & Illness Prevention Plan & Accident Prevention Plan

Health and Safety Plan

Prepared by:

PIONEER TECHNOLOGIES CORPORATION

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November 2023

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Figure 1	PIONEER Office Evacuation Map

List of Acronyms

Acronym	Explanation
APP	Accident Prevention Plan
CCR	California Code of Regulation
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
H&S	Health and Safety
IIPP	Injury & Illness Prevention Plan
JSA	Job Safety Analysis
L&I	Labor and Industries
Near-Miss	An accident that did not, but could have, resulted in a serious injury to an employee
OSHA	Occupational Safety & Health Administration
PIONEER	PIONEER Technologies Corporation
PM	Project Manager
PPE	Personal Protective Equipment
PSA	Project Safety Analysis
SHE	Safety, Health, and Environmental
SOP	Standard Operating Procedure
SSO	Site Safety Officer
WAC	Washington Administrative Code
WISHA	Washington Industrial Safety and Health Act

SECTION 1: INTRODUCTION

1.1 Purpose

The PIONEER Technologies Corporation (PIONEER) Injury and Illness Prevention Plan/Accident Prevention Plan (IIPP/APP) is a part of the PIONEER Health and Safety (H&S) Program. The purpose of this IIPP/APP is to document the PIONEER corporate plans for preventing accidents, illnesses, and injuries. The IIPP/APP was developed to meet the requirements of an Injury and Illness Prevention Plan (California) and Accident Prevention Plan (Washington) in compliance with the following regulations:

- California Occupational Safety and Health Act mandated by Title 8 of the California Code of Regulations (CCR) Section 3203; and
- Washington Industrial Safety and Health Act (WISHA) regulations Washington Administrative Code (WAC) 296-800-140.

The H&S program for field work is regulated in Washington State under the following:

- WAC 296-155 Safety Standards for Construction Work
- WAC 296-800-160 Personal Protective Equipment
- WAC 296-842 Respirators
- WAC 296-843 Hazardous Waste Operations

The H&S program for office work is regulated in Washington under WAC 296-800 Core Rules and includes the following principles:

- Provide a workplace free from recognized hazards.
- Provide and apply the tools for a safe workplace.
- Prohibit employees from entering or working in an unsafe workplace.
- Construct a safe workplace.
- Prohibit alcohol and narcotics from the workplace.
- Prohibit employees from using tools and equipment that are not safe.
- Establish, supervise, and enforce rules effective in practice that lead to a safe and healthy work environment.
- Control chemical agents.
- Protect employees from biological agents.
- Discuss employee participation in any WISHA related practices.
- Acknowledge employee refusal options to perform dangerous tasks without fear of discrimination (e.g., dismissal, demotion, loss of seniority, denial of a promotion, harassment). See WAC 296-360, Discrimination pursuant to RCW 49.17.160, for a complete description of discrimination and the responsibility to protect employees.

1.2 PIONEER Corporate Commitment to Safety

PIONEER values employee safety and developed this program as a tool for injury, illness, and accident prevention. Safety is a core value at PIONEER. This is demonstrated by a commitment to ensure employee safety through training, planning, and continually evaluating and improving safety procedures. In addition, PIONEER focuses on safety for all projects regardless of the size or scope of the

work and prioritizes safety over production and schedule. PIONEER will continually strive to engage management and employees in identifying and eliminating hazards that may develop during work activities.

PIONEER is committed to employee safety and injury/accident prevention. All employees must comply with the PIONEER corporate safety, health, and environmental (SHE) policies, which are provided in Appendix A and are summarized in the following table.

Policy Name	Summary	Applicability		
		PIONEER Office	Field Work	Travel
PTC-SHE-1: Disciplinary Policy	Outlines basic safety rules and provide appropriate consequences for failure to follow safety rules.	X	X	X
PTC-SHE-2: Electrical Safety Awareness, Ground Fault Protection, and Lockout/Tagout Policy	Identifies the procedures for electrical safety awareness, ground fault protection, and lockout/tagout.	X	X	
PTC-SHE-3: Fatigue Management Policy	Identifies the procedures intended to reduce the risk of fatigue-related incidents in the workplace.	X	X	X
PTC-SHE-4: Fire Protection and Extinguishers Policy	Identifies how PIONEER manages fire risks during work activities.	X	X	X
PTC-SHE-5: First Aid Policy	Identifies the rules and guidelines for providing quick and effective first aid to employees.	X	X	X
PTC-SHE-6: Fit for Duty Policy	Identifies PIONEER's Fitness-For-Duty requirements.	X	X	X
PTC-SHE-7: Waste Management Policy	Establishes systems for managing and documenting all wastes generated during field activities at jobsites where PIONEER is responsible for waste management.		X	
PTC-SHE-8: Hand and Power Tools Policy	Identifies the practices and requirements for the safe operation and maintenance of hand and portable tools.	X	X	
PTC-SHE-9: Hazard Communication Policy	Ensures that employees are aware of the dangers posed by the use of hazardous chemicals that may be encountered during investigations and/or remediation activities.		X	
PTC-SHE-10: Hazardous Waste Operations and Emergency Response Policy	Establishes work place policies, practices and procedures that employees must follow while working at hazardous waste sites.		X	
PTC-SHE-11: Ladder Safety Policy	Provides the minimum safety requirements for protecting employees from potential injuries associated with the use of portable and fixed ladders.	X	X	
PTC-SHE-12: Noise Exposure and Hearing Conservation Policy	Provides the minimum safety requirements for protecting employees from the potential effects of excessive noise exposure, and complies with WISHA Hearing Loss Prevention Rule WAC 296-817.	X	X	
PTC-SHE-13: Personal Protective Equipment Policy	Establishes policies to protect employees from exposure to work place hazards through the use of personal protective equipment (PPE) during field work activities at PIONEER jobsites.		X	
PTC-SHE-14: Bloodborne Pathogens Policy	Outlines the control measures used to prevent bloodborne infections and diseases by eliminating or minimizing employee exposures.	X	X	X

Policy Name	Summary	Applicability		
		PIONEER Office	Field Work	Travel
PTC-SHE-15: Spill Prevention/Emergency Response Policy	Identifies the practices and requirements associated with spill prevention and emergency response.		X	
PTC-SHE-16: Subcontractor Management Policy	Establishes the systems and methods by which PIONEER will assure the production of quality deliverables and services from each of its subcontractors.		X	
PTC-SHE-17: Trenching/Shoring/Excavations Policy	Identifies the requirements and safe practices necessary to ensure the safety of PIONEER employees who work around trenching and excavation activities.		X	
PTC-SHE-18: Drug and Alcohol Testing Policy	Identifies prohibited substances, requirements and procedures, safeguards, and disciplinary action.	X	X	X
PTC-SHE-19: Lone Workers Policy	Identifies the practices and requirements for employees working alone during field activities.		X	X
PTC-SHE-20: Driving and Travel Management Safety Policy	Specifies the licensing, driver training, and vehicle collision data collection requirements for PIONEER employees who drive motor vehicles for company business.		X	X
PTC-SHE-21: Behavioral Based Safety Policy	Identifies behavioral based safety practices and requirements to increase safety awareness and encourage people to focus their attentions and actions on safety in order to avoid hazards.	X	X	X
PTC-SHE-22: Confined Space Entry Policy	Provides requirements and guidance to protect employees from hazards associated with Confined Space and Permit-Required Confined Space entry.		X	
PTC-SHE-23: Fall Protection Policy	Provides guidance and requirements for protecting employees from falls and fall-related hazards when working at heights.	X	X	
PTC-SHE-24: DOT HAZMAT Awareness Policy	Provides guidance and requirements to protect human health and the environment from hazards associated with shipping Hazardous Materials.		X	
PTC-SHE-25: Manual Lifting Techniques Policy	Provides guidance and requirements to protect employees from the hazards of improper lifting techniques and overexertion during manual material handling.	X	X	
PTC-SHE-26: Remote Work	Identifies the best practices for a healthy remote work environment to maximize productivity and efficiency, reduce risk of fatigue and discomfort, and maintain work-life balance.	X		
PTC-SHE-27: Wildfire Smoke Response Plan	Provides guidance and requirements for protecting employees from wildfire smoke and air pollution hazards when working outdoors.		X	
PTC-SHE-28: Outdoor Heat	Provides guidance and requirements for protecting employees working outside in elevated outdoor temperatures.		X	

1.3 Health and Safety Goals

PIONEER is committed to achieving zero injuries and strives for safety, health, and environmental excellence. The following are H&S goals for 2023:

- Conduct an emergency training drill at the office to cover potential emergency situations.

- Perform ergonomic evaluations for all work spaces at the PIONEER office.
- Conduct quarterly safety meetings with the PIONEER field team to share learnings from completed field events, coordinate and prepare for upcoming fieldwork, and discuss emerging topics.

SECTION 2: ROLES, RESPONSIBILITIES, AND PROGRAM IMPLEMENTATION

2.1 Roles and Responsibilities

The following safety guidelines apply to all PIONEER work activities:

- Never perform a task that may endanger your own safety and health; the safety and health of coworkers, subcontractors, or the public; or damage the environment.
- Management and employees are expected to work together as a team to keep the workplace safe and healthy.
- Tasks should not be performed which violate safety rules or risk injury/illness to complete a job.
- Employees are required to comply with company safety rules and participate in safe workplace accommodations.
- Management will devote the necessary resources to develop a system for identifying and correcting hazards.
- Employees are subject to random drug and alcohol testing in accordance with the PIONEER Drug and Alcohol Testing Policy (PTC-SHE-18; see Appendix A).
- Management will plan for any foreseeable emergencies and provide initial and ongoing employee training.
- Management will acknowledge employees that identify safety hazards, stop work to address a changed condition, add value to the safety program, or contribute to safety audits. Acknowledgements may include rewards given to employees to communicate management's commitment to employee safety, reinforce H&S importance, and provide incentives for active employee participation in H&S.

2.1.1 Administrator

Kevin Gallagher is the IIPP/APP Administrator and has the authority and responsibility to implement the provisions of this program.

2.1.2 Management

Managers, supervisors, and lead personnel must implement and maintain the IIPP/APP in the work area and answer any questions that employees may have about the H&S Program. Management is responsible for ensuring that all safety and health policies and procedures are clearly communicated and understood by all employees.

Other management H&S responsibilities include:

- Ensuring sufficient employee time and funding for safety equipment, training, and safety program implementation.
- Informing employees of the IIPP/APP provisions during the Health and Safety Plan (HASP) review.
- Evaluating employee safety performance.
- Recognizing and acknowledging safe and healthful employee work practices.

- Ensuring incident or near-miss investigation and corrective action to prevent reoccurrence of hazardous conditions or behaviors.
- Providing injury and illness record maintenance and post incidents.
- Following established safety rules and attend required training.
- Ensuring H&S program audits are conducted to verify H&S effectiveness.
- Answering worker questions about the IIPP/APP.
- Enforcing safety rules fairly and uniformly.

2.1.3 *Employee*

All employees are responsible for using safe work practices, for following all directives, policies and procedures, and for assisting in maintaining a safe work environment.

Employee H&S responsibilities include:

- Taking personal responsibility for individual and co-worker health and safety.
- Participating, developing, and reviewing fieldwork HASPs and Project Safety Analyses (PSAs).
- Stopping work and evaluating unplanned events and changed conditions such as:
  - Introduction of new substances, processes, procedures, or equipment that present potential new hazards in the workplace.
  - Recognition of new or previously unidentified hazards.
  - Occurrence of occupational injuries and illnesses.
  - Evaluation of hazards, processes, operations, or tasks not previously conducted by permanent or intermittent employees.
- Following program safety rules and documenting safety training.
- Reporting unsafe conditions or actions to management promptly.
- Reporting all injuries to management promptly regardless of level of seriousness.
- Reporting all near-miss incidents to management promptly.
- Maintaining PPE in good working condition.
- Encouraging co-workers by words and examples to use safe work practices on the job.
- Suggesting to management any changes for employee safety improvements.

2.1.4 *Site Safety Officer*

Site Safety Officers (SSOs) are responsible for overseeing the safety of daily field operations and implementing IIPP/APP provisions in the field. SSOs are qualified individuals designated by management and approved by the IIPP/APP Administrator. All SSOs must have Occupational Safety and Health Administration (OSHA) 29 CFR 1910.120(e)(4) 8-hour supervisor training and be first aid and CPR certified. All SSOs must be knowledgeable in general industry and construction standards and have a fundamental understanding of project-specific HASPs and this IIPP/APP.

2.2 Fit for Duty

PIONEER is committed to providing a drug-free, healthy, and safe workplace. To achieve this goal, employees are required to report to work fit to perform their jobs in a satisfactory manner.

2.3 Health and Safety Implementation and Compliance

The IIPP/APP is intended to improve workplace health and safety by encouraging good management and employee involvement. Managers and lead personnel are expected to enforce safety rules fairly and uniformly. Employees are responsible for safe work practices, directive, policy and procedure implementation, and safe work environment maintenance. The following system is in place to ensure employee compliance and maintain a safe work environment:

- Inform employees of the IIPP/APP provisions and read and sign the IIPP/APP Form 1-Compliance Agreement (see Appendix B).
- Evaluate employee safety performance.
- Recognize employee performance of safe and healthful work practices.
- Discipline employee non-compliance of safe and healthful work practices.
- Conduct and assess field audits of workplace compliance.

The PIONEER Administrator or SSO is responsible for implementing the IIPP/APP provisions in the office and in the field. Managers and personnel are responsible for maintaining the IIPP/APP in personal work areas and field work sites to ensure safe work practices and maintain a safe work environment. PIONEER will provide employees with the proper safety and health policies and procedures to ensure a safe work environment. The Standard Operating Procedures (SOPs) for fieldwork are implemented on a site-specific basis.

2.4 Health and Safety Committee

PIONEER management and personnel meet monthly to discuss health and safety topics. PIONEER management and employees collaborate to identify safety problems and develop solutions using the following guidelines:

- Discuss identified safety issues.
- Encourage safe work practices among co-workers.
- Conduct regularly scheduled monthly safety meetings.

A safety topic is selected by each employee and presented during monthly safety meetings. This ensures active participation of all PIONEER employees.

The PIONEER Safety Committee meets quarterly to discuss the H&S Program effectiveness and improvements. The 2023 PIONEER Safety Committee consists of the following people:

- Corporate Management Representative - Brad Grimsted
- Corporate H&S Manager and IIPP/APP Administrator – Kevin Gallagher
- Project Management Representative – Joel Hecker
- Project Management Representative – Eric Grimsted
- Employee Representative – Melisa Kegans
- Employee Representative – Stephanie Herrera
- Employee Representative – Ruth Stevenson
- Employee Representative – Thom Barrett

- Employee Representative – James Witt

SECTION 3: SAFETY COMMUNICATIONS

The PIONEER approach to safety-related communication is intended to facilitate a continuous flow of health and safety information between all affected personnel. The following communication system is designed to facilitate two-way communication between management and employees:

- New worker safety orientation to include site-specific H&S policies and procedures.
- HASP review and task-specific PSA for every project.
- Monthly safety awareness meetings.
- Investigational review of accidents, injuries, and exposures to hazardous substances.
- Stop work authority is issued to all employees in the event of changed conditions, injury, illness, or safety protocol violations.
- SSO daily site walks to ensure effectiveness.
- Daily tailgate meetings to discuss specific health and safety procedures.
- Non-English speaking site workers will be provided an effective translation of communication of H&S concerns between workers and supervisors.
- Site workers with workplace hazard concerns are encouraged to contact Kevin Gallagher via phone (360.570.1700) or email (gallagherk@uspioneer.com).

Employees must follow these basic safety rules:

- Never do anything unsafe in order to get the job done. If a job is unsafe, stop working and report it to the SSO.
- Use the appropriate PPE when required.
- Obey all safety warning signs.
- Clean up spills immediately to prevent accidents.
- Use evacuation map route to exit the workplace in an emergency.
- Know designated emergency assembly location outside of the building.
- Know the location of fire extinguishers, first aid kit, and emergency phone numbers.
- Follow earthquake emergency guidelines to drop, cover, and hold.

The IIPP/APP Administrator will provide or coordinate safety orientations for all employees. In the event of field work, a PSA leader will provide or coordinate job-specific safety orientations for all employees.

3.1 Reporting Injuries and Unsafe Conditions

All personal injuries that occur on the job must be reported as soon as possible to the IIPP/APP Administrator and Project Manager (PM). The SSO will provide employees with the location of the first aid kit. Emergency contact information is located in the site-specific HASP. Report an unsafe working condition and/or practice to the SSO in the field, immediately.

Any unsafe acts or conditions that are observed must be reported to the IIPP/APP Administrator and SSO, who will make efforts to correct the situation. The PM will be notified of the situation and will assist in the response and implementation of additional corrective actions, as needed.

3.2 Safety Meetings

Safety awareness is discussed daily during field work. Topics include H&S issues and practices to maintain a safe work environment. Meeting minutes and a list of participants will be recorded to document that the meetings occurred (see Appendix C). The PIONEER Safety Committee meets monthly to discuss the H&S Program effectiveness and improvements (see Section 2.4).

SECTION 4: HAZARD ASSESSMENT & CONTROL

4.1 Hazard Assessment

A hazard is any condition in the workplace that can potentially cause occupational injury, death, or disease. PIONEER is committed to identifying hazards, assessing risks, and eliminating/controlling exposures. Therefore, each field project will include the following:

- A comprehensive HASP that describes PIONEER policies and procedures for identifying and eliminating exposure to hazards. Each HASP will meet the requirements of OSHA's Hazardous Waste Operations and Emergency Response (HAZWOPER) Standard, 29 CFR 1910.120.
- A comprehensive written assessment of task-specific and process-specific hazards (henceforth referred to as hazard assessment) will be completed prior to the start of work. Hazard assessment will typically be accomplished through the completion of a PSA and may be replaced and/or supplemented through the addition of Job Safety Analyses (JSAs; also known as job hazard analyses) at the discretion of the IIPP/APP Administrator. The PSA will serve as a vehicle to identify, discuss, and propose controls for potential hazards (see Appendix D). Key personnel involved in the project will be required to participate in the PSA in an attempt to comprehensively identify and control hazards. At a minimum, all individuals involved in a field effort, including subcontractors, will be required to review the PSA prior to the start of work.

The hazard assessment process (i.e., PSA and/or JSA) will also fulfill the WAC requirement to identify hazards and determine if PPE is necessary on the job (WAC 296-800-16005). Additional hazard assessments will be completed when new substances, processes, procedures, personnel, or equipment are introduced into the workplace.

4.2 Hazard Prevention Control

Site hazards and risks are controlled using one or more of the control measures listed below (in order of preference):

1. Elimination involves physically removing a hazard. It is the most effective method of control.
2. Substitution involves replacing something that causes a hazard with something that does not.
3. Engineering Controls involve isolating workers from hazards. It does not eliminate a hazard.
4. Administrative Controls involve changes to work practices (e.g., employee training).
5. PPE involves workers wearing protective equipment. PPE is the least effective method of hazard control because if the equipment fails workers are exposed to the hazard.

4.2.1 Identify and Control Workplace Hazards

PIONEER is committed to eliminating or controlling workplace hazards that could cause injury or illness to our employees. Potential hazards to PIONEER employees would primarily be encountered during work at hazardous waste sites; however, employees may experience ergonomic-related injuries of improperly appointed computer workstations. An initial workstation ergonomic assessment and

overview of good working positions will be provided during new employee orientation. Employees are encouraged to communicate ergonomic concerns to management.

A project-specific HASP will be developed that identifies all potential hazards and control procedures to be implemented during work at hazardous waste sites. The HASP will include work procedures that effectively prevent employee exposure to a hazard when eliminating the hazard (which is the preferred procedure) or engineering controls are not possible. Where work procedures alone are not fully effective, employees will be required to use PPE (e.g., safety glasses, hearing protection, and foot protection). PIONEER employees will be required to read and sign the HASP before performing any site work.

Daily safety tailgate meetings will be conducted during site work and PIONEER employee attendance will be required. Employees arriving late will be briefed on the contents of the meeting before beginning work. Facilities and equipment will be designed to eliminate employee exposure to hazards.

PIONEER will evaluate employee computer workstations and provide the necessary equipment (e.g., chair, foot rest, wrist support) to prevent ergonomic-related injuries. Employees will be encouraged to report any work station related discomfort to management or safety committee member to remedy a possible work-related injury.

4.2.2 Basic Safety Rules

The following basic safety rules have been established to make PIONEER a safe and efficient workplace. Failure to comply with these rules will result in disciplinary action. The basic safety rules are in addition to hazardous waste site safety rules and include the following:

- Never do anything that is unsafe in order to get the job done. If a job is unsafe, report it to management or a safety committee representative. We will find a safer way to do the job.
- Never operate a piece of equipment unless trained and authorized to do so.
- Use PPE whenever it is required.
- Never work under the influence of alcohol or illegal drugs as using them at work is prohibited.
- Do not bring firearms, explosives, or weapons onto company property.
- Smoking is only permitted outside the building away from any entry or ventilation intake.
- Good housekeeping helps prevent injuries.

4.2.3 Identify and Manage Field Changes

A field change is a change to the project scope of work, schedule, workforce, control measures, and/or work activities (including tools and equipment) identified during pre-project planning. When a project is being implemented and the site is full of activity, it may be difficult to notice field changes.

Good observation techniques are based on looking at things from every perspective, and comparing what you see with what you expect to see. The 20-20-20 Rule is an important observation technique that is designed to help employee's notice field changes by reminding them to focus on safety:

- Every 20 minutes,

- Take 20 seconds, and
- Look 20 feet around you in every direction.

When a field change is identified, immediate action must be taken to stop work and report the changed condition to the IIPP/APP Administrator and SSO. See Section 3 of the IIPP/APP for information on stop work authority and reporting unsafe conditions.

4.2.4 Personal Protective Equipment

Some tasks require an employee to use PPE to protect against injury. The project-specific HASP will outline the PPE requirements and the directions for proper use and maintenance.

PIONEER employees may occasionally participate in work at sites where the use of respirators is required. This is expected to be an infrequent occurrence; however, all employees who are required to use a respirator at any time must be familiar with and comply with the provisions of the PIONEER Respiratory Protection Program (see Appendix E). Where respirator use is required, PIONEER will provide the proper respirator(s), training, fit testing, and medical monitoring at no cost to the employee.

Working in extreme hot or cold temperatures for a long period of time can cause severe health damage, such as heat exhaustion and hypothermia. PIONEER employees who conduct work outside must be familiar with the provisions included in the Outdoor Heat Policy and the Wildfire Smoke Response Plan (PTC-SHE-27 and PTC-SHE-28; see Appendix A).

4.2.5 Heat and Cold Stress Management

4.2.5.1 Heat Stress

Employees working in extreme hot temperatures or with semipermeable or impermeable protective clothing for long periods of time may be at risk of heat stress, which can result in occupational illnesses and injuries such as heat exhaustion. Heat exhaustion is a condition that results from the body being less able to cool itself efficiently. Symptoms of heat exhaustion may include dizziness, nausea, headache, muscle cramps, and cool/moist skin. If left untreated, heat exhaustion can lead to heat stroke, which is the most serious heat related condition and occurs when the body's temperature regulation fails and body temperature rises to critical levels. Symptoms of heat stroke may include, confusion, irritability, fainting, and red and dry skin. Untreated heatstroke can quickly damage the brain, heart, kidneys and muscles.

Best Practices for Preventing Heat Stress

- Stay hydrated by regularly drinking plenty of cold fluids.
- Follow a work/rest regimen that includes an available shelter to cool off as needed.
- Wear appropriate protective clothing made up of materials that are lightweight or wick sweat.
- Keep skin covered as much as possible and apply sunscreen of SPF 30 or greater.
- Use cooling vests or headbands.

4.2.5.2 Cold Stress

Employees working in cold or windy environments for long periods of time may be at risk of cold stress, which can result in occupational illnesses and injuries such as hypothermia. Hypothermia is a condition that occurs when the body is no longer able to produce heat and body temperature falls to critical levels. Symptoms of hypothermia may include shivering, fatigue, confusion, and blue skin. Prolonged exposure to cold may also result in frostbite. Frostbite is an injury to the body that is caused by freezing, and most often affects the nose, ears, cheeks, chin, fingers, or toes. Symptoms of frostbite may include tingling, numbness, and bluish or pale skin.

When this prolonged exposure is combined with a wet environment, employees may also be at risk of trench foot. Trench foot, also known as immersion foot, is an injury that occurs when the feet are wet for long periods of time, and results in the death of surface tissue. Symptoms of trench foot may include reddened skin, numbness, swelling, tingling, and blisters.

Best Practices for Preventing Cold Stress

- Minimize activities that reduce circulation for prolonged periods of time (e.g., sitting or standing).
- Stay hydrated by regularly drinking plenty of warm fluids.
- Follow a work/rest regimen that includes an available shelter to warm up as needed.
- Wear appropriate protective clothing with a minimum of three layers to assist in retaining body heat and adapting to changes in weather and level of physical exertion.
    - An outer layer to break the wind and allow some ventilation (e.g., nylon or Gore-Tex).
    - A middle layer to absorb sweat and retain insulating properties when wet (e.g., wool or synthetic pile).
    - An inner layer to allow ventilation and escape of perspiration
- Protect exposed skin and body parts such as ears, face, hands, and feet (e.g., hats, gloves, and insulated boots).

4.2.6 Lone Workers

Field personnel will implement the use of the buddy system or have a means of communication (i.e., cell phones, two-way radios, satellite phones) available to maintain contact with other personnel for emergency purposes. Working alone at field sites will be minimized to the extent feasible. If working alone is necessary, an alternate method of maintaining contact with others must be used. If working alone is necessary, the following applies:

Arrangements will be stated in written plan (i.e., this HASP, PSA).

- The degree of contact required with a lone worker is directly proportional to the degree of hazard to which the worker is exposed.
- Points of contact may include contractors, security, or other reliable individuals. Contact will occur at intervals agreed upon prior to the field activity.
- Employees selected for potential lone worker assignments will be competent to carry out tasks independently. The SSO will involve the PM in decisions regarding whether it is believed that

the employees selected have sufficient training for and familiarity with the assignment to be able to work with minimal guidance or oversight.

4.2.7 *Safety Inspection Procedures*

PIONEER is committed to identifying hazardous conditions and practices likely to result in employee injury or illness. Prompt action will be taken to eliminate potential hazards. In addition to reviewing injury records and incident investigation causes, management and the safety committee will regularly check work place hazards. In addition, hazardous waste site work audits will be conducted at least once during site work lasting for more than one week in duration. A walk through safety audit of the worksite will occur. The auditor will complete IIPP/APP Form 5 – Safety Audit Form to document and verify work is conducted in accordance with the site-specific HASP (see Appendix B). The audit results will be used to eliminate or control obvious hazards.

4.3 Record Keeping and Review

Employees are required to report any injury or work-related illness to their immediate supervisor regardless of how serious. The employee must use IIPP/APP-Form 2 – Employee Injury or Illness Report Form. All incident and accident forms pertaining to personal injury and illness are presented in Appendix B.

The Safety Committee will:

- Investigate a serious injury or illness using procedures in Section 4.2 - Serious Incidents.
- Complete an IIPP/APP Form 3 – Accident Investigation Report (see Appendix B).
- Submit the Injury/Illness/Near-Miss Report and the Incident Investigation Report to management.

Management will:

- Determine from the employee's report, Incident Investigation Report, and any workmen's compensation claim form associated with the incident, whether the incident must be recorded on the OSHA Injury and Illness Log and Summary (OSHA Form 300A; see Appendix F).
- Enter a recordable incident within six days of company awareness.
- Enter non-recorded OSHA incidents into a separate incident log, used to record non-OSHA recordable injuries and near-misses.

Management will post a signed OSHA Form 300A for the previous year on the safety bulletin board each February 1 through April 30. The log will be kept on file for at least five years. Upon request, an employee can view an OSHA log any time during the year.

SECTION 5: ACCIDENT & EXPOSURE INVESTIGATIONS

5.1 Accident or Exposure Investigations

Investigation of workplace accidents, hazardous substance exposures, and near-accidents will be completed by the IIPP/APP Administrator, SSO, and/or PSA leader. The investigation procedure will include a site visit, an interview of affected workers and witnesses, an examination of workplace factors associated with the accident/exposure/near-accident, and corrective actions to eliminate reoccurrence and improve overall business operations. This process will provide the critical information to prevent and control hazards and potential accidents in the workplace. Accident and exposure investigations will be documented on IIPP/APP Form 3 – Accident Investigation Report. Near-miss incidents will be documented on IIPP/APP Form 4 – Unexpected Occurrence and Near-Miss Report (see Appendix B).[1,2]

5.2 Serious Incidents

An incident is considered serious if an employee dies while working or is not expected to survive, or if any employee is in-patient hospitalized as a result of a work-related incident. In the event of a serious incident in Washington State, management will contact the Department of Labor and Industries (L&I) within 8 hours after becoming aware of the incident. The toll-free notification number is (800) 423-7233. Fax and answering machine notifications are not acceptable. Management will report the employer name, incident location and time, number of involved employees, a brief incident description, and the name and phone number of a contact person.

When a serious incident occurs, an investigation will be conducted by an investigation team consisting of management, a safety committee member, and any other person whose expertise would help the investigation.

The investigation team will take written statements from witnesses, and photograph the incident scene and equipment involved. As soon as possible after the incident, the team will document the condition of equipment and any relevant information in the work area. The team will provide a written "Incident Investigation Report" of the findings. The report will include sequential events prior to the incident, conclusions about the incident and any recommendations to prevent future incidents. The report will be reviewed by the safety committee at the next regularly scheduled meeting.

5.3 Non-Serious Incidents and Near-Miss Incidents

When management becomes aware of an employee incident not serious enough to warrant a team investigation as described above, management will complete IIPP/APP Form 3 – Accident Investigation

[1] The DuPont CRG SHE-0-11 Unexpected Occurrence Reporting procedure will also be completed if an accident or unexpected occurrence takes place at a DuPont site.

[2] The Chemours EHS.03 Unexpected Occurrence Reporting SOP will also be completed if an accident or unexpected occurrence takes place at a Chemours site.

Report. The employee will complete IIPP/APP Form 2 – Employee Injury or Illness Report (see Appendix B). Both reports will be placed in the PIONEER Corporate Health and Safety files.

An incident that did not, but could have, resulted in a serious injury to an employee (a near-miss) will be investigated by management or the safety committee depending on the seriousness of the injury that would have occurred. The investigation findings will be summarized in the IIPP/APP Form 4 – Unexpected Occurrence or Near-Miss Report (see Appendix B). The report will be forwarded to the IIPP/APP Administrator for review.

SECTION 6: EMERGENCY PLAN

An evacuation map for the PIONEER office building is posted on the corporate H&S information board in the kitchen and presented in Figure 1. The map shows the exit locations, fire extinguishers, first aid kits, and the emergency employee gathering area outside the building. Project-specific emergency plans for work at field locations are provided in project-specific HASPs.

6.1 In Case of Fire

All employees will receive fire extinguisher use training in the initial orientation. If a fire occurs, follow the guidelines below:

- Tell all adjacent employees immediately.
- Extinguish a small fire (e.g., waste basket fire with minimal smoke) with a fire extinguisher.
- Do not continue to fight the fire if the fire grows or has thick smoke. Call 911.
- Tell other employees in the area to evacuate.
- Meet in the designated gathering area (e.g., designated walkway by mail boxes) outside the building in the center of the parking lot.
- Account for all employees. If an employee is missing, do not re-enter the building! Notify the responding fire personnel that an employee is missing and may be in the building.

6.2 In Case of Earthquake

Follow the guidelines below if an earthquake occurs while in the building:

- Drop under a desk or table, cover head and hold on. Stay away from windows, heavy cabinets, bookcases or glass dividers.
- Check for damage and available evacuation routes, then evacuate to the employee gathering area when the shaking stops.
- Evacuate quickly before aftershocks occur.
- Account for all employees.
- Administer first aid and help evacuate injured employees. Do not attempt to move seriously injured persons unless potential immediate danger could cause further injury.
- Do not re-enter the building once evacuation is complete.
- Do not approach or touch downed power lines or objects touched by downed power lines.
- Do not use the phone except for emergency use.
- Turn on a radio and listen for public safety instructions.
- When outside during an earthquake, employees must move away from the buildings, trees, telephone lines, and electric lines to keep safe.

If on the road during an earthquake, drive away from underpasses/overpasses, stop in a safe area, and stay in the vehicle.

6.3 If an Injury Occurs

Only certified employees shall provide first aid/CPR assistance to injured persons. Current first aid and CPR certified employees are listed on the safety bulletin board, located in the PIONEER office kitchen. Follow the rules and guidelines for providing quick and effective first aid in the PIONEER First Aid Policy (PTC-SHE-5; see Appendix A).

Should an injury occur:

- Do not move injured person unless absolutely necessary.
- Transport the injured person to the nearest health care facility as identified in the project-specific HASP, in the event of a minor injury.
- Call 911, in the event of a major injury.
- Promptly report the incident to management.

It should be assumed that all blood is infectious; refer to the PIONEER Bloodborne Pathogens Policy for more information on bloodborne diseases (PTC-SHE-14; see Appendix A).

Should a bleeding injury occur:

- Wear gloves to prevent exposure to blood or other potentially infectious materials. Gloves are available in the first aid kits.
- Have the injured person help (if able) by applying pressure to the wound.
- Wash immediately with soap and water and report the incident to a supervisor, if exposed to blood while giving first aid.
- Follow the appropriate follow-up procedures initiated by management, including a medical evaluation, counseling, Hepatitis B vaccine, and possible blood testing of the source person. For further information, refer to WAC 296-62-08001(6).

In the event that the eyes or body of any person is exposed to corrosive materials, utilize eyewash facilities to quickly drench or flush the eyes and/or body.

SECTION 7: HEALTH AND SAFETY TRAINING

PIONEER acknowledges the importance of H&S training. All employees will benefit from H&S training through fewer work-related injuries and illnesses, increased productivity, lower costs, and a more cohesive and dependable workforce. All workers will receive training on general and job-specific health and safety practices. Training will occur for all new workers and prior to new job assignments. Training will be performed by the IIPP/APP Administrator or SSO, and will include an explanation of the IIPP/APP, emergency action plans and procedures, project-specific PSA, and PPE requirements.

7.1 Safety Training

Training is essential to ensuring a safe work place at PIONEER. All training records will be maintained in the PIONEER H&S files. The following training courses will ensure proper employee training requirements before beginning work tasks:

Training	Frequency	Who Must Attend
Basic Orientation, including review of IIPP/APP and SHE Policies	Initial/Annual	All Employees
40-hour HAZWOPER	Initial	Employees who will work at hazardous waste sites
8-hour HAZWOPER Refresher	Annual	Employees who will work at hazardous waste sites
8-hour HAZWOPER Supervisor	Initial	Employees who will serve as supervisors at hazardous waste sites
3 days of documented field experience under a qualified supervisor	Initial	Employees who will work at hazardous waste sites
Fire Extinguisher Safety	Initial/Annual	All Employees
Respirator training including annual fit test	Annual	Employees required to use respirators at hazardous waste sites
First Aid/CPR	Biennial	Employees who will serve as SSOs or work at hazardous waste sites
SHE Policy-Specific Training		
Electrical Awareness (PTC-SHE-2)	As necessary	Employees that perform tasks involving electrical work
Fatigue Management (PTC-SHE-3)	Initial/Annual	All Employees
Fire Evaluation Drill (PTC-SHE-4)	Annual	Employees who will work at the PIONEER office
DOT HAZMAT (PTC-SHE-7/PTC-SHE-24)	Every 3 years	Employees who work at hazardous waste sites
Specific training for assigned tasks (PTC-SHE-6)	As necessary	All Employees
Additional on-the-job training (PTC-SHE-8)	As necessary	Employees that are not thoroughly familiar with the equipment and/or written procedures at hazardous waste sites
HazCom training and orientation (PTC-SHE-9)	Initial	Employees who will work at hazardous waste sites
General Lead Awareness Training (PTC-SHE-9)	Initial/Annual	Employees who will work at hazardous waste sites
General Asbestos Awareness Training (PTC-SHE-9)	Initial/Annual	Employees who will work at hazardous waste sites
General Benzene Awareness Training (PTC-SHE-9)	Initial/Annual	Employees who will work at hazardous waste sites
Ladder Safety (PTC-SHE-11)	Annual	All Employees
Noise Exposure Hazard Awareness (PTC-SHE-12)	Annual	All Employees

Training	Frequency	Who Must Attend
Non-Typical PPE (PTC-SHE-13)	As necessary	Employees who will work at hazardous waste sites
Bloodborne Pathogens Policy (PTC-SHE-14)	Annual	All Employees
Site-Specific Emergency Response Plans (PTC-SHE-15)	Initial	Employees who will work at hazardous waste sites
Behavioral Based Safety (PTC-SHE-21)	Annual	All Employees
Fall Protection (PTC-SHE-23)	As necessary, biennial	Employees who may be exposed to fall hazards
Manual Lifting Techniques Policy (PTC-SHE-25)	As necessary	All Employees
Remote Work (PTC-SHE-26)	Initial	All Employees
Wildfire Smoke Response Plan (PTC-SHE-27)	Annual	Employees who will conduct outdoor field work
Outdoor Heat (PTC-SHE-28)	Annual	Employees who will conduct outdoor field work

7.2 Medical Monitoring

Washington (WAC 296-843-210) and California (Title 8 CCR Section 5192) require medical monitoring for individuals who:

- Are exposed to hazardous substances at concentrations exceeding a permissible exposure limit for more than 30 days per year;
- Wear an approved respirator for 30 or more days per year;
- Become injured, ill, or develop signs or symptoms from likely overexposure to hazardous substances; or
- Is a member of a HAZMAT team.

PIONEER does not have a medical monitoring program for employees working at hazardous waste sites because employees have never met any of these criteria. If any of these situations occur, PIONEER will implement an appropriate program and this IIPP/APP will be amended to reflect the change.

7.3 Respiratory Protection Program

A Respiratory Protection Program is required in California (Title 8 CCR Section 5144) and Washington State (WAC 296-842-120) when employees are required to wear respirators. All employees who must wear respirators must review, sign, and follow the procedures in the Respiratory Protection Plan (see Appendix E).

7.4 Disciplinary Policy

Employees are expected to use good judgment and follow established safety rules when working. PIONEER has a disciplinary policy to motivate employees to make corrections to unacceptable behavior, and provide appropriate consequences for the failure to follow safety rules (PTC-SHE-1; see Appendix A). The following consequences apply to the violation of the same rule or the same unacceptable behavior:

- First Instance – verbal warning, notation in employee file, and instruction on proper actions.
- Second Instance – one week suspension, written reprimand, and instruction on proper actions or termination of employment.
- Third Instance – termination of employment.

An employee may be subject to immediate termination when a safety violation places the employee or co-workers at risk of permanent disability or death.

Discipline for drug and alcohol use will be implemented according to the PIONEER Drug and Alcohol Testing Policy (PTC-SHE-18; see Appendix A).

SECTION 8: RECORDKEEPING & DOCUMENTATION REQUIREMENTS

PIONEER is a company with ten or more employees and will implement and maintain the IIPP/APP. Records of scheduled and periodic inspections including the person conducting the inspection, the workplace hazards, and the actions to correct the identified unsafe conditions and work practices will be recorded on IIPP/APP Form 5 - Safety Audit Form (see Appendix B). The inspection forms will be maintained for at least one year.

Documentation of safety and health training for each worker, including the worker's name, training dates, types of training, and training providers will be maintained for at least one year.

Other recordkeeping and documentation provisions will be performed according to task-specific and project-specific plans (e.g., HASPs, PIONEER Respiratory Protection Plan, etc.).

Figures

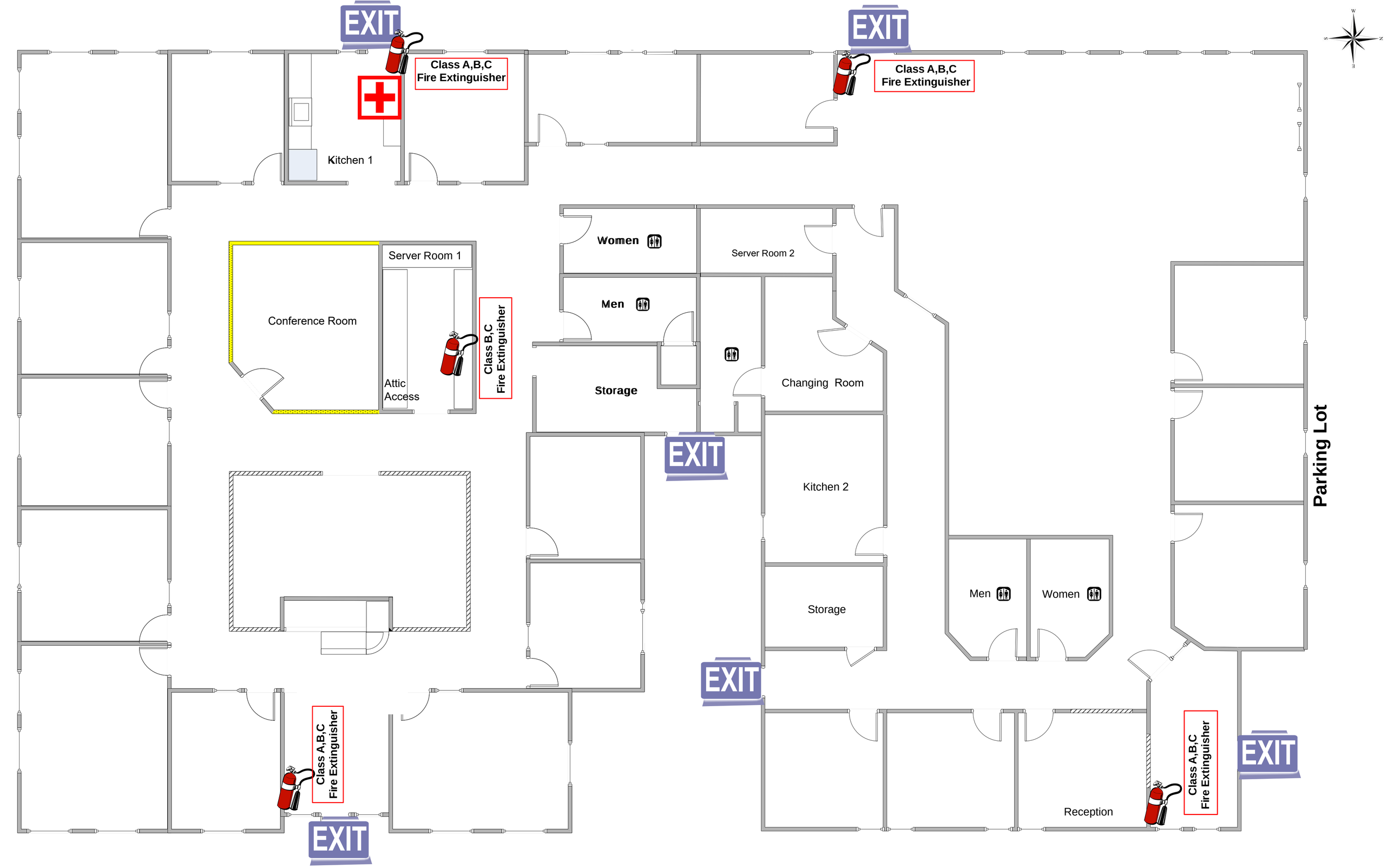


Figure 1 - PIONEER Office Evacuation Map

Appendix B

DAILY SAFETY BRIEFING PROCESS

The Contractor Supervisor completes Work Permit for work to be performed that day. The SSO and the contractor supervisor discuss the work to be performed and any safety observations from the previous day's work. Once all parties are in agreement with the work, tasks and safety mitigation measures, the work permit is signed. The contractor supervisor begins tailgate meeting by discussing the day's activities and assigning tasks and then leads into an interactive discussion regarding the safety hazards of the day's work. With assistance from the SSO, the discussion should be started by asking open ended questions to solicit comments from field crew. Areas for improvement, positive observations, mitigation measures, key points regarding mitigation measures, etc., should be noted in the space below.

Date and Time of Meeting: _____

Discussion:

_____

_____

_____

_____

_____

Attendee's Name (Printed) Signature _____

Supervisor: _____

SSO: _____

WORK PERMIT

Date: _____ **Start Time:** _____ **Finish Time:** _____ **Project Name:**_____

Work Location: _____

Work Description: (Summary of Tasks): _____

_____

Special Procedures to Follow

Check all that apply	HASP	Section	Does the JHA Address the Hazards?	Special Permits Required	Required	Complete
Equipment Operation / Drill Rigs						
Biological Hazards						
Traffic Control						
Work Over or on Water						
Confined Space Entry Permit						
Explosive or Reactive Materials						
Heat / Cold Stress						
Overhead Obstruction Plan (OHOP)						
Truck Tarping and Lining (Site Specific)						
Rigging and or Crane Operations						
Scaffold Construction and Use						
Electrical Safety and GFCI Protection						
Elevated Work / Fall Protection						
Radiation, X-Ray, Microwave, or Laser Hazards						
Waste Management / Drum Handling						
Site Control and Communications						

	Yes	No
Field personnel aware of the hazards and required permits identified above?	□	□
Have all vehicles, equipment, and tools been inspected?	□	□
Has the work area been inspected?	□	□
Have there been any changes in work area conditions that require revision to the JHA or HASP?	□	□

PPE Level: (e.g., Level D) also add additional PPE (e.g., body harness): _____

In Case of Emergency:

Nearest designated rally point: _____

SSO emergency phone number: _____

Implement UO Notification Chain as written in the HASP: _____

Approved by: _____ Date: _____

Contractor Supervisor Signature: _____

WORK PERMIT

Work Must Not Start Until Permit is Signed and All Precautions Are Taken!

Check Topic(s)

Overhead utilities
- ☐ Power de-energization required
- ☐ Required clearance distance ft

Underground Utilities
- ☐ Review as-builts
- ☐ Sub-subsurface surveys
- ☐ Received excavation permit
- ☐ Required clearance distance _____ ft
- ☐ Safe work zone mark

Excavations
- ☐ Permits
- ☐ Inspected prior to entrance
- ☐ Proper Sloping/shoring
- ☐ Barricades provided
- ☐ Access/Egress provided
- ☐ Protection from accumulated water

Vehicle traffic or Heavy Equipment
- ☐ Traffic barricades
- ☐ Cones and/or Signs
- ☐ Flagmen
- ☐ Lanes closure
- ☐ Communication with equipment operator
- ☐ Spotters
- ☐ Equipment Inspection Forms

Hand & Power Tools
- ☐ Inspect general conditions
- ☐ GFCI in use
- ☐ Identified PPE required for each tool
- ☐ Reviewed safety requirements in operators Manual(s)
- ☐ Guarding OK

Manual Lifting:
- ☐ Reviewed proper lifting technique
- ☐ Identified material requiring lifting equipment
- ☐ Hand protection required

Scaffolds:
- ☐ Inspect general condition before use
- ☐ Tags in place
- ☐ Properly secured
- ☐ Toe boards used
- ☐ Footing adequate
- ☐ Material properly stored on scaffold

Pinch Points:
- ☐ List pinch points: _____

_____
- ☐ Working near equipment
- ☐ Hand/body position

Heat Stress
- ☐ Heat stress monitoring (<85F)
- ☐ Liquids available
- ☐ Cold down periods
- ☐ Sun Screen
- ☐ Exposure monitoring conducted

Equipment Operator
- ☐ Training documentation

Crane or other lifting equipment
- ☐ Signalman assigned
- ☐ Tag lines in use
- ☐ Lifting equipment inspected

Electrical
- ☐ Lock Out/Tag Out/Try Out
- ☐ Confirm that equipment is de-energized

Fire Hazard
- ☐ Hot work
- ☐ Fire extinguishers ( ) Fire Watch
- ☐ Adjacent area protected
- ☐ Unnecessary flammable material removed
- ☐ Grounding and bonding of fuel containers

Noise > 85dB
- ☐ Hearing Protection
- ☐ Ear Plug

List sharp tools, material, equipment
- ☐ 1.
- ☐ 2.
- ☐ 3.
- ☐ 4.
- ☐ PPE gloves, etc.
- ☐ Protected sharp edges as necessary

WORK PERMIT

Ladders:

- ☐ Inspect ladder prior to use
- ☐ Ladder tied off or held
- ☐ Proper angle and placement
- ☐ Review ladder safety

Slips, Trips, Falls:

- ☐ Inspect for trip hazards
- ☐ Hazards Marked
- ☐ Tool and material properly stored
- ☐ Extension cords properly secured
- ☐ Work zone free of debris

Barricades/covers:

- ☐ Caution tape required
- ☐ Danger barricade tape required
- ☐ Rigid barricade
- ☐ Covers over opening ()
- ☐ Warning sign required

Cold Stress

- ☐ Proper clothing (i.e., gloves, coat,
- ☐ coveralls) Wind chill <32F,
- ☐ Reviewed cold stress symptoms
- ☐ Warm up period

Environmental:

- ☐ Are Spill kit available?
- ☐ Are container labels

HEALTH AND SAFETY PLAN COMPLIANCE AGREEMENT

Project Name: _____ **Project Number:** _____

I have read, understood, and agree with the health and safety protocols presented in the Health and Safety Plan (HASP) and the information discussed in the health and safety briefing. I also understand that noncompliance with the HASP may result in dismissal from the site.

Printed Name	Organization	Signature	Date

Personnel Health and Safety briefing conducted by:

Name	Signature	Date

Appendix C

PROJECT SAFETY ANALYSIS SOP
EHS.04

PURPOSE

To ensure that a Project Safety Analysis (PSA) is conducted before field activities are initiated so that the following can be achieved:

- Likely hazards associated with the work are identified.
- Consensus is reached as to how the hazards will be eliminated or mitigated.
- Work is performed safely in compliance with applicable EHS regulations.

ROLES AND RESPONSIBILITIES

Project Director

- Ensures during the bidding process that PSAs are funded adequately
- Verifies that a PSA is conducted for all CRG-funded projects
- Ensures that a Plan of Action Discussion (POAD) is held prior to the PSA Meeting
- Ensures that PSA recommendations are documented and implemented as agreed to by the PSA Team
- If applicable, ensures that a High-Risk Analysis (HRA) alert is initiated on the EHS SharePoint site

Project Manager

- Schedules and participates in the PSA, including the POAD and PSA Meeting
- Assembles a PSA Team that includes key project personnel as listed in the Key Terms section of this SOP
- Ensures that the completed Hazards Checklist is retained in the project file

PSA Leader

- Leads the POAD and review of the Hazards Checklists
- Verifies that the information generated during the PSA Meeting is documented adequately

Health and Safety Resource

- Participates in the POAD and PSA, serving as a resource to ensure the adequacy of the hazard identification and mitigation process
- Ensures that approved controls are in place to address a HRA
- Initiates the HRA alert on the EHS SharePoint site

Scribe

- Takes thorough notes and completes the Hazard Checklists

PSA Team

- Understands the scope of work
- Participates in the PSA Meeting
- Agrees to the hazard mitigation techniques discussed

PROCEDURE METHODOLOGY

PSAs must be conducted for all CRG-funded field projects regardless of project complexity, duration, or scope of work and must be initiated during project development after the scope of work has been determined. *NOTE: Although PSAs are not required for general services that do not involve fieldwork*

(e.g., plumbing for an office restroom, snow removal, light bulb or outlet replacements), the likely hazards associated with these activities must be addressed via EHS.05, Job Safety Analysis, Work Permit, and Tailgate Briefing SOP.

Accomplishing the PSA is a multiple step process that involves scheduling and holding the POAD, scheduling the PSA Meeting and gathering the PSA Team, holding the PSA Meeting, filing the PSA Form, and updating the Hazard Checklists, as described below.

Scheduling and Holding the POAD

1. The Project Manager, in communication with the Project Director, determines the appropriate timing for the POAD based on the project life cycle. S/He schedules the POAD any time after the contract is awarded, allowing for sufficient time to address any items that require further research or follow-up.
2. The PSA Leader leads the POAD using the Preproject Implementation Checklist (see Attachment A) and the Hazard Checklists (see Attachment B) as guides.
    - » The implementation of specific tasks is discussed so that the hazards associated with the tasks can be identified. The contractor's Job Safety Analysis for the identified tasks and hazards should be discussed at this meeting if applicable.
    - » The anticipated hazards are reviewed, and control measures are discussed.
    - » The most significant hazards associated with the work, which may or may not be HRAs, are identified.
3. If HRAs are identified, a control plan must be agreed upon.
    - » The Scribe documents the control plan in the Background Information section on the Hazards Checklists (see Attachment B).

Scheduling the PSA Meeting and Gathering the PSA Team

1. The Project Manager, in communication with the Project Director, determines the appropriate timing for the PSA based on the project life cycle and schedules the PSA Meeting at least one week prior to field mobilization.
    - » Approximately two hours should be allotted for this meeting.
    - » Based on the project and the thoroughness of the POAD, PSA Meetings may take more time or less time as appropriate.
2. The Project Manager assembles a PSA Team that **must** include the following key personnel: the Project Manager, a Health and Safety Resource, the CSR or field supervisor responsible for field operations, and at least one contractor representative (preferably the contractor field team and safety representative or manager). If these participants are not available, the PSA **must** be postponed.
    - » The Project Director must be invited to the PSA Meeting, but is not required to attend.
    - » Optional attendees can include individuals not working on the project with relevant expertise.

Holding the PSA Meeting

Although the Hazard Checklists are completed as part of the POAD, a discussion of the hazards is an important part of the PSA Meeting. The PSA Team should not simply read the checklists or skip this discussion.

1. At the beginning of the PSA Meeting, the PSA Leader reviews the scope of work, the major hazards identified during the POAD, and HRAs identified. If feasible, photographs of key hazards should be included to facilitate the discussion.
2. The PSA Team discusses the outcomes of the POAD, including the hazards identified and control measures anticipated to be implemented.
    - » The PSA Team discusses "what if" scenarios. The duration of the discussion for potential hazards should be commensurate to the potential severity or frequency of the hazard posed (i.e., a worker injury in the "south forty," what is the worst thing that could happen while doing this work?)
    - » This discussion should be an open exchange of information and ideas.
3. The PSA Leader reviews the Hazard Checklists that were initially completed during the POAD.
    - » The Hazards Checklists in Attachment B were developed to stimulate thought. Not all of the hazards listed in the checklists may apply, and some hazards may apply that are not included on the checklists. It is expected that those hazards posing the greatest risk will generate the most discussion and planning. The identification of hazards is intended to be an interactive process (i.e., a dialogue, not a monologue).
    - » Hazards previously discussed should be passed over in favor of items that have not already been addressed.
4. The PSA Team identifies a specific hazard and determines a means of controlling or eliminating the hazard. To the extent feasible, a hierarchy of controls approach should be used (listed in order of preference): Elimination/Substitution, Engineering Controls, Administrative Controls, and Personal Protective Equipment.
5. The Scribe captures the discussion of the hazards and the associated control measures within the Hazard Checklists. Accurate notes are critical.
6. If a HRA is identified during the meeting, the Health and Safety Resource ensures that approved controls are in place to address the HRA.
7. The Health and Safety Resource documents the presence or absence of HRAs on the EHS SharePoint site.
8. If additional research is necessary for a hazard or control measure, the PSA Team identifies one of its members to follow up on the item and provide the information for inclusion into the draft Hazards Checklists.

Filing the Hazards Checklists

The final Hazards Checklists must be filed (electronically or hard copy) with the project files.

Updating the PSA Form

For ongoing projects or projects that are periodic in nature (e.g., semi-annual groundwater monitoring), the project team must review and update the completed Hazards Checklists as necessary to reflect changing conditions (i.e., seasonal differences). This review and any changes must be documented, and the updated Hazards Checklists must be filed. A new POAD/PSA call may be required depending on the scope of changes and risk level of the work. The Project Director will determine if scheduling a call is necessary or if updating existing documentation is adequate.

TRAINING

All personnel must be trained on this procedure. Refresher training must follow the initial training by no more than three years.

KEY TERMS

Key Term	Definition
Hazards Checklists	A series of checklists to assist in identifying physical, chemical, and other hazards that may be encountered during field activities.
High-Risk Activity (HRA)	An activity that, if not anticipated or controlled, has the potential to cause serious injury or death.
Plan of Action Discussion (POAD)	A discussion held in advance of the PSA Meeting involving the Project Manager, a Health and Safety Resource, and the contractor performing the work in which the following is addressed: proposed scope of work, methods, tools, roles and responsibilities of the field team, and the major hazards and controls associated with the work.
Preproject Implementation Checklists	A planning tool designed to help determine the roles and responsibilities of project team members, identify required field documents (e.g., Health and Safety Plan, Waste Management Plan), understand site access requirements, and outline other premobilization planning steps.
Project Safety Analysis (PSA)	A process designed to identify the (1) field-related safety and health hazards that may be known or anticipated and (2) associated control measures to be implemented. This two-step process includes the POAD and PSA Meeting.
PSA Meeting	A meeting held with the larger project team and Chemours Site Representative (if applicable) in which the POAD documentation is reviewed and the proposed control measures are discussed and agreed upon.
PSA Team	A group of people who are directly involved with the project or have expertise in a given area that is unique to the project. The PSA Team **must** include the Project Manager, a Health and Safety Resource, the CSR or field supervisor responsible for field operations, a plant representative (if applicable), and at least one contractor representative (preferably the contractor field team and safety representative or manager).

ATTACHMENT A
PREPROJECT IMPLEMENTATION CHECKLISTS

Preproject Implementation Checklists

Instructions: The following checklists are to be completed by the Project Manager working with the project team during the POAD. Information must be recorded in the space provided.

Scope of Work	
Project Tasks	
Contractor's Approach	
Fieldwork Start Date	
Roles and Responsibilities	Project Director: Project Manager: Chemours Site Representative: Contractor Site Supervisor: Health and Safety Resource: Contractor Representatives: Field Team Members: Plant or Site Representatives:

Are there any short service employees (SSEs) who will be working on this project? A SSE is a contractor with less than six months of experience in the same job type with his/her present employer. If so, list the names of SSEs below.

Who is serving as the field mentor for those individuals? (List names below.)

Preproject Implementation Checklists

FIELD DOCUMENTS (HASP, WMP)		
Is there a current HASP or HASP addendum for the scope of work? Provide date and title of HASP or addendum.		
Has a copy of the pertinent document(s) been made available to the project team?		
Is the WMP current for activities? If yes, list date and title of WMP.		
Has the WMP been reviewed by a member of the Waste Management Network and the field team? If yes, list the names of the individuals.		

VARIANCE
Supply justification below for **not** completing geophysical survey for underground obstructions.
Justification:
Project Director Signature:
Project Manager Signature:
Date:

SITE ACCESS REQUIREMENTS		
Are there any special security requirements for work at the site (i.e., Homeland Security)?		
Is Maritime Security Act training required?		
Are security background checks required for site entry?		
Is substance abuse testing required?		
Is local Area Safety Council Training required?		

Preproject Implementation Checklists

PM / CSR REVIEW	
Review project goals and objectives with CSR and how current scope fits in with overall project	
Permit requirements related to the work (e.g. federal, state, local, E&S, plant, internal)	
Technical Specifications/Drawings/Work Plan	
Contract-type (lump sum, unit price, or T&M) and how they relate to field management responsibilities	
Contract administration (responsibility as a "Receiver" in the **B**uy/**R**elease, **R**eceive, **P**ay process, Cost Tracking, Progress Meetings, Meeting Minutes, etc.	
Fieldwork Documentation Requirements	
Communication	1. Describe lines of communication within project team (e.g., CRG, plant, site, contractor, subcontractors) 2. Describe how to address community issues, visits, and/or questions. 3. Describe how to address regulatory visits and/or questions.

ATTACHMENT B
HAZARDS CHECKLISTS

Hazards Checklists

BACKGROUND INFORMATION	
PSA Date:	
Site Name:	
Project Name:	
List names below of those present at PSA meeting	

Name	Organization

Hazards Checklists

BACKGROUND INFORMATION
Brief Summary of the Scope of Work (as documented in POAD):

Hazards Checklists

BACKGROUND INFORMATION

What does the project team believe to be the most significant hazard(s)? Note: These hazards may or may not be HRAs as identified in Checklist A.

1.

Control Measure

2.

Control Measure

3.

Control Measure

Hazards Checklists

Checklist A
High-Risk Activities

In the process of accomplishing the agreed upon scope of work, is it anticipated that there may be exposure to any of the following HRAs? The definition of these HRAs can be found in the corresponding standard.

1. *Working with potential for electrical shock/arc (S31G)*
2. *Working at elevation or from heights (S5H)*
3. *Using high pressure water (P*ressures greater than 3,626 psig) *(S43G)*
4. *Performing hot work (S31F)*
5. *Operating powered industrial trucks (S32G)*
6. *Working on or near suspended loads (S30G, S33G)*
7. *Working with potential for body entrapment - machine, excavation (S44G, SC12E)*
8. *Entering confined spaces (S16G)*
9. *Performing line breaks to hazardous processes or systems (S27G)*
10. *Working in oxygen deficient atmospheres (S16G, S41G)*
11. *Working with highly toxic materials (S23A)*
12. *Unguarded Rotating equipment*
13. *Working over/near water*
14. *Underground (high energy) utilities*
15. *High hazard underground contaminants*
16. *Unexploded ordnance / reactive materials*
17. *Line of fire*
18. *High hazard topography/terrain*

If the answer is yes, information about the control measures must be detailed on the significant hazard page.

Are these plans in place: YES NO

Who logged the HRA alert into the EHS SharePoint?

Hazards Checklists

Checklist B Physical Hazards (Note: Asterisk denotes HRA)			
Item	**Subject**	**No**	**Yes (add comments below)**
A	Hazardous Terrain, Topography		
B	Overhead obstructions		
B1	If yes, has an OHOP been prepared?		
C	Underground obstructions (e.g. electric, water, gas, cable)		
C1	Will intrusive activities be performed?		
C2*	Will an intrusive activity be performed within 15 feet of an identified electrical, gas or buried process line		
C3	If yes, review Underground Obstructions SOP and complete flow chart.		
C4	If Geophysics will not be accomplished, the Project Director must complete the variance process by signing the variance in Preproject Implementation Checklist.		
D*	Is elevated work (over 5 feet) to be performed?		
D1	Has a fall protection plan been developed?		
D2	Has a rescue plan been developed?		
E	Excavation, Trenches		
E1*	If yes, will it be necessary to enter an excavation >4' deep?		
E2	Who is the competent person?		
E3	How will the excavation be sloped/shored/barricaded?		
F	Will heavy equipment be used?		
F1	Equipment should be inspected under both static and loaded conditions.		
G	Traffic (flow and congestion)		
G1	If yes, has this been discussed with the contractor?		
G2	What requirements will there be for spotters?		

Hazards Checklists

Checklist B Physical Hazards			
Item	**Subject**	**No**	**Yes (add comments below)**
H	Slip, Trip, or Fall Potential		
I	Weather (heat, ice and rain)		
I1	Has heat stress or cold stress been identified?		
J*	Rigging, Suspended Loads		
J1	If yes, who is the qualified rigger?		
K*	Confined Space Activity		
K1	If yes, who will develop the CSE entry requirements (e.g., LOTO, air monitoring) and complete the CSE permit?		
K2	If yes, has a rescue team been trained and notified?		
L	Heat/ignition sources (powered tools, torches, lamps)		
L1*	Will it be necessary to perform Hot Work?		
M	Explosion potential (static, vapor, storage)		
N	Is there a potential for a fire?		
O	Rotating Equipment/Moving Parts		
O1*	Will personnel be exposed to unguarded rotating/moving parts?		
O2	What additional guards can be installed to minimize exposure?		
P	Pinch Points		
Q	Drill Rigs		
Q1	If a drill rig will be used, does the potential exist to encounter flammable/combustible gases (methane, etc.?)		
Q2	If the answer to Q2 is “yes” specify what type of Combustible Gas Indicator will be used, how often and where the monitoring will take place, and the action limit.		
R	Will there be work over / adjacent to water?		

Hazards Checklists

Checklist B Physical Hazards			
Item	**Subject**	**No**	**Yes (add comments below)**
R1*	Will the work require the use of a boat?		
S	Will drum handling be performed?		
T	Are there any noise sources?		
U*	Will there be any use of high pressure water (>3626 PSI) or steam?		
V*	Will there be work performed on electrical systems?		
V1	If yes, has a Lock-out/Tag-out procedure been developed?		
W	Will it be necessary accomplish a line break?		
W2*	If yes, what material is in the pipe or line? Is it defined as a "Hazardous Process"?		
X	What hand safety concerns are associated with the scope of work?		
X1	What hand PPE is required?		
X2	Is there special tool(s) to be used to reduce the hand safety hazard?		
X3	Are additional precautions, techniques, etc. to be used?		
Y	What ergonomic concerns are associated with the scope of work (i.e., lifting, repetitive motion, materials handling)?		
Z	What hand or power tools will be used?		
Z1	Who will perform initial inspection of hand tools?		
Z2	Who will perform initial inspection of power cords and GFCIs?		
ZZ	What is the audit requirement for this project based on project duration (< or > 2 weeks)? Note: A minimum of one audit is required for EVERY project regardless of project length.		☐ Self Audit ☐ Scheduled Audits
ZZ1	Who will develop the required audit schedule?		

Hazards Checklists

Checklist C Chemical Hazards			
Item	**Subject**	**No**	**Yes (add comments below)**
A	Are contaminants present (most recent data)?		
B	What are the concentration levels?		
C	Do routes of exposure include inhalation, ingestion, and dermal absorption?		
D	Are there PPE requirements or is PPE required for a specific task to be conducted (e.g., mixing materials that could cause exposure to dust or a splash hazard)? If yes, what are the levels of protection? (Specify Levels A, B, C, D, or modified D.)		
E	Are there air monitoring requirements?		
F	Is there a potential that respirator use will be required to complete this work?		
F1	If so, list the names of the individuals who will wear respirators and be prepared to provide documentation of fit tests and medical clearances.		
G	Are there hazardous products to be used in the execution of the work?		
G1	Are Safety Data Sheets available and have they been reviewed?		
G2	Will chemical addition or treatment be performed?		
G3	Will the use of any products or materials result in heat generation or off-gassing?		
H	Will sample preservatives be prepared in the field?		
I	Will mixtures (e.g., grout, chemical addition) be prepared in the field?		
J	Is there proximity to Site Chemical Operations? If yes, specify the hazards if exposed to these operations.		
K	Are plant area orientations required?		
L	Are additional permits/notifications required?		

Hazards Checklists

Checklist D Other Hazards or Concerns				
Category	**Item**	**Subject**	**No**	**Yes (add comments below)**
Biological Hazards	**A**	Are there biological hazards present (e.g., poisonous plants, vectors, wild animals, snakes, ticks, bees)?		
Communications	**B**	Have adequate means of communication been established (cell phones, plant radios, etc.)?		
	B1	Means of communication with facility?		
	B2	Means of communication between field team members?		
	B3	Have cell phone numbers been exchanged as appropriate?		
	B4	Is there an emergency communications plan in the event of a UO with injury? How will help be notified? Who will be notified?		
	B5	How will site on-site and/or outside emergency responders know where you are located in the field?		
	B6	How will you determine if the injured party can be transported by you or if you should wait for emergency responders?		
	B7	Has a copy of a stand-alone emergency contact information sheet been prepared to be placed in each site vehicle?		
Lone Worker	**C**	If there are circumstances where individuals must work alone?		
	C1	Has a buddy system been developed for the work?		

Hazards Checklists

Checklist D Other Hazards or Concerns				
Category	**Item**	**Subject**	**No**	**Yes (add comments below)**
Lone Worker	C2	Have adequate provisions regarding check in and communication been made to assure individual safety?		
Other Hazards	**D**	Are there any other hazards applicable to the fieldwork being performed?		
Management of Change	**E**	Do all parties understand the importance of and the process to identify and/or manage changing field conditions?		
Unexpected Occurrences	**F**	Do all parties understand the definition of an Unexpected Occurrence and are they familiar with the expected reporting and investigation process?		

Appendix D

DRILLING SAFETY HANDBOOK

1.0 PRE-FIELD WORK

It is very difficult to predict all problems that may occur during drilling fieldwork activities. However, if pre-fieldwork preparations are completed thoroughly, the job will likely proceed more safely and smoothly (i.e., with less down time). This section lists some important safety items that should be performed/considered prior to initiation of actual fieldwork. The Project's Project Manager (PM) should review the following list and determine if other pre-fieldwork activities are necessary. At a minimum the following should be completed:

- Ensure that all items are completed on the Pre-fieldwork Checklist.
- Create and have available a map showing underground equipment, lines, and/or hazards.
- Check with utility one-call service before excavating or drilling.
- Visually inspect each location in the field for underground utilities.
- Site maps should be checked for utilities not found in the field.
- Review a site map with a person familiar with layout of underground hazards.
- Determine if surveying is needed to locate underground hazards.
- Markers, flags, or painted lines, etc., should be used to identify excavation boundaries and locations, or hazards beyond which excavation must not exceed.
- All dimensions, elevations, and coordinates should be viewed as approximate locations of buried equipment, lines, etc. Elevations may change due to erosion or the addition of fill. Buried cables have been found three to five feet on either side of buried protective boards and markers.
- If buried equipment, lines, etc., exist within 10 feet on either side of the excavation, these should be considered in the excavation area.
- A conscious decision should be made on whether or not to de-energize underground cables within 10 feet (overhead cables within 20 feet) of the excavation prior to excavation.
- If the location of a utility line is unclear, the local utility company should be contacted for clarification of line location.
- If the location of a utility line is unclear, probing or hand augering to a depth of five feet is recommended. Probing and hand augering should be performed such that the area to be excavated is within the radius of the investigation.
- Excavating around process lines requires extreme caution. If any unusual odors or other signs indicating leakage are observed, the job should be shut down immediately and area supervision notified. Air quality checks must be performed to ensure adequate personnel protection is provided. Whenever possible, process lines should be depressurized before excavating.

2.0 MOBILIZATION

The following are safe guidelines related to on- and off-road movement of drilling equipment. Prior to mobilizing or demobilizing drilling equipment, responsible individuals should consider the following:

- Inspect the rig, using the Drilling Equipment Checklist.
- Before moving any equipment, first walk the route of travel with driller, inspecting for depressions, slumps, gullies, ruts, and similar obstacles. The drill site also should be inspected for debris, plant, and animal hazards. It also should be determined if the ground is suitable for heavy equipment travel.
- Make sure bystanders and passengers are clear of equipment.
- After equipment has been moved to a new drilling site, set all brakes and/or locks. When grades are steep, block the wheels.
- Use caution when traveling on steep grades. Conservatively evaluate side-hill capability of equipment movement. Arbitrary addition of drilling tools may raise the center of mass. When possible, travel directly uphill or downhill.
- When moving up a steep grade or slope, anchor a winch line from the vehicle to a suitable object at the top of the slope.
- Attempt to cross obstacles such as small logs and small erosion channel or ditches squarely, not at an angle.
- Use the assistance of someone on the ground as a guide when lateral or overhead clearance is restricted, or when setting the drill rig on location.
- Never travel with the mast (derrick) of the drill rig in the raised or partially raised position.
- Do not raise the mast or operate the drill rig if this distance to overhead powerlines is less than 20 feet. In general, distance between the overhead power line and boom should be no less than the height of the boom. Remember to “Look Up and Live.”
- Keep in mind that both hoist lines and overhead powerlines can be moved toward each other by the wind. If strong winds are present, consider having the utility company (or plant) cover the overhead power lines.
- Prior to drilling, adequate site cleaning and leveling should be performed to accommodate the drilling rig and equipment. This provides a safe, obstacle-free working area. Drilling should not commence when tree limbs, protruding objects, unstable ground, site obstructions, or debris may cause unsafe work conditions and/or limited, awkward work spaces. An area clear of obstructions or debris should be maintained around the drilling or support activities at all times.
- Never leave equipment idling and unattended, especially on any incline or on loose material; the vibration may put the machine in motion.

3.0 EQUIPMENT DECONTAMINATION

Due to the presence of water, heat, pressure, and heavy equipment, decontamination activities can be very dangerous. The following are safety items to be considered during equipment decontamination:

- Follow equipment decontamination procedures outlined in the Health and Safety Plan (HASP) or Project Work Plan.
- Chock wheels of equipment/supply trailer prior to beginning work.
- Use face shield, *Tyvek*®, and gloves, boots, etc., to prevent physical contact with potential contaminants and debris.
- Check hose for possible weakness or potential break points prior to use.
- Do not point wand toward body when in use.
- Use anti-freeze (windshield washer type) in cold weather to prevent water from freezing inside equipment.
- Regarding access/egress, safe footing, lifting hazards, slipping on plastic should be considered as potential hazards, especially inside the decontamination area.
- Beware of burrs and sharp edges when moving augers and drilling equipment.
- Practice good housekeeping at all times.
- Be aware of heat and hot water from steam cleaner.

4.0 SET-UP AND START-UP

4.1 Set-up

This information should be reviewed prior to set-up activities at each drilling location:

- If required, a barricade should be set up after defining the exclusion zone.
- When drilling near suspected underground electrical hazards, the rig should be grounded with a ground wire attached to a ground rod.
- All brakes must be set before drilling begins. If the rig is positioned on a steep grade and leveling of ground is impossible or impractical, the wheel of the transport vehicle should be blocked and other means employed to prevent the rig from moving or tipping over (e.g., level jacks on rig).
- Use sufficient blocking under rig jacks to prevent sinking.
- Inspect pulley sheaves for wear and cable/rope positioning.
- Work to be done above three feet on the mast requires the use of a safety harness, or the mast must be lowered.
- Before lifting a relatively heavy object, approach the object by bending at the knees, keeping your back vertical and unarched while obtaining a firm footing. Grasp the object firmly with both hands and stand slowly and squarely while keeping your back vertical and unarched. In other words, perform lifting with muscles in your legs, not muscles in your lower back. If the object is in excess of 50 pounds, request assistance.

4.2 Start-up

After drill set-up, the following safety items should be observed:

- All personnel should know location and use of kill switch.
- Identify potential pinch points and hazards which could injure fingers and toes.
- All drilling rig personnel and visitors should be instructed to “stand clear” of the drilling rig immediately prior to and during starting of an engine.
- Make sure all gear boxes are in neutral, all hoist levers are disengaged, all hydraulic levers are in the correct non-actuating positions, and the cathead rope is not on the cathead before starting a drilling rig engine.
- Raise the derrick a few inches in order to check the brakes and always check for overhead power lines.
- Secure and/or lock the mast in upright position if required, according to the drilling manufacturer's recommendations.
- Place the fire extinguisher in an easily accessible location away from the drilling rig.

5.0 DRILLING

This section concerns rotating equipment, catheads, wire ropes, and hoists (the part of the drilling rig which may cause serious injuries), and drilling techniques most commonly used during auger and rotary drilling:

- Only personnel necessary to achieve drilling objectives should remain within the exclusion zone. All others should remain outside the exclusion zone.
- Drilling personnel should not wear clothing that may be awkward or loose and get caught in rotating equipment.
- Wear protective gloves when handling augers, cable, rods, or any sharp or splintery materials.
- Proper gloves (see HASP) should always be worn when handling materials which can irritate or contaminate skin.
- When appropriate, noise protection must be worn by employees who are working when drilling equipment is operating.
- Effective communication (hand signals, etc.), especially under high noise conditions, is essential to safety. Clarify use of hand signals.
- Use tools only for the job for which they were intended.
- Do not perform maintenance or refueling while equipment is running.
- Stay clear of cables while lifting equipment or while drilling rig is under heavy strain.
- Do not operate the drilling rig in an electrical (lightening) storm. If drilling when a storm approaches, stop drilling and lower the mast, if possible. Do not stay near drilling rig if the mast cannot be lowered.
- When removing drilling string from borehole, the rod string should not exceed 1.5 times the height of the mast.
- Do not ride on hook, ropes, or other traveling lines of the rig.
- Do not climb the rig mast while equipment is running. Shut down equipment and use safety harness if climbing mast, is necessary.
- When moving or hoisting stabilizers or drill collars, tag lines should always be used. A helper should not use his hands to hold or control heavy equipment. Instead, he should loop a rope around it and hold onto both ends of the rope.
- The operator of a drilling rig should only operate the rig from the position of the controls. The operator should shut down the drilling engine before leaving the vicinity of the drilling rig.
- All hydraulic lines should be inspected periodically for integrity, and replaced as needed.
- Drilling should always proceed cautiously, especially at depths less than ten feet.
- Operation of drilling equipment should be limited to qualified personnel.

5.1 Auger Drilling

Auger drilling uses direct power to rotate (screw) flighted augers into the ground. Be aware of the following hazards which may be unique to this type of drilling:

- Only use the manufacturer's recommended method of securing the auger to the drill drive coupling. Do not touch the coupling or the auger with your hands, a wrench, or any other tools during rotation.
- Whenever possible, use tool hoists to handle auger sections.

- Never place hands or fingers under the bottom of an auger section when hoisting the auger over the top of the auger section in the ground, or over other hard surfaces such as the drilling rig platform.
- Never allow feet to get under the auger section that is being hoisted.
- When rotating augers, stay clear of the rotating augers and other rotating components of the drilling rig. Never reach behind or around a rotating auger for any reason whatsoever.
- Never place your hands between the drill rig and an auger, even when attempting to free damaged or bound sampling equipment from the auger.
- Never use your hands or feet to move cuttings away from the auger.
- Augers should be cleaned only when the drill rig is in neutral and the augers have stopped rotating.
- Care should be taken to ensure augers are properly stored and secured when not in use and during transport.

5.2 Rotary Drilling

Mud rotary is direct rotary drilling using mud slurry circulation to remove cuttings and keep the borehole wall stabilized. Be aware of the following hazards which may be unique to this type of drilling:

- Lifting heavy equipment (i.e., drill rods, etc.);
- Rotating equipment/parts; and
- Slippery or dangerous work areas caused by messy mud pits or troughs (could fall in); keep area clear.

Air rotary is direct rotary drilling using high pressure air circulation to remove cuttings and keep the bit cool. Be aware of the following hazards which may be unique to this type of drilling:

- Rotating/lifting equipment;
- High pressure air lines;
- Air discharge of cuttings at high velocity; use a cover to control discharge of cuttings;
- Heavy drill rods being lifted;
- Very loud; wear hearing protection;
- Large drill rig and support vehicle (space limitations); and
- Dust generation in dry formations; move upwind and use a cover for dust control.

Listed below are general rotary (air and mud) drilling hazards:

- Drill rods should not be braked during lowering into the hole with drill rod chuck jaws.
- Drill rods should not be held or lowered into the hole with pipe wrenches.
- If a string of drill rods is accidentally or inadvertently released into the hole, do not attempt to grab the falling rods with your hands or a wrench.
- In the event of a plugged bit or other circulation blockage, high pressure in the piping and hose between the pump and the obstruction should be relieved or bled down before breaking the first tool joint.
- When drill rods are hoisted from the hole, they should be cleaned for safe handling with a rubber or other suitable rod wiper. Do not use your unprotected hands to clean drilling fluids from drill rods.

- If work must progress over a portable drilling fluids (mud) pit, do not attempt to stand on narrow sides or cross members. The mud pit should be equipped with a rough surface and/or cover panels of adequate strength to hold drilling rig personnel.
- Drill rods should not be lifted and leaned unsecured against the mast. Provide some method of securing the upper ends of the drill rod sections for safe vertical storage or lay down the rods.

5.3 Cathead

Listed below are guidelines regarding cathead operation:

- Only drilling personnel familiar with cathead operation should be allowed to operate equipment. Keep the cathead clean and free of rust and oil and/or grease. The cathead should be cleaned with a wire brush if it becomes rusty.
- The cathead operator must operate the cathead while standing on a level surface with good, firm footing conditions, without distraction or disturbance.
- Always use a clean, dry, sound rope. A wet or oily rope may "grab" the cathead and cause drill tools or other items to be rapidly hoisted to the top of the mast. Do not operate the cathead in rain.
- Never wrap the rope from the cathead (or any other rope, wire rope, or cable on the drilling rig) around a hand, wrist, arm, foot, ankle, leg, or any other part of your body.
- Always maintain a minimum of 18 inches (driving spoon length) clearance between the operating hand and the cathead drum when driving samplers, casing, or other tools with the cathead.
- Do not use a rope that is longer than necessary. A rope that is too long can form a ground loop or otherwise become entangled with the operator's legs.
- Do not use more rope wraps than are required to hoist a load.
- Do not leave a cathead unattended with the rope wrapped on the drum.
- Position all other hoist lines to prevent contact with the operating cathead rope.
- When using the cathead and rope for driving or back-driving, make sure that all threaded pipe connections are tight and stay as far as possible from the hammer impact point.
- When stuck tools or similar loads cannot be raised with a hoist, disconnect the hoist line and connect the stuck tools directly to the feed mechanism of the drill. Do not use hydraulic leveling jacks for added pull to the hoist line or the feed mechanism of the drill.
- Should the rope "grab" the cathead or otherwise become tangled in the drum, do not attempt to release the rope. Instead, sound an appropriate alarm for all personnel to rapidly back away and stay clear. The operator should also back away and stay clear. If the rope "grabs" the cathead, and tools are hoisted to the sheaves at the top of the most, the rope often will break, releasing the tools. If the rope does not break, stay clear of the drilling rig until the operator cautiously returns to turn off the drilling rig engine and appropriate action is taken to release the tools. The operator should keep careful watch on the suspended tools and should quickly back away after turning off the engine.

5.4 Wire Ropes and Hoists

Listed below are guidelines regarding wire ropes and hoists:

- Replace damaged safety latches on safety hooks before using.
- Always wear the appropriate gloves when handling wire ropes.
- Minimize shock loading on wire rope; apply loads smoothly and steadily.
- Protect wire rope from sharp corners or edges.
- Do not guide wire ropes onto cable drum with your hands.
- Never leave a load suspended in the air when the hoist is unattended.
- Keep your hands away from hoist, wire rope, hoisting hooks, sheaves, and pinch points as slack is being taken up and when the load is being hoisted.
- Never hoist the load over the head, body, or feet of any person.

6.0 WELL CONSTRUCTION AND GENERAL HOUSEKEEPING

This section presents safety items around well construction, and general housekeeping. The following safety items should be observed:

- Before lifting a relatively heavy object, approach the object by bending at the knees, keeping your back vertical and unarched while obtaining a firm footing. Grasp the object firmly with both hands and stand slowly and squarely while keeping your back vertical and unarched. In other words, perform lifting with muscles in your legs, not muscles in your lower back. If the object is in excess of 50 pounds, request assistance.
- Wastewater and drilling fluids must be properly contained and labeled. Refer to the project Waste Management Plan.
- Suitable storage locations should be provided for all tools, materials, and supplies so that they can be conveniently and safely handled without falling on a member of the drill crew or a visitor, without creating tripping hazards, and without protruding at eye or head level.
- Avoid storing or transporting tools, materials, or supplies within or on the mast (derrick) of the drill rig.
- Pipe, drill rods, bit casings, augers, and similar drilling tools should be stacked in an orderly manner on racks or sills to prevent spreading, rolling, or sliding and should be secured prior to moving equipment.
- Work areas, platforms, walkways, scaffolding, and other accesses should be kept free of materials, obstructions, and substances such as ice, water, mud, excess grease, or oil that could cause a surface to become slick or otherwise hazardous. The use of additional footing safeguards (mats) should be evaluated on a case-by-case basis.
- Keep all controls, control linkages, warning, and operation lights and lenses free of oil, grease, or other substances which would decrease safe handling.
- Do not store gasoline in any portable container other than that specifically designed for the intended purpose.
- Welding gas cylinders should be stored in an upright and secured position. Protective caps should be in place when the cylinders are not in use.
- All unattended boreholes must be adequately covered or otherwise protected to prevent personnel, site visitors, or animals from falling into the hole. All open boreholes should be covered, protected, or back filled adequately and according to local and state regulations upon completion of the drilling project.
- Do not tolerate unprofessional conduct ("horse play") on the job site.

WELL DRILLING EQUIPMENT CHECKLIST*

Contractor: _____

Company Name: _____

Equipment Identification Number: _____

ITEMS	CONDITION	REMARKS
1. Backup Alarms		
2. Brakes		
3. Clutch		
4. Control Buttons & Levers Labeled		
5. Fuel, Fluid, & Hyd. Sys. (No leaks)		
6. Guards		
7. Horn		
8. Lights/turn signals		
9. Muffler & Exhaust Pipe		
10. Muffler Guards		
11. Leveling Jacks		
12. Parking Brakes		
13. Platform Decking (stability)		
14. Rear and Side View Mirror		
15. Seat Belts		
16. Tracks, Tires, Wheels		
17. Engine Gauges		
18. Lifting Cables		
19. Cable Clamps		
20. Cable Safety Latches		
21. Lockouts		
22. PPE (including respirators)		
23. Safety Harness		
24. First Aid Kit		
25. Fire Extinguishers		
26. Safety Shutdowns Tested & Working		
27.		

_____Auditor

_____Others

_____Others

Worker safety is paramount. This Drill Rig Inspection Checklist is provided to all contracted drilling firms as guidance regarding equipment expectations. All equipment should be inspected and found to be in safe working order **prior to** mobilization. Once onsite, this checklist will be reviewed with the Project Manager or his/her representative. Contractor is responsible for its equipment (rented or owned). The PM has the authority to halt work if unsafe conditions or equipment are observed.

Appendix F

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 Incorporated Location: 700 West Bay Drive NW Olympia, WA 98502

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:	Hannah Morse	Name:	Laura Keehan
Organization:	Pioneer Technologies Co	Organization:	City of Olympia
Phone:	(360) 570-1700	Phone:	(360) 570-5855
Email:	MorseH@uspioneer.com	Email:	lkeehan@ci.olympia.wa.us

Ecology Contacts (completed by Ecology Project Manager)

Ecology Project Manager		Alternate or Cultural Resource Contact	
Name:	Steve Teel, LHG	Name:	Amy Hargrove
Program:	Toxics Cleanup Program, Southwest Region Office	Program:	oxics Cleanup Program, Southwest Region Office
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.



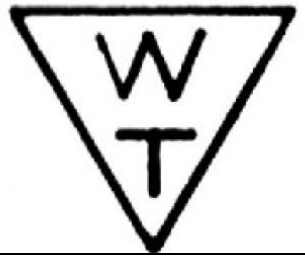


Far Left: .303 British cartridge found by a WCC planting crew on Skagit River. Don't ever touch something like this!
Left: Maker's mark on bottom of old bottle.



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.

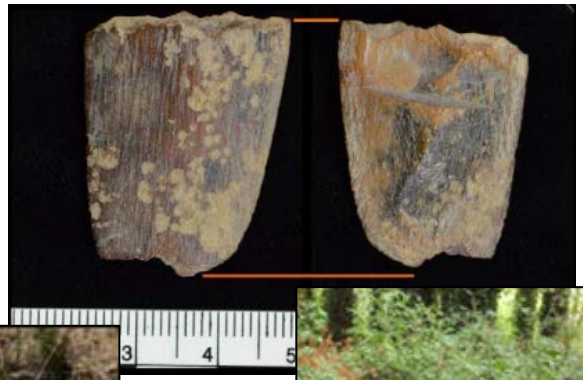
Examples are:

- 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!*